TIME FOR CLASS

2021

THE STATE OF DIGITAL LEARNING AND COURSEWARE ADOPTION

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Tyton PARTNERS

Bay View Analytics

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EXECUTIVE SUMMARY

Since 2014, Tyton Partners has monitored the dynamics of the higher education digital learning and courseware market with the goals of understanding the needs of institutions, instructors, and students and investigating how suppliers are evolving to meet those needs. This 2021 summary provides an updated view on how the pandemic has altered the landscape of teaching, learning, and course materials in higher education. Informing this research are survey responses from over 1,000 administrators and 3,000 faculty at 1,600 unique postsecondary institutions as well as interviews with more than 20 digital learning suppliers. Approximately 2,300 of our faculty respondents teach introductory-level courses, and this 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.

Our respondents report that their institutions are prioritizing digital transformation and grappling with how to address systemic racism and other inequities laid bare by the pandemic. These findings have been echoed in other recent **Time for Class research**: in fall 2020, instructors described an increased positive perception of digital learning and more frequent and embedded uses of digital resources (especially in introductory classes); given increased exposure to the lived experiences of many of their students, they also voice growing concerns about equity across student groups.[1]

Recent student surveys bear out the need for careful attention to how the ongoing shift to digital learning affects learners: a July 2020 **Digital Promise study** found that students are emerging from the pandemic with more exposure to digital learning but with disparate levels of access to devices and internet as well as varying attitudes toward the value of higher education.[2] And in an April 2021 **report from Top Hat**, students say they valued online learning most when receiving frequent feedback from their instructors via courseware and engaging in digital learning activities during class. They also contend that they are open to continued use of digital learning to enhance in-person classes, particularly to create opportunities for flexibility and engagement.[3]

Throughout this work, digital learning is defined as the use of technology and teaching practices enabled by technology to enhance learning. It encompasses a broad range of content and communication tools, curricular models, design strategies, and student support services that personalize instruction for students in blended, hybrid, and online learning environments. Equitable digital learning adapts instruction to students' needs and capabilities. If implemented well, digital learning has the potential to facilitate active learning, empower instructors with data to inform teaching, and enable better student outcomes.

1. Fox, K., Bryant, G., Lin, N., Srinivasan. N, Nguyen, A. (2021, January 28). *Time for Class – COVID-19 Edition Part 3: The Impact of 2020 on Postsecondary Teaching and Learning of Introductory Faculty.* Tyton Partners.
2. Means, B., and Neisler, J., with Langer Research Associates. (2020). *Suddenly Online: A National Survey of Undergraduates During the COVID-19 Pandemic.* San Mateo, CA: Digital Promise.
3. Top Hat Monocle Inc. (2021, April 30.) *Top Hat Field Report: 3,052 College Students on the Good, the Bad, and Learning Post-COVID.* Waterloo, Ontario, Canada: Top Hat.

In this context, this paper addresses the following critical questions with the goal of exposing information that can be used by providers of course tools and materials to better serve faculty and institutions.

What are the unique challenges that faculty teaching introductory-level courses face, and what tools and materials are they adopting in the classroom?

What is the role that high-quality digital learning tools can 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?

DIGITAL TOOLS IN INTRODUCTORY COURSES

Faculty who teach introductory-level classes play an important role in designing and delivering courses that impact student retention and progression. High-enrollment introductory-level English, STEM, and other general education courses 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, and at disproportionately high numbers for low-income students and students of color. Faculty teaching introductory courses are more likely to be part-time, adjunct, non-tenured, and white than instructors teaching upper-level courses. In terms of workload, they are more likely to teach an average of 3 or more courses per term and to spend more than 13 hours per course, per week. They are also more likely to work at 2-year institutions, where fewer faculty report availability of centralized support services such as a center for teaching and learning.

When asked about instructional priorities and challenges, faculty teaching introductory courses report that they are focused on improving equity and access, engaging students, and providing more effective and efficient feedback in their courses. Faculty at 2-year institutions are more likely to report that engaging students (48% vs. 42%) and increasing equity and access (49% vs. 43%) are priorities relative to their 4-year counterparts. Faculty at 4-year institutions are more likely to report that providing practice (18% vs. 13%) and providing feedback (42% vs. 38%) are priorities.

In terms of equity and access, specific introductory faculty priorities include increasing student access to and decreasing the cost of instructional materials, and ensuring that all students have an equitable opportunity for success. In the area of student engagement, specific priorities are increasing student collaboration and attendance. In terms of providing feedback, faculty seek ways to increase the timeliness of their feedback and find ways to efficiently grade student work.

INSTRUCTIONAL PRIORITIES FOR FACULTY TEACHING INTRODUCTORY COURSES, 2021
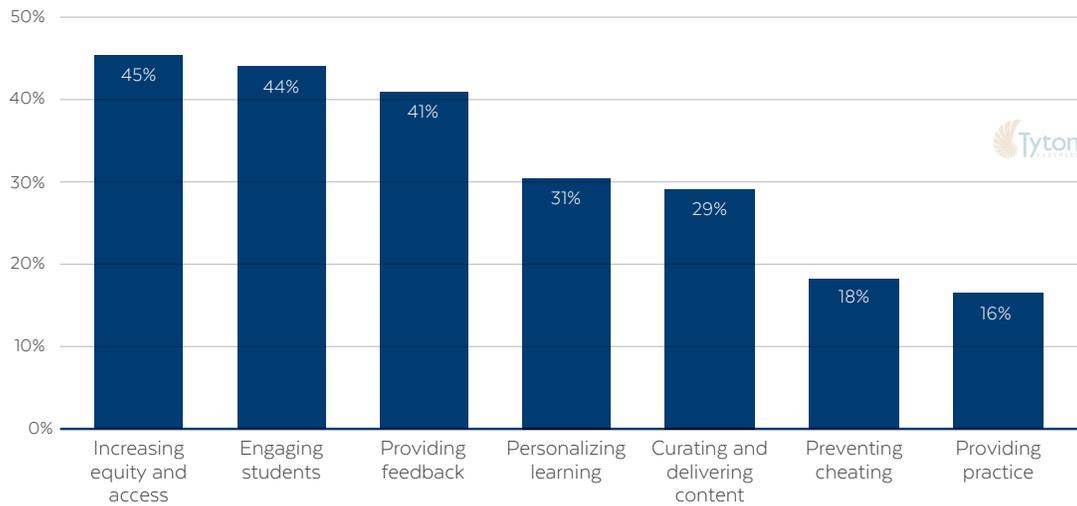
Notes: "Which instructional challenges are top priorities for you to solve in this course? Please choose up to three." N = 2652

Over the past year, these faculty have turned to digital tools at increasing rates to help transform their courses and achieve these outcomes: 86% of faculty who teach introductory courses used some form of digital tool (e.g., e-text, courseware, or instructional tool) during the spring 2021 term, with most using more than one tool.

KEY DEFINITIONS OF DIGITAL INSTRUCTIONAL MATERIALS

E-text: electronic versions of printed materials that can be read on a computer or handheld device

Instructional tools: supplementary digital tools that enhance learning through incorporating social learning, classroom engagement, assessment, and/or analytics

Courseware: instructional content that is scoped and sequenced to support delivery of an entire course through software that is built specifically for educational purposes

Adaptive courseware: courseware that is provided through a platform that enables personalized learning for students by tailoring material in real time

ADOPTION OF DIGITAL TOOLS AMONG FACULTY TEACHING INTRODUCTORY COURSES, 2021
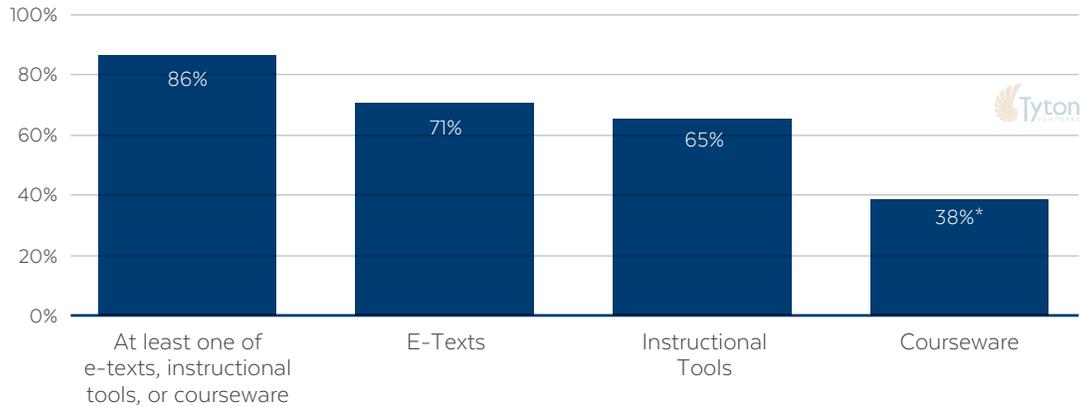
Notes: "Please describe your level of awareness with and usage of the following: E-Texts, Instructional Tools, Courseware." N=3365,

Courseware adoption has been increasing since 2016, with a third of faculty teaching introductory courses using courseware. Faculty at 2-year institutions report using courseware at greater rates.

ADOPTION OF COURSEWARE AMONG FACULTY TEACHING INTRODUCTORY COURSES, 2019–2021
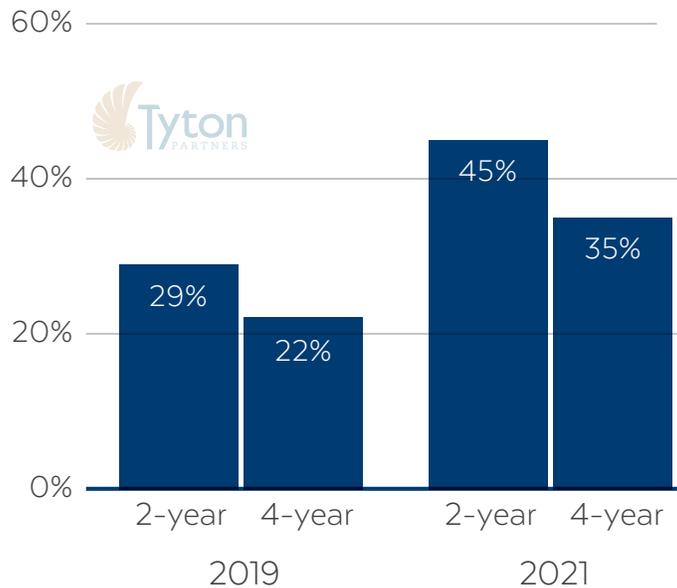
*Notes: 2019 question: "Please describe your level of awareness with the following: Courseware," 2021 question: "Please describe your level of awareness with and usage of the following: Courseware," 2019 2-year N=408; 2019 4-year N=1,382; 2021 2-year N=837; 2021 4-year N=1,803; *Courseware adoption rate derived from triangulating two data points asking faculty about their use of courseware and courseware products*

Sources: Time for Class 2019, and 2021

Courseware combines content with platform capabilities including assessments and homework. When implemented well, courseware can provide benefits for students, faculty, and institutions.

BENEFITS FOR STUDENTS	FOR FACULTY	FOR INSTITUTIONS
• Allowing students to move through the course material flexibly based on their demonstrated knowledge and skills • Changing the content and/or the degree of difficulty to keep students engaged • Providing immediate feedback so students can self-assess and monitor their own progress	• Automating assessments and analytics to provide real-time data on students' progress and areas of need • Enabling insight into how students are interacting with the course material (time spent on activities, study habits) • Freeing up class time to spend on interactive activities that build on student engagement with content outside of class	• Enabling institutional strategies to achieve improved affordability, access, retention, and equity • Improving student success rates in foundational courses • Generating more actionable student data than is possible with textbooks • Reducing the cost of course materials

Source: Every Learner Everywhere

Most courseware includes adaptive capabilities that can modify the presentation of content in response to student performance. These systems capture learning data and use feedback loops to create personalized learning pathways. This capability has significant implications for the closing of equity gaps among student groups. Courseware can provide individualized support to students, enable faculty access to learner data that enhance coaching and intervention, and improve course outcomes.

74% PERCENT OF FACULTY WHO ARE CURRENTLY USING COURSEWARE AND BELIEVE IT HAS A POSITIVE IMPACT ON LEARNING OUTCOMES

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EVIDENCE-BASED TEACHING PRACTICES

Evidence-based teaching (EBT) practices are techniques or approaches that are associated with greater student learning. These practices can be deployed in online, hybrid, and face-to-face course settings. We explore six categories of teaching practices that have been shown to result in improved learning gains for students and we explore the potential for digital tools to enable these practices.

CATEGORY	SELECTED APPLIED PRACTICES
Transparency - Providing students with a clear overview of the course content, learning outcomes, and assessment criteria	• Using the syllabus or another mechanism to ensure that students are aware of the course content and learning outcomes they are expected to master • Specifying learning goals and rationale before each assignment • Mapping content and assessments to course outcomes • Providing rubrics or other approaches to clarify for students the grading expectations and criteria upon which they will be assessed
Active Learning - Engaging students in learning by doing	• Discussion-based activities • Contextualizing content for students (e.g., through real-world examples or project-based learning) • Activities that require higher-order thinking • Simulations and animations • Differentiating instruction based on student need
Formative Practice - Creating opportunities for students to practice skills in ways that provide timely and targeted feedback to nudge them towards mastery	• Practice opportunities spaced out throughout the course • Giving timely, targeted, and ungraded feedback • Opportunities for students to self-check or debrief assignments and assessments • Providing ungraded assessments for students to practice • Using adaptive learning tools that respond to student performance • Scaffolding for students with increasing responsibility for their own learning
Data Analytics - Using real-time data to inform teaching and ongoing course improvements to optimize student success	• Adjusting instruction based on how the class is performing • Personalized learning for individual students • Use of data dashboards
Meta-cognition, self-regulation, and agency - Incorporating practices that help students learn to be a better learner and take control of the learning process	• Student self-assessment • Student self-reflection in course sessions or assignments • Commentary and think-aloud activities that encourage students to verbally explain their questions or reactions • Personalized study plans for students
Sense of belonging and inclusive learning environment - Intentionally using practices that enable all students to feel that they and their unique background have a place in the life of the classroom	• Incorporating culturally responsive pedagogy • Peer work to encourage student collaboration • Personalized messages and outreach from you to individual students • Activities that value affirmation and growth mindset

In this survey, faculty who teach introductory courses report that they value and are prepared to use a variety of evidence-based teaching practices. Notably, as shown below, faculty are most likely to say they value, are prepared to use, and are adopting practices related to transparency, formative practice, and active learning. Meta-cognition, self-regulation, and agency are areas where faculty report moderately lower use, readiness, and value. Importantly, two of the areas known to enable equitable learning—the use of data analytics and the creation of a sense of belonging and an inclusive learning environment—are those that are least used, and where faculty report the lowest levels of readiness and value.

VALUE AND USE OF AND READINESS FOR EBT PRACTICES AMONG FACULTY TEACHING INTRODUCTORY COURSES
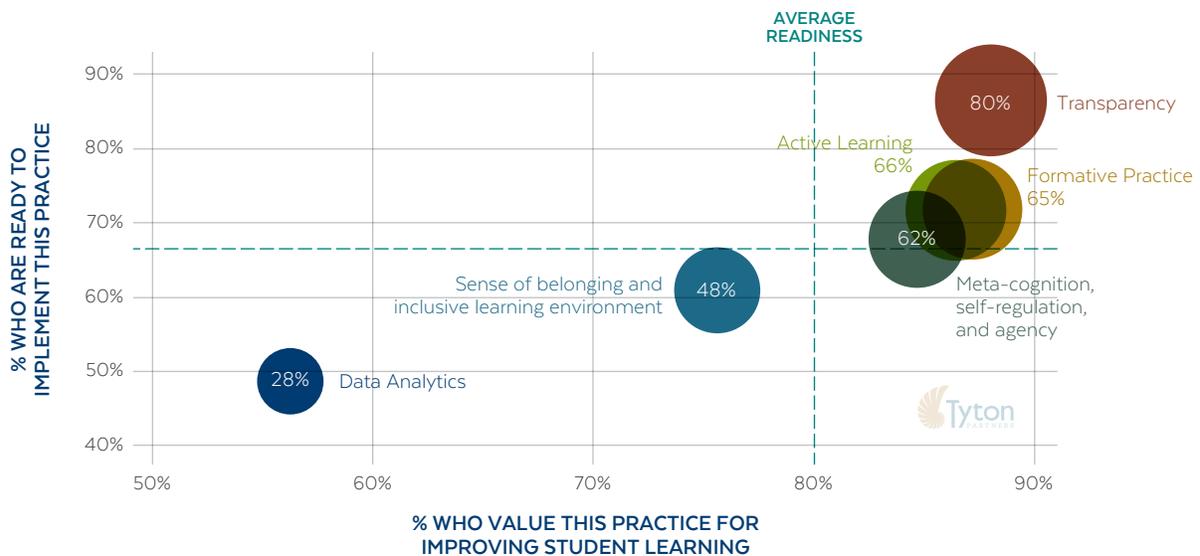
Notes: *Size of the bubble is the % of faculty adopting that practice in their highest enrollment course, x and y-axis are the percent of respondents who chose a 4 or 5 on a scale from 0-5 for the following questions: x-axis: "Please rate your perception of the value of these practices on improving student learning," y-axis: "Please rate your agreement with the statement 'I have the support needed and am able to implement these practices,'" N=2,465*

Our findings suggest that effectively implemented courseware can increase the use of certain evidence-based teaching practices. Faculty who use courseware report that they are doing so to enable more comprehensive application of a range of strategies, including formative practice, active learning, meta-cognition, and data analytics. However, the data reveal differences by faculty discipline: introductory math and computer science faculty, for example, are more likely to use courseware to engage students in active learning (59%) and provide timely and formative practice (67%), whereas introductory economics and finance faculty are more likely to use courseware for data analytics (47%).

USE OF COURSEWARE TO ENABLE EBTS AMONG FACULTY TEACHING INTRODUCTORY COURSES

Practice	Percentage
Formative Practice	58%
Active Learning	50%
Meta-cognition, self-regulation, and agency	40%
Transparency	40%
Data Analytics	32%
Sense of belonging and inclusive learning environment	18%
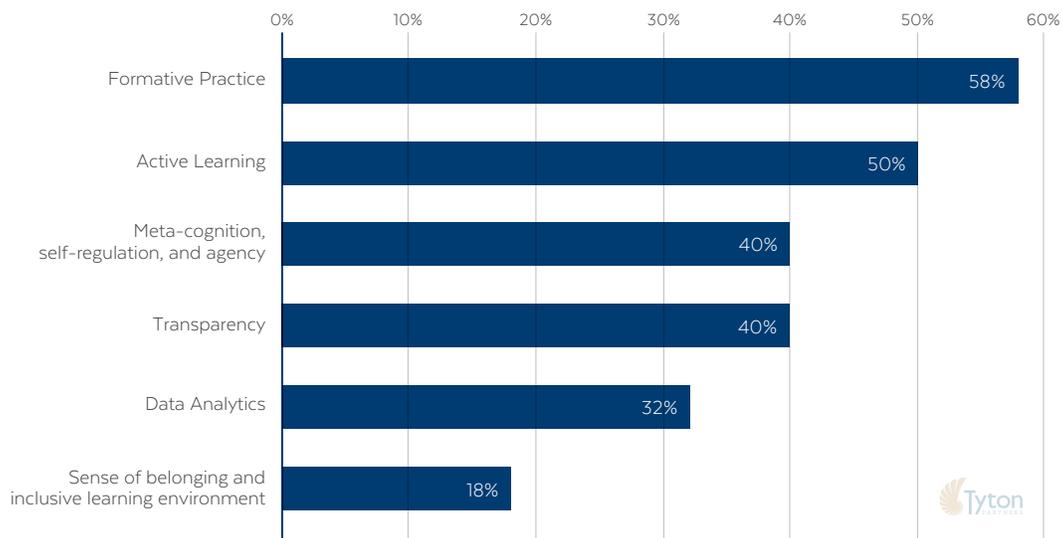
Notes: "Do you use courseware to enable any of the following teaching practices you are using in your highest enrollment course this term?," N=846

Use of courseware has a notable impact on the practice that faculty report they are least prepared to implement: data analytics. Introductory faculty who use courseware, and adaptive courseware in particular, report that they are incorporating data analytics into their teaching at a greater rate (32% total users and 36% adaptive users vs. 26% non-users) than those who do not use courseware.

EVIDENCE-BASED TEACHING PRACTICE ADOPTION BY COURSEWARE USAGE AMONG FACULTY TEACHING INTRODUCTORY COURSES

NON-COURSEWARE USER   COURSEWARE USER
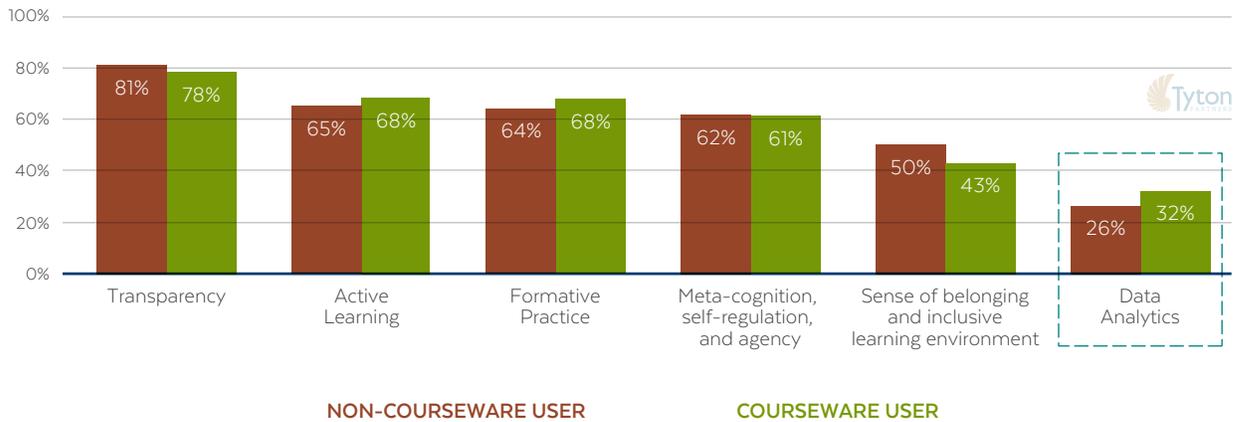
Notes: "Which of the following teaching practices are you using in your highest enrollment course this term?", Non-Courseware user N=1,719; Courseware user N=744

In general, the use of course-level data to adjust instruction and assess learning has important implications for equity, but if student data is not broken down by race or other pertinent categories, it is impossible to know if outcome gaps across student populations are being perpetuated or addressed.

"Our institution has a culture dedicated to making our students' lives better while encouraging faculty to innovate and use cutting-edge resources to help educate our students. Our institutional identity is tied to this process; we take pride in accomplishing it"

–Introductory course instructor, 4-year institution

Respondents reported a lack of institutional support for providing data disaggregated by various student characteristics. As shown below, only 29% of faculty teaching introductory courses say that their institution encourages faculty to disaggregate data by race to analyze course-level outcomes. However, faculty at 2-year institutions—institutions with more diverse student populations—are most likely to report that their institution engages in data disaggregation by race.

RESPONSES TO THE STATEMENT: 'MY INSTITUTION ENCOURAGES FACULTY TO ANALYZE COURSE-LEVEL DATA DISAGGREGATED BY RACE' BY FACULTY TEACHING INTRODUCTORY COURSES

	Overall	2-year institutions	4-year institutions	HBCU
AGREE	29%	39%	23%	47%
NEUTRAL	29%	29%	29%	22%
DISAGREE	42%	32%	47%	31%
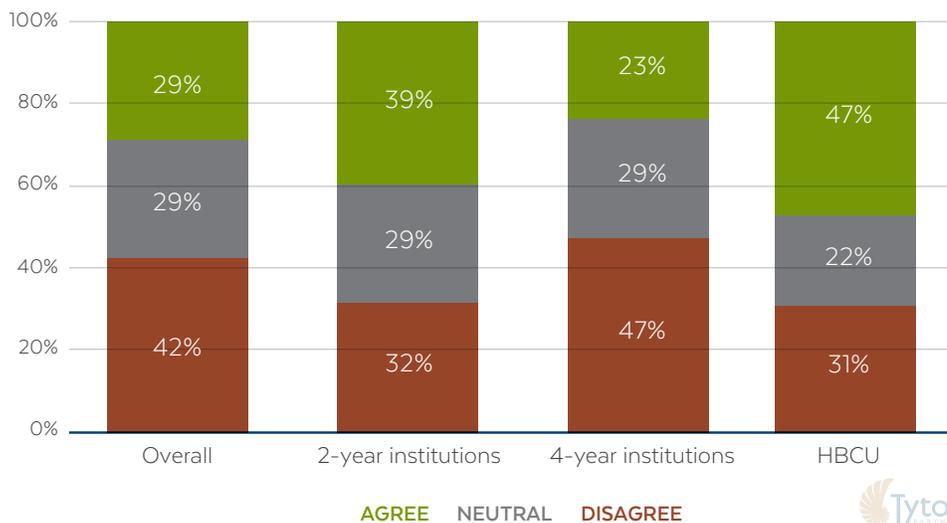
Note: "How would you rate your institution related to the use of equity-minded practices in digital learning?" Overall N=1,979; 2-year N=633; 4-year N=1,341; HBCU N=49

Courseware has the potential to change how faculty time is used in high-enrollment courses. Faculty who use courseware report lower total amounts of time per week spent teaching their courses, and these reductions occur without drops in faculty-reported satisfaction with student learning. Courseware users note that they spend less time on grading and slightly more time with students outside of class; however, they also spend more time answering IT questions. These results bear further exploration, and this work will continue to explore the nuances of where and how faculty time can be altered positively (e.g., promoting active learning, identifying students struggling to master a concept, and providing support) and minimizing less beneficial impacts on faculty time (e.g., answering IT questions).

WEEKLY DISTRIBUTION OF TIME FOR FACULTY TEACHING INTRODUCTORY COURSES, BY COURSEWARE USAGE

Selecting or adjusting tools and content

Answering IT questions

| Faculy teaching without courseware | 1.4 | Preparing and delivering assessments 1.7 | Preparing content for class 2.4 | Delivering instruction 2.3 | Providing support outside of class time 1.8 | Grading student work 2.5 | 0.9 | 13.0 |

| 0.1 hours saved | 0.3 hours saved | 0.1 hours added | 0.4 hours saved | 0.2 hours added |

| Faculty teaching with adaptive courseware | 1.4 | 1.6 | 2.1 | 2.3 | 1.9 | 2.1 | 1.1 | 12.4 |

HOURS PER WEEK

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?" Non-Courseware user N=1,760; Adaptive courseware user N=417

COURSEWARE FEATURE USE AND SATISFACTION

Certain features increase faculty satisfaction with courseware; these include components that enhance efficiency and engagement (e.g., auto-grading, practice questions) and faculty–student collaboration tools) and those that allow faculty to adjust the content to suit their needs (e.g., modular structures and customization tools). Faculty who use each of these features give their courseware product a higher net promoter score, a metric that indicates how likely a user is to continue using a product and to recommend it to their peers. On the other hand, features earning lower faculty rankings for usage and satisfaction are those in the areas of collaboration, customization, and Open Educational Resource integration. Collaboration in particular is an area compelling further attention, given the priority that faculty teaching introductory-level courses give to increasing student engagement.

COURSE FEATURE USE AND SATISFACTION AMONG FACULTY TEACHING INTRODUCTORY COURSES WHO ARE CURRENT COURSEWARE USERS

AVERAGE SATISFACTION (y-axis, 60% to 100%)
AVERAGE USE (x-axis, 0% to 70%)

Data labels on chart:
- Dashboards that show student progress in the course
- Presentation of content that adapts to student performance
- Summative performance assessments to assess learning
- Auto-grading of formative activities
- Practice questions with instant feedback
- Modular structure for enabling configurability
- Practice questions with interactive activities
- Incorporation of Open Educational Resources (OER)
- Customization tools
- Student activity reports and analytics
- Multimedia resources (e.g., videos, simulations, virtual labs) as part of instruction
- Tools for collaboration between students and faculty
- Tools for collaboration between students
- Tools for collaboration between faculty

Notes: x-axis: "Please select the following courseware features that you use in your class." y-axis: "How satisfied are you with this feature(s) in your courseware product?" N = 951

Faculty using courseware, especially for the first time, report that products are complex and challenging to implement, in part due to the overwhelming mix of feature sets. One way that the supplier community can ease faculty adoption is through the use of discipline-specific or use case–based models. Suppliers can develop product options that place certain functionalities front and center depending on subject matter while holding consistent those features that all faculty value. For example, math and computer science instructors emphasize built-in activities with immediate feedback and autograding. Business faculty make more use of features that help them communicate with their students and measure student progress. Humanities faculty, for the most part, use each courseware feature less than their peers, possibly because most current feature sets are not designed to support their needs.

VARIATIONS IN COURSEWARE FEATURES USED IN INTRODUCTORY CLASSES, BY DISCIPLINE CATEGORY

BUSINESS   **HUMANITIES & SOCIAL SCIENCE**
MATH & COMPUTER SCIENCE   **NATURAL & PHYSICAL SCIENCE**
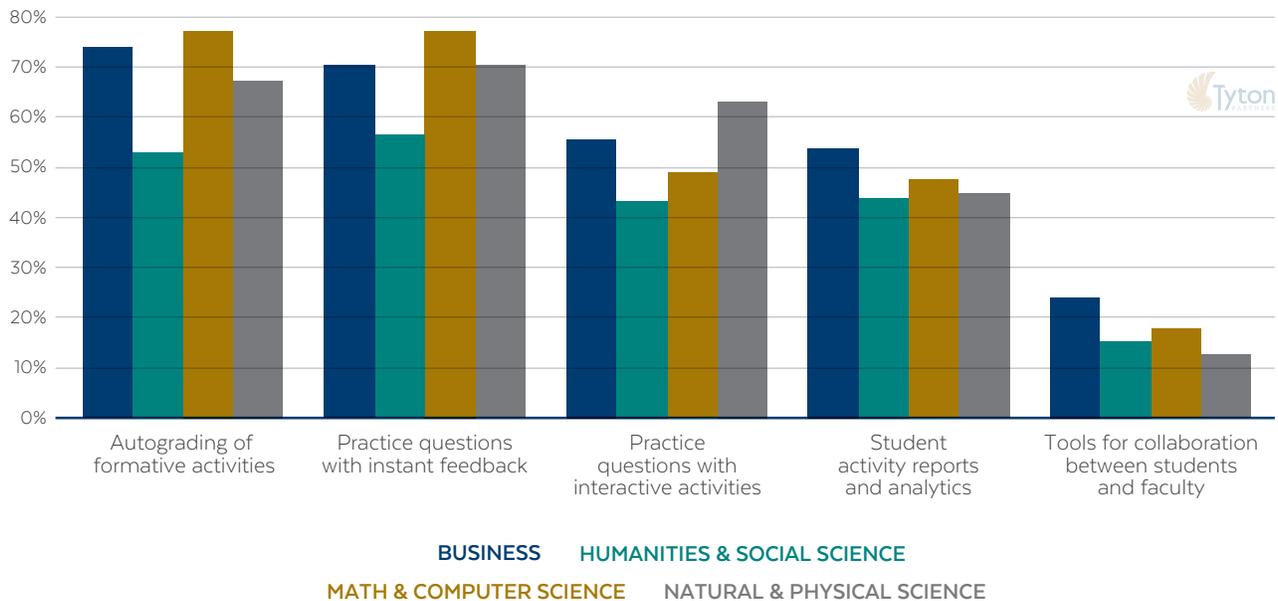
Note: "Please select the following courseware features that you use in your class. Select all that apply." Business N = 54, Humanities & social science N = 257, Math & computer science N = 247, Natural & physical science N = 168

IMPLEMENTATION SUPPORT FOR HIGH-QUALITY DIGITAL LEARNING

When implemented well, digital learning tools show promise in enabling evidence-based practices and redistributing how faculty time is spent. It should go without saying, however, that such tools only advance good teaching when employed in the context of broader pedagogical goals; they themselves are not vehicles of good instruction, and implementation and support is a prerequisite for achieving positive results.

It takes time to effectively integrate new course materials and teaching methods, including courseware. Faculty report highest levels of net promoter scores and satisfaction with student learning after they have been using courseware for three terms or longer, a finding consistent with efficacy and impact research pointing to the third term as being a turning point for student grade increases.[4] This time horizon is an important call to action to suppliers and institutions: how can we accelerate the time needed to optimize usage of courseware and other digital tools for the benefit of students and faculty?

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4.   Means, B., and Neisler, J., with Langer Research Associates. (2020). *Suddenly Online: A National Survey of Undergraduates During the COVID-19 Pandemic.* San Mateo, CA: Digital Promise.

NET PROMOTER SCORES FOR COURSEWARE FROM FACULTY TEACHING INTRODUCTORY COURSES, BY TERMS OF COURSEWARE EXPERIENCE
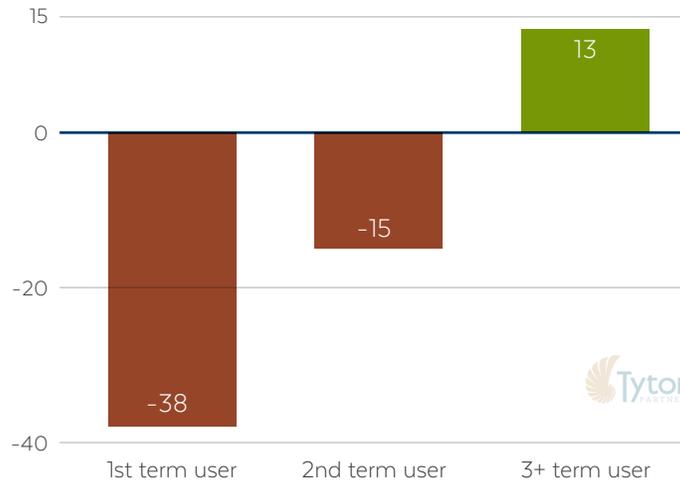
Notes: "How likely are you to recommend courseware to a colleague?" 1st term N=111, 2nd term N=125, 3rd term N=619

PERCEPTION OF COURSEWARE IMPACT ON STUDENT LEARNING BY FACULTY TEACHING INTRODUCTORY COURSES, BY TERMS OF COURSEWARE EXPERIENCE*
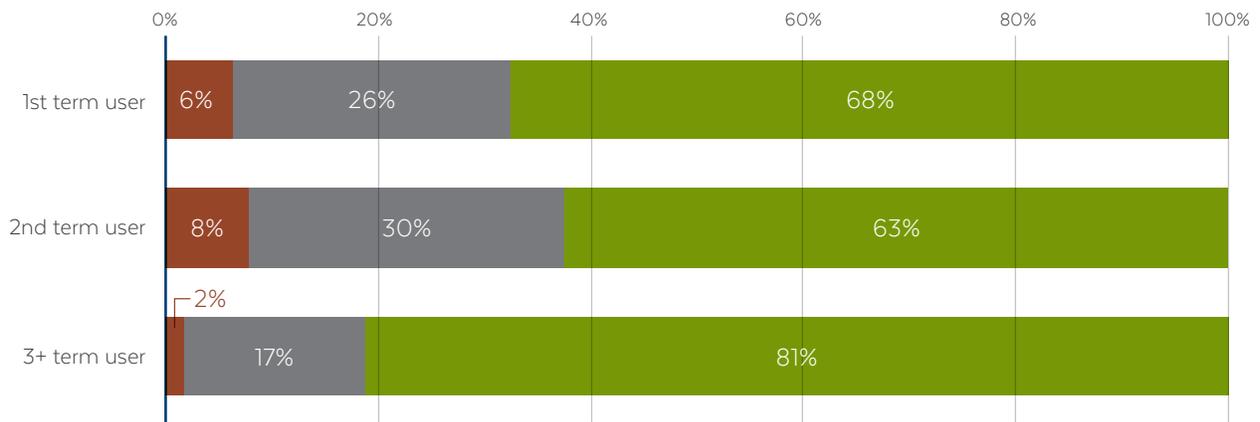
FACULTY WERE ASKED TO RATE THEIR PERCEPTION ON A 10-POINT SCALE:

NEGATIVE				NEUTRAL		POSITIVE			
1	2	3	4	5	6	7	8	9	10

CREATES NEGATIVE OUTCOMES   CREATES POSITIVE OUTCOMES
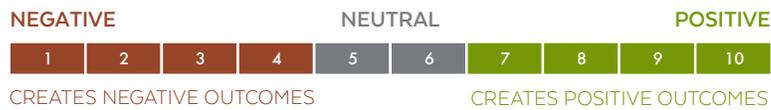
* Showing data among current courseware users; 1st term user N=80; 2nd term user N=104; 3rd+ term user N=545

Faculty who receive support during courseware implementation, whether from their institution, vendors, or others, are more likely to report satisfaction with products and their impact on students. Despite the importance of support in achieving outcomes, only 51% of faculty report that they received support during the courseware adoption process. Vendors play the preeminent role in providing that support, a role that was only amplified during the pandemic, particularly at 2-year institutions.[5] Informal networks and the institution are the second and third most common sources of support.

PERCENT OF FACULTY TEACHING INTRODUCTORY COURSES RECEIVING SUPPORT DURING THEIR IMPLEMENTATION OF COURSEWARE
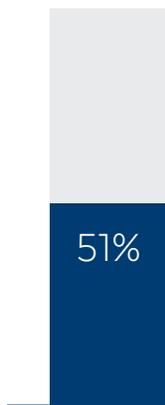
SOURCES OF SUPPORT FOR FACULTY TEACHING INTRODUCTORY COURSES DURING COURSEWARE IMPLEMENTATION
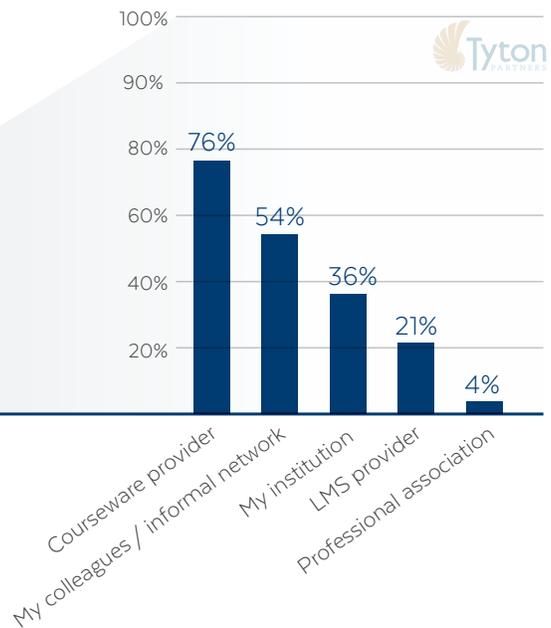
Notes: *"At which stages of courseware implementation have you received support either from your institution or an external partner?" among faculty that responded they are "Aware, and currently [use courseware] in my course" N=695*

Institutions play an important role in supporting faculty not only at the point of implementation but also more broadly in courseware selection and ongoing usage. Institutions with greater levels of infrastructural support for teaching and learning (e.g., instructional design staff, comprehensive professional development, the presence of centers for teaching and learning) report higher levels of satisfaction with digital tools and courseware and their impact on students. However, 2-year institutions are less likely to have those resources available. This is an important consideration for equity that impacts the experiences of both faculty and students using digital tools.

5. Fox, K., Bryant, G., Lin, N., Srinivasan, Nguyen, A. (2021, January 28). *Time for Class – COVID-19 Edition Part 3: The Impact of 2020 on Postsecondary Teaching and Learning of Introductory Faculty.* Tyton Partners.

AVAILABILITY OF INSTITUTIONAL RESOURCES AMONG FACULTY TEACHING INTRODUCTORY COURSES, BY INSTITUTION TYPE
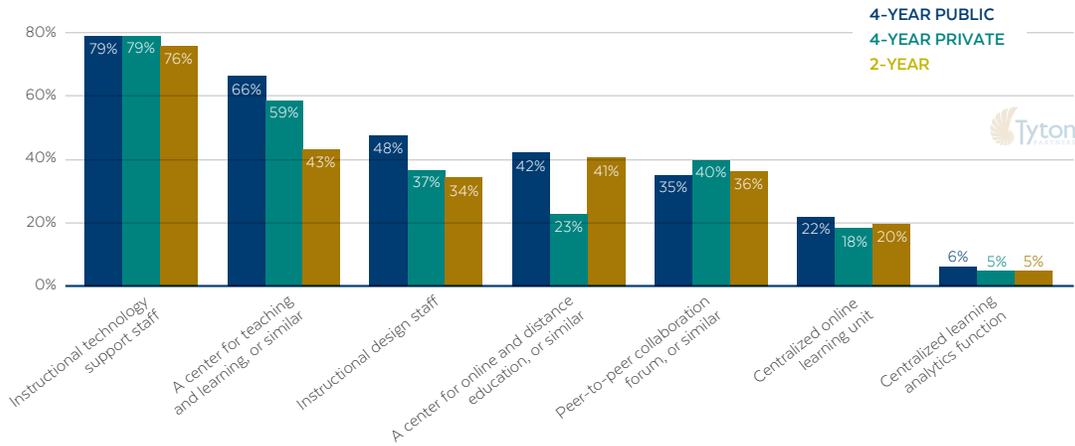
Note: "Which of the following institutional resources, if any, are available to you at your institution to support digital learning?"; public 4-year N=1186, private 4-year N=605, 2-year N=855

Institutions that serve higher numbers of poverty-affected and students of color are also more likely to report lack of resources and infrastructure as barriers. As shown below, institutions that serve a high proportion of Pell-eligible students (an imperfect proxy for the number of poverty-affected students served) report institutional budget constraints, limited support staff, and integration challenges at greater rates. These gaps in access to support services are a reality for less-resourced institutions and an important area for institutions, suppliers, and philanthropy to address to ensure equitable implementation of high-quality digital learning practices and tools.

VIEWS ON TOP BARRIERS TO DIGITAL LEARNING BY FACULTY TEACHING INTRODUCTORY COURSES, BY PELL %
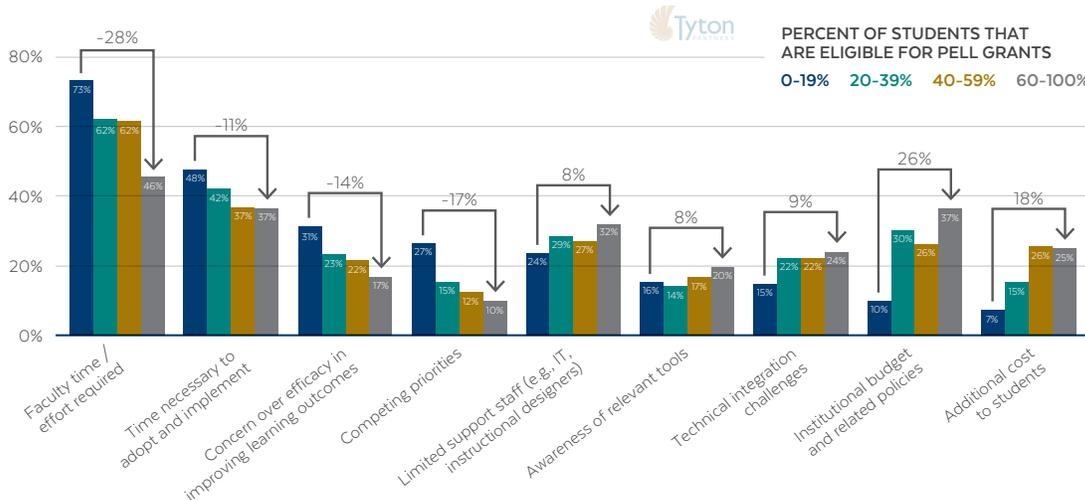
Note: *Survey question: "What factors are barriers to the implementation of digital learning at your institution?" 0-19% Pell N=109, 20-39% Pell N=401, 40-59% Pell N=500, 60-100% Pell N=200

As we look beyond the period of pandemic-induced online learning, faculty and administrators overwhelmingly affirm that they anticipate continued increased use of digital learning in introductory-level courses. Although survey respondents overall did not report additional sustained investment in professional development or policies and incentives for effective teaching, faculty and administrators at 2-year institutions were more likely to note increased investment and focus on policies related to teaching—an area in which it is perhaps unsurprising that they are leading the way, given the centrality of teaching to the mission of 2-year colleges.

Digital learning has the power to transform the postsecondary experience for all students, particularly those who have not historically been well served by higher education. However, ensuring that faculty who teach introductory courses are supported and celebrated in their efforts is critically important. The disconnect between the rapidly expanding adoption of courseware and the lagging infrastructural support for these changes requires further collaboration across the supplier and institutional communities to ensure that instructors can apply promising digital learning tools in high-impact ways.

PERCENT OF ADMINISTRATORS REPORTING AN EXPECTED INCREASE BECAUSE OF COVID-19

	4-YEAR PUBLIC	4-YEAR PRIVATE	2-YEAR
Use of hybrid or blended learning in introductory courses	75%	69%	82%
Investment in digital transformation	73%	72%	79%
Investment in professional development for effective teaching	38%	35%	49%
Investment in incentive and policies to encourage effective teaching	26%	23%	29%
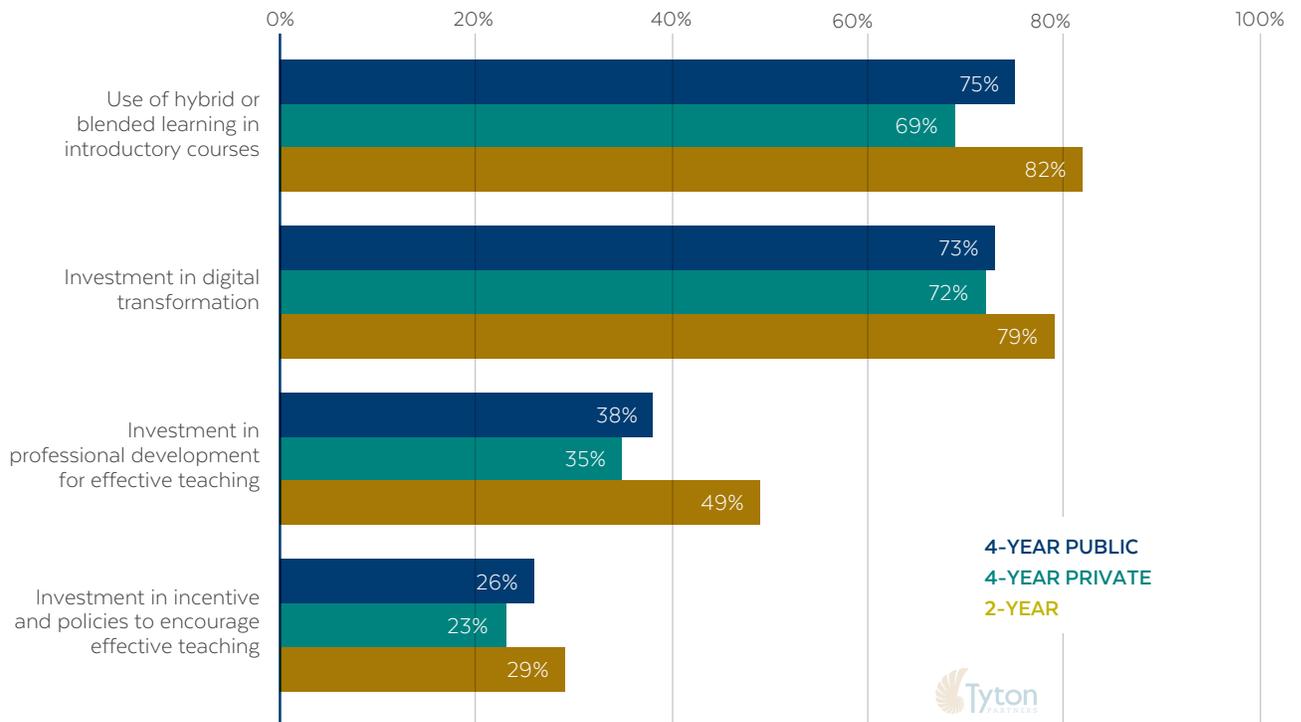
Note: "Across the following areas, please describe how you think COVID-19 will have an impact on your institution." N = 1,042

THE IMPACT ON THE SUPPLIER MARKET

The pandemic has accelerated the movement towards digital course materials and purchasing channels that was occurring before the pandemic. From 2006 to 2016, textbook prices increased by 87%, but student spending on textbooks dropped 41%, as students turned to rentals, prior editions, or PDF copies, or chose to skip acquiring the text altogether.[6,7] During this period, both major publishers and new players moved to digital product and delivery models. Digital versions are in some cases priced lower than traditional textbooks (which students like), cannot be resold or shared quite as easily (which publishers like), and have become the predominant delivery format for higher education content today.

One benefit to this shift has been lower average price points for students. The average spend on student materials was down to an average of $47 per course in 2019-2020 compared to $50 per course the previous year.[8] The use of digital Open Educational Resources materials is also increasing and contributing to lower annual student costs. However, the shift to digital materials is not without challenges; faculty teaching introductory courses report concerns about reliable internet and device access as barriers to students' ability to succeed.

REVENUE FOR HIGHER EDUCATION INSTRUCTIONAL MATERIALS PROVIDERS
CALENDAR YEARS 2019 AND 2020 (JANUARY – DECEMBER)
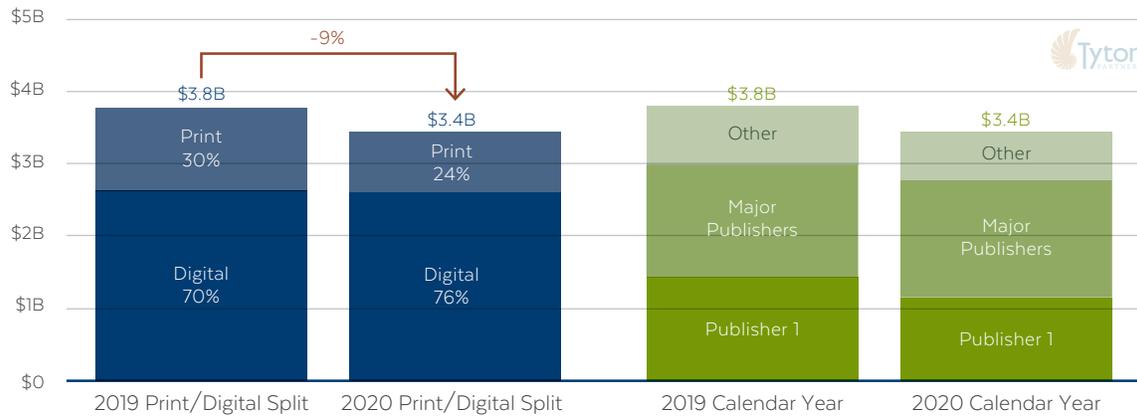
Sources: Company annual reports and investor filings, National Association of College Stores

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6. Bureau of Labor Statistics. (2016) College tuition and fees increase 63 percent since January 2006. *https://www.bls.gov/opub/ted/2016/ college-tuition-and-fees-increase-63-percent-since-january-2006.htm* accessed May 2021

7. Nemec, Julie. (2020) NACS Report: Student Spending on Course Materials Continues to Decline. *https://www.nacs.org/student-spending-on-course-materials-continues-to-decline* accessed May 2021

8. Ibid.

In addition to a shift in the format of required course materials away from print, students have continued their accelerated movement toward the use of study aid services (e.g., CourseHero and Chegg). These aids, which are criticized as being vehicles for cheating, also point to a gap in current institutional capacity to provide academic support to students. The growing role of study aids—which can cost upwards of $200 annually via a student paid subscription model—has the potential to further drive equity gaps between students who can afford them compared to those who cannot. Since 2014, this category has grown by 31%.[9]

STUDENT USE OF INSTRUCTIONAL MATERIALS AND SUBSTITUTES
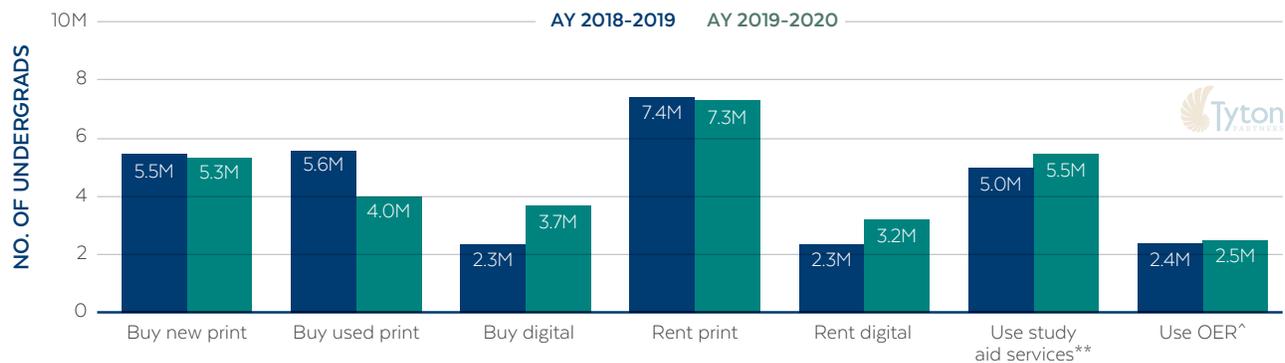
Sources: National Association of College Stores, National Center for Education Statistics, OpenStax, U.S. Securities and Exchange Commission, The Motley Fool, Bay View Analytics, U.S. Bureau of Labor Statistics

Inclusive access—a direct purchase program in which publishers, distributors, and/or campus bookstores provide digital access to course materials on a subscription basis—has accelerated the shift to digital and become an increasingly popular purchasing model for faculty and institutions: 20% of introductory faculty report an inclusive access agreement at their institution, and faculty at those institutions are almost twice as likely to use courseware than faculty at institutions without an inclusive access agreement. These models continue to be promoted by institutions and publishers for the ease of materials access and purchase. Two-year institutions are employing inclusive access agreements at the highest rates.

9. Tyton Partners analysis

PERCENT OF FACULTY TEACHING INTRODUCTORY COURSES REPORTING THAT EITHER THEY USE INCLUSIVE ACCESS OR IT IS USED AT THEIR INSTITUTION

USE AT THE INSTITUTION (NOT IN COURSE)
USE IN COURSE
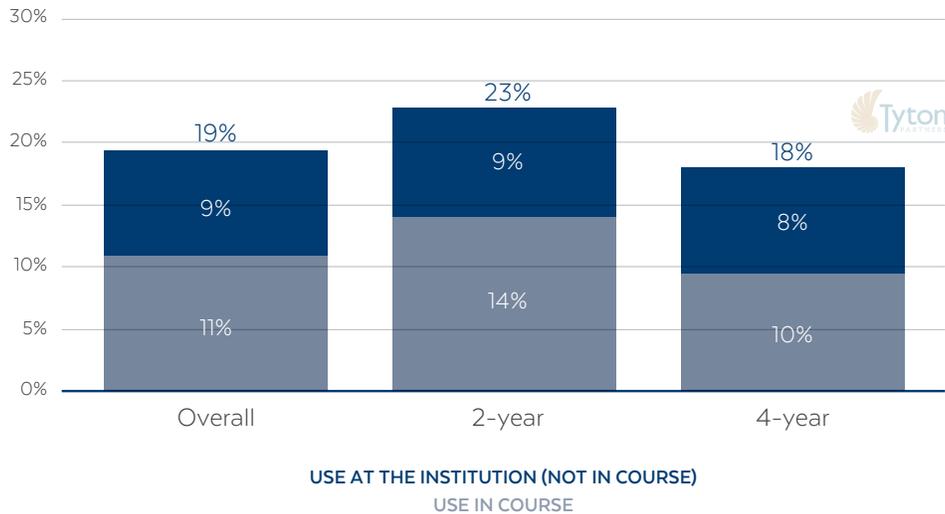
Notes: "Are you familiar with Inclusive Access where publishers, distributors, and/or campus bookstores provide digital access to course materials on a subscription basis?" Overall N=2,316; 2-year N=730; 4-year N=1,577

Providers with strong existing digital channels fared better during the course of the pandemic. Companies with strong digital sales platforms, including inclusive access and direct-to-consumer models were able to quickly ramp up to support the sudden huge need for digital delivery.

Just as they lead in overall instructional materials revenue and market share, the top three courseware providers by volume are Pearson, McGraw Hill, and Cengage, with Wiley and Macmillan products in the next tier. Numerous other providers in the market have expanded their offerings and continue to develop new product and service models.

PERCENT OF FACULTY TEACHING INTRODUCTORY COURSES USING EACH PRODUCT
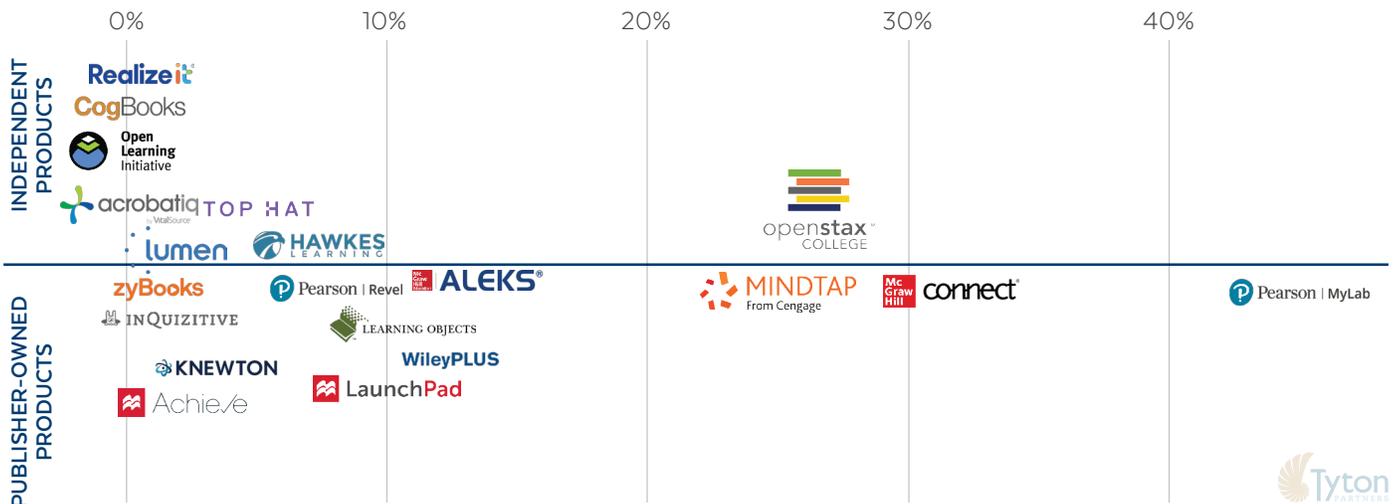
Note: "Select all courseware products you have used" N=846

NOTABLE PRODUCT, DELIVERY, AND SERVICE ENHANCEMENTS

In order to meet the changing needs of faculty and institutions, courseware providers are expanding product offerings and features. These include, subject-area coverage and feature enhancements in areas such as accessibility, adaptivity, and integration.

PRODUCT

- Integration of expanded content: After raising $55M last year, Top Hat acquired Nelson, bluedoorlabs, and Fountainhead Press to expand its platform to include a wealth of content.

- Expansion from content to expanded courseware platform options: OER provider OpenStax reported explosive growth over the course of the pandemic, with almost 30,000 new users in March 2020 alone. The company launched Tutor as its courseware offering and now has seven college courses available, a move that marks OpenStax's transition from a pure content player into the content + platform market.

The focus on new **delivery and distribution models** are also notably changing where and how students access materials.

DELIVERY AND DISTRIBUTION

- **Inclusive access as a frictionless institutional channel:** Inclusive access continues to be a prominent mode of delivery, enabling seamless access to digital textbooks and courseware. Major publishers note that implementation of these direct platforms has reduced resale and rentals, thus increasing margins, and that day-one access has allowed them to better meet the immediate needs of institutions and faculty.

- **Direct to student:** Students are increasingly making their own purchasing decisions, going directly to services such as Chegg and Course Hero to supplement their in-class materials. Traditional content providers should focus on the student channels to ensure they are meeting the needs of all parties.

Interest in **services and support** for faculty at the intersection of tools and pedagogy has massively increased. Many suppliers note that their faculty product users sought sophisticated support in using tools to transform teaching practice and enable active learning.

SERVICES AND SUPPORT

- **Integration of professional learning services:** Lumen Learning has focused on expanding their service offerings at the intersection of pedagogy and digital learning through the acquisition of Faculty Guild and the creation of Lumen Circles.

- **Partnerships between digital learning associations and publishers:** Some publishers are seeking to align more closely with existing quality frameworks for high-quality digital learning. The Online Learning Consortium partnered with McGraw Hill to train their sales professionals, called digital faculty consultants, to work with faculty throughout the selection and implementation process.

LOOKING AHEAD AND RECOMMENDATIONS FOR THE FIELD

The lessons of the past year reveal important ways for instructors, institutions, and the vendor community to work together in the service of fostering equitable access to high-quality instructional materials and digital learning experiences. We encourage continued collaboration across the following areas:

- **Provide support for and celebrate the use of evidence-based practices and high-quality teaching**
  Digital tools and materials can enhance the ability of faculty to engage in selected evidence-based teaching practices, but they are only effective when paired with thoughtful and comprehensive implementation. The landscape of professional learning to support instructors and institutions is currently fragmented, with the vast majority of implementation support coming from suppliers. Mechanisms such as the application of common frameworks and professional development approaches that are collaboratively designed, aligned to evidence-based practices and implemented across institutions and vendor-types, can support all instructors and students in realizing the power of digital tools and pedagogies.

- **Ease the selection of high-quality digital tools**
  Selecting high-quality, affordable, and effective digital tools can be a time-consuming and overwhelming process. CourseGateway (www.coursegateway.org), is a new resource designed to support instructors and institutional leaders in making informed decisions about digital courseware and tools that can support quality teaching and learning. The tool enables search by discipline, price, and features and evaluates a growing number of courseware and instructional tools based on their affordabiity, equitable design, and demonstrated efficacy. This tool can support informed decision-making.

- **Create continued opportunities for dialogue between faculty and the supplier community with a focus on increasing the ease of use of high-quality tools**
  As a field, we must continue to explore, interrogate, and expand the use of approaches to instruction in gateway and introductory courses that show promise in reducing outcome gaps and better serving poverty-affected students and students of color. Both instructors and suppliers have a vested interest in collaborating in this work. When instructors have access to quality, affordable materials that lead to better outcomes, they and their students win, and when publishers have input to create better products, they win. Suppliers should prioritize inviting diverse faculty, instructional designers, and students to participate in product design and development.

- **Support those institutions that need it most**
  Policies, relevant funding, and professional development must be created to help instructors and institutions support students who may be further challenged due to the pandemic; invest in high-quality digital learning experiences and supports; remove unnecessary hurdles to student re-enrollment and progress in gateway courses; and enable student-ready institutions to provide the academic and other services to get them back on track. As a field, we need to continue to identify and close access barriers for poverty-affected and BIPOC students and the institutions that serve them.

ABOUT THE SURVEY

Time for Class (T4C) 2021 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, with the ultimate aim of increasing affordability and accessibility for students. The T4C survey has been fielded since 2014 by Tyton Partners and Bay View Analytics with support from the Bill & Melinda Gates Foundation and Every Learner Everywhere.

Online surveys were distributed in February 2021 to administrators and faculty. Responses were collected from approximately 1,000 administrators and 3,000 faculty at 1,600 unique postsecondary institutions. Incentives of $10 were used to target specific populations and a balanced final sample. Given the timing of the survey, an additional short survey about satisfaction with learning outcomes and engagement was sent in mid-March to collect feedback from faculty respondents.

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 deemed to be representative and as such were not weighted. Because not all questions were presented to all respondents, response numbers vary by segment. Due to rounding, percentages may sum to slightly more or less than 100%.

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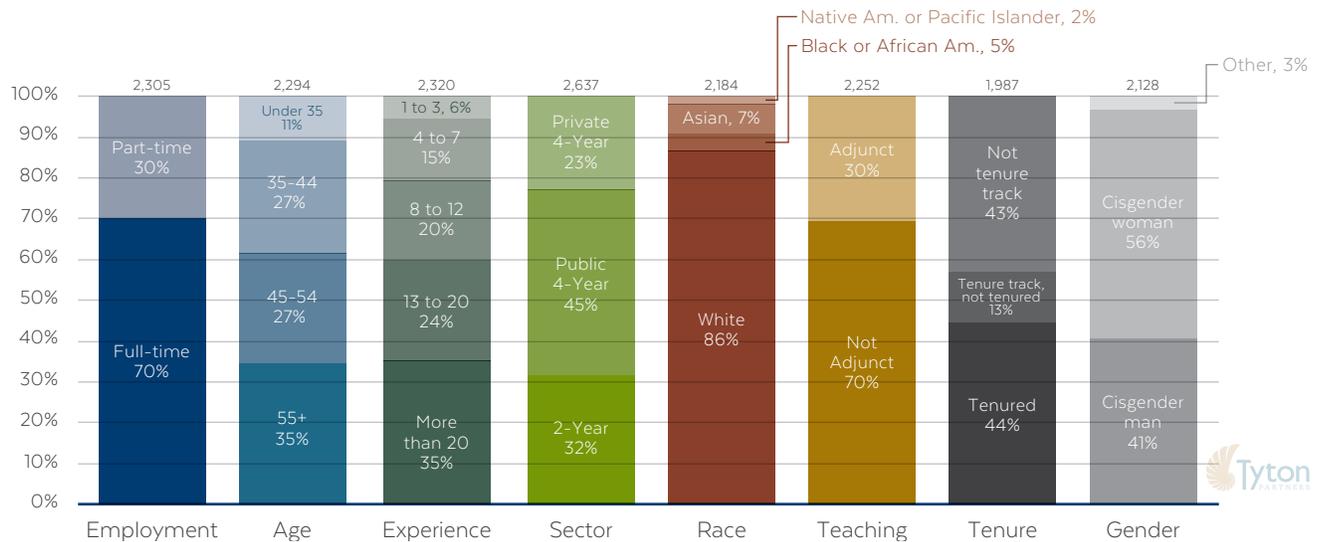
Based on the full response set, the 95% confidence interval is +/- 2% for questions asked of the faculty who teach introductory courses. Questions that were addressed to a smaller subset because of skip logic have wider confidence intervals. Generally, subgroups with samples smaller than 30 responses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

As is the case 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.

ACKNOWLEDGMENTS

AUTHORS

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.

In higher education, Tyton Partners' consulting practice offers a unique spectrum of services to support institutions, foundations, nonprofit organizations, and companies in developing and implementing strategies for revenue diversification and growth, student persistence and success, and innovations in teaching and learning.

In September 2020, Tyton Partners launched the Center for Higher Education Transformation. Building on 10+ years of experience, scores of engagements in higher education, and hands-on executive experience, the Center offers advisory services for institutions seeking transformational impact. Tyton's advisory offerings enable mergers and affiliations, revenue growth and diversification, transformative partnerships and creative capital access for all types and sizes of institutions.

For more information about Tyton Partners, visit *tytonpartners.com* or follow us at *@TytonPartners*.

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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 the London School of Business, Hunter College, the Commonwealth Institute, College Board, Eduventures, Citizens Bank, the Alfred P. Sloan Foundation, the Southern Regional Education Board, the Midwestern Higher Education Compact, the William and Flora Hewlett Foundation, the Gates Foundation, Tyton Partners, and the American Distance Education Consortium. Bay View Analytics's activities cover all project stages, including initial proposals, sample selection, survey design, methodological decisions, analysis plan, statistical analyses, and report production.

- **Dr. Jeff Seaman,** Co-director

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