Supporting Greater Integration of Adaptive Courseware in Gateway Courses

A CASE STUDY OF BROWARD COLLEGE

SEPTEMBER 2021
ABOUT THIS CASE STUDY

Achieving the Dream (ATD) is one of 12 higher education and digital learning organizations that make up the Every Learner Everywhere (Every Learner) Network, whose mission is to help higher education institutions improve and ensure more equitable student outcomes through advances in digital learning, particularly among poverty-impacted, racially minoritized, and first-generation students. Every Learner partners are addressing high failure rates in foundational courses through the provision of scalable, high-quality support to colleges and universities seeking to implement adaptive courseware on their campuses. As part of its ongoing effort to help community colleges develop effective teaching and learning practices, ATD is working with seven community colleges in Florida, Ohio, and Texas on this initiative, providing coaching and direct support to the colleges, fostering collaboration within and among the participating institutions, and serving as a liaison to the Every Learner network.

The following case study is part of a series of studies conducted by ATD examining how adaptive courseware is implemented at those institutions as well as how courseware is used in particular disciplines to better serve students. Case studies are based on a series of interviews with college leaders, faculty, instructional designers, developers, technology specialists and students who were enrolled in classes using the courseware.

Acknowledgements

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OVERVIEW

Faculty at Broward College led efforts to more fully implement adaptive courseware in introductory courses. The institution developed structured supports and integrated tutoring efforts to support both faculty and students.

- Faculty built on previous supplemental use of adaptive courseware to integrate the technology into course design and activities.
- Adaptive initiatives were supported by existing institutional structures, including the Center for Teaching Excellence and Learning, which provided professional development and curriculum expertise.
- Students were supported by tutors in the college’s Academic Success Centers who were familiar with the adaptive courseware and often used it to work with students.
- Adaptive courseware is being integrated into broader efforts to improve gateway instruction, including new types of introductory courses in math and English for Academic Purposes.

SUPPORTING INSTITUTIONAL REFORM

The Every Learner initiative supports broader efforts to foster student learning with evidence-based practices, including efforts to develop curriculum and teaching practices and support faculty development. “The adoption and integration of adaptive courseware in our course design process enable us to meet students exactly where they are and then to automatically develop an individualized learning plan for that student within that course,” says Broward College Provost Dr. Jeffrey Nasse. The initiative also reflects the contexts in which broader institutional reform is taking place at community colleges throughout the ATD Network, including building a culture of excellence in teaching and learning and leveraging data and technology to support student success and equitable student outcomes. To learn more, see p.7.
BROWARD COLLEGE
DATA SNAPSHOT

LOCATION
Fort Lauderdale, FL
Type
City, Midsize
Locations
(Campus/Centers) 9

ENROLLMENT
38,976
GENDER
Female 59%
Male 41%

RACE
White 16%
Black or African American 29%
Latino or Hispanic 38%
Asian 3%
American Indian or Alaskan Native 0%
Native Hawaiian or Pacific Islander 0%
Two or More Races 5%
Other Unknown 9%

Pell-grant recipients
62%
First-generation
49%

Full-time vs. Part-time
30% Full-time
70% Part-time

ATD MEMBER STATUS
JOINED ATD
2004
ATD ACHIEVEMENTS
ATD Leader College (2009)

ELE INFORMATION

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1 The information contained in the Data Snapshot is based on data from the National Center for Education Statistics’ College Navigator, data collected directly from the institution, and information maintained by ATD.
INTRODUCTION

With aspirations of joining the exploding cybersecurity field, Valeska De Langton is halfway to her goal of earning an associate degree in computer science at Broward College in Florida.

While she likes math, De Langton didn’t go directly to Broward from high school. “I took a break,” she says. Accordingly, she was placed in what she calls the “lowest of the low” math classes at the South Florida institution — intermediate algebra. For students like De Langton, relearning key skills has become an even greater challenge following the elimination of most developmental education classes as the result of state legislation passed earlier in the decade.

Like many community colleges, Broward has a longstanding institutional commitment to meeting its students where they are, particularly since many arrive on campus needing to build on their academic and English language skills. “Anything we can do to help them to succeed is welcomed with open arms,” says Belinda Mouradian, the district director of instructional design and online learning development.

Broward has devoted considerable time and resources to a wide range of technology-driven efforts to do just that, including blended and online learning models, open educational resources (OER), course management software, and adaptive learning courseware — tools which were brought to bear on helping students in gateway classes like intermediate algebra in new ways as part of the Every Learner initiative.

“We have a history of not being risk-averse,” says Dr. Julia Philyaw, associate vice president of Broward’s Center for Teaching Excellence and Learning.
AN EMPHASIS ON INTEGRATION

Even though Broward faculty had previously implemented adaptive courseware in some courses, it had mostly been used as a supplemental resource. “It was that extra thing students had to do,” Philyaw says. “It generally wasn’t integrated.”

But ongoing efforts to improve outcomes in gateway courses following the elimination of developmental education “galvanized a group of faculty to look at ways to support students and ensure they’re successful without that developmental preparation,” Philyaw says. Adaptive courseware was seen as a tool that could be “infused into our curriculum to help students not only remediate, but also support and enhance their skills in gateway courses,” she adds. It also “could help students recognize where they need to improve instead of continuously repeating the course without any remediation,” Mouradian adds.

Broward administration identified and encouraged faculty members in gateway courses to participate in — and lead — the Every Learner initiative in their respective departments. Because of the institution’s culture of faculty-led course development, an approach cemented in Broward’s collective bargaining agreements, participating faculty members were already familiar with evaluating publisher materials, including adaptive technologies, to ensure course alignment. “We ensure the materials we choose are covered within our (course) outlines,” says Jasmine Vazquez, assistant professor of mathematics. “Anything not covered in our outlines is not used.”

Unlike previous uses of adaptive courseware, participating faculty members focused on fully integrating the technology in their classes. “It is driving the actual course,” Vazquez says of her college algebra classes. A typical class, she says, might begin with a brief lecture, followed by a think-pair-share activity among small groups of students. Then she’d let students begin working in the adaptive courseware and answer questions as needed. While adaptive homework was assigned, students “primarily did their work in class,” she says.

Broward also is one of a relatively small number of institutions which has adopted adaptive courseware in English courses, in its case primarily for English for Academic Purposes (EAP) courses intended for non-native speakers. While the technology had previously been used for diagnostics and supplemental lab work to support students in some EAP courses, English assistant professor Rhonda Bobb made it the foundation of her in-person classes as well.

While efforts to integrate courseware more deeply into courses remain a work in progress, these intentional efforts represent a significant shift, according to Mouradian. Before the initiative, “we gave courseware more credit than what we were truly using it for,” she says. “We’re moving in the direction of being more savvy.”
BUILDING ON ATD’S CORNERSTONES OF EXCELLENCE

Like other community colleges participating in the Every Learner grant which are part of the ATD Network, Broward College has committed to engaging in bold, holistic, and sustainable institutional change across multiple institutional areas and priorities. The institution’s efforts to implement adaptive courseware reflect the importance of several key cornerstones of institutional change, including building a culture of excellence in teaching and learning, leveraging data and technology, and building collaborative partnerships to support student success and equitable student outcomes.

“Thoughtful and intentional curriculum design, effective teaching practices, and a coordinated network of care are at the core of our student success initiatives,” says Provost Dr. Jeffrey Nasse.

ATD’s Institutional Capacity Framework and Institutional Capacity Assessment Tool (ICAT) outlines seven essential institutional capacities required to create a student-focused culture that promotes student success. One focuses specifically on teaching and learning and the commitment to engaging full-time and adjunct faculty in examinations of pedagogy, meaningful professional development, and a central role for faculty as change agents within the institution. Building capacity in this area is particularly crucial because, as ATD President Dr. Karen A. Stout recently asserted, “focusing on teaching and learning is still not central to the field’s overall theory of change. We still have much more to do to build a deep focus on pedagogy and to support our colleges in building a culture of teaching and learning excellence.”

To foster this culture of teaching and learning excellence, ATD’s Teaching & Learning Toolkit: A Research-Based Guide to Building a Culture of Teaching & Learning Excellence is centered on four cornerstones of excellence that provide a forward-looking vision that campuses can use to inform their work.

Initiatives such as Every Learner provide important resources and supports to community colleges and the time, space, support, and resources to explore innovative pedagogical approaches to improving student learning and outcomes, enabling sustained opportunities to build on these cornerstones of excellence. Broward’s work with Every Learner exemplifies the importance of institutional efforts to empower faculty to consider, adapt, test, and refine new approaches to fit their campus context and the needs of their students.

As part of the initiative, Broward’s Center for Teaching Excellence and Learning provided professional development and curriculum expertise to help faculty integrate adaptive technology within course design efforts in ways that aligned with evidence-based instructional practices, including what Nasse calls the “necessary differentiation in support and reinforcement for each student.”

“Our course design and redesign project are complemented by our intentional and focused work in Teaching and Learning, specifically our support of ongoing faculty development,” says Nasse. Broward’s faculty development programming, he adds, is “multi-dimensional to support the development of the individual faculty member and enhance the experience and increase the success of our students.”

The Every Learner grant also provided opportunities to build shared efforts to support student success across existing support structures, including creating intentional connections with tutors in the college’s academic success centers who helped orient students in the adaptive courseware and provided ongoing one-on-one support within it. “Tools like adaptive courseware allow us to customize the student experience with the course content and enable the faculty member to better personalize their outreach and support the student’s success,” Nasse says.
KEY SUPPORTS

Broward leveraged existing structures to ensure faculty were supported in adaptive courseware efforts. The Every Learner initiative was housed in the institution’s Center for Teaching Excellence and Learning, which supports all student-facing staff at Broward. The Center provided professional development and curriculum expertise for participating faculty.

Instructional designers also played a key role in course redesign efforts. Participating faculty received support in integrating the courseware with existing online platforms from instructional designers like Miguel Suarez, who had previously collaborated with faculty on implementations of OER in college algebra.

Faculty members also continued to work with adaptive courseware publishers to refine and modify the technology to meet their needs. In biology, new adaptive courseware is currently being co-developed by a faculty member and the vendor. “She’s going to be able to teach the course as it’s given to her (by the developer) with minor tweaks,” says Wendy Varela, assistant director of faculty professional learning. “We’re excited about that.”

Broward also intentionally housed assistance for students using adaptive courseware within existing support structures. Tutors — known at Broward as “Academic Success Mentors” housed in dedicated centers on each campus — offered online orientations and supports for the adaptive courseware, as
well as one-on-one support for individual students, often working within the courseware.

Academic success centers put up fliers encouraging students to come in for support, and professors received email alerts when students struggled and were encouraged to refer them to the center on their campus. “We told professors they’d get notifications when students were having problems with the courseware so they could provide support and send them to tutors,” Suarez says.

“Our tutors in the math lab knew the courseware in and out,” Vazquez says. She found the supports so helpful that she encouraged online students to attend on-campus tutoring sessions. “I said, ‘go, please, before it’s too late.’”

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### THE STUDENT EXPERIENCE

| Valeska De Langton likes math. Geolmary Suazo doesn’t. But both Broward College students say they benefitted from using adaptive courseware as they began their college careers in classes they knew would be challenging for them. “I was nervous because it was my first math class in another language,” says Suazo, who immigrated from Nicaragua the year before enrolling at Broward. “I thought it was going to be very hard, and I remembered that I had a classmate tell me that it was the third time she was taking the course.” For Suazo, adaptive software proved an effective way to prepare for class — and build her confidence. “When the professor was teaching the topic, I already knew things because of the courseware,” she says. De Langton agrees, adding that ongoing checks for understanding and practice tests “bring back things you don’t remember and check up on you,” she says. | Both Broward students said the workload was challenging at times. “Some assignments are eight questions, some are 17,” says Suazo. “Some assignments have 25 questions and two more to do in the same week. Sometimes it’s too much.” “It’s usually about how people manage their time,” De Lang adds. “That’s a big factor, but it does get frustrating. You get a math question wrong, you should redo it and redo it. It’s great in the long run because it teaches you to look over things, but when you have a lot of assignments and have to do other things, in the moment it’s frustrating.” Despite finding adaptive courseware beneficial, both students found their professor’s approach and the in-class experience more important. “It’s on the teacher,” De Langton says. “The courseware is definitely a plus, but the teacher is more important to me.” |

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THE IMPACT

The transition to remote learning in Spring 2020 was made easier by Broward’s longstanding use of online platforms in face-to-face classes. Students taking in-person classes were already turning in assignments on Broward’s learning management system, so “when we were forced to go to remote learning, we were ready,” Vazquez says.

The transition also accelerated the adoption of adaptive courseware by faculty, according to Suarez, as the technology supported face-to-face instructors as they shifted to remote learning. “You may not have seen as many classes enhanced with the courseware (otherwise),” he says. Were it not for the shift, he adds, “you would have seen it mostly in an online model.”

Faculty say that students benefitted from adaptive courseware, particularly when they understood its purpose and bought into the concept. “Students saw the merit in it — that it was not just busywork, but further cementing what we were learning in class,” Bobb says.

While data collection efforts were limited due to the pandemic, administrators point to some improvement in outcomes. However, preliminary attempts to disaggregate data to see which students benefitted most in classes using the courseware suggests that the most at-risk students continued to struggle with the workload involved in simultaneously remediating missing skills and keeping up with course content.
What Worked Well:

Targeting courses where students needed the most support. The focus of adaptive courseware adoption was gateway courses in math, English for Academic Purposes courses targeted at non-native speakers, and a biology course that non-science majors often take to fulfill their general education requirements.

Skill building. Students and faculty agreed that adaptive courseware helped prepare for class discussions and build key skills. Faculty added that skill-building was particularly effective when courseware was integrated into classroom activities. “I appreciated it because they knew how to tackle (new skills) vs. being at home and trying to figure it out,” English assistant professor Rhonda Bobb says.

Technology integration. Integration between adaptive courseware products and Broward’s learning management system ensured that students could access their adaptive assignments without having to search for or switch to another website. Integration also ensured that grades from work in the adaptive courseware were automatically passed back to the LMS.

Monitoring student progress. Faculty said the courseware helped them identify students who are struggling — and let students track their progress. “I can see where they’re weak and they’re strong, and they can monitor themselves,” Bobb says. “I tell students they’ll be able to see where they stand in the class. It’s a great measuring tool for your own (course objectives) as well.”

Students were not always aware that their progress in courseware was being monitored, but recognized the importance of doing so. “I would definitely push professors to do that,” student Valeska De Langton says.

Tutoring integration. Students who took advantage of in-person tutoring said that they often worked within the adaptive courseware. “(Tutors) are familiar with it,” De Langton says.

Cost. Courseware built upon existing efforts to reduce financial issues for students, with some products meeting Broward’s goal of keeping textbook and material costs below $40 per semester. The institution also leveraged publisher partnerships to ensure free subscriptions to students with severe financial needs and explored OER variations of adaptive tools in some courses. “It’s really obvious to students that it’s $40 vs. several hundred dollars,” instructional designer Miguel Suarez says.

Ongoing Challenges:

Onboarding. Students found getting started with adaptive courseware challenging. “The first time when you register, it’s confusing,” says student Geolmary Suazo. “If you have someone explaining the tool when you register, it would be better.”

Faculty also stressed the importance of explaining the purpose of adaptive homework. “It’s all about expectations,” says Jasmine Vazquez, assistant professor of mathematics. “We have to remember to show them how to do it during orientation and making it very clear that they’re the ones doing the class and we’re here to facilitate. When that’s done, things go very smoothly the rest of the semester.”

With the pivot to online courses in Spring 2020, faculty also found that some students also needed broader support to use all of the tools that enable online learning. “We have to take into account what we’ve done to prepare our students to interface with (any) of these technologies so it’s not a roadblock to their learning,” says Dr. Julia Philyaw, associate vice president of Broward’s Center for Teaching Excellence and Learning.

Workload. Faculty and students both found adaptive workloads excessive at times. “You can learn a lot from (these products), but you also have
to dedicate a lot of time,” Vazquez says. Pointing to one of the three tools the math department tested which didn’t easily allow faculty to adjust assignments, “If you’re taking a full course load and have one class with (the product), you’re done,” she says, saying that following adaptive assignments to the letter could add 14-15 hours a week to a student’s workload. “Or they find ways to work around the system,” she adds.

Students agreed, stressing the importance of remembering the realities many community college students face. “Let’s say I have 30 topics over a few weeks, I can do four topics a day and it mostly lines up with my class, so that’s good,” De Langton says. “(But) everyone has a life, and it gets hectic. Some have jobs and three other classes.”

Some faculty members also cautioned that fully implementing adaptive courseware involves more, not less work for them as well. “Adaptive does some of the work for you, but if you look into it, it opens up more work — I have more work now than ever,” Vazquez says. “Some instructors are going to exit out and do what they’ve been doing.”

**Equity.** While courseware provided supports for students in gateway courses, in some cases it benefitted higher-performing students more than those who needed the most assistance, who struggled with accomplishing both remediation and the curricular requirements of the course.

“By adding the supplemental courseware, you were helping those who were already high achieving to enhance their skills, but exacerbating challenges for those trying to keep up with the pace of the course itself,” Philyaw says. “We’re seeing some increases in success, but when we look at who’s successful, we’re seeing some at-risk students continuing to be at risk.”

The shift to online instruction during the pandemic also highlighted another equity issue, as some students in face-to-face courses struggled or withdrew due to limited Internet access at home. “Campus is where they did their homework, and that was abruptly taken away and they couldn’t complete their classes,” Vazquez says.

**Variability among adaptive products.** Faculty who evaluated multiple adaptive products found significant differences among them. “They were all good in some ways and had challenges in some ways,” Vazquez says. “It all depends on how you implement the courseware and how you want your students to implement it as well.”

**Pacing.** Faculty found that students would wait until the end of the semester to complete assignments. “The courseware tells them you should be doing (specific assignments each) this week to reinforce what’s in class,” Bobb says.

**Scaling.** Efforts to expand the use of adaptive courseware will rely on individual faculty members’ decisions on curricula and course format, which participants say depend heavily on their comfort level with new tools. “It’s really about the expectations and how comfortable they are with the technology,” Suarez says.
LESSONS LEARNED

Keys to Broward’s implementation of adaptive courseware:

• **Strong institutional support — and commitment to a faculty-led initiative.** Senior Broward leadership, including the provost, vice provost, and deans in key subject areas not only supported the initiative, but also identified specific faculty members to lead implementation efforts. “It’s another thing to consider participating when an associate dean says you’d be great,” says Wendy Varela, assistant director of faculty professional learning.

• **Intentional placement of the Every Learner initiative within existing institutional structures.** Administrators note that Broward is currently involved in hundreds of different projects and initiatives at all levels of the institution. “It’s a challenge at Broward because we have so many different initiatives going on, but as long as we can put dedicated time to it, we’re keeping it top of mind,” says Dr. Julia Philyaw, associate vice president of Broward’s Center for Teaching Excellence and Learning.

To that end, Broward housed Every Learner in the college’s Center for Teaching Excellence and Learning, which provides participating faculty with professional learning opportunities and curriculum expertise they can draw from. Instructional designers also played a role based on their existing involvement in faculty-designed online courses, as stipulated in collective bargaining agreements.

Administrators say supports such as these are critical. “Is there funding to support faculty exploration and development? Are there PD opportunities?” Philyaw asks. “If not, you might have a harder time of it.”

• **Supporting broader course design objectives.** Administrators are encouraging a more holistic approach to course development, with faculty implementation of adaptive technologies playing a supporting role in broader course objectives, as is the case with a newly redesigned gateway course in math and an advanced English for Academic Purposes class.

“You have to understand how the development process for adaptive courseware fits into your overall strategic curriculum and course development plan,” Philyaw says. “We should never dissuade a faculty member who wants to look at adaptive courseware as a tool to support student success. To do that without looking at the broader picture is potentially a mistake.”

• **Full integration of adaptive courseware in class activities.** EAP faculty found a clear divide in how students used and perceived courseware in courses where it was a key element of the class and others where it continued to be used as a supplementary resource. In EAP courses in which students worked in the courseware during class time, “they were able to ask me if they needed help going over the skills together,” English assistant professor Rhonda Bobb says. “If they didn’t finish in class, they could go home and do it and in the next class, we could know whether everyone got the skill.” By contrast, students in EAP courses where the courseware was a complementary tool struggled more. “A lot of them got behind. A lot didn’t want to do it,” Bobb says. “If you’re going to use it, use it fully — in and outside the course.”
• Setting clear expectations. Faculty stressed the importance of understanding how they intend to use the courseware — and then explaining their rationale clearly to students. “The faculty member sets the tone in the classroom, and they have the ability to help with the transition,” says Philyaw.

That kind of onboarding is particularly important for all online modalities, as many community college students — and especially those who are not recent high school graduates — may be unfamiliar with any courseware, adaptive or not. Particularly following the pivot to online instruction in Spring 2020, faculty recognized that many nontraditional students weren’t familiar with the differences between online and face to face modalities and needed support in understanding different delivery formats.

“A lot of our students don’t know how to do an online course,” says Jasmine Vazquez, assistant professor of mathematics. “They don’t have those skills.”

Broward’s student services, marketing and public relations departments collaborated to provide a series of videos in which students provided a perspective of “what to expect.” Even as classes return to in-person settings, Philyaw sees an opportunity to use these videos to help set expectations for the use of adaptive courseware.

• Understanding adaptive workloads. Faculty stressed the importance of being intentional about limiting adaptive homework in recognition of student workloads. “Let’s be realistic — I don’t have to drill 50 problems into one student so I know they understand the concept,” Vazquez says.

Students also stressed the importance of faculty understanding the scope of adaptive assignments. “They don’t realize how much work it is,” student Valeska De Langton says. “Try to assign the topic and calculate it out — if I were the student, how many topics would I realistically be able to do each day?”

• Monitoring student progress and connecting supports. Faculty received early alerts and monitored courseware to target individual students for support. “Look into the reports,” Vazquez says. “You can bring it into the classroom, or the online portion, or you can send an email to students saying ‘I notice you’re having trouble here — if you need me to send you an explanation, let me know.’ It shows you understand what’s going on.”

Tutors within Broward’s academic success centers were tasked with helping onboard students and assisting them in the courseware when they struggled. Professors received notifications when students were struggling with adaptive work so they could either provide support or send them to tutors.

• The importance of buy-in to scaling. In part because of the college’s definition of academic freedom and collective bargaining agreements, participating faculty have recognized the importance of demonstrating to peers the benefits of fully integrating adaptive technology into their courses if their efforts are to scale.

“It all depends on the merit you find in it,” says Bobb. “If you don’t see the merit in it, it becomes busy work for the students, and they don’t get it. If you’re going to use it, then use it.”

The Center for Teaching Excellence and Learning provides an avenue to introduce faculty to the technology’s potential. “At the end of the day, it’s a tool. It really is what you put into it,” instructional designer Miguel Suarez says. “If you’re not leveraging data, you’re not using the tool for what it’s for.”
CONCLUSION

To better address student needs, faculty and administrators are developing new models for introductory courses, with adaptive courseware used to support the new approaches. For example, the math department is introducing a new five-credit course which combines college algebra and developmental support, with adaptive courseware as a common thread connecting the two. In similar fashion, English faculty are rolling out advanced EAP courses that count as elective courses as students work towards their degrees.

Recognizing the challenges faced by students struggling to keep pace with both remediation and the curricular requirements, Broward is looking at ways that peer mentors and students could supplement the work of the academic success mentors to provide “an added level of human support for students who need that extra assistance,” Philyaw says.

For De Langton, though, there’s no question that adaptive courseware helped her navigate intermediate algebra as a crucial first step towards a degree. “It 100 percent helped me pass,” she says. “As frustrating as it can be, it does help you. It makes you do the work.”