



APLU Adaptive Courseware Program Report
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Personalized Learning Consortium
Association of Public and Land-grant Universities

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1 Executive Summary

The Association of Public and Land-grant Universities (APLU) *Accelerating Adoption of Adaptive Courseware at Public Research Universities* grant program includes eight participating institutions: Arizona State University, Colorado State University, Georgia State University, Northern Arizona University, Oregon State University, Portland State University, University of Louisville, and University of Mississippi. The APLU grantees submitted their second set of semi-annual reports on or before June 30, 2017 based on data and work completed through May 31, 2017. This APLU Adaptive Courseware Program report provides cumulative results for the first program year and highlights progress and other program developments occurring in the period to date.

Following the Spring 2017 term, six of eight institutions reported their first adaptive courseware enrollments. Per the terms of its grant proposal, Georgia State University plans to implement courseware in Fall 2017. Portland State University did not report any adaptive courseware enrollments during the spring term. The collective data show that the six universities are more than a quarter of the way to achieving the grant program goal of adaptive courseware use in 15% of the general education course enrollments at their institutions.

To better understand progress and challenges of each institution in the cohort, APLU visited seven universities between February and April. Site visits included interviews of faculty and department leaders, meetings with several university provosts, focus groups with students, and extended consultations with each institution's program management team. At most, but not all institutions, efforts to scale use of adaptive courseware are well aligned with existing student success initiatives.

All the participating institutions have pursued cross-institutional conversations between faculty within discipline areas, and they are extremely supportive of APLU's creation of discipline-specific professional learning communities. A faculty workshop on active and adaptive learning co-hosted by APLU and the University of Louisville in July included one hundred participants and formally launched this project. There are now seven professional learning communities formed – in Biology, Chemistry and Physics, Mathematics, Composition, Economic, Psychology, and Faculty Support – with governing charters and identified community managers.

Grant report and survey data, and APLU engagement with the participating universities, indicate that the participating universities are satisfied with APLU grant program management and that many of the program managers rely on the APLU team for consulting support and encouragement. There is now enough information, based on the participating universities experiences to date, for APLU to speak publicly about adaptive courseware implementation opportunities and challenges. An APLU focus area for 2017-2018 is more direct presentation of findings to senior academic affairs leaders and student success officers and APLU member convenings.

Key Findings:

- All participating institutions have transitioned from initial design and awareness-building efforts to the implementation phase. A few universities have begun to scale courseware use in select disciplines. There is a wide variation in enrollments reported (between 0 and 10,476).
- Program managers still spend a significant amount of time with faculty and department chairs answering the questions “what is adaptive courseware?” and “where’s the research that proves it works?”
- Direct engagement of senior academic affairs and departmental leaders is critical to scaling adaptive courseware use at a large public university. Even the most dedicated and respected program managers lack the status and authority needed to engage and sustain faculty and department chair participation on their own.
- Once faculty have committed to adaptive courseware use, sometimes before and especially after adopting a product, they need to collaborate directly with colleagues engaged on similar projects. The focus of these interactions can be substantive (teaming to co-develop instructional materials and review products) or relational (sharing aspirations and experiences).
- Too many program managers and faculty support staff conflate the typical challenges that characterize faculty efforts to improve teaching and learning with technology with the issues specific to adaptive courseware implementations. With traditional tools, faculty lack the necessary data to course correct in their teaching IN the classroom and intervene to assist struggling students. Adaptive courseware provides this data and requires the proper encouragement and training to act on this data.
- There are some barriers and challenges which are unique to specific institutions; however, many universities share the same “top five” factors that impact success in varying degrees.
- Courseware adoptions grew nearly threefold from January 2017 (from 11 to 37) and number of adaptive courseware suppliers engaged doubled (from 6 to 12). Despite this progress, it is too early to look for statistical comparisons of course sections with and without adaptive courseware.
- Updated implementation plans show a clear path to the program goal of 15%-20% of general education course enrollments using adaptive courseware. The narrative and enrollment reports confirm that scaling adaptive courseware is hard work for universities, program management teams, and faculty.

2 University Report on Faculty Development

The University Report on Faculty Development is a narrative report on implementation progress. There are four sections in the report: (a) activities pursued since the beginning of the grant term; (b) program management update; (c) progress towards goals and outcomes; and (d) the effectiveness of APLU. University reports range from six to twenty-seven pages depending on whether the university submitted a log of all meetings and the extent to which the meetings were summarized. In general, the reports are upbeat about progress towards the grant program's intended outcomes. Universities that launched fewer than expected numbers of courses shared detailed information about the multiple unexpected barriers they encountered in the first program year. APLU believes that all of these barriers can be surmounted within the remaining years of the grant.

Program management personnel was largely stable, and where universities had a change in program management personnel, there was an accompanying decrease in the number of courses/sections launched or increased implementation challenges. Universities who identified program staff in the proposal phase or at the outset of the grant program maintained better traction with awareness building among faculty, course coordinators, department chairs and deans. When surveyed, all of the universities emphasized that adaptive program managers needed multiple knowledge bases and skillsets including but not limited to: academic innovation, digital learning, course redesign, faculty communication and engagement, and technical proficiency to evaluate and test adaptive courseware technologies. Most universities situate the program manager within a unit that includes instructional designers/technologists and digital learning support staff.

Program managers reported spending most of their time in meetings with faculty who teach the courses identified in the institutions' implementation plans. Key activities during the first year of the grant were awareness building of adaptive courseware, discussing potential products and suppliers, explaining what is "adaptive" means in general and in the context of the grant requirements, and confirming commitments to adaptive courseware implementation at both the department and individual faculty levels. For universities that launched more than 10 course sections, the program management activities shift slightly toward supporting analyses of projects, connecting work of adaptive courseware to other student success initiatives, and messaging about the project. We see the progression as encouraging and a signal of a university's readiness to deploy adaptive courseware at institution-scale.

Program managers leveraged institutional expertise of pioneering faculty, faculty doing research on adaptive learning/learning analytics, and external experts. Time spent connecting faculty and building internal networks often enhanced awareness building efforts at the department, college and institutional levels. Various institutional cultures and practices influenced program managers as to which activities (e.g., workshops, communities of practice, and connections to external groups) were appropriate to build a foundation and scale of adaptive courseware. While APLU fostered monthly discussions within the cohort, initially institution wanted to learn from acknowledged industry leaders like Arizona State University and use ASU campus visits and speakers as leverage to foster internal change.

During the first program year, all universities acknowledge challenges and barriers to success. The types of issues encountered changed across the year from awareness building to implementation.

Respondents note that adaptive courseware is an emerging learning technology category and therefore faculty knowledge about its purpose, features, and leading suppliers is extremely thin. Most universities are leveraging academic innovation processes and procedures that rely on historical institutional knowledge with online learning, blended learning, flipped classrooms, classroom technology and other such efforts. The limitation with this approach is that faculty still want to know much more about why adaptive learning is different and why will it help? It is not clear from the reports whether most universities have the deep knowledge required to address satisfactorily all of the questions faculty present. Department heads, course coordinators, tenure-line faculty and instructors are not getting the message that adaptive courseware can help educators adjust their goals and planning activities for in-class time and intervene in a timely manner to help students with incorrect or missing knowledge. Adaptive courseware can provide faculty with important and timely data on what students don't know and need to learn in order to progress in a course or program of study.

APLU asked participating universities to report on progress toward shared goals and general program outcomes. At the June 2017 convening, APLU emphasized the importance of institutions sharing their experiences broadly and especially with other public universities that are likely to engage in this work. APLU required institutions to create a case study problem and use their colleagues as consultants. The survey responses from the event indicate that spending time this way was valuable and led to discovery of new approaches to problems. Program managers are networking with each other and being asked to present on their work in web-based meeting this fall.

The University Report on Faculty Development also asked grantees to describe adaptive courseware's impact on underserved learners. The participating institutions all report that improving outcomes for these students is very important, and that they are on track to achieve the goals set forth in their proposals regarding low-income, minority, and first-generation student populations. None of the universities reported having enough data to determine if adaptive courseware implementations are having a positive impact on underserved learners. At the present time, and please recall that courseware delivery under the grant began in Spring 2017, it is not yet possible to assess each institution's progress. APLU reports include the requirement to collect and analyze data on overall student populations and to disaggregate this data by Pell-eligibility and various other demographic criteria.

The final section of the University Report on Faculty Development requests feedback on APLU's effectiveness as a grant program manager. All institutions confirm receipt of their grant payments in a timely manner. Universities evaluated APLU on a five-point scale in the following categories: Clear Communication (4.1 out of 5); Sufficient Consultative Support (4.4 out of 5); and Collaborative Network for Sharing Information and Experiences (4.0 out of 5). Respondents request that APLU continue cohort facilitation and advance ongoing efforts to build a network of informed practitioners which would enable program managers to find and implement adaptive courseware-related solutions more quickly in their communities.

3 Implementation and Course Enrollment Reports

The Implementation Report provides a snapshot of the courses universities are planning to scale and their timelines for adaptive courseware deployment. The Course Enrollment report details information about courses that launched with adaptive courseware. The two reports provide insight into whether or not scaling plans are realistic and if course enrollments are growing rapidly enough to achieve each university's target. The data presented in the current implementation reports supports the narratives provided in the universities' reports on faculty development. Program managers spend the preponderance of their time recruiting faculty, guiding the adaptive courseware discovery and selection processes, and preparing for implementation of the technology. This has remained consistent across the first year of the grant.

Collectively, participating universities report on-track (green) status with a high degree of confidence in their progress toward intended outcomes on scaling and positive impact on underserved learners. In discrete cases where respondents report off-track (yellow or red) status, they describe efforts to engage other faculty and plans to implement courseware in other courses/disciplines as a result the total list of courses planned to use adaptive courseware has grown. Most of the off-track status indicators in the current reports are for courses and course sections identified courseware implementation in 2018-2019.

Universities have adopted multiple strategies to reach scale. ASU, GSU and PSU committed to implement adaptive courseware in all sections of the selected courses. NAU, OSU, UL and UM chose to work with groups of faculty who will implement adaptive courseware in multiple sections and in a few cases have departments that will implement adaptive courseware in all sections. CSU is working with teams of faculty implementing adaptive courseware multiple sections of many courses (but not all sections of any courses) to reach its scaling goal. As a result, there is wide variation in the number of courses implementing adaptive courseware (between 5 and 29). In general, the universities implementing in the most courses are pursuing a strategy that allows faculty teams implement adaptive courseware in multiple not all sections.

Using the course enrollment and implementation reports, APLU aggregated number of courses and discipline areas included in the universities adaptive courseware implementations. Universities reported enrollments in adaptive course sections for 37 different courses. If the implementation plans are accurate, the universities will launch 126 courses across the cohort. Since last fall, the number of planned launches has grown from 77 to 126. Table 1 in section 3.1 shows the discipline coverage and number of courses planned by the universities.

3.1 Courses and Disciplines Represented

As expected given the grant program's emphasis on high-enrollment, high-impact introductory-level courses, the represented disciplines include many popular 100- and 200-level courses. Science and Mathematics courses were most likely to implement adaptive courseware historically, and this has continued to be true in the first program year of the grant. Within the cohort, a significant number of Economics and Psychology course implementations of adaptive courseware are planned for the second and third program years. From the baseline data received in January, most of the science, mathematics,

economics and psychology courses correlate with higher DWF rates. The strong representation of these disciplines led APLU to prioritize formation of discipline-specific professional learning communities in these subject areas. While UM is the only institution in the cohort planning adaptive courseware implementations in Writing/Composition, previous adaptive courseware development work by PLC in for introductory-level English Composition created an opportunity to connect faculty in this discipline across multiple institutions in the cohort.

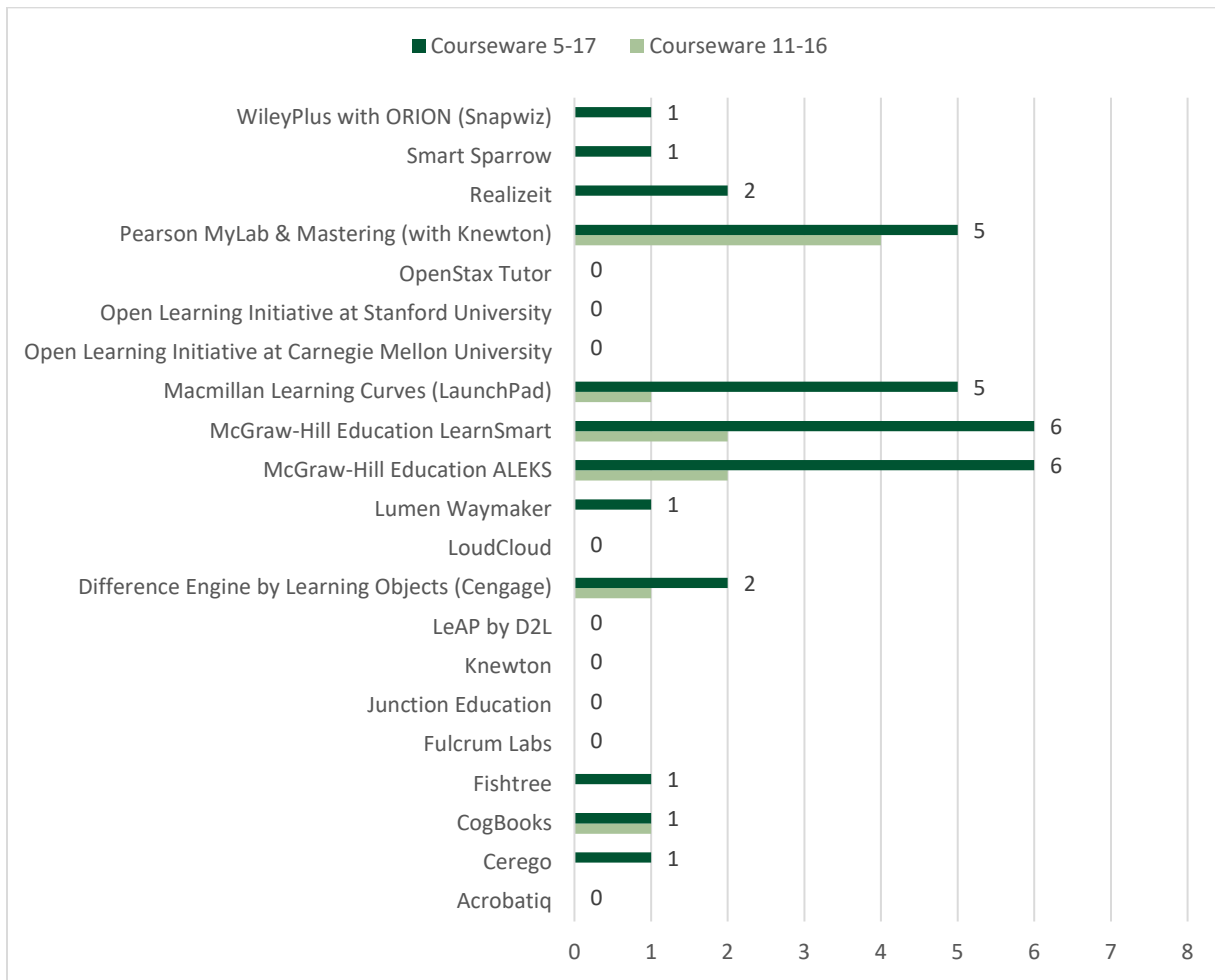
Table 1. Adaptive Courseware Courses Planned by Discipline

Disciplines	Courses Planned as of December 31, 2016	Courses Planned as of June 30, 2017
Anthropology	0	1
Art	5	1
Biology/Life Sciences	9	15
Business	5	7
Chemistry	12	20
Criminal Justice	0	1
Economics	0	12
English Composition	8	2
Geology	2	2
Government/Political Science	0	4
Health Sciences	0	2
History	3	4
Mathematics	0	16
Modern Languages	5	7
Philosophy	11	2
Physics	0	16
Psychology	0	10
Rhetoric/Communications	5	1
Sociology	9	2
University Studies	0	1
Total Courses Planned	77	126

3.2 Selection of Courseware Products and Suppliers

In late May, program managers reported to APLU the number of suppliers and number of courseware products in use (deployed, not planned). The course enrollment reports confirm the number of adoptions. The data shows that the number of adaptive courseware adoptions doubled in the last six months. APLU requested supplier data through a survey that was launched in May and as a result the data varies slightly from the reports turned in at the end of June. The trends from both the survey and course enrollment data show the same positive growth. The number of suppliers now serving the participating universities has grown from 6 to 12. The number of courseware products in place has grown to 32 which is three times the number of courseware product adoptions reported in December.

Figure 1. Suppliers and Courseware Product Adoptions as of May 2017



Large commercial publishers still overshadow newer providers, and sorting through information from all approved suppliers takes a considerable amount of faculty time. The threefold increase in adaptive courseware adoptions does show that the universities are expanding the market demand for adaptive courseware tools. Throughout the year, several program managers described meaningful conversations with Realizeit and Lumen Learning for planned courses. APLU and the program managers observe that faculty prefer adaptive courseware from large commercial publishers (typically courseware titles aligned with existing textbook adoptions). There has been very limited use of third-party discovery and evaluation tools like the Courseware in Context Framework or other approaches to prompt a general reconsideration of the courseware best suited to specific disciplines, pedagogies, or learner needs.

3.3 Baseline Student Success Rates

Data collected in the first course enrollment reports provides a baseline for measuring changes in course success rates. Participating institutions target specific courses and faculty for adaptive courseware

implementation using a range of strategies, and a majority of courses have lower overall student success rates. Outcomes in the targeted courses range from a student success rate low of 58.8% to a high of 93.5%. APLU calculates the weighted average success rate for each university based on the number of enrollments as a percent of the total enrollments intended to be impacted by adaptive courseware. The baselines for the participating institutions show a range of average success rates from 71.2% to 87.7%. Individually, each university's baseline is not especially meaningful; however, in aggregate they may provide view into changes in student success rates over time. There is a concern among the program managers that comparing the baseline student success to student success in adaptive courseware may be an apples to oranges comparison. It is true that most program managers describe that as adaptive courseware is adopted other changes are made in the course, e.g., active learning, scaling to other faculty, new assessments, etc. These changes mean that comparing a previous course success rate with a new one cannot be described as only due to the addition of adaptive courseware.

3.4 Progress to Scale

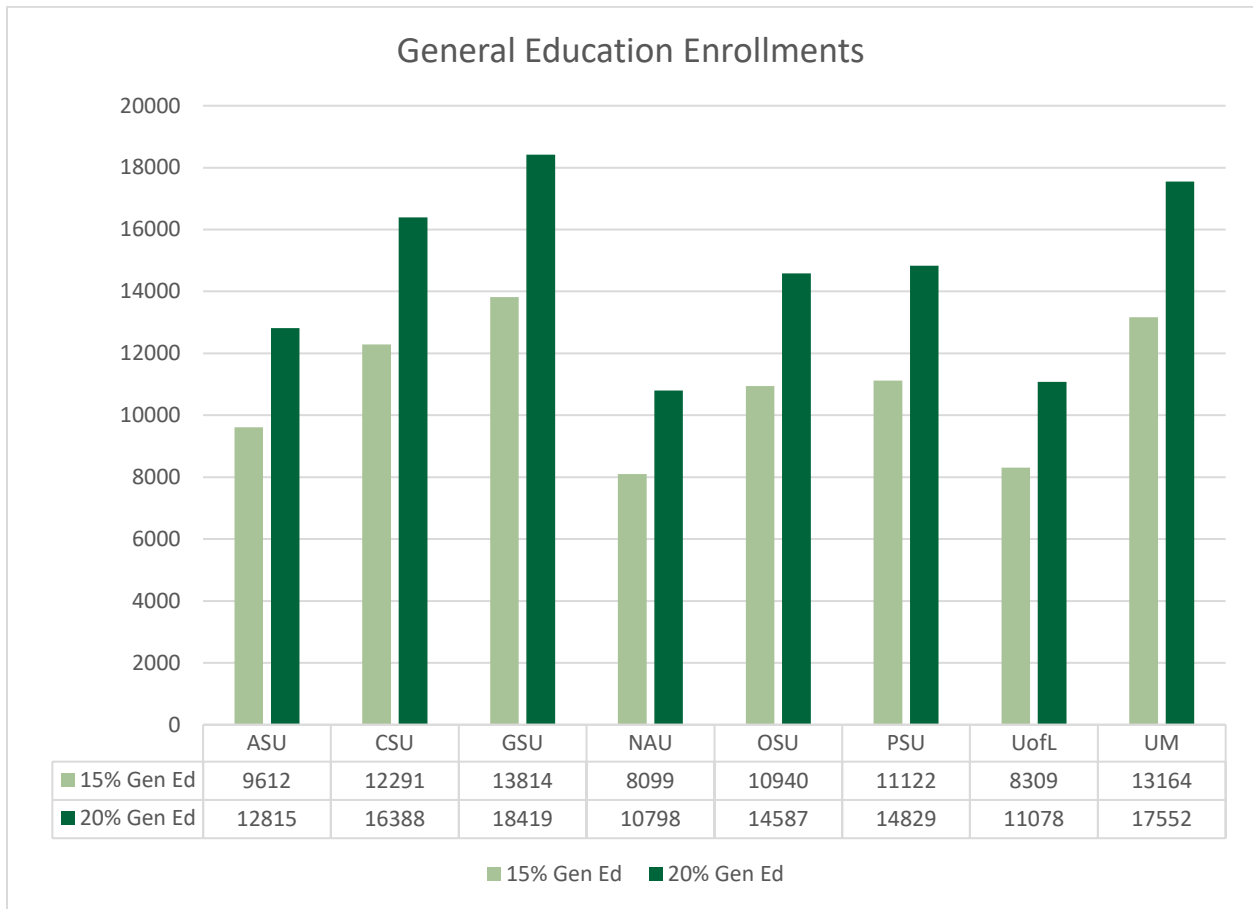
The Course Enrollment Report tracks information at the course level and supports efforts to report student success outcomes and to track course outcomes by special populations. The collective data show that the six universities reporting courseware enrollments are more than a quarter (27%) of the way to achieving the grant program goal of adaptive courseware use in 15% of the general education course enrollments at their institutions. The progress amongst the eight participating institutions is not even. ASU and NAU are exceeding their stated goals. CSU has reached about 25% of its goal. As specified in GSU's original proposal, they will offer their first courses using adaptive courseware this fall. The remaining four institutions have launched at a slower pace. Given the uneven approach to scale amongst the universities, APLU will wait for course outcomes data that are spread across the cohort to analyze outcomes in courses with and without adaptive courseware use.

The implementation reports complement the course enrollment reports which show overall growth and progress to meeting the scale targets. The implementation reports are unique to each institution. As such it makes sense to consider each implementation report independently not cumulatively. The only summative statement from the collective reports is that six of eight have had to replace proposed/planned courses proposed with new courses. Only ASU and GSU have maintained the originally-identified courses and plans to scale adaptive courseware use to 100% of all sections.

Earlier in the year, universities submitted reports on general education course requirements for each participating institution. The universities provided the associated 2015-2016 academic year enrollment numbers for these courses. The total general education enrollments for each institution serve as the baseline for measuring progress toward the program goal of adaptive courseware use in courses and course sequences generating 15-20% of general education course enrollments by the end of the program term (December 2019) based on courseware availability.

Figure 2 illustrates the number enrollments needed for each institution to achieve the 15-20% program goal. The implementation and course enrollment reports indicate that several universities in the cohort are on track to meet or exceed the 20% target.

Figure 2. General Education Enrollments



4 Recommendations

The progress of the grant toward stated scaling goals presents an opportunity to think about present and future needs which will impact the sustainability of adaptive courseware implementations at participating universities and other institutions influenced through this program. Several of the recommendations below would require collaboration with and engagement of organizations beyond APLU, the cohort, and the Bill & Melinda Gates Foundation.

4.1 Data Definitions for In-Process Courseware Adoptions

Universities in the cohort are continuing to discuss with institutional research/effectiveness staff, data scientists, faculty and information technology managers the need to collect and analyze data. While there are some barriers related to the ownership of data, the larger debate is how to use the tools to measure and hopefully offer insights and guidance for instructors on how to support struggling students and get them back on a successful track. Given the sheer number of suppliers, variations in the data flow, and questions about what data is required, there is a need for robust discussions about the data

available across systems and how to think and act holistically regardless of number of suppliers and products in use.

4.2 Influencing and Informing Faculty

Generous support from the New Media Consortium, the Bill & Melinda Gates Foundation, the University of Louisville, and the Personalized Learning Consortium enabled APLU to host a faculty workshop on active and adaptive learning in preparation for launching discipline-specific professional learning communities. One hundred faculty and faculty support staff spent two days learning from experts about active learning strategies and best practices for online community building among professionals. The event was an overwhelming success. Onboarding for the online communities will begin in late August. This forum will provide faculty with the space and time to network with others in their discipline about adaptive courseware, other digital learning tools, pedagogical strategies and how to implement adaptive and active learning successfully in their classrooms. APLU has prioritized communities based on the courses targeted in the grant for adaptive courseware implementation. There is an opportunity to nourish, support and expand these communities, and APLU recommends conversation within the Digital Learning Solutions Network about how to build on this foundational group.

4.3 Enhanced Site Visits

The engagement of senior academic affairs leaders was critical to the success of the site visits and there is need to maintain that level of engagement throughout each academic year and across the program. The site visits offered an opportunity for APLU to consult and problem solve with administrators and faculty regarding local challenges and barriers to implementation of adaptive courseware. The participation of EDUCAUSE and the Bill & Melinda Gates Foundation in several visits broadened the focus of the visit from digital learning to student success in a positive way. APLU will pursue mid-year virtual site visits for most or all grantees in the second year of the program (a 90-minute web conference with the APLU grant program manager, the university's program manager, and the university's executive sponsor). When practical, the on-campus site visits in 2018 and 2019 should include representatives from the foundation, DLSN and other Education Community partners, and possibly senior executives from the courseware supplier companies. At a minimum, each visit should include structured participation of students using adaptive courseware.

The next APLU Adaptive Courseware Program Report (January-December 2017) will be provided to the foundation on or before February 28, 2018.