Blackboard

Inclusive Learning Series

Research Insights from the Ally Community

Accessibility Trends and Ally Usage: Doctoral Universities

Extended Abstract

Four-year research universities offer a variety of competitive degree programs delivered in face-to-face, hybrid, and fully online formats to students studying around the world. Beyond the rigors of academic study, students maintain busy schedules as student-athletes, student-workers, and participants in a variety of extra-curricular activities and social clubs. Having access to high-quality, flexible digital course content that works better with assistive technologies, mobile devices, and study tools can increase and improve engagement with their course content. Analyzing data collected from the Blackboard Ally software, this paper focuses on content accessibility and tool usage at "Doctoral-granting Universities" as defined by the Carnegie Basic Classification system. The data captured through the Ally tools include accessibility scores of Learning Management System content, student engagement with Alternative Formats of digital learning content, and faculty engagement with Instructor Feedback on accessibility issues in their courses.

Key Findings

- While the HTML content authored in the LMS in Fall 2019 courses had mostly minor accessibility issues, scoring on average around 98%, files uploaded into the LMS **scored on average around 40%**. Critical accessibility issues such as Scanned PDFs and Missing Image Description affected tens of thousands of files in Fall 2019 courses.
- Although PDF was the most prevalent file in LMS courses (most often downloaded as a mobile-friendly HTML format), Presentations and Word Docs respectively were the file types most frequently downloaded as an alternative format (most often as a Tagged PDF). Doctoral Universities had **a median of 1.08 downloads per Full Time Enrollment** during Fall 2019, and the number of downloads per downloader **increased from 2.17 to 2.75 from the start to end of term.**
- During a ten month period, the conversion rate between clicking an accessibility course indicator and attempting to fix a file through the Ally Instructor Feedback was 36% and **86% of files altered through the Instructor Feedback resulted in an improved accessibility score**. Images were the commonly fixed file type, followed by PDFs, Docs, and Presentations respectively. A subset of 20 institutions saw an average **overall improvement in Files score of 2.2 and 2.5 percentage points in a single term**, compared to only a three point improvement in five years found in a previous study.

Implications

Given the number of files with critical accessibility issues added to the LMS during 2019-20, a data-informed approach is essential to addressing issues at scale. While accessibility improvement with Ally appears accelerated compared to historical trends, insights from data can help universities take a more proactive, targeted approach that focuses resources on high-need areas to maximize the impact of that progress. Alternative Formats appear to have widespread usage by students across the university, and provide an immediate impact on access to flexible learning content without additional support from faculty or staff. The more immediate impact of on-demand Alternative Formats are complemented by sustainable progress on accessibility barriers, as demonstrated by the high rate of efficiency with which faculty improved the accessibility of their course files using the built-in guidance of the Instructor Feedback.

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Study Context

Over the last several years, digital accessibility and Universal Design for Learning (UDL) have emerged as key priorities in higher education. While many articles emphasize the benefits of accessibility and UDL to all students, there remains a lack of empirical insights into the extent of accessibility issues with course content in the Learning Management System (LMS) as well as adoption of UDL tools by faculty and students. Analyzing data collected from the Blackboard Ally software, this paper focuses on content accessibility and tool usage at "Doctoral-granting Universities" as defined by the Carnegie Basic Classification system.

Data Set and Research Questions

The data set includes 73 Doctoral Universities with Ally enabled in their LMS courses during the Fall 2019 term. Of the 73 universities, 32 fall in the "Highest Research" (R1) category, 21 in the "High Research (R2) category, and 19 in the "Moderate Research" (Doctoral/ Professional) category. The median Full Time Enrollment (FTE) of the 73 universities was 19,380, ranging from 1,937 FTE to 53,055 FTE. The data captured through the Ally tools include accessibility scores of LMS content, student engagement with the Alternative Formats, and faculty engagement with the Instructor Feedback.

? *How can an understanding of accessibility barriers and critical issues with digital course content inform institutional strategy?*

? *How do students make use of course content available in different modalities and formats?*

? *How do instructors use feedback in their courses to address accessibility issues with their course materials?*

Barriers to Inclusion: Critical Issues

The tables below include accessibility data from the Ally **Institutional Reports** for a subset of 35 medium to large doctoral universities across two FTE bands that recently adopted Ally. The "Files Score" and "WYSIWYG Score" are the average scores of files (PDFs, Word, PowerPoint, Images) and HTML content created using the LMS editor respectively in Fall 2019 courses. Each score approximates how closely the file or HTML item meets WCAG 2.1 AA standards that can be checked using automated tools. The "Total Files with Issue" column represents the average number of files in Fall 2019 courses with the stated accessibility issue. The percentage score is the total number of files with the issue out of the total number of files in Fall 2019 courses that could be affected by that issue.

Avg. Accessibility Scores and Critical Issues: Fall 2019 Courses

Content Type	10,000 FTE - 25,000 FTE	25,000 FTE - 55,000 FTE
Uploaded files	**41.6%**	**39.7%**
WYSIWYG content	**98.3%**	**98.9%**
Total Files with Issue (% of Files with Issue)	10,000 FTE - 25,000 FTE	25,000 FTE - 55,000 FTE
Scanned PDFs **(% of Total PDFs)**	10,340 **(18%)**	19,257 **(16%)**
Untagged PDFs **(% of Total PDFs)**	27,593 **(49%)**	61,569 **(52%)**
Docs Missing Headings **(% of Total Docs)**	25,328 **(24%)**	45,486 **(23%)**
Images Missing Description **(% of Total Images)**	31,654 **(80%)**	75,027 **(82%)**

Implications for Addressing Accessibility Barriers at Scale

Given the number of files with critical accessibility issues added to the LMS during 2019-20, a data-informed approach is essential to addressing issues at scale. Real-time insights empower institutions to improve remediation workflows, allocate resources strategically, and take a more proactive approach to supporting diverse student needs. Ally's **Institutional Report** provides five different analytics tools for tracking progress and measuring impact at both the issue-level and course-level. Reporting can help foster collaboration across campus units, such as library services, equity and inclusion, and disability support. Beyond just content accessibility, the course content breakdowns across LMS tools in the Report offer instructional design insights as well. With CSV exports and REST APIs, institutions can also aggregate their Ally data with LMS (including Blackboard Data) and institutional data.

Alternative Formats Usage

Ally automatically generates 8 different **Alternative Formats (AF)** of files uploaded to the LMS, and makes these available to all students in their courses. During the Fall 2019 term, there were **over one million formats downloaded** at Doctoral universities, and a median download rate of **1.08 downloads per FTE, with 9 universities exceeding 1.50**. While some of the universities represented in the data set deployed strategies to promote the formats to students, most commonly through an LMS announcement, others simply made the formats available and allowed students to discover them on their own.

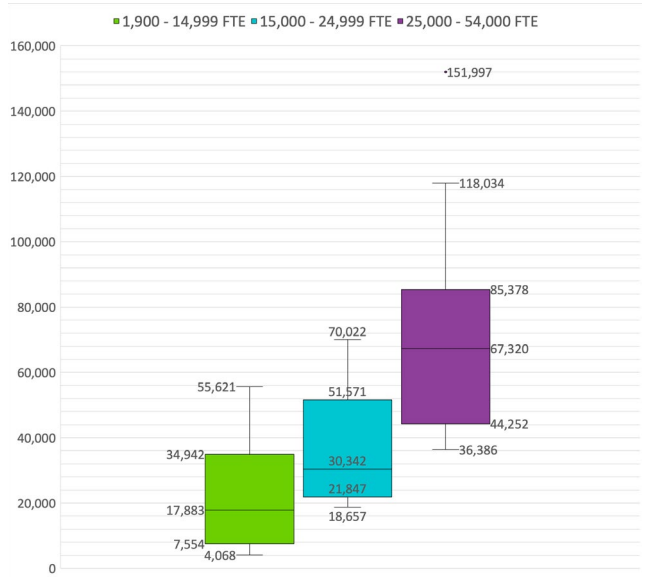
Weekly AF activity tends to reflect broader LMS usage, where engagement is highest at the start of the term, steadily declines during the term, and spikes back up toward the end of the term. During the Fall Term 2019, while the number of unique student downloaders decreased by 39% from peak start to peak end of term, the number of downloads per downloader **increased from 2.17 to 2.75 and the conversion rate between clicking the AF icon and downloading a format increased 12 percentage points.** When considering drop-out rate and other factors affecting the number of students engaged with the LMS at the end of term, the increase in downloads per students and conversion rate suggest the formats offer sustained value to many students.

Presentations were most commonly downloaded as an Alternative Format in Fall 2019 courses, even though there were three times more PDFs in those courses. 85% of Presentations and Word Docs were downloaded as Tagged PDFs, while 68% of AF downloads from PDF were HTML formats, 16% were OCRed PDFs from Scanned PDFs, and 8% were ePub formats.

- Presentations: **371,434 downloaded** (36% of total)
- Word Docs: **340,201 downloaded** (33% of total)
- PDFs: **305,428 downloaded** (30% of total)
- HTML files: **7,363 downloaded** (1% of total)

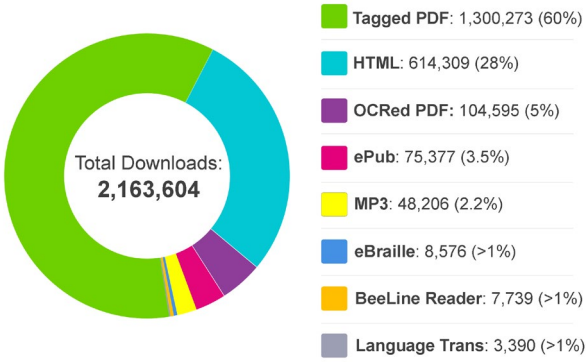
> ***Tools like Ally make us feel like we're independent learners. It gives us multiple text options so we can see what is most effective for the ways we learn.***
>
> ***- Andrew Phuong; Student, UC Berkeley***

AF Downloads for Doctoral Unis over 8 months



AF Downloads by Format type over 8 months

*BeeLine Reader and Language Translation were available in a limited number of courses



Instructor Feedback Usage

Ally's accessibility indicators and guidance along with the Course Accessibility Report provide feedback to instructors about the accessibility of their course files as well as instructions for fixing the issues. Ally records instances when instructors click on an indicator and when they attempt to fix a file through the **Instructor Feedback (IF)** panel. Over 12 months, the average number of files improved and range per size category were:

- 1K - 14K FTE: **600** (range of 44 to 1,614 files improved)
- 15K - 24K FTE: **2,380** (range of 398 to 10,688 files improved)
- 25K - 55K FTE: **2,274** (range of 99 to 7,131 files improved)

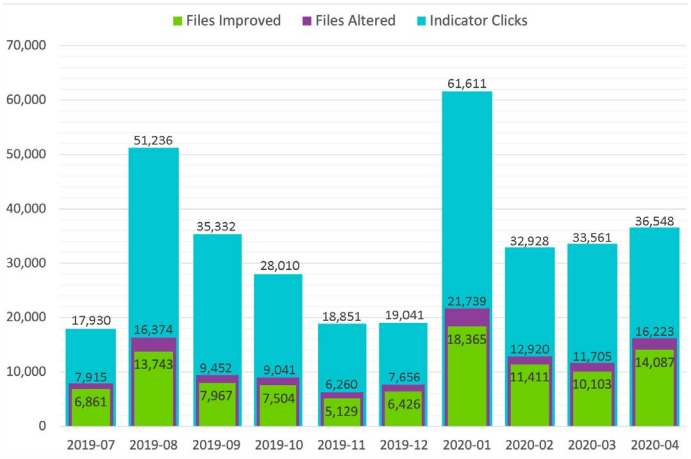
> ***I found this tool easy to use. I strive for accessibility but do not have access to readers or tools to check whether I have formatted my documents properly. This tool takes the guess work out completely.***
>
> ***- Faculty, University of South Carolina***

Images were the most common file type improved through the IF with the highest success rate (87%), followed by PDFs (77% success rate), then Word Docs (71%), and Presentations (81%). Because descriptions to images can be added directly through the IF, images are generally the most fixed file type.

Analyzing changes to the overall Files score of a subset of 20 universities with Ally turned on for at least one year reveals **average gains of 2.2 and 2.5 percentage points** between Fall 2018-19 and Spring 2019-20 terms respectively. By comparison, a previous data study of a random sample of 700,000 courses found an increase in Files score of just 3 percentage points over five years. Given the large number of files with severe accessibility issues and the slow pace of improvement historically, these initial gains appear promising.

IF Engagement over 10 months for 73 Universities

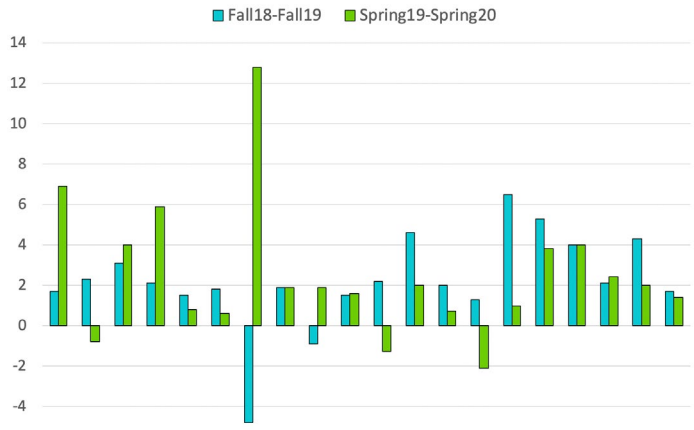
*April, 2020 includes 23 days



The conversion rate between clicking an indicator and attempting to fix a file through Ally was **36%.**

85% of files altered resulted in an improved accessibility score

Percentage Point Improvements in Files Score, Term to Term Comparisons for 20 Doctoral Unis



Reframing the Conversation around Accessibility

While "Alternative Formats" of learning materials have traditionally been reserved for students with disclosed disabilities, providing content in mobile-friendly formats, in multiple sensory modalities, and with improved usability can enhance the learning experience for *all* students. When institutions add Ally to their courses, they often see an immediate impact on students in download activity. With the Instructor Feedback, impact tends to be more gradual, as faculty with little accessibility experience take the initial steps to understanding the issues affecting their content. For time-pressed faculty, recognizing the benefits of the Alternative Formats and how the usability of their course materials affects student engagement can inspire them to make accessibility a greater priority in their course design.