

Accelerating Learning for Students with Limited Internet Access

How Microsoft Windows 11* devices and Chromebooks* support offline access to educational content and materials

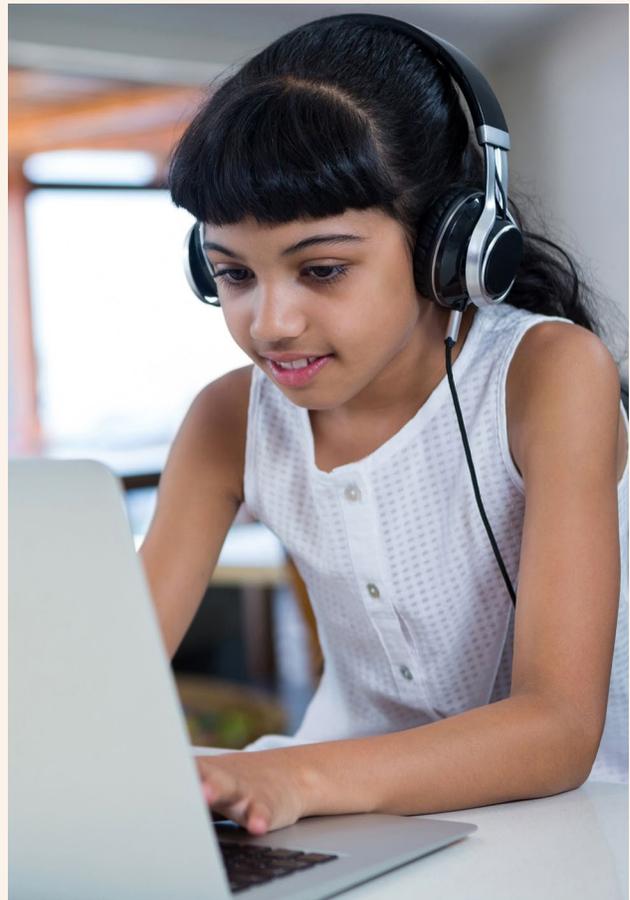


Executive Summary

Over the past three years, there has been increased attention given to the disparity in access to an equitable education due to home or out-of-school internet connections. In the U.S., there are an estimated 12 million students who lack home internet connection—an estimated 9 million have no access at home while 3 million have access only through a phone data plan¹. As a result, millions of students have to struggle with interactive, online lessons that they cannot easily access, devices with limited storage for videos and other resources, and offline workarounds that are challenging for most users – let alone elementary and middle school-aged children.

Over the past two years, the federal government has allocated over \$21 billion to help improve internet access for students through programs like the Emergency Connectivity Fund (2020) and the Affordable Connectivity Program (2021)². Lack of access disproportionately impacts rural students and students of color. Despite the fact that rural students represent 14% of the total student population, 20% of the disconnected students come from these communities, particularly in the Southern U.S.³

Students who do not have access to the Internet from home or are dependent on a cell phone for access perform lower on a range of metrics, including digital skills...A deficit in digital skills compounds many of the inequalities in access and contributes to students performing lower on standardized tests such as the SAT, and being less interested in careers related to science, technology, engineering, and math.⁴



¹ Source: [EdSurge](#)

² Source: [Affordable Connectivity Program](#)

³ Source: [Common Sense Media](#)

⁴ Source: [Quello Center](#)

Rationale

Connecting Every Student to Digital Learning

Despite substantial challenges brought on by virtual learning, 95% of U.S. teachers reported experiencing benefits from using technology and a majority of teachers have expressed that technology has improved student engagement and helped provide flexible access to instructional content⁵. As teachers continue to utilize digital resources in school and at home, there is an elevated importance for students to engage with learning content easily and equitably regardless of where they are and whether or not they have internet access.

Several trends emerge when looking at the educational experiences and outcomes of students who do not have internet access at home. In a study conducted by Michigan State University in 2020, researchers found that students who have no home access or rely upon cell phone data plans have the digital skills equivalent of a three-year deficit when compared to their peers with home internet access⁶. Further, this same study found that students without home access have lower grade point averages, perform below their peers on college admittance exams like the SAT, and are less likely to pursue college or careers in STEM fields. The problem is compounded when one considers the correlation between economic status and home internet access. Families at or below the poverty line are twice as likely to have no access than those above the line.

Consequently, as schools can provide devices for each student for home use as well as continue to find creative ways to provide internet access to students beyond school hours, many districts look towards simple hardware and software solutions to bridge the access gap.

Impact on Students⁷

- 3** 3-year digital skills deficit
- 1/2** 1/2 point lower GPA
- 10** -10 percentile points lower on the SAT
- 18%** 18% less likely to pursue college degree

In 2020, Microsoft partnered with UNICEF* to launch Learning Passport*, a platform that syncs Open Educational Resources to a student's device to address the learning gap impacted by, among other factors, consistent access to high-speed internet.

Meeting Needs ⁸	
1.3 billion students worldwide lack internet access	35 million students are displaced due to war or natural disasters
Around the World	
2 million students currently use Learning Passport	45 countries either have access to Learning Passport or are in the onboarding process

⁵ Source: [Educator Confidence Report](#)

⁶ Source: [Broadband and Student Performance Gaps](#)

⁷ Source: [Broadband and Student Performance Gaps](#)

⁸ Source: [About Us – Learning Passport](#)

⁹ Source: [The Learning Passport Provides Learning Continuity](#)



Learning Scenario

The following scenario compares the step-by-step process that a representative seventh grade student, who does not have internet access at home, would complete to access learning materials while disconnected from the internet. For comparison, we used identical versions of an OER presentation from the [OER Commons](#) in Microsoft PowerPoint* and Google Slides*.

At a Glance

Topic

Don't Be Fooled by Food Messaging

Subject

Health and PE

Grade Level

7th grade

Accommodation

Ensure that classroom instruction is accessible to all students regardless of their ability to access the internet at home.

Step-by-step Comparison

Test Devices

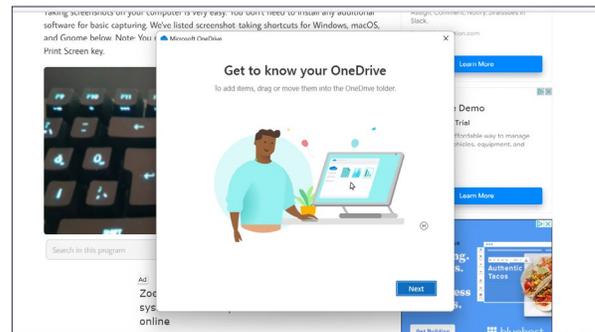
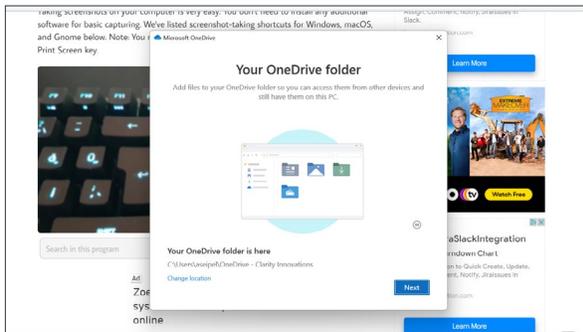
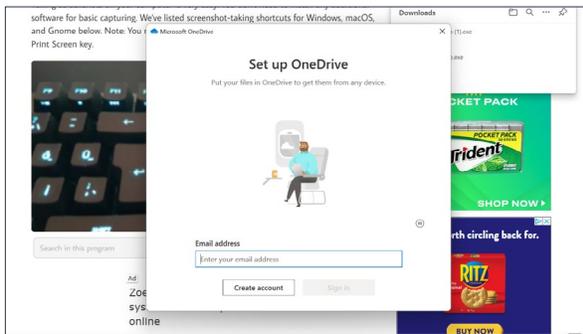
In conducting this comparison, the K-12 Blueprint team tested the following devices and configuration:

- **Microsoft Surface Go 2** running Windows 11 Pro 22000.493
- **ASUS Chromebook Flip C436** running 98.0.4758.91 (Official Build) (64-bit)

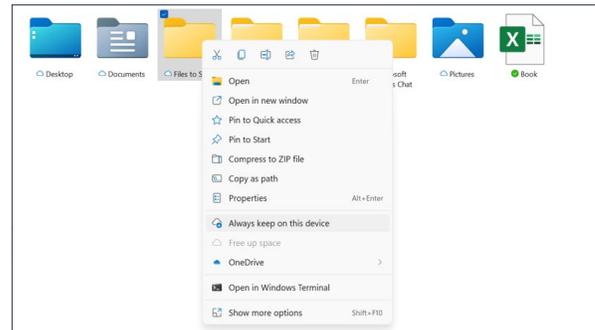
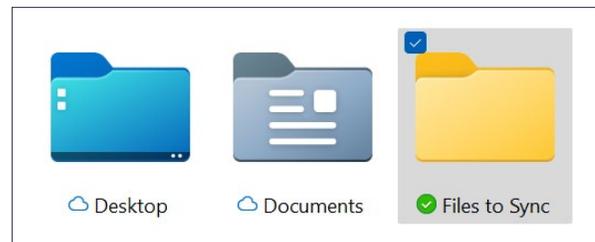
Offline Access to Files Using Windows 11

Setting Up Access

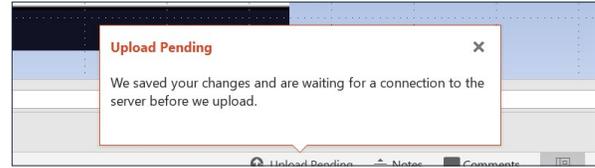
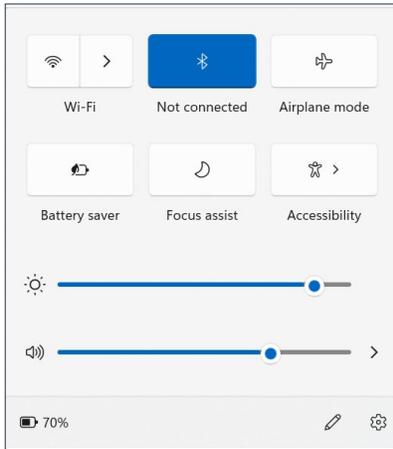
1. Set up OneDrive by signing into your account and identifying OneDrive folder location.



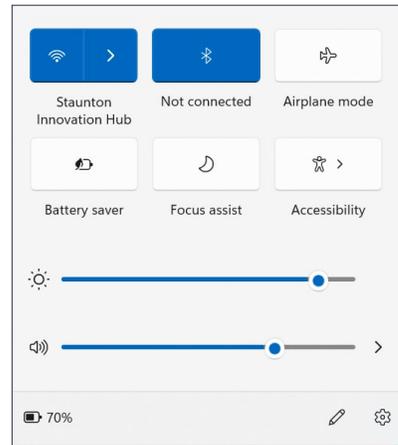
2. Open OneDrive on desktop > Select sync settings for files and folders.



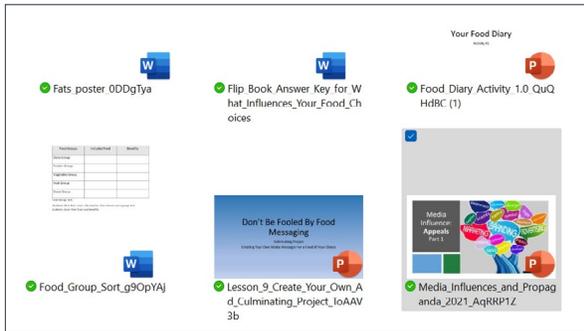
3. Disconnect Wi-Fi connection.



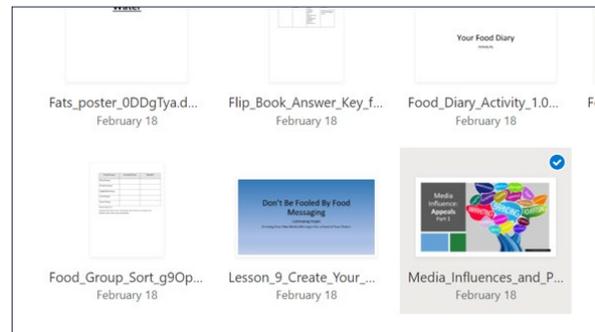
6. Reconnect to Wi-Fi.



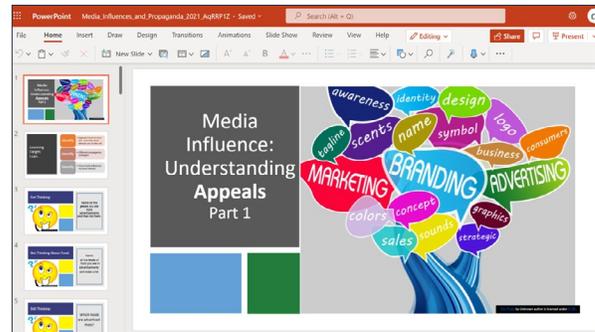
4. Open synced file in OneDrive on the desktop.



7. Access synced and updated file using the web version of OneDrive.



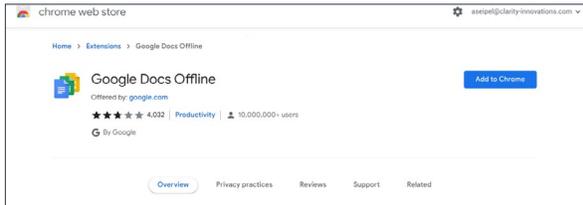
5. Make edits using desktop Microsoft Office tools.



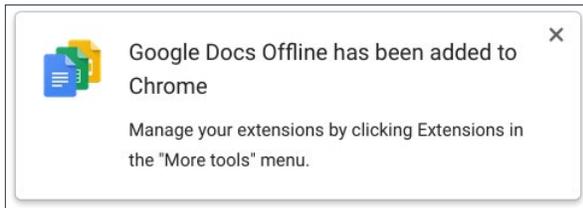
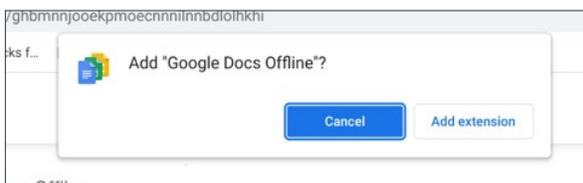
Offline Access to Files Using Chrome OS

Setting Up Access

1. Navigate to Google Docs Offline Extension > Click Add to Chrome.

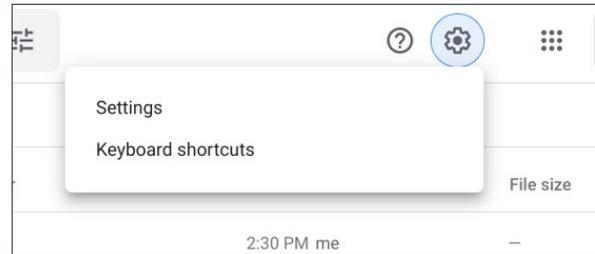
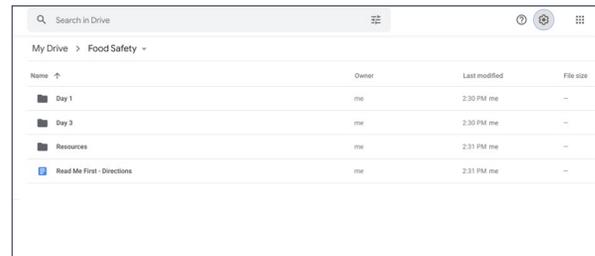


2. Click Add extension.

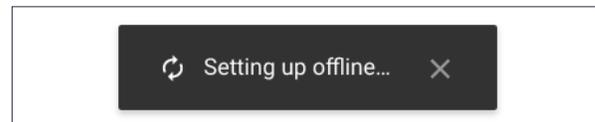
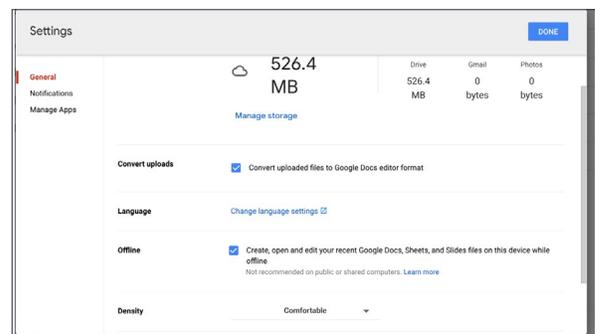


3. Open Google Drive.

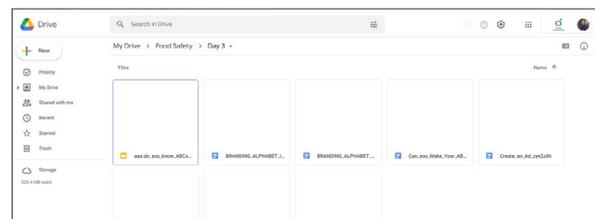
4. Click Settings Gear > Settings

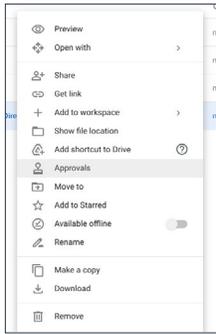


5. Select Offline > Done.

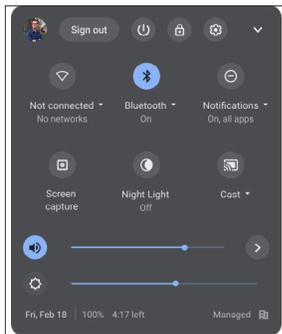


6. Right-click desired file > Click Available offline.

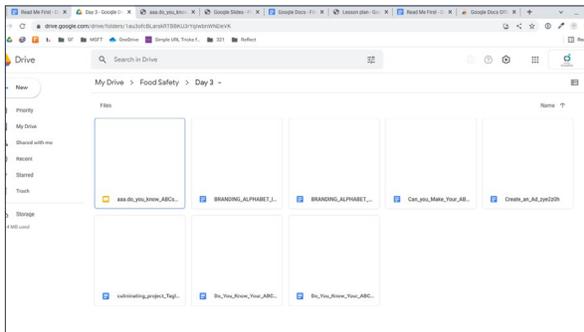




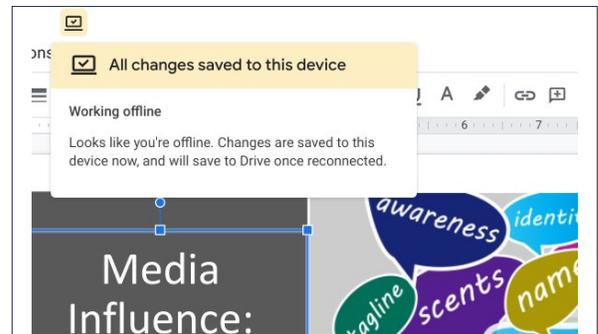
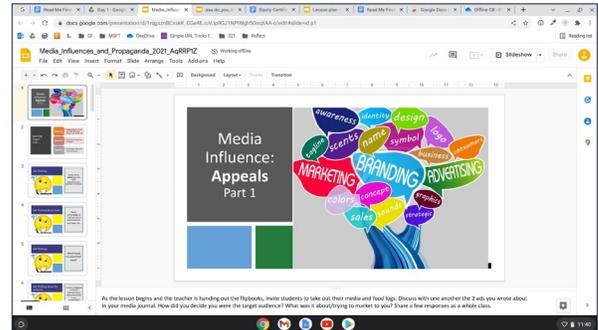
7. Disconnect Wi-Fi connection.



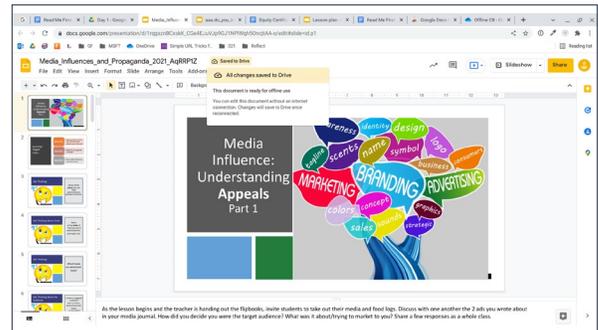
8. Open desired file.



9. Edit file. Changes will save to the device once reconnected to network.



10. Reconnect to network > Changes automatically sync and save in Drive.

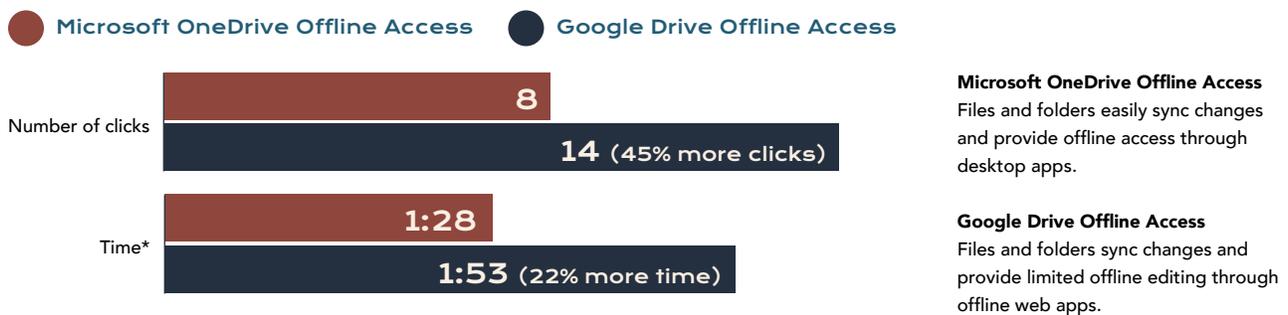


Conclusion

Microsoft’s commitment to providing equitable education through building in offline access features within their robust desktop Office suite helps ensure that the 12 million U.S. students without home internet service can access the same educational content as their peers¹⁰. With offline functions like translation and Accessibility Checker, Microsoft Office tools ensure students, regardless of their learning needs or preferences, have the tools they need to access and create.

Offline Google Drive access, the Google Workspaces for Education* equivalent, requires students to download browser extensions to access files in offline versions of their Google Drive suite, which lack essential features like offline translation or accessibility options.

Offline Access: By the Numbers



As educators continue to depend upon digital learning resources to meet their students’ learning needs, close attention must be given to the ongoing impact of home internet access—particularly for students of color, those living in poverty, and rural communities—has on learners. Averaging four times as much device storage as Chromebooks¹¹, Microsoft Windows 11 devices¹² offer the hard drive capacity needed for students to take their learning with them without worrying about running out of the storage space they for uninterrupted success¹³.

Beyond being the faster and simpler process for setting up offline access, Microsoft Windows 11 continues to excel when it comes to providing a deeper and richer offline learning experience for students. From Adobe* design tools to CAD software, Windows 11’s offline access grants students the tools that they need to develop authentic STEM skills even when disconnected from the internet.

When comparing both offline file access to learning content, accessibility, on-device storage, and offline creation and editing, Windows 11 devices provide a superior experience for learners than the equivalent experiences on Google Chrome OS.

¹⁰ Source: [EdSurge](#)

¹¹ Source: [The Right Chromebook for Online Learning](#)

¹² Source: [The Right Windows Device for Virtual Learning](#)

Appendix

Side by Side Comparison Data Table

Device	Trial 1	Trial 2	Trial 3	Average
Microsoft Surface Go 2	1:33 min	1:29 min	1:22 min	1:28 min
ASUS Chromebook Flip C436	1:51 min	1:53 min	1:55 min	1:53 min