

## Standard: DA.S.01    Grade Band: 3-5

Grade	Standard
3	Recognize that different types of information are stored in different formats that have varying characteristics, which could include associated <b>programs</b> and storage requirements.
4	Store information in various formats for specific purposes (e.g., file type, file size, file compression).
5	Convert different types of information into various formats to be used across multiple <b>software/hardware</b> .

Grade	Essential Skills
3	Provide examples of different file types (text, image, video, audio).  Identify characteristics of common file types and how to determine those characteristics (for example an image can have .jpg or .png at the end of its name).
4	Determine how to store information for a specific purpose (for example: save an image differently for printing than for display on a website)
5	Identify the file format that various software and hardware are capable of storing and opening (for example a spreadsheet stored on a laptop can be opened by Excel or Google Sheets).  Convert a file from a format appropriate for one device to a format appropriate for another device based on the intended software and/or hardware.

Explanation
<p>Students will recognize that there are different file types based on the kind of information (data) the file contains. Students should identify different types of data that are stored in different formats such as text, audio, video, images, etc., and how to identify them (by the suffix .doc, .jpg, .mp4, etc.), but do not have to understand how these files differ. Because the data in different file types differ in fundamental ways, specific types of software and hardware may or may not be able to open a particular type of file. By fifth grade students should demonstrate knowledge that, for example, a video file can be opened by a video editor (e.g., WeVideo) but cannot be opened by a text editor (Word or Google Docs). They should also recognize that on a given device there may be room to store a text file that requires a few hundred kilobytes of storage, but not a video file that may require tens of thousands of kilobytes of storage.</p>

Think of this as similar to...
Why do you store milk in a milk container and not in a shoe box?

Essential Questions
Why is information stored in different formats?
What are some differences between different file formats?

## Implementation Examples—What would this look like in the classroom?

Grade(s)	Title	Description	Link	Content Connection & Notes
3-5	<b>Presentation</b>	<p><b>3rd grade</b>-- While students are creating a presentation or publishing images (in print, on the internet, in a research paper etc.) identify file formats of images (jpeg, png) and notice differences in resolution, image backgrounds and other characteristics.</p> <p><b>4th grade</b>-- Students determine the best format to use for their purpose (print or online) and justify the choice.</p> <p><b>5th grade</b>--compare formats and note advantages and disadvantages of different formats (one may take less storage, another gives better resolution, another may allow removal of the background).</p>		This lesson can be connected to many assignments in Science, SS and ELA.
3-5	<b>File Conversion</b>	<p><b>3rd Grade</b>--Given a specific file, try to open with different applications (Word, Google Docs, a photo viewer) and notice that certain file types can only be opened by certain programs.</p> <p><b>4th Grade</b>--Use files in different formats (e.g., Google doc, Word document or PDF) for different purposes. For example, if students are collaborating online a Google Doc works well, for sophisticated formatting and accessibility Word works well, and to post something that you don't want changed a PDF works well. Students should justify their choice.</p> <p><b>5th Grade</b>--Given a specific file, identify a program that can open that file.: Use a safe file format converter (try Stanford's SCRIBE). Have students convert a file to a different format and identify characteristics that have changed as well as advantages and disadvantages of each file type.</p>	Stanford <a href="#">SCRIBE</a>	

Grade(s)	Title	Description	Link	Content Connection & Notes
3-5	<b>More Storage and Selfies</b>	<p><b>Grade 3</b>-- Students take selfies with a computing device, choose their favorites and record and write a short description to go with them. Students distinguish between an audio, text and image file and describe how they know which is which (by looking at the extension such as jpg, doc. etc.)</p> <p><b>Grade 4</b>--Students compare and contrast how their favorite selfie looks on the device with how it looks when it is printed out. The file has to be of higher resolution (have more pixels) to look good when it is printed out.</p> <p><b>Grade 5</b>- Students should attempt to open their selfies with a variety of programs and see which programs will open the file. Explore possibilities for improving the quality of the photo when it is printed out including changing the file resolution, converting from jpg to png or embedding in a text document or a presentation.</p> <p>Note: one printed example of different file sizes can be sufficient for all examples (each student does not have to print)</p>	<a href="#">More Storage and Selfies</a>	

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These annotations are a collaboration between [Maryland Center for Computing Education](#) and the [Maryland State Department of Education](#).