Impacts of Computing: Culture (2) Grade: 5

Standard 5.IC.C.02
Develop, test, and refine **computational artifacts** to improve **accessibility** and usability for all users.

Essential Skills
Create an artifact that improves **accessibility** and/or usability of a computing device or a **computer program**.
Evaluate the extent to which an artifact is effective at improving accessibility and/or usability and revise accordingly.

Essential Questions
What features make a **computer program accessible** for all users? Consider those with limited sight, limited hearing, non-readers, those new to using a computer, speakers of other languages, etc.
What are some ways you can revise a computer program or **computing device** to make it more accessible or easier to use?

Explanation
The development and adaptation of computing technologies are driven by people's needs and wants and can affect individuals differently. Users with different backgrounds, ability levels, points of view, preferences, and disabilities should be considered when developing and modifying computing technologies. Accessibility has been improved by features such as text to speech, high contrast, enlarged cursors or buttons.

Think of this as similar to….
Some people have difficulty going up and down steps. Elevators, escalators and ramps can make areas with stairs accessible to these people.

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

Title	Description	Link	Content Connection & Notes
Designing for Accessibility	**Grade 3**--Students are introduced to individuals who have trouble accessing apps due to disabilities. Students will identify features of the apps that make it hard for some individuals to use and brainstorm some of the ways they have seen to make the apps easier for people to use. **Grade 4**--Suggest changes that could be made to one of the apps and explain how it would make the app more accessible. **Grade 5**--Create a re-design of the app on paper and explain how it will improve usability; solicit feedback from others and revise the design accordingly.	Designing for Accessibility	This lesson also aligns with **CS** IC.SI.02
Accessibility Features	**Grade 3**--Students explore existing features of the computing devices they currently use and explain how they increase usability. Use the linked article for reference. **Grade 4**--Students think about ways that people in their lives (young children, older people, friends, teachers) have difficulty accessing technology and brainstorm ways to improve the technology and how the improvement would increase ease of usability. Explore features that already exist and how they can be enhanced. **Grade 5**--Create a prototype of a physical device or a computer program (students can actually use a programming language or simply describe the purpose of the program) that will make a device or an app more usable/accessible. Discuss the improvement with the intended audience and revise the plan based on their feedback.	Accessibility Features	This lesson also aligns with **CS** IC.SI.02
Beyond Gender Stereotypes	**Grade 5**--Students think critically about how gender stereotypes can affect the ways they view themselves and others. Although not a strict accessibility issue, students can discuss what the effect of stereotypes is on who uses different hardware and software, how and why. The students then can examine an app, website for gender stereotypes and suggest ways to reduce gender stereotyping.	Beyond Gender Stereotypes	

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These annotations are a collaboration between Maryland Center for Computing Education and the Maryland State Department of Education.