Standard: IC.SI.02 Grade Band: 3-5

Grade	Standards IC.SI.02
3	Identify how computing devices and computational products have been, or can be, improved by incorporating diverse perspectives.
4	Discuss ways existing devices or computational products can be improved by collaborating with peers to gain their diverse perspectives.
5	Discuss ways existing computing devices or computational products can be improved by collaborating with outside resources (other grade-levels, businesses) to gain their diverse perspectives.

Grade	Essential Skills
3	Investigate ways that computing devices and products are used by people of different ages, roles and situations. Explain the features that make devices and programs easier to use for people with different needs, perspectives, and opinions.
4	Collaborate with peers to imagine ways of improving devices and computer programs.
5	Collaborate with people of different ages, roles and situations to imagine ways of changing computing devices and programs so they can be improved. Discuss the unique perspectives of others and reflect on one's own perspectives when designing and developing computing devices and programs.

Explanation
Computing devices and programs can perform a wide variety of tasks. However, a variety of factors including age, disability, socio economic level, experience, etc., influence how accessible a given device or program is to an individual. By soliciting the opinions of others, students will brainstorm ways computing devices and programs can be improved to better meet their needs and the needs of others. .

Think of this as similar to….
Most scissors work well if you are right-handed, but not if you are left-handed. Left-handed people made modifications to create scissors that worked for them.

Essential Questions
How do people's differing abilities cause them to use computing devices and programs differently?
How can collaborating with others lead to the creation of improvements in computing devices and programs?

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

Grade(s)	Title	Description	Link	Content Connection & Notes
3-5	**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 all people to use--including the very young, older adults, or speakers of other languages. **Grade 4**--Suggest changes that could be made to one of the apps and explain how it would make the app more usable for a variety of people. **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.C.02
3-5	**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. Examples can be enlarging text or reading text aloud for users with limited visual abilities, making buttons larger so they are easy to press, creating a program in Scratch that can translate from English for speakers of other languages. Discuss the improvement with the intended audience and revise the plan based on their feedback.	Accessibility Features	This lesson also aligns with **CS** IC.C.02

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