FUSE Steam Education

FUSE & ISTE Standards Alignment

The ISTE standards are a widely recognized and used body of learning standards for technology education. These standards are well aligned with FUSE as they focus on the underlying processes students use and the skills they build while engaging with technology. ISTE provides standards for students, teachers, and education leaders.

FUSE & ISTE Standards: Students

Below is a list of common student behaviors or actions that a FUSE facilitator might notice over the course of a student's time in FUSE. Each of these aligns with ISTE's standards for students.

Student Behavior/Action	ISTE Standard
Chooses to work on a challenge based on their interests and goals.	1.1.a
Uses technology, either hardware or software, to achieve learning goals.	1.1.a
Iterates on their design/solution to reach desired outcome.	1.1.a
Chooses to engage with help content on level pages (videos and instructions)	1.1.b
Changes where they are working, who they are working with, or arrangement of space in the process of working on a challenge.	1.1.b
Uploads an artifact that demonstrates that they achieved their goal.	1.1.c
Requests feedback via the FUSE Feedback tool on fusestudio.net.	1.1.c
Takes an active role in troubleshooting software and technology in FUSE.	1.1.d
Develops proficiency in applications beyond FUSE instructions.	1.1.d
Becomes proficient in the use of an application or tool.	1.1.d
Uses tools and technology to create appropriate artifacts and contribute appropriate content.	1.2.b
Demonstrates repeated process of testing a design or solution, evaluating results, iterating on it, and retesting	1.4.a, 1.4.c
Works through problems in their design or solution, does not give up.	1.4.d
Shows willingness to create artifacts that differ from exactly what is shown in the FUSE instructions.	1.4.d
Creates unique artifacts using the technology and applications in FUSE.	1.6.b
Works effectively as part of a team on FUSE challenges.	1.7.c
Assumes various roles when working on challenges with a group.	1.7.c

FUSE & ISTE Standards: Students

Common Behaviors and Actions *when combined with an extension design project*

In an extension design project, students are asked to apply what they have learned through one or more FUSE challenges to solve a real-world problem. These projects often involve conducting research on a real-world problem, following the engineering design process to come up with a solution, and generating a high-quality presentation of the work. Extension design projects are most appropriate for students who have had 50+ hours in FUSE.

Student behavior/action	*ISTE Standard*
Conduct thorough research using multiple high-quality sources.	1.3.a, 1.3.b
Authentically engage with and thoroughly explore a real-world problem.	1.3.d
Intentionally collect data related to their selected problem and analyze it to inform their design.	1.5.b
Analyze and dissect their selected problems to understand various components.	1.5.c
Chooses a format for their presentation that is appropriate to their content.	1.6.a
Composes a high-quality presentation describing their project and work that includes multimedia artifacts.	1.6.c

Additionally, over the years FUSE facilitators have shared related units and topics that they address with their FUSE students. While these units go beyond FUSE, they also align with ISTE standards. For example, prior to starting FUSE, a facilitator may review internet safety and digital privacy with their students (aligning to ISTE Standard 1.2: Digital Citizenship). Depending on how (and whether) a facilitator chooses to grade FUSE, they may also find alignment with additional standards (i.e. Standard 1.1 Empowered Learner and/or 1.6 Creative Communicator). Since FUSE is intended to be adaptable at the local level, facilitators have the flexibility to design an implementation plan that best fits their goals and parameters.

FUSE & ISTE Standards: Educators & Education Leaders

ISTE also publishes standards for Educators as well as Education Leaders. The following behaviors and actions have been directly observed or shared with FUSE, through both our research and implementation teams.

Educator behavior/action	*ISTE Educator Standard*
Participates in FUSE Community Slack (network of 800+ FUSE facilitators across the country)	2.1.a
Advocates for all students in a particular grade or grade band to engage in FUSE, including students who are English Language Learners and students with special needs	2.2.b, 3.1.b, 3.3.d
Leads peers and colleagues in staff meetings and trainings, as to how to explore and implement FUSE and its related technology tools	2.2.c, 3.3.a, 3.3.c
Teaches students about digital literacy, managing personal data, and how to protect student data privacy	2.3.b, 2.3.d, 3.1.d
Learns how to operate, calibrate, and troubleshoot the 3D printer, and encourages students to learn how to do the same	2.4.b
Embraces FUSE's choice-based approach by making a wide range of Challenges available at any given time	2.5.a, 2.5.b
Encourages students to create their own "Ideas" projects, inspired by FUSE challenges and the students' own interests	2.6.a
Implements full range of FUSE challenges, including digital and tangible challenges, and develops strategies and supports for students	2.6.b
Models a willingness to be creative and take risks, and celebrates failures and hiccups along the way	2.6.d
Provides multiple modalities for assessments and grading, including reflections on development of 21st century skills	2.7.a, 3.3.e
Encourages students to share the stories and artifacts from their individual experiences with FUSE, with their parents and community	2.7.c