

Curriculum Project Authorization Form, Integrated Science Practices Enhanced by Computational Thinking

United States Code Title 42, Sections 1869a and 1869b – National Science Foundation

In an effort to meet its obligation to the National Science Foundation (NSF) under the United States Code Title 42, Sections 1869a and 1869b, the Concord Consortium (CC) is required to obtain authorization from a school board or its designee for their school's participation in CC's curriculum project. More details about this NSF requirement are on the back of this form.

The Concord Consortium would like to conduct the following NSF-funded curriculum project in Mount Diablo Unified School District at College Park, Concord High School, Crossroads High School, Northgate High School, and Olympic High School.

The InSPECT (Integrated Science Practices Enhanced by Computational Thinking) project is a three-year future-oriented exploration of new and emerging technologies. These technologies are exemplified by the intelligent objects that constitute the coming "Internet of Things" (IoT). The fundamental characteristics of the IoT technology is connectivity—IoT devices have sensors, actuators, and wireless connection to the Internet all controlled by incredibly powerful but inexpensive computers such as the Arduino and the Raspberry Pi. These are exactly the functions needed in the smart laboratory, so the coming avalanche of IoT and similar technologies guarantees continuing performance/cost gains that can be harnessed to the needs of student open-ended projects. These advancements have inspired popular DIY and "Maker" movements that provide very low-cost probes and outputs that will allow students to control and analyze an unprecedented range of experiments. The project also features an intuitive programming environment called DataFlow which simplifies controlling experiments and analyzing data. The initial content focus of our research is on biology with possible extensions to chemistry and physics. The curriculum may include content and practices as outlined in the Next Generation Science Standards.

Selected teachers from College Park, Concord High School, Crossroads High School, Northgate High School, and Olympic High School may run the project's activities in their classes from 2018 – 2019 depending on availability. The research phase of the project will potentially continue through 2021 with additional studies.

Students in participating teachers' classes will work with project staff to test, assess, and revise instructional materials and technologies that lead toward independent investigation. Students will interact with games, simulations and physical experiments, moving quickly toward designing their own investigations using sensors and actuators within the DataFlow environment.

As materials are developed, you may review project progress at <https://concord.org/projects/inspect>. If you have any questions, please contact Principal Investigator Sherry Hsi by telephone at (510) 334-6802 or email at shsi@concord.org at The Concord Consortium.

I authorize the Concord Consortium to undertake the proposed project in Mount Diablo Unified School District. Further, I represent that under the rules and regulations of Mount Diablo Unified School District, I have the authority to provide this authorization.

Signature, Title, and Date

In accordance with sections 1869a and 1869b of title 42 of the United States Code, the awardee will do the following, as appropriate:

1. Obtain from the school board or comparable authority responsible for the schools considering participation in the project, written approval prior to involvement of pre-college students in pre-college education research and development, pilot-testing, evaluation, and revision of experimental and innovative pre-college curriculum.
2. Include in every publication, testing, or distribution agreement involving instructional materials developed under this grant (including, but not limited to, teachers' manuals, textbooks, films, tapes, or other supplementary material) a requirement that such material be made available within the school district using it for inspection by parents or guardians of children engaged in educational programs or projects using such material of that school district.