

TECHNOLOGY INTEGRATION PROJECT GRANT PROPOSAL

Name of Applicant: Jason Sirard

District/School: Cherokee County Schools

Date: April 27th, 2021

Total Cost of Project: \$2,400

Title of Project: Argument Driven Inquiry

To what organization will you submit this grant application in the future? Cherokee County Education Foundation

- I. Why is this project important (In 2-3 paragraphs, describe the need for the project and its relevance to the shared vision for instructional technology)?

Part of the technology-shared vision is to use technology to expand inquiry-based activities. Teasley Middle School is already a 1:1 school with new laptops confirmed for the 2021-2022 school year. We have iPad carts and Chromebook carts. Electronic technology is unnecessary, but we need simple technology for student collaboration that mirrors group work in specific workforces, specifically a science lab.

Cherokee County has launched an initiative to teach our students how to apply real-world science application with Argument-Driven Inquiry or A.D.I. According to the National Science Teaching Association, is meant "to teach students to use arguments to construct, support, and evaluate scientific claims of their own and others." It is vitally important that Teasley meet the increasing demands in the workforce by preparing our population, which includes over 55% Low S.E.S. and over 50% female. By incorporating A.D.I. and technology, we can increase the opportunity for these students and decrease the divide in science-related jobs. In 2019 the comparison between women to men in S.T.E.M. jobs was 27% to 73%, respectively. (Martinez & Christnacht, 2021)

- II. What would you like to accomplish (In 2-3 paragraphs, describe the project and list instructional objectives/project outcomes.)?

A.D.I. labs will be done once during each unit. Each lab will focus on two of the 4Es: Explore and Engage. When done at the beginning of the unit, Explore, students will be expected to build background knowledge and become engaged using a phenomenon for the A.D.I. lab. When done in the middle, Engage, students will apply learned material, apply it, and expand on it. The D.O.K. levels reached during these A.D.I. labs are a DOK4. Students are synthesizing their own claims with

evidence and support to share with their peers and change opinions. The A.D.I. labs will take at least five days to complete.

The project outcomes are that each student will begin to build their abilities to research, ask questions, plan, design, and use the information to support a claim with evidence. The National Science Teaching Association states, "these investigations will also enable students to develop the skills outlined in the Common Core State Standards and practice reading, writing, speaking, and using math in the context of science." Students will understand that in science, answers are not always right or wrong but supported or not supported by evidence. It will take them away from a cookie-cutter answering method and produce group answers through collaboration and individuality from applying their group's ideas with their finds.

III. In what ways is this project an example of exemplary technology integration (In 2-3 paragraphs, discuss your project regarding one or more of the following: LoTi, S.A.M.R., T.P.A.C.K., T.I.M., etc.)?

A.D.I. labs range from a LoTi 4-6 depending on the sources and result. Some of the A.D.I. labs, such as the Food Web, have students look at local communities and find solutions to problems in the Ecosystem. The process is student-led, and they do all the planning and execution of the plan to develop their claim supported by their findings. They then share this with other groups, and the teacher can share it with the community stakeholders.

The A.D.I. labs "use technology to develop higher-order questioning and learner engagement through real-world connections. H.E.A.T. stands for Higher-order thinking, Engaged learning, Authentic connections, and Technology use." (LoTi Connection) A.D.I. would score a H6, E5, A4, and T4 each time. A.D.I. has them collaborate to plan the process, execute a task, analyze data, and argue a claim by collaborating.

IV. How will you complete the work? (Describe how the project will be completed.)

A. Describe how the instructional objectives/project outcomes will be met (2-3 paragraphs).

Students will be presented with a guiding question and will have to collaboratively plan, execute their plan, and collect data. They will make a claim and use supporting evidence to convince an audience. They will then write a Findings Reports. The projects outcome is not to find a correct or incorrect answer but for the student to learn how to justify an answer with scientific data.

The claim the student makes is expected to change as they do more and experience more until a final claim is settled on. The expected objective is to move students away from the standard Scientific Method teachings of a Hypothesis is right or wrong. Science is far from the normal Scientific Method teachings. According to Cultaro (2012), "scientist rarely follow one straightforward path to understanding the natural world." She also goes onto to say, "mistakes and unexpected results can be blessings in disguise." A.D.I. aims to teach students there is more than on path and no right or wrong answer but supported or not supported claims.

- B. Describe the time involved (project length including amount of time each day/week; include a timeline for planning and implementation).

The time for the project is outlined below:

1. three 1-hour teacher training done during pre-planning of 2021-2022 school year
2. one practice lab during second semester of 2020-2021 school year
3. one P.L.C. planning to discuss lab and prepare materials (each time lab is done)
4. five days for students to complete lab

- C. Describe the people involved (grade level/subject & # of students, teachers and/or staff, other stakeholders).

This project is for 7th science teachers and will be done with all 7th grade students during their science classes. ESOL and special education teachers will work with the science teachers to ensure appropriate scaffolds and accommodations are met during the lab.

- D. Describe any professional development that you or others will complete prior to implementing the grant.

Science teachers will have three one-hour professional development trainings to understand how to implement A.D.I. in their classroom and their role to support students but allow them the freedom to learn and make mistakes.

- E. Describe the materials needed for the project (provide links to relevant websites; include a written description of how the technology/ies will benefit students).

For this project to be a full success we need are 24" x 36" dry erase boards. These boards are the medium that the students will work on and finally present their claim. This is important because the board allows an equitable view for all collaborating and mirrors a real-world environment. The number of boards needed is 120. This would provide enough boards to each science teacher so students have their own board through the lab.

https://dryerase.com/products/large_unlined_dry_erase_boards?_pos=2&_sid=c05962327&_ss=r

- IV. What is the timeline for assessing accomplishments and objectives/project outcomes (In 2-3 paragraphs, describe the program evaluation procedure. Explain how each objective will be measured and how success will be determined.)?

The total time for students to complete the A.D.I. lab is five classes. Each class has an expected task to be completed. Task one is the introductions, task two is planning, task three is doing, task four is reporting, and task five is peer review. Each task is completed when the group agrees they have completed it. Again, A.D.I. is meant for students to not only learn the content and apply it but

also to learn the method in which science is done. Sometimes mistakes are made but are not discovered until the end. This may be a lesson learned by some.

Success will ultimately be determined as time goes on. Students should find that each time they are presented with an A.D.I. lab they are becoming better and better at reaching their claim and supporting it. We should see in that in all aspect's students are better problem solvers. We have a plan to work with eighth grade on implementing and communicate with the high school on how they have seen an increase in students' abilities to solve problems.

V. How will the students be impacted by the project (In 2-3 paragraphs, include details regarding how the impact on students will be assessed and reported to students, parents, teachers, and others.)?

The A.D.I. labs will have a rubric that will be the same for each time. Since the goal is not the learning of the content but the application of the process the rubric will focus on that. Part of the rubric will be the peer reviews and the students will have specific ways to responds. We want them to also learn how to agree and disagree appropriately and provide evidence to support.

Canvas is our learning management system, and the rubric will be on there. Students will submit their final individualized report. The grade received will be viewable upon posting for the students, parents/guardians, and any other observer to immediately see and read any feedback. The data of all students will be discussed in P.L.C. and used to design or manipulate later labs.

VI. What is the proposed budget? Include information on the following:

- A. Materials/supplies: A.D.I. lab handouts
- B. Equipment: computers, 24" x 36" Dry Erase Boards (needed grant items)
- C. Total Cost of Proposed Project (include a line item for any required professional development)
 - 120 Dry Erase Board (8/pack): \$2,400
 - in-house trainings: no cost
 - A.D.I. in Life Science: already purchased
- D. Additional Funding Sources
 - Science Lab Fees: voluntary donation request, amount unknown
 - Seventh Grade Science Department Moneys: amount unknown for 2021-2022 school year

V. List your supporting references.

National Science Teaching Association. (n.d.). <https://www.nsta.org/book-series/argument-driven-inquiry>.

Cutraro, J. (2019, December 3). *Problems with 'the scientific method'*. Science News for Students. <https://www.sciencenewsforstudents.org/article/problems-scientific-method>.

LoTi Connection. (n.d.). *H.E.A.T. Framework*. H.E.A.T Framework. <https://www.loticonnection.com/heat-framework>.

LoTi Connection. (n.d.). *LoTi Framework*. LoTi Framework. <https://www.loticonnection.com/loti-framework>.

Martinez, A., & Christnacht, C. (2021, January 26). *Women Making Gains in S.T.E.M. Occupations but Still Underrepresented*. The United States Census Bureau. <https://www.census.gov/library/stories/2021/01/women-making-gains-in-stem-occupations-but-still-underrepresented.html#:~:text=The%202019%20American%20Community%20Survey,and%20earn%2084.1%25%20of%20men>.

**INSTRUCTIONAL TECHNOLOGY GRANT PROPOSAL
EVALUATION FORM/SCORING RUBRIC**

Total Points (out of 300): _____

1. Impacts a variety of skill levels and/or learning styles or impacts an important target population.

Possible number of points: 60 _____

2. Clearly identifies standards and learning objectives/project outcomes being addressed.

Possible number of points: 60 _____

3. Pedagogically sound, based on research and/or best practices.

Possible number of points: 60 _____

4. Clear plan for assessment of project and goals with examples of implementation methods.

Possible number of points: 60 _____

5. Impacts large number of students and/or can be recycled/reused.

Possible number of points: 60 _____

General Comments:

Adapted from: The Education Foundation of Oconee County, Inc.