BART Charter

*Discover, Design, Build:*
Massachusetts Creativity and Innovation Initiative
Project Overview: 

Discover, Design, Build

• A cross-disciplinary, year-long course (engineering/technology/visual arts) for students in grades 9-12 offered as part of our existing arts/technology elective structure

• This course will utilize digital fabrication technology in a hands-on learning environment to engage students in collaborative projects to solve real-world problems with community partners

• The foundation of the curriculum will be problem-based and students will work with a high level of autonomy and independence as part of a process that begins by identifying a problem, and then working as a member of a team to solve the problem; This class will focus on the development of 21st Century skills—collaboration, communication, and creativity
Discover, Design, Build: Essential Questions

• What is the process used by engineers, scientists, and inventors to develop solutions to important community or societal needs/problems?
• How can digital tools (hardware and software) be used to create a prototype that is a representation of a design solution?
• What does successful collaboration look like and how as members of a team do we use individual experiences to help shape collaborative activities?
• What are the strategies for persisting in the face of failure?
• As teachers how do we help students to unleash ingenuity?
• What are the skills needed to make professional presentations?
• How is mentor and peer feedback used to refine and improve a design concept?
Discover, Design, Build: Course Structure

- Course will utilize a co-teaching structure with three teachers representing disciplinary expertise across engineering, technology, and visual arts.
- Students will cycle through unique modules offered by each teacher or will be instructed in small groups for whole-class activities.
- The course will be organized into three phases that correlate to our school’s trimester structure:
  - The “discover” phase will focus on discrete skill development and introduction to the design process and collaborative problem solving.
  - The “design” phase will focus on the identification of a community-based problem and the investigation of solutions to this problem.
  - The “build” phase will focus on the development of a proposed solution to the problem, with a focus on modeling and the presentation of solutions to various stakeholders.