Wayland Public Schools
FY17 System-Wide Goal ACE Progress Report: Infusing Technology and Design

System-Wide Goal: To infuse technology and design throughout the curriculum with an emphasis on students building the skills they need to solve real world problems as they create, model, and learn.

High School Strategic Initiatives:

- Continue developing Wayland High School standards for digital citizenship and literacy.
- Wayland RISES 2.0 professional development for faculty.

A Accomplishments	C Challenges	E Exemplar
• Through the Technology Committee, each department reflected on the new state Digital Literacy and Computer Science Frameworks and where and how our high school curriculum currently addresses them. (This reflection appears in the Introduction to the high school portion of the Digital Literacy Plan.) Eight special areas for growth by the year 2020 were also identified, including the expansion of Project Based Learning, the continued growth of our Computer Science program, and further embedding the principles of Citizenship and Public Discourse in the curriculum. • Wayland RISES 2.0 occurred over the course of four Wednesday in-service meetings. Six different courses were offered by high school faculty members who have an expertise in an area. The goal was to move teachers along the SAMR model in a way that had instant application to their classrooms. Feedback from attendees was very positive. • Our 9th grade course, Information Technology, ran this year with a theme of Digital	• We were pleased that six colleagues volunteered to teach mini-courses during Wayland RISES 2.0 this year; however, we would love to be able to broaden the offerings and make it possible so that more faculty members are confident enough to share their expertise and innovative work with one another. • Now that the Technology Plan is articulated, we want to embrace the eight areas that the Technology Committee has identified as exciting challenges. With students becoming more adept in their technological skills at earlier ages, we also want to be responsive in our work at the high school and revise our goals as the larger K-12 context shifts. We anticipate that more students will be coming to the high school with a stronger skill set, which will push our own work as well.	Based on survey feedback from teachers who participated in Wayland RISES 2.0, it is very clear that this professional development effort was meaningful and useful. From the survey results, 92% of respondents prefer learning from colleagues as opposed to outside experts. The six courses offered this year made an immediate impact on the participants' classrooms. When asked, "How will you incorporate the tool you explored [Google Classroom, Infographics, Storybird, Peardeck, Socrative, and It's Learning Assessment] into your classroom?" respondents had very specific plans for quickly, if not immediately, beginning to infuse this technology into the classroom. Some survey comments included: • I plan on developing an infographic to support the STEM solar lab that will be installed this fall. Also, it may be possible to create an infographic assignment for the robotics elective, used to describe the basic components of a robotic device. • I plan to use Storybird at various points with my ninth and eleventh grade classes.

Citizenship. Students worked on independent projects related to this theme after studying issues related to digital literacy and ethics. Next year, the course will include a student data privacy module and students will learn the importance of reading license agreements and privacy policies. Students will be exposed to the importance of data security and ethics. • The Innovation Realization course continues to inspire students to solve the world's problems with real-life solutions using the "design thinking process." This year, two "Expos" were held in the Innovation Lab that showcased the amazing work of our Innovation students.		We will use it to support vocabulary lessons, to practice writing poetry and to visually represent character traits and central conflicts of protagonists in our class texts. ● I have already started using it in all my classes. I post a question to journal about every class, I post assignments, and I post videos I play in class for students who missed out. It has been great!

Middle School Strategic Initiatives:

- Design and implement a unit on coding in the 6-8 applied science curriculum.
- Bring in a new STEAM consultant to promote STEAM integration to a higher level within the school.

A Accomplishments	C Challenges	E Exemplar

• Hip Rivera, Technology Education teacher, and Bethann Monahan, Instructional Technology Department Head, worked diligently this year to develop and implement a coding unit using the "processing" language for all students. They worked with high school teacher Mike Hobbs to find a good bridge between elementary school coding skills and high school coding needs. Every student was able to:
  ○ translate a design → scripted, digital code,
  ○ take code → sketch a specific design it would result in,
  ○ create their own design → code it.
• Hip, Bethann, and Jay Moody have begun planning for year two of the coding sequence. The plan is to build on their knowledge of script-based coding and integrate the use of arduinos into students' applied science projects in grades 7 and 8. Many teachers are excited to take Jay's Arduino 101 class this summer.
• The Wayland Middle School STEAM team created a consistent unified middle school visual model to represent design thinking (the middle school way – with "Empathize at the center – surrounded by the iterative process of "Explore, Develop, and Evaluate") that
	• As with most things, finding the time to fit new pieces of curriculum into programs where many tried-and-true curricular projects are already in place can be challenging. Hip has so few lessons with students in a quarter already and values the skills students get through their hands-on work in the wood shop that shifting to a new model is an adjustment. It is impressive, however, how he has embraced this new work.
	• Jay has made so many great connections with teachers and has been a wonderful thinking partner for PLCs. Again, finding the time to maximize his potential has been the challenge.
	• On the Chromebook front, we are about to head into year four of our 1:1 initiative. This year we were challenged with Chromebook hardware issues and look forward to a new, more rugged model of Chromebook as we engage in our second 3-year lease.
		On May 31st, Tom Longnecker held a "David Cluster STEAM Exhibition" to showcase students' YES projects (Year-End STEAM projects) during our Wednesday morning TAG time. Parents, students, and teachers came through to learn firsthand about problems students had sought to solve, hear about their design-thinking process, and celebrate the iterations and resulting final projects. Students presented enthusiastically, and parents were aglow!
		 

teachers are now using in their classes when engaging in STEAM lessons. This was rolled out to all staff at a faculty meeting.

- Jay Moody, who teaches an innovation class at the high school, has come on as our STEAM consultant. He has been a great fit and instrumental in moving the vision forward. In addition to his primary work with Hip and Bethann, some examples of his collaboration with PLC teams include:
    - the new activism project in social studies,
    - steam design modeling with the science teachers who have transformed curriculum to include it,
    - a 6th grade math PLC for a funnels challenge project,
    - a 6th grade science project implementing a student-centered YES (Year-End STEAM project).

  The work has been exciting and invigorating.

Elementary Schools Strategic Initiatives:

- Continue to examine applications for iPad and Chromebook use to support a STEAM curriculum and differentiated instruction, including applications to support technology literacy such as All the Right Type and Code.org.
- Develop proficiency with STEAM projects throughout all grade levels utilizing the engineering and design process.

A Accomplishments	C Challenges	E Exemplar
• Teachers across all elementary grade levels are now incorporating at least three STEAM projects per year. • All three elementary schools use Code.org for teaching computer programming as part of computer literacy skills and analytical thinking as aligned with the new Massachusetts Digital Literacy and Computer Science Standards. • All three Instructional Technology Specialists from each of the elementary schools worked collaboratively with grade level staff to implement a technology project. These projects aligned with the technology and grade level standards.	• The tools and supplies for STEAM projects take up a considerable amount of space. Additionally, the projects themselves require space while they are in process, as STEAM projects tend to be multiple day processes. At Claypit Hill and at Happy Hollow, there isn't room for a Makerspace, so teachers are a little more limited in terms of the types of projects that are feasible. • Instructional Technology Specialists continue to find it challenging to connect with the classroom teaching staff (given their individual schedules) to plan and coordinate integrated project-based work.	In September 2016, elementary teachers and administrators participated in professional development with STEM consultant, Rob Stephenson. Mr. Stephenson is an outspoken advocate in science, technology, engineering, and mathematics (STEM) education and routinely conducts trainings around the country on its integration into the K-12 classroom. This training provided a springboard for the year-long work for all elementary grade levels to utilize the engineering and design process through three STEAM lessons per grade level.

Central Office Strategic Initiative:

- To develop a three-year Digital Literacy and Innovation Plan.

A Accomplishments	C Challenges	E Exemplar
• Wayland Public Schools supports national and state education technology trends, thus delivering today's best educational experiences to our students. • Working with our school-based Technology Committees and using the Massachusetts Digital Literacy and Computer Science Curriculum Framework as a guide, we have developed a three-year (2020) Digital Literacy and Innovation Plan for Wayland Public Schools. This plan will continue to evolve and become a working guide for us to follow and support the delivery of high quality, technology-rich education to all students K-12. • With a focus on Project Based Learning, we will support the integration of the Massachusetts Digital Literacy and Computer Science Curriculum Framework into Wayland's curriculum to enhance teaching and learning through creative and thoughtfully blended and personalized learning initiatives.	• Lack of funds to replace elementary iPads and meet the 1:1 request of 4th and 5th grade teachers. • Limited time to provide extensive, ongoing professional development to our teaching staff. • Limited time in the middle school schedule to deliver the computer science curriculum. • Oversight challenges of our student data privacy initiative for online applications from teacher-driven, student-centered curriculum requests.	• Elementary Programming – Use of Code.org for grades 1-5; Scratch Jr. for grades K-3, and Scratch 2.0 for students in grades 4-5 utilizing block programming skills. • Elementary Robotics – Continued use of Beebots and Probots at the early elementary level to provide hands-on experiences with robots. Introduction of Dash robot lessons into grades 4 and 5 (funded by the Wayland Public Schools Foundation). • 6th Grade Coding – Students are introduced to computer programming in Applied Science classes using the Processing language. • 7th Grade Coding – Students will be introduced to coding using the Arduino boards. • High School Python Programming – Students create text-based adventures, interactive video games, and pieces of digital art. • High School Honors Applied Computer Science – Students worked collaboratively to make several large-scale products, including the Wayland High School Planner App and a 3D Bottle Flipping game. Students combined technical skill with the visual arts to create an undersea gaming adventure utilizing the Unity gaming engine. • Fine Arts – Music Production Studio I and II utilize professional recording and editing software to explore digital audio principles.

		● Innovation Realization – Students exercise their creative muscles to design, prototype, and build inventions that solve real-world problems.