



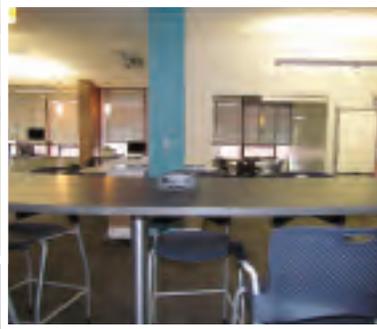
The Future Is Now!

The Chappaqua Central School District and the Chappaqua School Foundation partner to make the *iLab at HGHS* a reality.



The iLab Vision

To continue our District's record of success, the Chappaqua Central School District (CCSD), in collaboration with the Chappaqua School Foundation (CSF) researched, designed, and built the Innovation and Collaboration Learning Lab (iLab) at Horace Greeley High School (HGHS), which opened in February 2014. The iLab enhances education by extending learning beyond the traditional classroom. Traditional classroom space of desks in rows has been redesigned to a stimulating, open and flexible space paired with easy-to-access technology. The result is a learning environment that moves beyond lecture-based teaching to create space for creative, collaborative inquiry for educators and students. Flexible seating, small conference rooms, use of electronic wall panels to share information from any device, use of movable white boards and writeable walls stimulates student discovery and builds momentum for learning. A day in the life of the iLab finds students searching and projecting images on the web to write a group poem, video-conferencing with a composer to have him listen to their interpretation of his music and provide feedback, and designing a new product in an engineering class where all students in the group contribute simultaneously by writing and sharing their ideas through technologies available in the iLab. In a chemistry course, students have the freedom to self-select into spaces that best fit their learning style enabling independent or group work. In a foreign language class, students engage in a writing project through an intensive collaborative process of continuous group presentation, feedback, independent work, and revision, resulting in an intense engagement with the material and higher level of ownership over their work.



The New iLab @ HGHS Fosters 21st Century Skills

"Universities like Harvard are changing their architecture, creating spaces that empower student collaboration. In 21st century workplaces, teams engage in design, knowledge building, and conflict resolution. To be effective using these complex skills, students need experiences in high school and college that develop their capacity. These experiences involve changes in schools' structures, technologies, and instructional techniques. Chappaqua is a leader in this type of teaching/learning through spaces like the iLab at Horace Greeley High School."

~ Professor Chris Dede, Timothy E. Wirth Professor in Learning Technologies, Graduate School of Education, Harvard University

"I feel more relaxed and less restricted when working in the iLab because the space encourages collaboration and breaks down the student-teacher wall."

~ Horace Greeley Student

Thanks to a strategic partnership between the Chappaqua School Foundation (CSF) and the Chappaqua Central School District (CCSD), the vision, construction and implementation of a new iLab @ Horace Greeley High School (HGHS) was completed in the winter of 2013-14. Four classrooms of HGHS were reimaged and renovated to create a 4,000 square-foot learning facility that is modern, student-centered, adaptive, interactive, and technology-infused.

The iLab ~ Why do we need one?

The role of educator is evolving. Teaching and learning is moving toward students' "active learning" rather than passive delivery of information through a conventional lecture format. Technology is playing an increasing role in teaching and learning by accelerating access to and sharing of information. These changes have led to a growing disconnect between how students learn and facilities designed and built in some cases over 60 years ago. Consequently, schools are re-envisioning and rethinking traditional classroom models to provide students with curriculum and space that enables "active learning." A primary mode of providing active learning is by extending the traditional subject-area focus of the classroom into real-world, collaborative, student-driven work such as through project-based learning (PBL).

The power of PBL (and the design of the new iLab @ HGHS) lies in the relationships it supports, including student-to-student, student-to-faculty, student-to-staff, student-to-technology, and student-to-information. The iLab's open floor plan functions as a vibrant, dynamic, and information-rich environment for both formal and informal teaching and learning. Its environment supports a myriad of learning modalities from small and large group instruction, independent study, and team collaboration which result in active learning, divergent thinking, improved communication and decision-making skills, and meaningful knowledge creation.

Teachers and students are currently utilizing the space to extend current classroom work to further incorporate:

- Creativity, problem solving, and multi-disciplinary projects
- In-depth inquiry
- Formulating questions and researching
- Task-based self-directed learning
- Communicating work to a variety of audiences
- Assessment and feedback of on-going learning

The iLab empowers teachers and students by providing the space, resources and technology to foster collaboration and promote active learning.

The iLab ~ How it all began

In the summer of 2011, then CSF President Michael Kaufman asked District Superintendent Dr. Lyn McKay if there was a large, innovative project CSF could support that could significantly impact the District's educational system. Following initial research and discussions, the decision to explore instructional space at HGHS was reached.

With a generous gift from CSF, the Chappaqua Board of Education approved a contract to have the firm STUDIOS Architecture prepare a feasibility study. CSF and CCSD worked collaboratively with STUDIOS conducting parent, teacher and student focus groups and researching how technology and space are driving educational innovation especially at the university level.

The District and CSF then turned to Fielding Nair International (FNI), an internationally-known educational facilities planning and architectural design firm. FNI suggested a high impact opportunity targeting about 4,000 square feet of space in Building E, which was already scheduled for some routine and less-creative maintenance improvements. FNI drafted blueprints for a state-of-the-art educational facility. FNI also worked with an initial group of teachers to develop innovative lessons designed around active (or project-based) learning that would take advantage of the unique features of the iLab. The initial group of teachers, known as Innovation Fellows ("iFellows"), were accepted to pilot the new iLab after an application and interview process. Today, there are 19 iFellows teachers (see list below) representing nearly all grades and subject areas at HGHS.



The iLab ~ Project Based or Active Learning: Embracing a 21st Century Paradigm

To remain one of the top performing districts in the country, CCSD's instructional approach must include project-based learning, in which students are actively engaged and participating in meaningful and direct ways. PBL goes beyond knowledge acquisition. It involves integrating, analyzing and applying knowledge to demonstrate mastered competencies in a subject area. Importantly, PBL builds upon Chappaqua's existing and outstanding content-based educational paradigm to promote even deeper learning and understanding for all students. Traditional content acquisition and PBL are not mutually exclusive; PBL builds upon, extends and expands traditional classroom teaching and learning.

For decades, CCSD's educational system focused on "knowledge" acquisition--learning based on core, broad subjects (e.g., math, science, English, history). Analytical thinking is emphasized and developed within these content areas. Our District, and HGHS in particular, is widely acclaimed for providing superb knowledge-based learning. This will always be the foundation for our schools and the district's top educational priority.

Education in the 21st century offers students a "real world" approach to learning where they enhance understanding of core subject matter by extending beyond the traditional classroom framework. Project-based (or active) learning encourages students to understand, think creatively and analyze authentic problems. Advances in school design, architecture, use of space, furniture, equipment and technology enable and support active, project-based learning. PBA lessons promote collaboration, perseverance, experimentation, risk taking, design thinking, and toleration for failure--skills necessary for success in today's world.

Why Project-based Learning?

Project-based learning (PBL) yields numerous benefits for students, ranging from deeper understanding of academic content to stronger motivation to learn. Comparisons of learning outcomes in project-based learning versus more traditional, textbook-and-lecture driven instruction show that the following:

- Students learning through PBL retain content longer and have a deeper understanding of what they are learning. (Penuel & Means, 2000; Stepien, Gallagher & Workman, 1993)
- In specific content areas, PBL has been shown to be more effective than traditional methods for teaching math, economics, language, science, and other disciplines. (Beckett & Miller, 2006; Boaler, 2002; Finkelstein et al., 2010; Greier et al., 2008; Mergendoller, Maxwell, & Bellisimo, 2006)
- Students demonstrate better problem-solving skills in PBL than in more traditional classes and are able to apply what they learn to real-life situations. (Finkelstein et al., 2010)
- When teachers are trained in PBL methods, they devote more class time to teaching 21st century skills; their students perform at least as well on standardized tests as students engaged in traditional instruction. (Hixson, Ravitz, & Whisman, 2012)
- PBL students also show improved critical thinking. (Beckett & Miller, 2006; Horan, Lavaroni, & Beldon, 1996; Mergendoller, Maxwell, & Bellisimo, 2006; Tretten & Zachariou, 1995)

The iLab facilitates Project-Based Learning better than the average classroom

The chart below summarizes how key educational shifts are enabled by specific design elements of the iLab.

Desired Outcomes	iLab Design Elements
Collaborative research and problem solving opportunities (group and individual)	Large, shared space with small conference rooms, flexible seating and big tables enables students to work independently, in small groups and in large groups as required by educational need.
Self-directed, student-owned learning where students actively participate and communicate	The iLab is designed as a “learning laboratory” where answers to questions must be generated through working with peers and researching information online. There is no front of the room which makes students feel more comfortable approaching the teacher and each other. Students are required to take ownership of their learning process, regularly communicating and presenting their point of view. Teachers become guides and facilitators.
Creative, accelerated learning and experimentation enabled through sharing of information using technologies/tools	Writing walls and movable white boards spur in-the-moment student learning and accelerate student brainstorming. One-to-one access to Chromebooks enables students to conduct research, collaborate online, and use large LED screens to publicly display work. These technologies empower students to quickly find and share information, accelerating learning and the sharing ideas.
Continuous feedback from teacher, peers and authentic audiences (external subject matter experts)	Access to subject matter experts through web-conferencing in the small teaming rooms, and use of large screens, whiteboards, and online collaborative tools like Google Docs make student work visible to others--spurring feedback as soon as student work begins and not just on a finished product. Student work in the iLab is easily observable--there is no place to hide.

A day in the life of the iLab

In preparation for the iLab’s opening in February 2014, the iFellows began work in the summer of 2013 and continued to work on designing and refining student-centered units and courses. They built upon the District’s strengths in content areas and provided increased active learning opportunities for innovation, intellectual agility, creativity, collaboration, social consciousness, personal growth, self-reflection, risk-taking, and pursuit of personal passions. New units of study being implemented in the iLab include:

- An industrial design class where students brainstorm in small groups on new product ideas. Sample blueprints are projected on multiple screens to facilitate peer-to-peer feedback.
- A chorus class Skypes with a composer in Minnesota who is commissioned to score an original song specifically for them. In real time, he is able to hear students perform the song for the first time, and then provide immediate suggestions for improved phrasing, articulation, and breathing. He also elaborates on his thinking for the song giving students better insight as to the feelings and emotions they should try to convey while performing.
- An English class convenes in an open area with a teacher introducing a topic with important questions to guide student thinking throughout the units. Students then form small groups and use Chromebooks and Google Docs to collaborate and provide real-time, actionable feedback before presenting their initial thinking about the questions to the rest of the class.

What students are saying. . .

“The iLab is a unique place which changes the traditional classroom setting. The space is more inviting and open because there aren't just desks with a board in the front of the room.”

“I feel more relaxed and less restricted when working in the iLab because the space encourages collaboration and breaks down the student-teacher wall.”

“My teacher allows more time for collaboration and student feedback. We can easily move around to sit with other students. We use the chrome books to share our work with other students so they can leave comments for feedback.”

“The iLab harnesses experiential and project-based learning in which I can work with fellow students to successfully learn in a fun and engaging way.”

“The walls allow students to share ideas and the TVs enhance presenting our work.”

“I enjoy our classes in the iLab. We generally have better class discussions because we sit in large circles or small tables rather than in rows.”

“I love that our class discussions are generally better when we are the iLab.”

“Everyone is more engaged, and I think the colorful and comfortable furniture makes the learning process both relaxing and extremely successful.”

“...If only Greeley looked like the iLab everywhere!”

But is the iLab working?

The iLab @ HGHS empowers students to drive their own learning and to further develop the expertise, collaboration, creative thinking, and leadership skills to better prepare them for life after HGHS. The District is assessing the success of the iLab in levels of use, organization of space and materials, and impact of the iLab on the student and teacher experience. In addition, teachers are continually reflecting upon and asking questions about their own work. Following are critical questions the District is investigating:

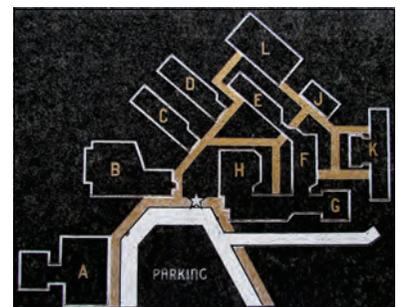
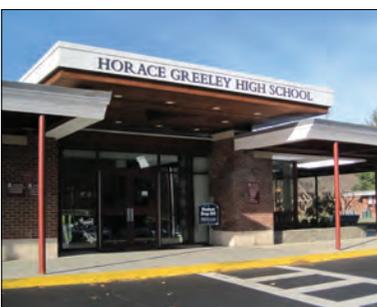
- Is the iLab being utilized to its fullest potential?
- Are teachers receiving sufficient training in problem-based learning?
- Are students applying content and transferring previous learning?
- Are students demonstrating independent use of skills in the areas of collaboration, communication, critical thinking and creativity assessed through teacher-designed rubrics?

Next Steps. . .

The iLab @ HGHS empowers students to drive their own learning and to further develop the expertise, collaboration, creative thinking, and leadership skills needed to better prepare them for life after Greeley.

Next steps include having Greeley's Space Committee, composed of students and teachers, examine additional opportunities for innovation that were presented by Fielding Nair International.

This committee's charge will be to identify additional spaces throughout the school's entire campus that could be transformed into an atmosphere designed to foster spontaneous teaching and learning along with organic collaboration and innovation.



What teachers are saying . . .

After using the iLab for a few months, the Innovation Fellows* made some observations about the differences in teaching and learning in the iLab versus a traditional classroom.

“When you walk into a classroom, students have an expectation in their mind of what will happen--I open my book and wait for the teacher to tell me what to do. Walking into the iLab, students don't have that automatic default of what happens next.”



“The aesthetics make a difference--bright modern colors, less fatiguing, cool sight lines, the soft furniture. When kids are in the iLab, they change the way they perceive their role. Before a kid may have sat in back of the classroom and zoned out, but now kids say they work at different levels. They are more continuously engaged, more focused, and more productive.”



“I had a student who found the perfect re-engineering example on his phone and we were able to project it right then and there. This became a mini-lesson led by the student. Kids want to share things that are cool and relevant and the iLab enables an immediacy of learning in the moment of discovery.”



“In the iLab, kids have the freedom to self-select into spaces that suit their learning style. Some kids really like the small conference room as a space where they can be more focused. The “writing walls” are a huge element...kids post a question or thought and let it sit or record what other kids are saying. They can grab the mobile white boards and pull them to the cluster tables and record ideas. There is a fluidity of ability to change modalities. For example, some kids don't like to type...they think better when they write so they brainstorm on the walls and type it out afterward. The iLab creates a dynamic energy with no lag. Kids might “run out of steam” in one modality, but access to multiple ways to generate ideas keeps the momentum going.”

“My students tell me, “It's like I'm at a job in an office on a design team...I could work in here all day.” The kids are more serious about what they are doing; they sit up straighter and feel more motivated, empowered, responsible and inspired. The students' ability to focus in the iLab is a big positive.”



“In my Latin class, students researched topics of their choice and then made presentations. Everyone gave feedback on the presentations, made revisions and then presented again. I could not have had this project occur in a traditional classroom. They used the small rooms to generate ideas, get them up on the screen and work simultaneously.”

“It is difficult to have all 20 students engaged in a discussion. In the iLab, everyone had a laptop and logged into a threaded discussion. Students at the table spoke, but those around them could only post comments in the threaded discussion, with students at the table able to respond to comments. All of it happened at same time. Everyone could hear, read and respond. The quiet kids felt more empowered--that they had a voice in the discussion, and I as the teacher had a written record and can see how many times I had responses from each student.”



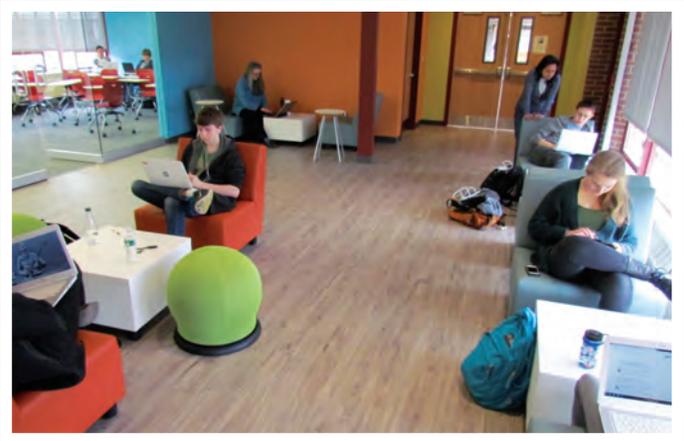
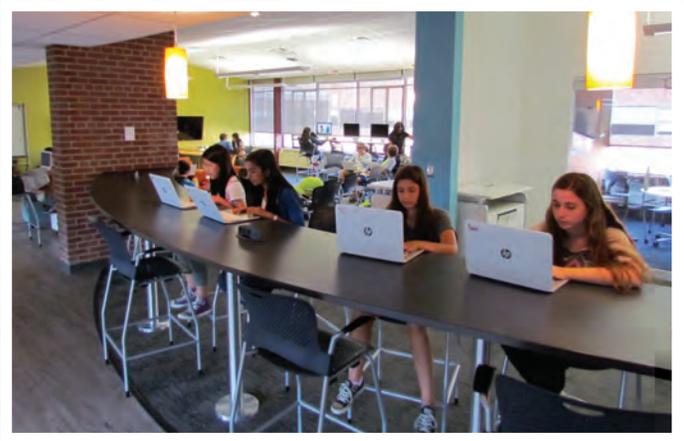
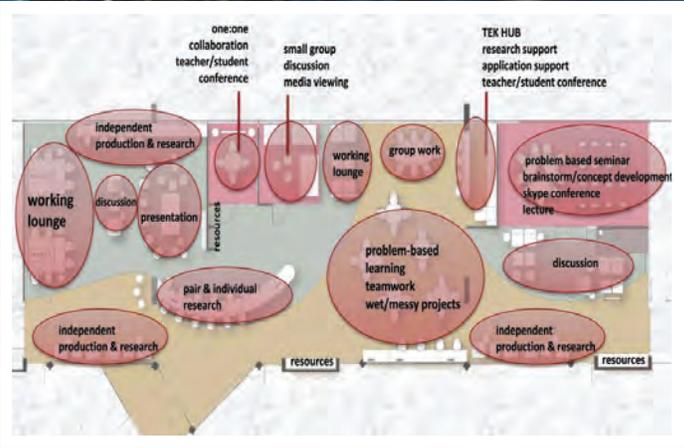
Innovation Fellows at HGHS

Jacqueline Abair ♦ Louise Brady ♦ Maureen Callan

Nicole Diamante ♦ Patrick Dougherty ♦ Jeanne Hurgin ♦ Chris Kaser

Matt Kimmerle ♦ Melissa Lugo ♦ Regina Luersen ♦ Teresa McKenna ♦ Brian Petruso

Annie Revel Davis ♦ Lauralyn Stewart ♦ Steve Walker



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