I.D.E.A. LAB AT TOWER

INNOVATION DESIGN ENGINEERING APPLICATION

TOWER SCHOOL

CHARACTER & CONFIDENCE

I.D.E.A. LAB MISSION

To foster and develop imagination, creativity and innovation by providing a project-based learning environment that cultivates original ideas.

I.D.E.A. LAB VALUES

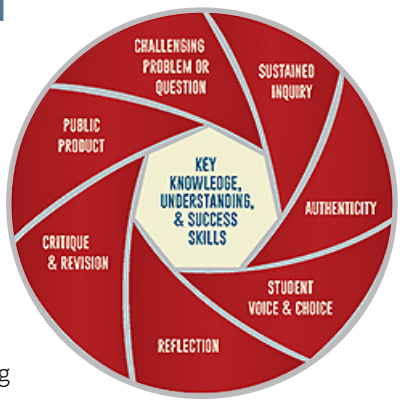
Imagination is the root of creativity. It is the ability to bring to mind things not present to our senses.

Creativity is putting imagination to work; it is applied imagination.

Innovation is a dynamic process that involves making new connections and crossing disciplines, it requires original thinking on the part of the individual.

At Tower School, imagination, creativity and innovation are critical elements of our balanced, intellectually-stimulating learning environment.

THE ESSENTIAL ELEMENTS OF TOWER'S PROJECT-BASED LEARNING PROGRAM*



ENGAGING PROBLEM OR QUESTION

Students apply their classroom knowledge in an interdisciplinary approach to solve a problem or answer a question that is meaningful to them.

SUSTAINED INQUIRY

Inquiry is an active, in-depth process that requires time for investigation and iteration. When offered a challenging problem or question, students utilize resources and classroom lessons to evaluate information and ask deeper questions until a meaningful solution has been developed.

AUTHENTICITY

Authenticity describes how "real-world" the learning or task is. Authenticity increases student engagement and learning. A project can have: an authentic context, involving real-world tasks, tools, and performance standards; a real-world impact on others by creating something to be experienced; or personal authenticity, by incorporating students' own concerns and interests.

STUDENT INPUT

Students become more invested in the outcome when they have input and control over aspects of a project, such as: the inquiries they make, resources they use, tasks and roles they take on as team members, or products they create.

REFLECTION

Students develop skills of reflection to solidify what they have learned and consider how that knowledge might apply elsewhere, beyond the project. Reflection on the project itself—how it was designed and implemented—helps students decide how they might approach their next project.

CRITIQUE & REVISION

Students learn how to provide and benefit from constructive feedback to improve processes and results. Communication and collaboration are skills that are learned only when opportunities are provided to students.

PUBLIC PRODUCT

By creating a product, students make what they have learned tangible and therefore, discussible, adding to the social dimension of learning.

* adapted from the Buck Institute for Education (BIE)

PROJECT-BASED LEARNING BUILDS SKILLS FOR SUCCESS*

KNOWLEDGE AND UNDERSTANDING

Through project-based learning (PBL), students master academic content, retain information longer and out-perform traditionally-taught students. Additionally, students learn how to apply knowledge in real world situations, and create innovative solutions to complex problems.

SKILLS FOR SUCCESS

In school, in the modern workplace, and in their lives, people must have a dynamic mindset to think critically and solve problems, collaborate and communicate well with others, and incorporate innovation and creativity into their work. These skills are crucial stepping stones to future success.

* adapted from the Buck Institute for Education (BIE)

WE'RE READY. HERE'S WHY.

TECHNOLOGY

Tower puts the tools for learning into the hands of students. Students in all grades embrace technology as a means to gain access to information, and to express their knowledge and share their ideas.

STEM/STEAM EDUCATION

Tower's "hands on, minds on" immersion in inquiry-based learning through STEM and STEAM education projects has prepared our students for an active learning approach, focusing on critical thinking and problem solving.

PROFESSIONAL DEVELOPMENT FOR TEACHERS

This summer, teachers will receive specialized professional development in PBL from the experts at the Buck Institute for Education, thanks to funding from Tower's WISE Fund. Teachers will build upon their skills and learn new techniques, best practices, and concrete methods for developing top-tier projects for students.

TIME-HONORED, TRADITIONAL PROJECT-BASED,

"Our schools have a doubly hard task, not just improving reading, writing and arithmetic but entrepreneurship, innovation and creativity."

Ken Robinson, *Out of Our Minds: Learning to be Creative*

EDUCATION, ENHANCED BY INTERDISCIPLINARY LEARNING.

TRADITIONALLY-STRUCTURED EDUCATION

Traditional classrooms are designed to support a structured educational model that encourages students to learn in a linear sequence. Both social and academic foundational skills are developed in the classroom setting.

INTERDISCIPLINARY LEARNING

The I.D.E.A. Lab is a dedicated space designed for hands-on, collaborative, interdisciplinary learning. Students are provided opportunities to develop critical thinking, and innovative problem solving skills, forging a deeper connection to their academic foundational skills.

Both settings are important and each demonstrates strengths depending on the activity and goals.

WHAT DOES IT LOOK LIKE?

An example of a project-based learning assignment:

THE ASSIGNMENT

Students embark upon a fictitious expedition to climb Mount Everest, with the goal of restoring the purity of the environment by removing trash, oxygen bottles and lost or abandoned gear left by decades of climbers.

In preparation, the students study maps, weather and geology. They work collaboratively to determine the best route to the top of Mount Everest, and design a pulley system for efficient trash removal as they ascend. The students itemize the equipment and supplies they will need, set a budget, and apply for funding in one of several world languages.

Teachers ensure intentional, directed learning by assigning different tasks throughout the project, and create opportunities for students to personalize their learning by incorporating elements that are of interest to them. One student might wish to learn about the impact that varying oxygen levels have on human physiology and brain function, another student might wish to examine the politics of implementing a carry-in, carry-out program for trash.

Once completed, students solidify their learning through reflection, make appropriate revisions based on peer feedback, and present their final project to a larger audience.

Student work is evaluated based upon pre-determined criteria provided at the outset.

I.D.E.A. LAB VISION

INNOVATION DESIGN ENGINEERING APPLICATION

Tower School is an innovative institution, one in which novel student learning is the central purpose. Tower is a school that embraces creativity, not as a separate part of the brain that exists in a chosen few, rather as a skill that arises from the interaction of prior knowledge and new ideas facilitated by collaboration with others.

Imagine a setting in which applied learning is commonplace, intellectual effort and academic rigor become a form of play, and students frequently say, “This makes so much sense,” and “Look at this!” A school where students would not think to ask, “When are we going to use this?” or “Why are we learning this?” because content is never taught without context. Imagine a school where learning is enhanced because students pursue it with enthusiasm and confidence, where students understand that joy begins with curiosity and grows with the pursuit of their own interests and passions.

Tower School is turning this vision into a reality by investing in capital improvements to create a space dedicated to project-based learning. The project-based learning space will include new technology and infrastructure such as: CAD software, a 3-D printer, and wireless connectivity; plus furniture that allows for flexibility and encourages collaboration.

IMAGINE

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