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STEAM Wing Renovation and Curriculum Development Propels District Towards Enriched Learning Opportunities for All Students

Courtney Ter-Velde, NCIDQ | Senior Interior Designer

Recall the traditional classroom environment: box-like rooms with rigid rows of bulky, steel-framed desks; students being directed to keep forward-facing attention towards a teacher with white chalk in hand; and limited opportunities for inspirative, hands-on learning amidst a dull, neutral-colored backdrop.

A new generation of students requires a new generation of classrooms.

CPL recently had the pleasure of working with the York Central School District to transform an under-utilized third floor wing of the district's Middle/High School into an architecturally bold, creatively inspiring center to support science, technology, engineering, art and mathematics (STEAM) learning.

STEAM EDUCATION

Research suggests that STEAM education has the power to "prepare students specifically for careers by mixing factual and experiential knowledge," often serving as a "major catalyst for teaching not only foundational STEAM concepts, but life skills such as problem-solving, creativity, critical thinking, manual dexterity and spatial perception" (Crawford 2006; Eisenberg 1998).

CPL's K-12 Education Practice stands firmly behind this research, believing that hands-on, high-performing STEAM spaces have become essential in facilitating prominent student growth and bridging the gap between graduation, employment and/or higher education.

Critical to the design of these spaces is their ability to appeal to individual interests, promote collaboration and exploration, support evolving learning styles and technology, and encourage cross curriculum development among educators. Above all, they must value project-based, experiential learning to effectively motivate students in discovering their own distinct paths to success.

Working closely with districts across the country, we've witnessed the positive impact STEAM learning environments can have on a student's academic experience.

Scan QR for an inside look at the exciting construction progress happening at York Middle/High School's existing third floor wing.

PARTNERING WITH YORK CSD

The decision to take on a full gut renovation of York Middle/High School's third floor wing stemmed from the district's desire to give their students enhanced educational opportunities. During our initial discovery phase, which encompassed months of collaborative sessions with key stakeholders, the CPL team began conceptualizing the project by first understanding the potential value a new, robust STEAM education program could bring to York students and educators.

We quickly identified that the school had been trying to support technology programs, such as Robotics and Computer-Aided-Design (CAD), but were not teaching said programs in classrooms or lab spaces that could fully support their demands. Eager educators worked with the spaces they had, adapted as they often do, and did their best to deliver these programs in a way that would spark interest and curiosity.

With "less than ideal" classroom layouts and resources, this proved challenging.

Our team jumped at the opportunity to discuss the potential impacts that newly designed STEAM labs and classrooms could have on these programs and the many students who are yearning to enjoy them.

What if these learning environments had the latest and greatest technology? What if they came equipped with proper storage as well as the appropriate power and data provisions? What if they were laid out to accommodate ample flex space for collaborative, group discovery? Or better yet, what if they had a dedicated arena for battle-bots?

As the questions kept rolling, the incredible opportunity we had to expand these forward-thinking STEAM programs became clear. Subsequently, the potential impact this effort would have on the district's recruitment efforts was also emerging. Top teaching talent demands quality educational spaces and resources to tap into. A new, dedicated STEAM wing would not only energize students, but it would also draw in the "hard-to-find" specialized educators needed to elevate the programs.

PROJECT DEVELOPMENT

Throughout our development and design process, we continued to ask key probing questions and learn as much as we could. We held frequent discovery meetings to check in on goals, surveyed York's educators to receive invaluable feedback, conducted visioning sessions to illicit a collectively desired design aesthetic, and presented to the community to promote transparency and bolster support.

These concerted efforts helped our project team identify four key design elements that became the driving forces of our work: **Technology Integration, Flexibility and Adaptation, Project-Based Learning, and Cross-Curriculum Design.**

Technology Integration

Having immediate access to technology is imperative for a high-performing STEAM environment, especially one looking to support Robotics and CAD programming as well as the future development of programs like Computer Coding, Graphic Design and Digital Media.

CPL designed concepts for York Middle/High School that would not only support new computers, greenscreens and smart screens, but would also make sure high-speed data and power/charging stations were readily available. This was achieved by integrating power and data into both the ceiling and flooring structures with retractable cord reels and floor outlets. We also provided ample charging stations within the cabinetry and throughout collaborative areas.

Flexibility and Adaptability

From a flexibility standpoint, our proposed concepts needed to be nimble enough to adjust to future curriculum changes. And to achieve adaptability, they also needed to support diversity in learning styles, teaching pedagogy and project-based learning, which in turn, enhances soft skills such as interpersonal communication and collaboration.

Modular furniture, mobile displays, moveable walls and multi-purpose lab spaces are several ways we promoted flexible and adaptive solutions for York Middle/High School's new STEAM wing.

Project-Based Learning

When it comes to encouraging teamwork and supporting critical thinking skills, there's no better solution than project-based learning. It's an educational approach that challenges the more traditional concept of a teacher tediously repeating information in hopes of students memorizing it, by giving teachers the resources they need to conduct hands-on research and apply practical scenarios for students to experience. Students become active learners and acquire a "toolbox" of invaluable skills that can help them thrive in the workplace.

CPL worked with the district to develop areas within the STEAM wing that would support several dedicated labs and a video production room, where students could actively get a glimpse of a project's more pragmatic facets, granting an early boost to their confidence and skill development. We also designed corridor display cases to further showcase the results of these projects, creating a rotation of art, design, models and robotics that students could proudly parade.

Cross-Curriculum Connections

Like design for project-based learning, designing with cross-curriculum connections in mind can make education more meaningful for students—the material becomes relevant when they recognize similarities between individual disciplines.

For instance, classes involving CAD directly converge with learning and exploration in the fields of Robotics. The cross-curricular investigations and assignments included in both programs demonstrate how educators can emphasize creativity and collaboration between different students and subject areas, and even help them identify prospective career avenues.

Our team designed the STEAM wing to support this initiative by leveraging movable walls and positioning labs and classrooms adjacent to one another, all to increase visibility to other curriculums in hopes of promoting interest and curiosity.

CONCLUSION

By working closely with York Central School District's academic leaders, educators and members of the community, CPL successfully helped the district envision an exciting future for students interested in Robotics, CAD, Digital Graphics and Computer Science. The approved design concepts gleam toward an inspiring and captivating shift in how students will learn and uncover their passions, empowering them with comprehensive skill sets along the way.

As designers, we can play an active role in shaping the next generation by providing support for educator via intentional facility and classroom design. Through innovative space planning, acknowledging the need for integrated technology, and subsequently creating malleable environments that support experiential learning and cross-curriculum exploration, we can continue to enrich educational experiences.

> **"There is strong evidence that STEAM education for at-risk students improves high school completion rates. Participation in STEAM courses, especially as a concentrated program of study, may also increase students' postsecondary education, employment and earnings.**
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> Report by The County Health Rankings and Roadmaps at the University of Wisconsin Population Health Institute