



Project Lead The Way

Successful Steps for Schools Beginning a Biomedical Science Program

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Why PLTW Biomedical Science?

Elementary School



Middle School



High School



Project Lead The Way's K-12 Curricular Pathways

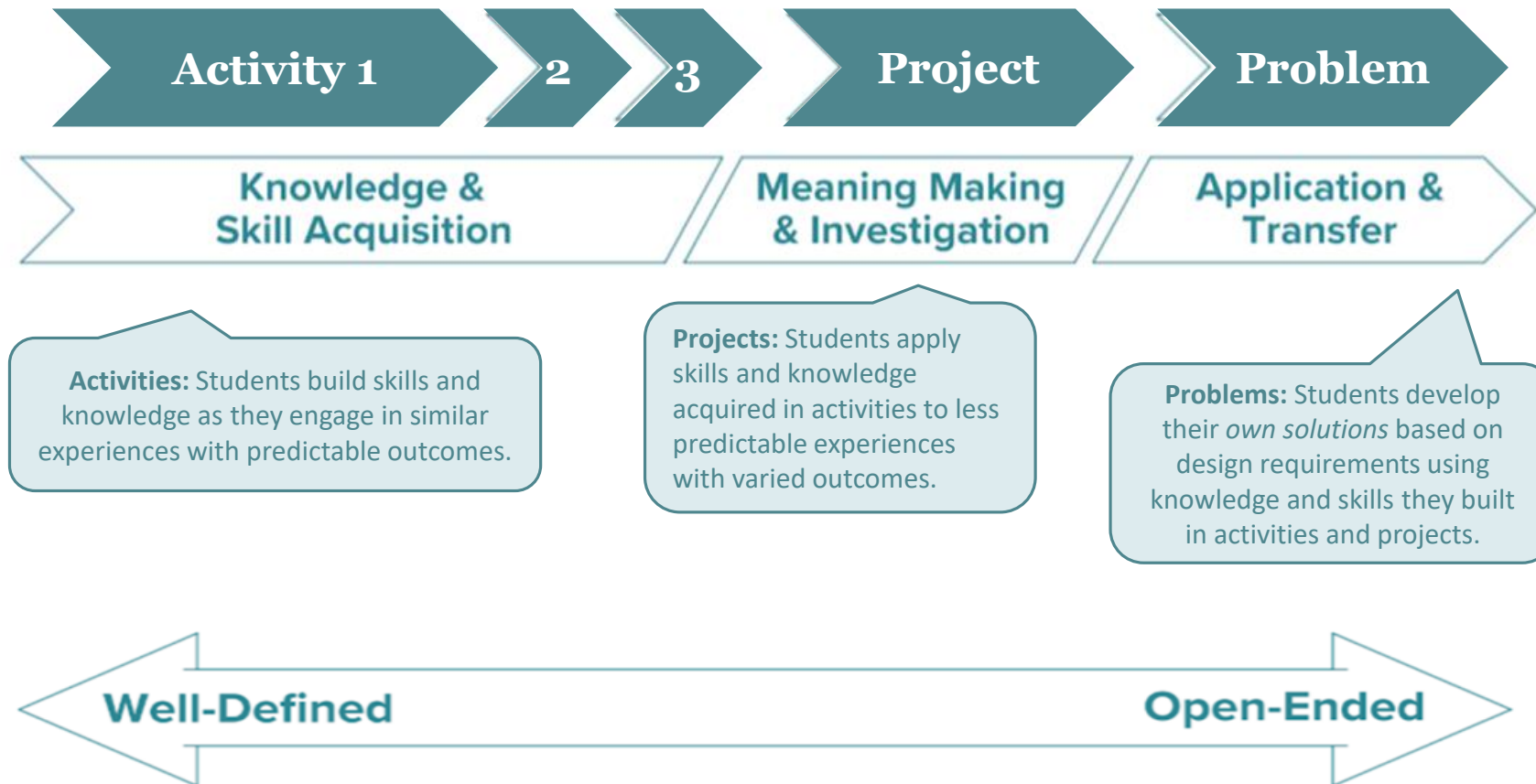
	PLTW Launch Grades K - 5 10-hour modules	PLTW Gateway Grades 6 - 8 9-week units	PLTW Programs for Grades 9 - 12 Year-long courses
Biomedical Science	K. Structure and Function: Human Body 1. Animal Adaptations 3. Variation of Traits 4. Input/Output: Human Brain 5. Infection: Detection	Medical Detectives	Principles of Biomedical Science Human Body Systems Medical Interventions Biomedical Innovation
Computer Science	K. Animals and Algorithms 1. Animated Storytelling 2. Grids and Games 3. Programming Patterns 4. Input/Output: Computer Systems 5. Infection: Modeling and Simulation	Computer Science for Innovators and Makers App Creators	Computer Science Essentials Computer Science Principles Computer Science A Cybersecurity (<i>Fall 2018</i>)
Engineering	K. Structure and Function: Exploring Design K. Pushes and Pulls 1. Light and Sound 1. Light: Observing the Sun, Moon, and Stars 2. Materials Science: Properties of Matter 2. Materials Science: Form and Function 2. The Changing Earth 3. Stability and Motion: Science of Flight 3. Stability and Motion: Forces and Interactions 4. Energy: Collisions 4. Energy: Conversion 5. Robotics and Automation 5. Robotics and Automation: Challenge	Automation and Robotics Design and Modeling Energy and the Environment Flight and Space Green Architecture Magic of Electrons Science of Technology	Introduction to Engineering Design Principles of Engineering Aerospace Engineering Civil Engineering and Architecture Computer Integrated Manufacturing Computer Science Principles Digital Electronics Environmental Sustainability Engineering Design and Development



Engaging. Inspiring. Empowering.



Activity, Project, Problem-based Learning Approach



PLTW Curriculum Design

RESEARCH BASED

- Wiggins and McTighe's Understanding by Design

COLLABORATIVE

- Seek ongoing feedback
- Work is informed by current research and experts in academics and industry
- Powerful team of educators and industry and business professionals

STANDARDS BASED

- Common Core ELA and Math
- Next Generation Science
- National Health Science
- International Technology and Engineering Educators Association Standards for Technological Literacy
- CS Teachers Association

PLTW Biomedical Science



PLTW Biomedical Science Overview

Foundation Courses

- Principles of Biomedical Science
- Human Body Systems
- Medical Interventions

Capstone Course

- Biomedical Innovation



Principles of Biomedical Science (PBS)

Units

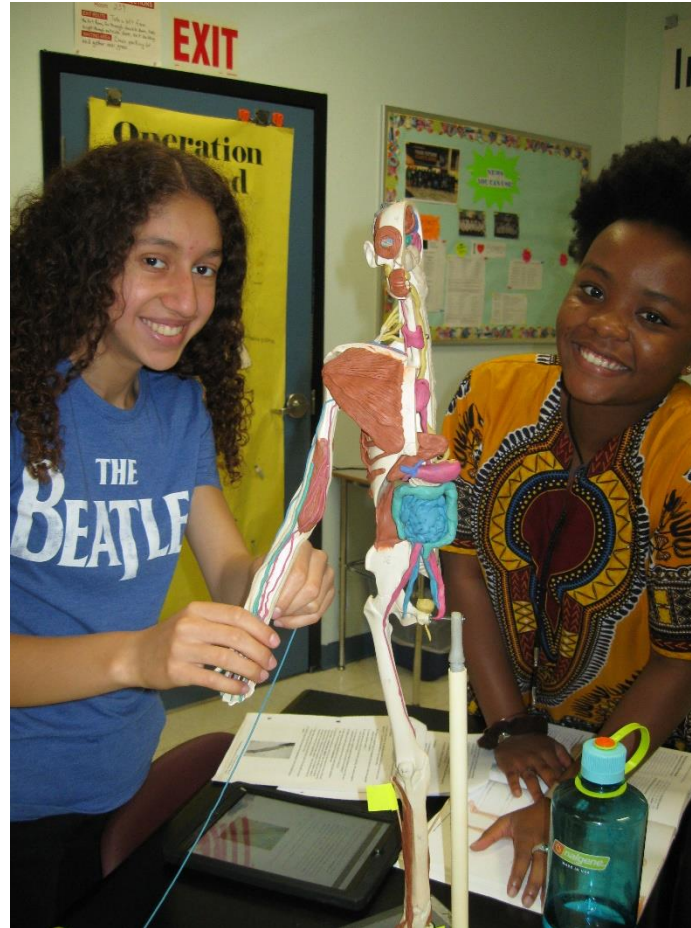
- The Mystery
- Diabetes
- Sickle Cell Disease
- Heart Disease
- Infectious Disease
- Post Mortem



Human Body Systems (HBS)

Units

- Identity
- Communication
- Power
- Movement
- Protection
- Homeostasis



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Medical Interventions (MI)

Units

- How to Fight Infection
- How to Screen What Is in Your Genes
- How to Conquer Cancer
- How to Prevail When Organs Fail



Biomedical Innovation (BI) Capstone

- Problem 1: Design of an Effective ER
- Problem 2: Exploring Human Physiology
- Problem 3: Design of a Medical Innovation
- Problem 4: Investigating Environmental Health
- Problem 5: Combating a Public Health Issue
- Problem 6: Molecular Biology
- Problem 7: Forensic Autopsy
- Problem 8: Independent Project
**Capstone





Professional Development

Professional Development

Prerequisite courses	Core Training	On Going Training
• Introduce you to PLTW • Provide essential foundational knowledge such as getting started with required software	• Two week onsite in person training * • Build skills and confidence with APB • Prepare to become facilitators of learning • Access to course specific resources * PBS – on line offering	• Community in myPLTW • Lynda.com • Community of PLTW, schools, college and universities, industry and corporate partners

A woman with curly dark hair, wearing safety glasses, a white lab coat, and a red polka-dot scarf, is smiling and looking towards a student. The student, seen from the side, is also wearing safety glasses and a white lab coat. They are in a laboratory setting with shelves in the background.

“ What’s different about these trainings is that it’s an immersive experience. The PLTW Master Teachers aren’t lecturing at you. They’re guiding you through the curriculum and activities. ”

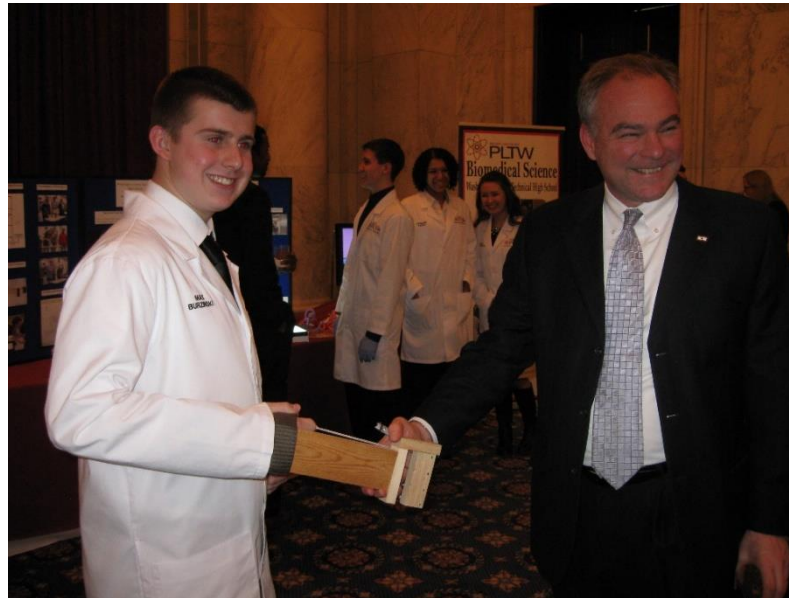
Dynamic Facilitator

- Great to have a solid biology/chemistry background
- Growth mindset
- Embraces the APB Curriculum Model
- Enthusiastic
- Embraces role as coach/facilitator
- New teachers are supported
- Seasoned teachers thrive



Growing Your Pipeline

- Ideally, train a different teacher for each Biomedical Science course
- Flexibility in scheduling with multiple teachers trained
- Increased student access
- APB learning filters throughout the school
- Program ambassadors:
 - Students
 - Community
 - Parents



Recruit and Retain Students

- Build a solid program
 - Kid magnet teacher
 - Invest in your program
- Let students do the talking
 - Open house
 - Middle School Recruitment
 - Community events
- Showcase your efforts
 - Highlight the technology
 - White coat ceremonies
 - Capstone presentations
 - Social Media
- Recognize Student Effort
 - Sash Night
 - Graduation Cords
 - Certificates



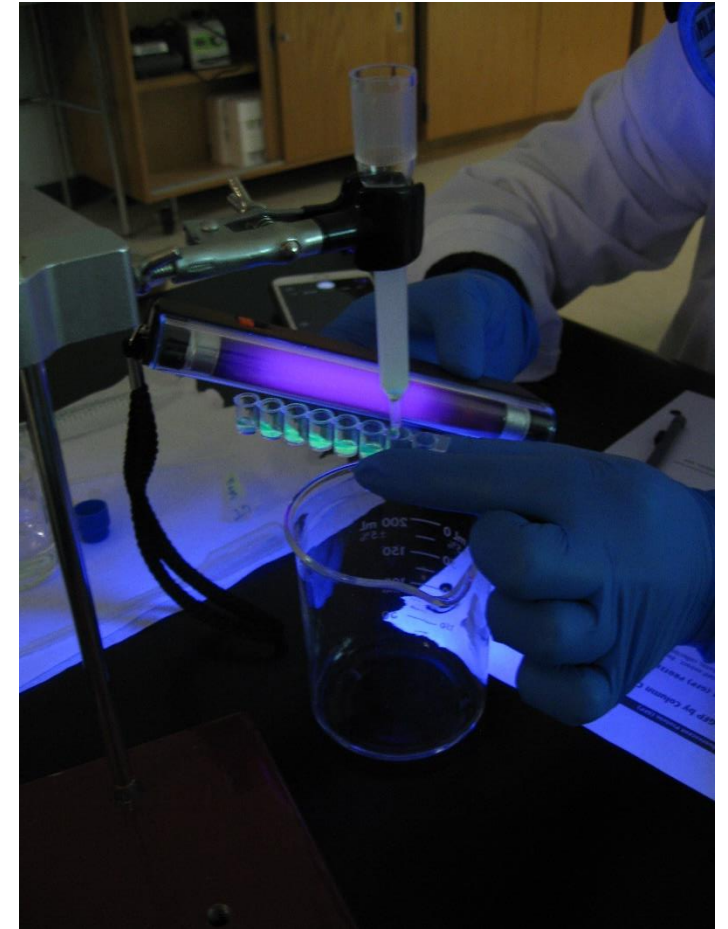
Student Opportunities

- AP + PLTW
- Student Organizations (HOSA, SkillsUSA)
- Scholarships
- Internships
- STEM Premier



Invest in Your Program

- Invest in required supplies and equipment
- Science laboratory facility
 - Sustainable structure and resources may be in place
- Teacher training
- Teacher lab prep time



Community Resources and Partnerships

Program Advisory Committee

- Perkins requirement

Local colleges and universities

- NSA Summer Programs – earn college credits and exposure to business and industry
- BI Capstone Project – Hagerstown Community College and Tufts University PARE Project - Prevalence of Antibiotic Resistance in the Environment

Relevant industry connections

- MedImmune – Biomanufacturing Day

Student internship programs

- Fort Detrick – SIP

Perry Initiative Outreach Program

- Orthopaedic Surgery and Engineering for high school girls UConn Health 11/3/18, (past Tufts - 2/10/18, Yale - 4/6/18)

Power of Biomedical Science

- Career awareness and connections
- APB approach engages learners
- Complements traditional and AP science courses
- Strong connections to literacy and mathematics
- Flexible implementation
- Empowers students with transportable skills





“ Easily the most enjoyable parts of my PLTW courses have been the applicability to biomedical careers and the hands-on learning approach. ”

Biomedical Science Students



Collaborators



Problem Solvers



Critical and Creative Thinkers



Persevere

Questions

