IB CONFERENCE OF THE AMERICAS 2014
WASHINGTON, DC • 10–13 JULY
Project Lead The Way and the IBCC

Carolyn Malstrom
PLTW Senior Director of School Engagement

Ed Graf
Resource Teacher for Career and Technology Education, Watkins Mill High School
Topics:

- IBCC
- Project Lead The Way Programs
- Watkins Mill Implementation
- Rockville High School Implementation Planning
- Student Engagement and Success
- Lessons Learned
- Discussion
International Baccalaureate Career Certificate Program
• Combines the educational principles of IB courses with a career focused program of study

• Flexible framework allows schools to create IBCC programs that meet the needs of their students
IBCC Program Requirements
Three Part Framework:

1. At least two IB Diploma Program Courses
2. Approved Career Program of Study
3. IBCC Core
IB Diploma Program Courses:

• At least two from any of the subject groups in the IB Diploma Program

• Courses should be relevant to career-related studies.
Approved Career Program of Study:

- Program is selected by the school
- Must be approved by IB
  - Accreditation
  - Assessment
  - Quality Assurance
IBCC Core:

- IBCC Approaches to Learning Course
- Community Service
- Language Development
- Reflective Project
Project Lead The Way Programs
• Project Lead The Way began in 1997

• United States’ leading provider of in-school curriculum for integrated science, technology, engineering, and mathematics

• Mission: To prepare students for the global economy.
• Full-year courses
• Aligned to Common Core and Next Generation Standards
• Teacher Notes
• Day-by-Day Lesson Planning
• Student Handouts
• Scoring Rubrics
• Answer Keys
• Additional Resources
PLTW Program Requirements

PLTW High School Programs:

- Engineering
- Biomedical Science
- Computer Science (in development)
PLTW Engineering:

• Introduction to Engineering Design
• Principles of Engineering
• One of the six Specialty Courses and/or the Capstone Course
PLTW Biomedical Science:

- Principles of Biomedical Science
- Human Body Systems
- Medical Interventions
- Biomedical Innovation (optional)
PLTW Computer Science:

- Computer Science and Software Engineering
- Computer Science Applications
- At least two half-year specialty courses or the capstone course
Implementation
Watkins Mill High School:

- Located in Montgomery County, MD; 20 miles North of D.C.
- 1500 students
- 50% FARMS; 73% Ever FARMS
- 60% take at least one IB Course
Watkins Mill High School: Class of 2013-14 IB Candidates

<table>
<thead>
<tr>
<th></th>
<th>Population (1449)</th>
<th>IB Diploma (30)</th>
<th>IBCC (19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>10%</td>
<td>30% (9)</td>
<td>32% (6)</td>
</tr>
<tr>
<td>Black</td>
<td>38%</td>
<td>20% (6)</td>
<td>47% (9)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>36%</td>
<td>37% (11)</td>
<td>16% (3)</td>
</tr>
<tr>
<td>White</td>
<td>13%</td>
<td>13% (4)</td>
<td>5% (1)</td>
</tr>
</tbody>
</table>
Watkins Mill High School: PLTW Support

- Partnered with Lockheed Martin
- AAAS Volunteer
- Construction Management with Montgomery College
Watkins Mill High School: Student and Parent Recruiting

- Middle School Visits
- Pizza Luncheons
- Electives Fair
- Direct Conversations
- Enhanced by IBCC
Watkins Mill PLTW IBCC Schedule Example

- 9th Grade: Introduction to Engineering Design
- 10th Grade: Principles of Engineering
- 11th Grade: Digital Electronics, IB Physics 1, IB Psychology, ATL (2 Semesters)
- 12th Grade: Aerospace Engineering, Engineering Design and Development, IB Physics 2, ATL (1 Semester)
- IBCC Core: Supervised throughout ATL
Watkins Mill PLTW IBCC IB Courses

- Physics (16)
- Chemistry (1)
- Biology (6)
- Math SL (11)

- Math Studies (1)
- English (14)
- History (9)
- Psychology (6)
Rockville High School:

- Information session attended by Principal and IB Coordinator
- Team attended IBCC Focus Group:
  - Principal, Assistant Principal, IB Coordinator, Child Development Academy Head, Culinary Arts Teacher
- IB Coordinator presented to and met with all students in PLTW, Child Development and Foods classes
- Develop student cohort
Rockville HS: Cohort Enrollment

- First cohort—fifteen students:
  - Six enrolled in PLTW
  - Four enrolled in Child Development
  - Two enrolled in Foods
Rockville HS: IB Courses Selected

- Chemistry
- English
- Math Studies
- Biology (HL and SL)
- Psychology
- Visual Arts
- History
Student Engagement and Success
Watkins Mill Students Say:

• “The IBCC helped me challenge myself and take risks in school.”

• “The IBCC helped me decide what I wanted to do in the future and expand my horizons.”

• “IBCC has prepared me for the Engineering courses I am going to take in college.”
Watkins Mill Principal:

“Kids are making connections from ATL to their career class. I’ve seen them bring global perspective or whatever ethical dilemma they are discussing in ATL and influence discussion in the career class. And that spreads among the rest of the class.”

-Scott Murphy
Growth of PLTW at Watkins Mill

- 2012-13: 5 Program completers (IBCC not offered)
- 2013-14: 6 Program completers (3 IBCC)
- 2014-15: 21 Program completers expected (17 IBCC)
Watkins Mill High School

- 14 of 20 IBCC students are taking IB classes beyond the requirements

- Community and Service Projects
  - Electronic School Map/Blueprint
  - Design and Build Greenhouse

- Reflective Project Sample
  - Use of Poor Quality Levees in the U.S. Should the USA’s failing levee system undergo reconstruction?
Participating in the IBCC allowed me to take the challenging IB classes I wanted to take without having to succumb to the pressure of the full IB program. Both the IBCC and PLTW programs have taught me the research skills I will need in college and the importance of finding balance in your workload. Approaches to Learning, paired with my interest in Engineering, introduced me to a side of engineering which I never knew existed: a side of ethics. The classes offered for PLTW had topics that would be taught in other PLTW classes as well as some IB Classes.
Lessons Learned
Watkins Mill:

- All students taking Engineering vs. open access
- Developing a student cohort
- Career teachers taking ATL and Reflective Project training
Discussion
Contact Information

• Carolyn Malstrom: cmalstrom@pltw.org
• Ed Graf: Edward_W_Graf@mcpsmd.org
• Galit Zolkower: Galit_Zolkower@mcpsmd.org
• Laurie Ainsworth: Laurie_K_Ainsworth@mcpsmd.org