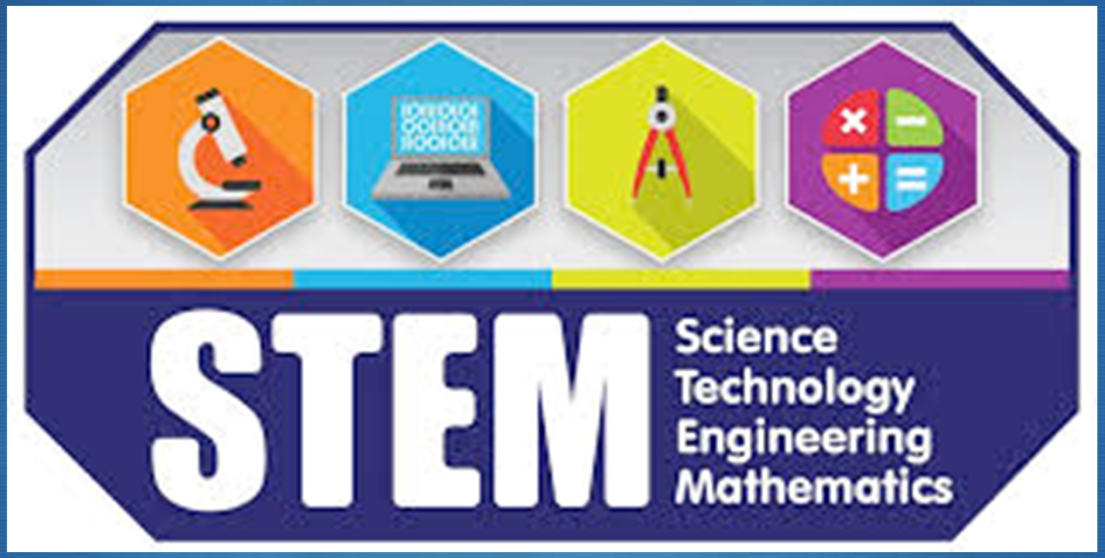
Bensalem



Jay Bowman
Director Secondary C&I / K-12 STEM
Doug Ferraro
K-12 Mathematics Supervisor / Data & Assessment Coordinator

3/15/18

K-8 Science

- **Utilize two programs**
- **K-2 FOSS (Full Option Science System)**
- **3-8 Science Fusion**
- **Supplement with STEM Projects through PD with TCNJ**

K-2 FOSS

- **Hands on Investigations**
- **“Learn by Doing Science”**
- **K – Trees Kit**
- **1st Grade – Plant, Air & Weather Kits**
- **2nd Grade – Balance & Motion, Pebbles & Sand**
- **Science Notebooks – Students learn to be descriptive and reflective**

3-8 Science Fusion

- **Range of "Interactive Instructional Options"**
- **Grades 3-5 deliver Inquiry based lessons**
- **Grade 6-8 utilize more traditional lab experiments**
- **Three levels of differentiation – Directed, Guided and Independent inquiry**
- **Flip Charts (small-group, hands on), Digital Lessons and Virtual Labs, Write in Textbook**

Additions to 6th Grade Gifted Science – Mr. Fitzpatrick

- **Articles, documentaries, and current events**
- **STEM activities - Crank and Gear creations, Towers & Air powered vehicles are among examples**
- **Rube Goldberg Machines**
- **Eco Systems**
- **Computer Coding**

Additions to 7th and 8th Grade Gifted Science – Ms. Kelly

- **Supplementing Science Fusion with FOSS and other teacher prepared Lab Experiments**
- **Several Large Projects in addition to Fusion Curriculum**
  - **Mitosis**
- **Participation in PJAS**

Elementary Technology

- **ISTE Standards – 4 C's (Communication, Collaboration, Creativity & Critical Thinking)**
- **Age Appropriate Digital Citizenship each year**
- **Internet Safety and Security**
- **Coding Skills**
- **Digital Story Telling to support core subject areas**
- **New Maker Spaces!**
  - **Ozobot Bits, Snap Circuits, 3D Scanner, 3D Doodler, Rok Blocks**

Elementary Engineering Activities

- **K-6 Teachers receiving PD from The Center for STEM Excellence at The College of New Jersey**
- **2016-2017 All 5th Grade Teachers**
- **2017-2018 All K-2 Teachers**
- **2018-2019 All 3-4 and 6th Grade Teachers**
- **Design Based Pedagogy and utilizing Design Briefs**
- **"Make & Take" Sessions**

1st-5th Grade SIP STEM Activities

- **Maker Space – a variety of items are available to students to create**
- **Little Bits - students are given challenges to complete with these materials**
- **Inventions – students participate in a unit where they create an invention and present it to their peers**
- **3D printer – students use when they have a problem, they are encouraged to create their own solutions**
- **FLL – First Lego League**
- **K'nex challenges**
- **City of the Future - students create a city of the future**

Middle Level Technology

- **21st Century Skills**
  - **Communication, Collaboration, Critical Thinking & Creativity**
- **Digital Citizenship**
  - **Cyber Bullying**
  - **Private vs. Public Info**
  - **Norms on Social Media**
- **Coding**
  - **App Creation, Python, Scratch**
- **Desktop Publishing such as Photoshop**
- **Google Apps for Education – Docs, Slides, Sheets**

Middle Level Engineering

- **Exploratory Rotation – 45 Day Marking Period**
  - **Model Bridge Project**
  - **Egg Crash Car**
  - **Manufacturing – 3D Printer, CNC Router**
  - **Robotics**
- **Full Year STEM Class – 8th grade only**
  - **Aero Unit – Water Bottle Rockets**
  - **Alternative Energy**
  - **SeaPerch Underwater Robotics**
  - **Rube Goldberg**
  - **Robotics**

High School Science

- **Honors Level Courses in Bio, Chem and Physics**
- **AP Bio, Chem, Physics 1&2**
- **Biotechnology/Microbiology**
- **Anatomy and Physiology 1 & 2**
- **PJAS**

High School Technology

- **Multiple Coding Courses**
  - **Java, C++, AP Comp Sci**
- **Web Page Design**
- **Graphics and Photography Courses**
- **Mobile App Development**
- **Club participation and Competitions**
  - **DECA – Finance, Marketing and Business Management**
  - **FBLA – Future Business Leaders of America**

High School Engineering

- **Bensalem Designed Engineering Courses**
  - **Engr 101- Foundations of Engineering**
  - **Engr 102 – Applied Engineering**
  - **Engr 103 – Industrial Design**
- **CAD**
- **Project Lead the Way – "AP" level engineering courses**
- **STEM Guitar**
- **FIRST Robotics**

K-5 Math

- My Math – Year 2
- Imagine Math – Currently at Rush, Faust, & Cornwells, district wide in 2018-19 for grades 3-6.
- Hands On Equations – 5th Grade

Imagine Math

- Computer-based, but with live teacher support
- Grade 3 – HS Geometry
- Students move at their own pace
- LIVE teacher interaction available 24/7, connection takes no longer than 2 minutes.
- Benchmarking + individualized "Pathway"

6th Grade GT Math

- Glencoe Math Accelerated + Aleks
- Curriculum includes topics from 7th-8th Grade PA Core
- Additional PA Core 6th Grade topics infused as needed.
- 100% Proficiency on 6th Grade PSSA (97% previous 2 years)

7-12 Math

- Glencoe Math
- Algebra 1 offered as low as 7th grade
- Geometry Offered as low as 8th grade
- Several Math electives offered at BHS, including Financial Algebra, Statistics, Calculus, and Intro to College Algebra
- AP Calculus & AP Statistics

of students passing Algebra 1 Keystone

School Year	6th	7th	8th
2013-14	0	0	163
2014-15	0	0	151
2015-16	1	34	157
2016-17	0	32	113

Math Acceleration

- Start with the END in mind!
- Goal: Maximize AP Course offerings & Connection /w Holy Family University
- How do we get there?

"Math to the MACS" Program

- MACS: Mathematics Accelerated Course Sequence
- Allows for 8th grade students to take Honors Algebra 2 @BHS and Honors Geometry @ Shafer in the same year
- Criteria includes a minimum MAP RIT score, Algebra 1 Keystone Exam score, Teacher Recommendation, and overall grade performance
- Criteria developed based on past experiences

MS Geometry

- Currently only offered at Shafer
- District plans to offer Geometry at Snyder within next 2-3 years.
- Criteria being developed beginning in 5th grade for an accelerated program to prepare non-GT students.

IXL

- Currently used as a supplemental tool for 7th Grade Algebra 1.
- Addresses 7th grade PA Core Content for PSSA Review.
- Weekly assignments counted as a homework grade.
- 80% mastery required of each skill.

Elementary WIN Period

- "What I Need"
- 30 minutes/day in grades K-6
- Students grouped based on data

Secondary WIN Period

- Grades 7-8
- Extension of morning Homeroom period
- Khan Academy
- MAP Skills
- Focus on Math, Reading, Vocabulary, & Language Usage