FULL STEAM AHEAD

BEVERLY HILLS UNIFIED SCHOOL DISTRICT

October 30, 2015 - STEM Symposium
The BHUSD STORY

• Introductions
• Getting Started
• Board Approval
• Research Process
• Year 1
• Year 2
• Year 3
• Ongoing Challenges and Next Steps
GETTING STARTED

• A New Superintendent and a New Chief Academic Officer
• Superintendent’s Advisory Group
• Needs Assessment in the District
RESEARCH PROCESS

• Research for Rationale
• School Visits
• Curriculum Research
• Meetings with Staff
• Potential Gains/Losses: Current vs. Proposed Curriculum
BOARD APPROVAL PROCESS

• Academic Advisory Process: August – November – April

• Proposal to Explore: November

• Proposal to Implement: May

PROPOSAL TO FORM A COMMITTEE TO EXPLORE STEM INTEGRATION AND ACADEMIES

PROPOSAL: The Superintendent seeks to form a committee of stakeholders who will formally explore all aspects of STEM integration at the middle school level, with a focus on the academy structure as a delivery model.

BACKGROUND: An analysis of the last ten years trends in the economic workforce has led our two Presidents to launch educational campaigns that address the diminishing pool of students majoring in Science, Technology, Engineering, and Mathematics (STEM) disciplines (American Compt. Act, 2007; Educate to Innovate, 2009). As a vehicle for strengthening our capacity to innovate and remain competitive in a global economy, supporting STEM in our schools is a priority at the national and state levels. Although there has been an increase in public schools coming to provide instruction in STEM activities, there are still a number of challenges which reduce overall performance in a global economy.

RATIONALE: Reaping the benefits of STEM education is critical to the continued growth and success of our nation. In past years, a number of achievements have been made:

• Common Core Standards and National Science Education Standards:

  • Science:
    • Connects to middle school science and mathematics.
    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of scientific inquiry and evidence-based reasoning.

  • Mathematics:
    • Connects to middle school mathematics.
    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of mathematical reasoning and problem-solving.

  • English Language Arts:
    • Connects to middle school English language arts.
    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of reading comprehension and writing.

  • History/Social Studies:
    • Connects to middle school history/social studies.
    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of understanding historical and social contexts.

Medical Science Academy: Launch of the medical science academy has shown mixed performance in the past two years. Last year, a number of efforts were made to achieve:

• Common Core Standards and National Science Education Standards:

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    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of scientific inquiry and evidence-based reasoning.

  • Mathematics:
    • Connects to middle school mathematics.
    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of mathematical reasoning and problem-solving.

  • English Language Arts:
    • Connects to middle school English language arts.
    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of reading comprehension and writing.

  • History/Social Studies:
    • Connects to middle school history/social studies.
    • Provides a coherent and sequential framework for instruction.
    • Emphasizes the importance of understanding historical and social contexts.

District Mathematics Committee: Focus on improving the curriculum and instruction to meet the needs of all students.

Teacher Collaboration and Articulation: Teams of high school department chairs and special area teachers work together to create a cohesive curriculum.

Curriculum Revisions: Improved pacing and high school, with a focus on 8th to 9th grades.

Professional Development Resources:

• Professional Development: Decrease in STEM-related professional development opportunities and resources.

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Next Steps: Changes in the curriculum and instruction to meet the needs of all students.

Final Thoughts: Although we believe our educational programs in science, technology, and mathematics are on the rise, we continue to see gaps in the programs for our students. The time is now to explore the integration of STEM in the middle school level, with a focus on the academy structure as a delivery model. This commitment will work to increase the number of students who are exposed to STEM programs and resources.

References:

1. Preliminary Education Commission, California, 1998. Noncompetition of

2. Western Association of Schools and Colleges.

3. A comprehensive STEM academy and STEM education.

4. NYS Board of Regents.

5. CTE, 2011. Mentoring youth and young adults. nysboardofregents RegentsEducation.


7. Mentoring the best results of the STEM education system. NYSBulletin.

8. Board of Education.

YEAR ONE

STEM INITIATIVE
BOISE STATE UNIVERSITY
May 14, 2019

PROGRAM PROPOSAL: Introduction to STEM (FYI)

WHO: MIDDLE SCHOOL TEACHERS – ALL FOUR SCHOOLS

WHAT YOUR ONE LOOKS LIKE: A Dual Approach

STAGE 2: April – May STEM COURSE: The STEM+C middle school programs enable teachers to work together to engage students in STEM education. Implementing STEM+C ideas will allow every 5th grade student to participate in STEM activities at school. As a result, these courses focus on STEM history and projects.

STAGE 3: DISTRICT TRANSITIONAL QUESTION: Engage site administrators, district or site-based council or various other educational initiatives to engage Class I, 5th grade, students in the 5th grade school district.

STEM 2 IMPLEMENTATION:

To ensure STEM+C will provide curriculum materials from various sources (physical education, discovery learning, and the Project (Gateway to Science), both of which include curriculum, research, and teachers. Training in the district is currently being defined by the California 51

The new curriculum will include a curriculum from a national center for curriculum and instruction.

1. Text is from the STEM+C project. 

ACTIONS, TIMELINES, AND ESTIMATED COSTS:

<table>
<thead>
<tr>
<th>Action</th>
<th>Timeline</th>
<th>Estimated Cost</th>
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<tbody>
<tr>
<td>Recruit 5th-grade teachers in STEM</td>
<td>September-December</td>
<td>$20,000</td>
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<tr>
<td>Commitment to districts to research best practices in STEM</td>
<td>December 2019 - 2020</td>
<td>$10,000</td>
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<tr>
<td>Engage and interest communities in STEM</td>
<td>December 2019 - 2020</td>
<td>$15,000</td>
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<tr>
<td>Engage middle school teachers in STEM</td>
<td>January 2020 - March 2021</td>
<td>$20,000</td>
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<tr>
<td>Engage communities and corporate sponsors in STEM</td>
<td>April 2020 - May 2021</td>
<td>$15,000</td>
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<tr>
<td>Coordinate with middle school administrators and teachers on STEM curriculum and instructional planning</td>
<td>July 2020 - February 2021</td>
<td>$10,000</td>
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<tr>
<td>Coordinate with FNS as the development of a Summer STEM program for middle school students</td>
<td>February 2021 - May 2021</td>
<td>$5,000</td>
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<tr>
<td>Coordinate middle school teacher schedules that supports the start of STEM in the 5th grade</td>
<td>June 2021 - August 2021</td>
<td>$2,500</td>
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A.5 AND HIGH SCHOOL STEM PROGRAM:

Although our focus is to be focusing on our middle school STEM program, we view this approach as a part of a larger STEM plan. We have also begun planning towards a program in order to create an authentic vision of STEM in future following up in our progress at Beverly Hills School’s A.5.

A.5 ACADEMY APPROACHES - increase this important source of introductory computer science oriented - AP Computer Science A and AP Computer Science B were selected to continue the STEM program in a way that would be beneficial for students.

B. HANDS-ON CURRICULUM: This course was approved as a \-oriented activities, techniques, and methods in the classroom. The teacher of the course is a teacher who has been approved to teach STEM in the classroom. The teacher of the course is a teacher who has been approved to teach STEM in the classroom.

E.3 INNOVATION: The project has been focused on creating a new initiative that was the most effective for teaching learning. Teacher, including the student, asks whether it is already been attempted in computer science. The teacher of the course is a teacher who has been approved to teach STEM in the classroom.

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FINISHING UP:

In order for STEM+C to be successful, the project must be sustained throughout the academic year. This project must be sustained throughout the academic year. The secondary role of STEM+C is not only to support STEM+C, but also to ensure that the teachers involved in the project have the resources and support to effectively implement the program. The teachers involved in the project have the resources and support to effectively implement the program.

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YEAR ONE

• Teacher Leadership
  • Collaboration Time provided
  • Latitude given to teachers to make decisions
• Curricular Changes
• Professional Development
• UC approved courses
YEAR ONE

• Ongoing Collaboration and Training
  • PLTW Training
  • Foundation Content Building
  • Two viewpoints experienced: student and teacher
  • Visits to university engineering labs
  • Team building within the teachers in the department
YEAR ONE

STEM Coordinator Duties:

- Ordering Supplies
- Planning Curriculum Meetings
- STEM Curriculum Planning, including K-5 Launch
- Community Events
- Liaison between administration and teachers
- Community Presentations
- Field Trips
YEAR ONE

Co-teaching with English Language Arts:

• 1 site only
• STEM & ELA teacher collaboration
• 1 day per week dedicated to STEM related ELA
• Common Core ELA
FIELD TRIPS

• NASA Jet Propulsion Laboratory

• California Science Center
YEAR ONE
YEAR TWO – AN EYE TOWARD PATHWAYS

Pathway: Media & Design Arts (Beverly Hills USD)

Pathway: Information Technology (Beverly Hills USD)

Pathway: Therapeutic Services (Beverly Hills USD)

Health Science & Medical Technology – Medical Science

Pathway: Computer Science (Beverly Hills USD)

Pathway: Architecture & Engineering (Beverly Hills USD)
Pathways: Grades 6-12

- Biomedical and Medical Science Academy
- Green Architecture and BHHS Architecture
- Programming and Digital Media
- Visual and Performing Arts Academy
Pathways: Computer Programming

- Coding Class
- HTML 5, CSS, Java, Javascript to create video games.
- Arduino programming
- Integrated CS in 6th grade STEM courses as extension to robotics
- Pathways to HS CS, Digital Media Courses and Robotics
Medical Science Academy

Colleen Lynch, Coordinator and Teacher
Medical Science Academy

UC approved Courses
• Introduction to Medical Science
• Biotechnology

Aspects of Academy
• School-within- a- school model
• Academy Teachers- team of teachers supporting students
• Community partners- Cedars-Sinai Medical Center Teen Volunteer Program, Amgen and more
• Guest speakers- Medical and Research professionals
• Academy events-2 events per year
• Student leadership roles
Additional MSA Partnership and Opportunities

• Cedars Regenerative Medicine Institute- Research Week (stem cell)
• Osborne Head and Neck Institutes- Scholars program (1 month mentoring)
• UCLA Volunteering
• National Academy of Future Physicians and Medical Scientist
• Internships, job shadowing and paid positions
STEM/arts to STEAM

Origami and Engineering

Alexander Calder - Engineer/Artist

Adding Art to STEM with Levers, Balances and Mobiles

By: Helen Hixon & Angela Brizuela

October 29
2015 STEM Symposium
Anaheim, California
YEAR TWO

• STEM Expo
• Hackathon
Year Two: K-12 Professional Development: BevEx

BevX
Tech and Learning Conference: Innovating for the Future
November 3, 2014 - Beverly Hills High S

K-12 Agenda

KEYNOTE PRESENTATION
KL Peters Auditorium - Beverly Hills High School
8:00AM-9:30AM

Anywhere, Anytime, Anyone: Transitioning Toward 21st Century Learning
Alec Couros, Ph.D., University of Regina, Canada
We are currently exiting the age of personal computer and entering a new mobile real technologies now provide us with the tools to drastically transform our learning environment first time in history, learners now have the technical ability to learn anywhere, anytime, a Yel, transitioning away from our industrial model of education will not be easy, and leave questions. What does it mean to be literate? What is the role of digital fluency in teaching? How can social networks be used to support student learning and teacher professional development? The presentation will outline our new technological reality, feature examples of how social media and devices can transform learning environments and guide participants in examining the pitfalls of 21st century learning.

Alec Couros is an Associate Professor of educational technology and media at the Faculty of Education of the University of Regina. He has given hundreds of workshops and presentations, nation internationally, on topics such as: open learning, networked learning, social media and digital citizenship, and critical media literacy. His graduate and undergraduate courses future educators understand how to use and take advantage of the educational potential of technology in a connective way.

SESSION 1
9:40AM-10:30AM

Introduction to 10X Thinking and Google for Education
Location: Baker Theater
Caren Caputo - Google for Education

Apple: What’s New with Apple Education and Leveraging Apple’s Ecosystem
Location: Jon Chernin Lecture Hall
Sanjay Berwinkle, Senior Systems Engineer Apple Education Join Apple Education Senior Systems Engineer, Sanjay Berwinkle, to find out what’s new in education. iOS 8 and OS X Yosemite, including better document workflows, easier AirPlay setup and sharing between devices, and the new Device Management tool. Learn how iTunes U courses can let teachers give students a customized learning experience, and how the iBooks Author can bring every subject to life for students by allowing teachers to author their own interactive, Multi-Textbooks.

Microsoft Solutions for Education
Location: STC 104
Anita Shukumana,Learning Experience Manager Microsoft
Surface Pro 3 with wireless screen transition and education solutions for Office 2013.

Round Table Sessions
1:30PM-3:00PM

Roundtable 1: Bring Your Own Device Policy Development - Christian Furrer, Principal, BV and Kathy Schaefer, Principal (iSchool)
Location: STC 104
Discuss and draft policy for students to bring their own device(s) to school for learning.

Roundtable 2: The Secret Life of Teenagers (and Technology) - Julie Goler, English Teacher (BHHS) Students Location: STC Jon Chernin Lecture Hall
Learn what students really think online and how these digital natives use technology for educational and social purposes.

Roundtable 3: The Future of Technology in the District - Christian Hertz, Director of Student Services and Special Projects Location: Room 202
Panel discussion: The Future of Technology in the District - Christian Hertz, Director of Student Services and Special Projects Location: Room 202
Discuss the making of the district vision for integrating technology.

Roundtable 4: Tech Trends for our Students and Beyond - Jon Tedford, Andrew Wern, The Futures Company: http://www.thefuturescompany.com/trendspective.html
Location: Room 202
Come learn what the Gen Xers, Gen Y (Millennials), and Gen C tech users are and will be, and participate in a tech trends conversation aimed at broadening your perspective on our students and technology.
YEAR THREE

• Summer Professional Development: Workshops and Space Camp
• MS Tech Courses
• K-5 Program
• MSA Expansion
• Capstone Project

STEM INITIATIVE
BEVERLY HILLS UNIFIED SCHOOL DISTRICT
March 22, 2019

A STEM F acility Proposal

• Elementary STEM/Technology Program
• Add Grade 9 STEM Elective
• Robotics 2 Technology Center
  • 2 periods of Middle School Technology

Additional Information:
As we move into the final year of the elementary school, we have developed a proposal that addresses the needs of our students and our school community. The proposal includes:

- **Elementary STEM/Technology Program**: This program will provide students with hands-on learning experiences in science, technology, engineering, and mathematics (STEM) through project-based learning, field trips, and guest speakers.
- **Add Grade 9 STEM Elective**: This elective will provide students with an opportunity to explore STEM careers and gain valuable skills.
- **Robotics 2 Technology Center**: The center will offer two periods of technology classes, providing students with the opportunity to learn about robotics and technology.

Addendum 2:
In addition to the above, the proposal includes:

- **Funding for STEM Initiative**: The proposal includes proposals for grants and donations to support the STEM initiative.
- **Curriculum Development**: The proposal includes plans for developing new STEM courses and integrating STEM into existing courses.
- **Staff Professional Development**: The proposal includes plans for professional development opportunities for teachers.

For more information, please visit the BHUSD STEM website or contact the BHUSD STEM office.

Related Website:
http://beverlyhillsunified.org/STEM
YEAR THREE

• K-12 STEM/Arts...STEAM
• Enrollment and Academies
• Discrete and Overlapping Pathways: K-8 and 6-12
• Integrated Curriculum...a 6-12 challenge
Next Generation Science Standards

3 dimensional learning to meet performance expectations:

• Science & Engineering Practices
• Cross-cutting Concepts
• Disciplinary Core Ideas

Ex: MS ETS 1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
ONGOING CHALLENGES

• Girls and STEM
• Funding
• Internships
• Staffing - STEM Credential
• Corporate and Community Partnerships
• Curriculum: Textbooks to Multiple Curricular Materials and Resources
NEXT STEPS

• A new Director of Technology: a unified vision for integrated technology
• Prioritizing Programs
• Maximizing Resources and Funding Opportunities
• Keeping an eye on the present and the future: economic forces driving the job market
Links:

• BHUSD Dropbox of Presentation Materials:
  https://www.dropbox.com/sh/73yvxarr61tqc9q/AACfi8-E9r-oJXWKdsoZxbQza?dl=0

• BHUSD WEBSITE: STEM Updates and Documents:

• BHHS MSA WEBSITE:
  http://bhhs.bhusd.org/apps/pages/index.jsp?uREC_ID=22793&type=u
Thank you from the BHUSD Team:

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• Angela Brizuela, Teacher: abrizuela@bhusd.org