HIGH SCHOOL VISITATIONS

(WITH EMPHASIS ON PROJECT LEAD THE WAY)
REPRESENTATIVES FROM ESTANCIA HIGH SCHOOL

Dr. Dave Martinez
Assistant Principal

Dr. Charlotte Zaremba
Math/Physics

Hayato Yuuki
CTE (Career Technical Education)
EMA (Estancia Medical Academy)
PROJECT LEAD THE WAY

- PLTW is the nation’s leading STEM program. PLTW’s world-class, activity-, project-, and problem-based curriculum and high-quality teacher professional development model, combined with an engaged network of educators and corporate partners, help students develop the skills needed to succeed in our global economy.
When students understand how their education is relevant to their lives and future careers, they get EXCITED!

-PLTW engage student minds while inspiring their Interest in STEM subjects through hands-on learning And real-world problem solving.

“...and that is why our Students are Successful” -PLTW
PLTW students achieve significantly higher scores in reading, mathematics, and science and in some cases have the opportunity to earn college credit. They earn higher GPA’s as freshmen in college and experience a higher retention rate in college engineering, science, and related programs that non-PLTW students.
In 2013, PLTW trained over 3,500 teachers using its rigorous approach. PLTW’s professional development model provides teachers with the program content, pedagogy, instructive skills, and professional networking to help them succeed.

(Dr. Charlotte Zaremba will be attending the PLTW training in the Summer at Cal Poly Pomona for two weeks.)
Over 5,200 schools in all 50 states have adopted the hands-on, activity-, project-, and problem-based PLTW curriculum.

Schools and districts that offer PLTW often report higher attendance rates, increased student engagement in class and extracurricular activities, and a transformation in school culture.
REDONDO BEACH UNION HIGH SCHOOL

PLTW (PATHWAY TO ENGINEERING AND BIOMEDICAL SCIENCES)
PATHWAY TO ENGINEERING

2 SECTIONS offered
- Introduction to Engineering (IED)
- Principles of Engineering (POE)
INTRODUCTION TO ENGINEERING DESIGN (IED)

- Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3D modeling software and document their work in an engineering notebook.

At RUHS,
- As an IED listing, it fulfills the (F) requirement in A-G
- RUHS changed the name to “ID” (Introduction to Design) to fulfill a (G) requirement
PRINCIPLES OF ENGINEERING (POE)

• Through problems that engage and challenge, students explore a broad range of engineering topics including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research and design while learning strategies for design process documentation, collaboration, and presentation.
4 sections offered (planning on adding a 5th due to student popularity)
- Principles of the Biomedical Sciences (PBS)
- Human Body Systems (HBS)
- Medical Interventions (MI)
In the introductory course of the BMS program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person. While investigating the case, students examine autopsy reports, investigate medical history, and explore medical treatments that might have prolonged the person’s life. The activities and projects introduce students to human physiology, basic biology, medicine and research processes while allowing them to design their own experiments to solve problems.
SAMPLE ASSIGNMENT FOR PBS AT R.U.H.S

Students had to create a concept map using the PLTW software program, “Inspiration” to make a concept map about the relationship between chromosomes, genes, and DNA.
SAMPLE ASSIGNMENT FOR PBS AT R.U.H.S

Students working in groups creating a concept map:
HUMAN BODY SYSTEMS (HBS)

Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Exploring science in action, students build organs and tissues on a skeletal maniken; use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration; and take on the roles of biomedical professionals to solve real-world medical cases.
Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; conquer cancer; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.
INTERESTING FACTS ABOUT PLTW (R.U.H.S)

- No textbook
- PLTW gives basic curriculum but no core assessment
- Given basic rubrics
- (Teachers usually develop their own project-based curriculum based on the basic curriculum given)
- Teachers/Students are given all programs needed to be successful in PLTW
- All A-G classes
- Method of Instruction:
  - PROJECT BASED
- At R.U.H.S., most PLTW classes are electives. They offer a 0 period for students to take "CORE" classes so that they can have an extra period for a PLTW elective
- At R.U.H.S., they have a brand new Engineering Lab
- Promoting PLTW to feeder schools
  - Parent night
  - College night
PICTURES OF THEIR ENGINEERING LAB
DA VINCI SCIENCE
PLTW (PATHWAY TO ENGINEERING)
**DAVINCI SCIENCE SCHOOL**

-Only offers the Pathway to Engineering PLTW program

-NO Biomedical

-500 total students

-College partner, El Camino College

-CORE curriculum teachers focus on “content” time

-PLTW teachers focus on “build” time

-Every grade level takes the same classes

-Charter school (no PE) allows for PLTW class in that spot
GRADE 9 AND 10

DVS 4-Year Course Sequence

All students who successfully complete their courses in this sequence will be eligible for UC and CSU systems.

<table>
<thead>
<tr>
<th>Grade 9</th>
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<tbody>
<tr>
<td>English 9</td>
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<td>Intro to Engineering Design (PLTW)*</td>
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<tr>
<th>Grade 10</th>
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<tbody>
<tr>
<td>English 10</td>
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<tr>
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<tr>
<td>Algebra 2</td>
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<tr>
<td>Chemistry</td>
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<tr>
<td>Spanish/American Sign Language</td>
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<tr>
<td>Principles of Engineering (PLTW)*</td>
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GRADE 11-12

Grade 11
- English 11*
- US History*
- Pre-Calculus
- Biology
- Spanish/American Sign Language
- Digital Art [Adobe Illustrator]

Grade 12
- English 12*
- Government*/Economics*
- Calculus*
- Anatomy/Psychology
- College Writing
- Engineering Design & Development (PLTW)*/
  Biotechnical Engineering (PLTW)/
- College Spanish*

*denotes courses which can be taken for college credit
DAVINCI SCIENCE SCHOOL (IED)

Grade 9- Introduction to Engineering Design (IED)
- College credit at El Camino College
- Engineering Technology 12

...In partnership with Northrop Grumman
DAVINCI SCIENCE SCHOOL (POE)

Grade 10- Principles of Engineering (POE)
- College credit at El Camino College
- Engineering Technology 10

...In partnership with Aerospace Corporation
DAVINCI SCIENCE SCHOOL (DIGITAL ARTS)

Grade 11- Digital Arts [Adobe Illustrator]
-Satisfies UC “F” visual art requirement

...In partnership with Olson Visual
DAVINCI SCIENCE SCHOOL (EDD)

(CAPSTONE class)
Grade 12- Engineering Design & Development
-College credit at El Camino College
-Engineering Technology 18

...In partnership with Boeing
DAVINCI SCIENCE SCHOOL

-School starts at 9am -4pm

-From 8am till 9am- Students can meet with their teachers for help/tutoring

-2:45pm-4:00pm, students choose 2 seminars
- Aerospace Engineering  - Computer Science Engineering  - Flight School (Simulator)
- Digital Electronics  - Civil Engineering and Architecture  - Submarine Robotics  - Crossfit
- Youth and Government  - Robotics  - American Pop Culture  - Cooking  - Mock Trial  - MESA
- Mechanical Engineering  - Athletics  - Peer Mediators  - Soccer  - Art Studio
- School Leadership  - Sign Language  - Guitar  - Yearbook  - Dance  - Film as Literature
- Student Tutors  - Yoga  - History of Rock and Roll  - Math Support  - Drama  - Work Experience
- English Language Development  - Sewing

- Students choose two seminars per semester. Each seminar meets twice per week from 2:45-4pm.
DAVINCI SCIENCE SCHOOL

-Class of 2013 Data:
- 98% graduated
- 98% UC/CSU eligible
- 98% accepted to college
- 78% accepted to 4 year Universities

- Baylor University
- Boston University
- Brown University
- Columbia University
- Georgia Tech
- Harvard University
- Howard University
- Johns Hopkins University
- LMU
- MIT
- Marquette University
- New York University
- Northwestern University
- Oregon Institute of Tech
- Stanford University
- Syracuse University
- USC
- Yale University
EL SEGUNDO HIGH SCHOOL

PLTW (PATHWAY TO ENGINEERING AND BIOMEDICAL SCIENCES)
EL SEGUNDO HIGH SCHOOL PLTW PROGRAMS

- Pathway to Engineering
  Introduction to Engineering (IED)
  Principles of Engineering (POE)

- Biomedical Sciences
  Human Body Systems (HBS)
The school tour was given at the end of the day, and the IED class that we went to, had a substitute for the day. Not too much information, but some great pictures of the Engineering classroom/program.
PATHWAY TO ENGINEERING

- Pathway to Engineering
  Introduction to Engineering Design (IED)
  Principles of Engineering (POE)

Their classroom is a “refurbished” woodshop classroom turned Engineering workshop.
EL SEGUNDO HIGH SCHOOL
EL SEGUNDO HIGH SCHOOL

-In the back of the classroom, in addition to their Engineering workshop, they have a loft for private group work. Equipped with a large table, chairs, and projector.
Classroom Projects:
EL SEGUNDO HIGH SCHOOL

• Classroom setup
EL SEGUNDO HIGH SCHOOL
Pathway to Biomedical Sciences
Human Body Systems (HBS)
Examples of clay art manikin type projects:
EL SEGUNDO HIGH SCHOOL

Crime scene identification project:
EL SEGUNDO HIGH SCHOOL
EL SEGUNDO HIGH SCHOOL

Computer lab within the classroom: