Building an innovative educational environment

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Eastside Preparatory School

GLOBAL INNOVATION EXCHANGE

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EASTSIDE PREPARATORY SCHOOL

Educational Objective: Prepare students for the future

Thought Experiment:

Imagine we had perfect future prediction ability in 2009

- What would we have built in 2009 to prepare students for their careers in 10 years?

- What would we have taught them?

Constraint: The technical capability of 2009

- The world compared to 10 years ago, some examples
  - Processing power has increased 900%
  - Storage capacity has increased 1,500%
  - Digital voice assistance usage 0% ➡ 46%
  - Smartphone usage 16% ➡ 81%
    - Mobile internet speeds 3.1 MBPS ➡ 1,300 MBPS
  - Electric Cars Sold (US) 2008-10: 4,700 ➡ 2018: 361,000

Conclusion: It is not possible to directly prepare students for the future

- The world is changing faster and faster. The target isn't clear.
- Today's technical skills will be outdated many times over
- Tools today are not powerful enough to do what is needed for tomorrow.
- Many skills employers are looking for are recently invented or recently possible.

Example, Student Objective: To be a Web Application Developer after College

Graduating College in 2019, means we would have been building curriculum in 2009 for…

- Web Developer Skills needed today
  - HTML5, released 2014
  - React Framework, in moderate use by 2016
  - Node.js and npm, 2010
  - Microservices architecture, on the radar 2016
  - Websockets, released 2011
  - Webpack, 1.0 in 2014
  - Github, started in 2008
  - Cloud virtual machines, released 2006
- *All of the above are also many versions beyond where they started*

It is not possible to have prepared a student with the skills needed to succeed in that career in high school.

It is even worse than that…

Many great jobs of today didn't exist in 2009 either. There was no way to prepare a student for them.

- Data scientist
- Self-driving car engineer
- Artificial Intelligence specialist
- Machine Learning Specialist
- Mobile App Developer
- Social Media Manager
- Cloud Architect
- DevOps
- Search Engine Optimization
- Tech Ethicist
- User Experience Designer
- Drone Operator or Programmer
- Quantum Computer Programmer
- Blockchain contract programmer

Your objective as a school is ***still*** to prepare students for their futures

There is a solution!

- As a high school, you can prepare for college
  - Preparation for college is known – knowledge about those academic subjects can jumpstart success.
  - Student self-advocacy pays dividends
- Teach to the timeless. What does not change?
- Adult culture matters, students will emulate what the observe
- You must equip students with the tools to understand and thrive in the future when they get there

Aside:
Innovation is not scripted, it happens with the right environment

- Belief in human progress
- Diverse ways of thinking engage with each other
  - Product
  - Design
  - Engineering
  - Promotion
- There is a worthwhile problem to solve
- There are tools and resources available
- When domains of expertise are joined
  - Bio-tech
  - Data Science
  - Physical Chemistry
  - Biomimicry

Eastside Prep Environment

Supporting Culture

- High Trust environment
- Diverse ways of thinking
- Relationship based
- Frequent feedback
- Choice & Agency
- Constantly evolving

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Success for students has always required:

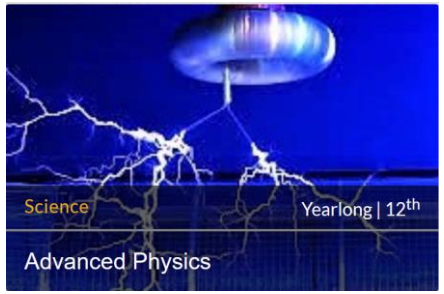
- Working with diverse teams of people
- Learning new things
- Assessing your environment
- Breaking large problems and projects into smaller ones
- Commitment to long term projects
- Exposure to cutting edge technology
- Communication
- Moving from problem admiration to problem solving
- Leveraging and deepening each student's interests

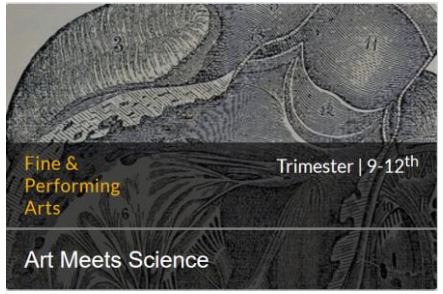
Eastside Prep Example: Pedagogical Posture

Diversity in ways of thinking

Human Progress

Agency and Choice





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Eastside Prep Example: Open Makerspace

Build your ideas

Foster creativity

Reinforce the value of iteration

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Eastside Prep Example: Academic Teams

Middle School Robotics

Upper School Robotics

Fusor Project

Electric Car Conversion

Broadcast Club

Debate Team

Math Team

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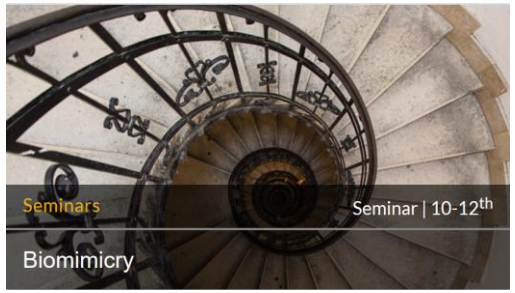
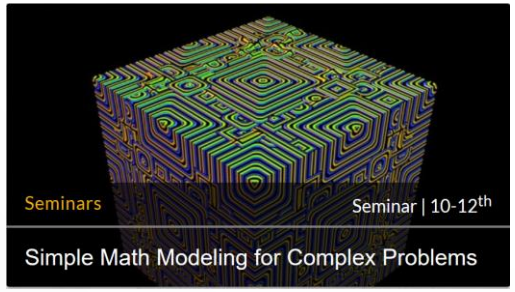
Eastside Prep Example: Seminars

Introduction to the independent curriculum

Six meetings with six students and one to two faculty members. Once a week for one hour.





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Eastside Prep Example: Independent Curriculum

Independent Study

- Machine Learning, Crime and Public Policy, Climate Crisis, Algorithms in Genome Sequencing, …

Senior Thesis

- Immunotherapy in Cancer Treatment
- Behavioral Economics

Senior Project

- Electric bicycle build,
  writing a novel, voting security,
  producing an album,
  building a business, mobile app,
  video game design and build

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~~Your objective as a school is to prepare students for their future~~

Your objective is to:

Engage and empower students to solve problems with the tools available.

"We coexist in a state of future anticipation that cannot be predicted but for which we claim (or are expected) to be preparing our students"

– Terry Macaluso, PhD, Head of School, Eastside Preparatory School (NAIS Magazine, Spring 2018)

- You must equip students with the tools to understand and thrive in the future when they get there

- Only students can prepare themselves for their futures
  - Success comes from reacting to your environment not having the right answer

Thank you

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