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# Why robotics in Education?

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*“A Picture Is Worth A Thousand Words”*



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# Why robotics in Education?

- Emotional engagement
  - Interaction with physical devices
  - Learning by doing
  - Multi-disciplinary learning
  - Constructivist approach
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# Why robotics in Education?

- Robots have an intellectual and emotional appeal that transcends any other type of engineered product
- robots inculcate an interest in science and increase self-esteem, as well as teach basic life skills such as problem solving, decision making, goal setting and logical thinking.
- Robots represent a practical application of physics, computer science, engineering, and mathematics, and may be used to speculate about concepts of humanities
- Robotics in the classroom offers teachers the opportunity to bring together many different areas of study

(adapted from Ken Berry, Founder of RoboEducators)

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# Why robotics in Education?

- It also allows students the chance to realize their full potential, moving from possibility to reality through a hands-on process that uses their many skills as a human being including cooperative problem solving and critical thinking.
- Robot can also used to teach humanities (like ethics, philosophy, etc.)
- Robotics its-self is a discipline worth to study because the robots are no longer restricted to the factory floor or hazardous environments, robots are making their way into human environments.

(adapted from Ken Berry, Founder of RoboEducators)

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# What robotics can teach?

- Endow rigor
    - Learn something real
    - Teach the realities and depth of science
  - Design
    - Use tinkering to explore
    - Connect high and low level issues
    - learn uncertainty and variability of the world
  - Work in teams
    - competitions are an exciting performance assessment
    - foster team spirit and camaraderie
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# Constructionism and Robotics

- Constructionism adds to constructivism (learning as “building knowledge structures”) the idea that learning is felicitous in a context where the learner is consciously engaged in constructing a public entity, whether it’s a sand castle on the beach or a theory of the universe
  - The Lego Robotic system leads to a bottom-up oriented developing of the first phase: starting from the basic brick, which defines the fundamental standard for all the other elements of the Lego kits, you can build more and more complex architectures combining simpler, already realized parts and a robot is a public entity.
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# Constructionism and Robotics

- Learning is open-ended
  - There are not right and wrong answers
  - In a taught class the learning is limited, in a project class there is no upper limit to learning.
  - In a design competition, students are encouraged to explore fields and solutions beyond topics covered in class.
  - Design teachers often grade as B the meeting of the class requirements and as A if the requirements are exceeded in some way
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