Building with Biology

Activities and Conversations about Synthetic Biology
Should We Edit the Genome?:
Teaching Social and Ethical Implications in STEM

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Philosophy: what is it, really?

Mystery Box Exercise!

- Is there something in the box?
- Is there a right answer?
- What is in the box?
- Are some answers better than others?
- How do we determine those?
- That is philosophy!
Philosophy

- Philosophy of Science
- Philosophy of Biology
- Bioethics
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social and ethical implications

Concerns
• Difficult to teach
• Broader focus and understanding required
• Critical thinking required
• New concepts (e.g. should, ought, moral responsibility, blame, guilt, etc.)

Remedies
• Case studies
• Analogies
• Thought Experiments
• Role Playing
• Discussion
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Questions and Distinctions
• What?
• Who?
• Where?
• Why?

Areas for Moral Evaluation
• Agent(s)
• Consequence(s)
• Action(s)
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The Person/Agent

The Action

BAM!

The Consequences
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1) What?
   • What are we trying to accomplish?
   • How much about what we are trying to accomplish do we know?
   • What don’t we know?
   • How much do we need to know to safely move forward?
   • Are we thinking broadly enough?
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2) Who?
• Who is affected by this?
• Do only humans matter, or should animals count as well?
• Will animals be affected by this?
• How so?
• Is there another alternative that does not negatively affect animals and humans?
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3) Where?

• Where would the project be implemented?
• How does it affect the surrounding environment?
• Do we have a responsibility to protect the environment?
• What role does the environment play in our daily life?
• How important is a healthy environment?
• Is there an alternative that protects the environment?
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4) WHY???

• Why are we engaged in this project? Why do we need it?
• What benefits does it produce and to whom?
• Who/what is affected by this project?
• What are the possible unforeseen harms?
• How much does the project have to benefit to outweigh the possible harms?
• Are there alternatives?
• Is there good reason to look into alternatives?
• Can the project be modified to lessen concerns?
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social and ethical implications

• By understanding a project in a broader context, we are in a better position to evaluate the project
• By evaluating the project, we have come to understand the project to an even greater extent
• The closer we get to fully understanding a project, the less likely we are to harm others, damage the environment, waste resources, lose money, etc.
• And, we have gained a better understanding of the world around us
• SCIENCE!
Let’s Do Philosophy!:
teaching ethical and social implications in STEM

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