Top 10 Scientific Achievements: Lesson Plan

Handouts:
1. 2 page worksheet; 1st page a grid for fleshing out top 10 scientific achievements, 2nd page (later) for defining scope/aim of course

Assignments
Part 1: Propose list of top 10 scientific achievements
1. Teams construct list of their 10 in-class
2. Discussion has teams defend their ideas, clarify their criteria, develop understanding of how science has contributed to solutions to global challenges in the past

Part 2: Frame course title: Global Challenges, Scientific Solutions
1. Teams return to small group to define terms in course title, post to SPARK for reflection and critique

Assessment
(0,1,2,3) on submitted work. Keep it simple to start; introduce peer review on Thursday.

"meta" lessons
Define a scientific advancement
Assign 'value' to advancements based on societal (or other) impact
Clarify what they consider valuable

DAY 1
Inception
Present a brand-new scientific advance, pulled from news. Suggestions: Discovery of extra-solar system rocky planet, relativistic effects needed to explain chemical potential of lead-acid battery, latest extremophile bacteria, etc. Ask if they think this/these will wind up being among the top 10 of all time. <5 minutes>

Engagement
Distribute 1st page of handout to teams; explain that it is an un-graded worksheet for them to use in preparing their list of top 10 scientific achievements. <15 minutes>

Scatter-collect responses - each team submits one new one, then collect any others that are still floating around. <5 minutes>

Challenge/Defend process: Are there any on the board that don't deserve it? <? min>

Research

Is there any organizational structure to what is obtained? Seek organization based on impact or type of advance? Social / Technological / Fundamental Insight ?

"What were your criteria for deciding if something IS a scientific achievement?"
    Here seek/guide to responses about rigor, order, data, things dealing with the natural world, perhaps define by negative (i.e. what's /not/ scientific). Example to help clarify might be Fire / Internal Combustion Engine / Thermodynamic Theory. Which, if any, is a scientific achievement?

"What were your criteria for assigning value to a scientific achievement?"
    Here allow full freedom of responses about their value - this will very much help us decide what cases to pursue later. Insist on clarity, and insist on them defending their assignment of value. Encourage moderated debate, and not necessarily consensus. Consensus on some points would be good, to help them write their final statements

This should end with about 10 minutes left in the class.

Create

Hand out 2nd sheet, also not to be turned in but rather for developing their firm statements defining the iCons I course. Explain what/how they should submit their final statements in SPARK, and give them the remainder of the class to finish them.

NEXT DAY

Reflection on previous day's activity
Open discussion from Research:

"What were your criteria for deciding if something IS a scientific achievement?"
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