

SCIENCE AND TECHNOLOGY POLICY RESEARCH WITH DR THOMAS S. WOODSON

TALKING POINTS

KNOWLEDGE

1. What are the two criteria currently used by the NSF to award research grants?
2. What is machine learning?

COMPREHENSION

3. Why does Thomas describe reliable power as a social, rather than a technical, problem? Why did Thomas' experience working in Nigeria make him want to study public policy rather than continue in electrical engineering?
4. Why is it important that scientists and researchers come from diverse backgrounds?

APPLICATION

5. How can machine learning help in science and technology policy research? What problems may researchers face when using this approach?

ANALYSIS

6. Why do some groups of people in society have lower access to resources and opportunities than others?

EVALUATION

7. Why does it matter who receives the benefits from scientific research?
8. What are the limitations of using only abstracts and project reports to assess the broader impacts of research?

CREATIVITY

9. How could you add to Thomas' study to discover more about the broader impacts of research?
10. What could funding agencies do, based on the results of Thomas' research so far, to improve the way they allocate research grants and reduce inequalities in the way research benefits are distributed?

ACTIVITY

Divide your class into two groups, and prepare to hold a debate. Allocate groups to argue either FOR or AGAINST the chosen debate topic. Groups should discuss and research their topic, preparing points for the debate.

- **DEBATE 1:** "Research grants should only be awarded to projects with clear positive broader impacts".
THINK ABOUT: Examples of different types of research (including curiosity-driven or blue skies research) and what the impacts have been, how research grants are awarded and broader impacts are assessed, the limited availability of research funds, etc.
- **DEBATE 2:** "Problems resulting from climate change can only be solved with technical research and solutions".
THINK ABOUT: The role of technical solutions (for example new technologies for clean energy, and other ways to reduce emissions) and policy solutions (for example how different groups of people can access new technologies, or change their lifestyles) in tackling climate change, etc.
- You could also choose different global challenges to discuss in debate 2, such as global food security, poverty or healthcare.
- Hold the debate, allowing a set amount of time for each team to make statements, question and respond to the other team. If you need it, here is some further guidance:
www.ablconnect.harvard.edu/files/ablconnect/files/want-to-facilitate-a-debate-in-your-class.pdf

MORE RESOURCES

This *New York Times* article 'Economists Pin More Blame on Tech for Rising Inequality' explores some concerns around new technologies and inequalities in the US:

www.nytimes.com/2022/01/11/technology/income-inequality-technology.html

This TED talk by Amy Hanauer explains some of the reasons why public policy matters:

www.youtube.com/watch?v=iBRxI3KIhJ0

And in this talk, Suzie Sheehy gives examples of where curiosity-driven research (rather than policy or problem-driven research) has had positive broader impacts:

www.youtube.com/watch?v=PlytMrKfOFA