Fractious Problem-Solving Skills (FPSS)

Description

Worksheet describes Five Characteristics of Fractious Problems and Six Skills for Addressing the Characteristics of Fractious Problems To Advance Understanding and Potential Resolutions. Includes a grading rubric and grade sheets.

Abstract

A. Five Characteristics of Fractious Problems

(1) Novel

○ These problems are *generated by rapid advances* in science and technology.
○ We *have not encountered* them before.
○ We *have not arrived at a broadly shared social understanding* of them.
○ We *have not arrived at stable policy resolutions* for them.

(2) Complex

○ These problems are *scientifically complex* because *they concern life*.
○ They are *psychologically complex* because they implicate our *self-understanding* (as moral agents, as agents with free will, as ensouled persons, etc.)
○ They are *socially complex* because they implicate our *understanding of ourselves as social beings*

(members of families, ethnicities, religions, disability/difference groups, species, etc.)

(3) Ethically Fraught

- These problems *evoke significant ethical concerns across diverse and sometimes conflicting religious & secular worldviews*.
- They *concern the most sensitive and profound of human experiences* (procreation and parenting; beginning and end of life; death and dying; illness, disability, and suffering; privacy and choice; survival of individuals and of social groups-families, ethnicities, religions, disability/difference groups, species, etc.)

(4) Public

- These problems *resist confinement to the purely private realm* of individual choice.
- The dividing line between their *private and public dimensions will be controversial and contested.*
- The *dimensions that are contested are those that are ethically fraught*—we strive to protect or advance many, often conflicting values associated with shared human experiences of procreation, parenting, etc.

(5) Divisive

- The above *4 characteristics render these problems socially divisive*.
- We will *struggle to understand and address their novelty*.
- We *struggle with the multiple levels of complexity*.
- Our struggle is *compounded by their ethically fraught nature*—these things really matter to almost all of us across our diverse and sometimes conflicting worldviews.
- Our struggle is *compounded by the contested dividing line between private and public*.

B. Six Skills for Addressing the Characteristics of Fractious Problems To Advance Understanding and Potential Resolutions

(1) Perspectives

Consider *multiple and diverse perspectives*—disciplinary, worldview, life experience—to advance understanding of and potential resolutions addressing:

- *novelty* (multiple and diverse efforts to understand and address)
- *complexity* (scientific, psychological, social)
- *ethically fraught nature* (across worldviews, concerning sensitive and profound)
- *public nature* (contested dividing lines between public and private dimensions)
- *divisiveness* (understand and address incorporating diverse perspectives)

(2) Precedent

Consider *historical analogies to similar or related problems*, including past and current policy resolutions and their rationales, to advance understanding of and potential resolutions addressing:

- *novelty* (we have encountered, understood, and resolved similar or related)
- *complexity* (scientific, psychological, social understood and addressed previously)
- *ethically fraught nature* (we have addressed ethical concerns previously)
- *public nature* (we have defined the public and private dimensions previously)
- *divisiveness* (we have achieved principled consensus resolutions previously)

(3) Prediction

Consider the *predicted future impacts of possible understandings and policy resolutions on all stakeholders*, to advance understanding of and potential

resolutions addressing:

- *novelty* (what are the predicted impacts of possible policy resolutions)
- *complexity* (what are the scientific, psychological, social dimensions of these)
- *ethically fraught nature* (what are the ethical implications across worldviews)
- *public nature* (what are the implications for the line between public and private)
- *divisiveness* (what are the implications for the divisiveness of the problem)

(4) Possibilities

Employ imagination and flexibility to expand the range of possible understandings and policy resolutions, by brainstorming, reflection, role-playing, reference to literature, film, or other devices, to advance understanding of and potential resolutions addressing:

- *novelty* (what are the predicted impacts of possible policy resolutions)
- *complexity* (what are the scientific, psychological, social dimensions of these)
- *ethically fraught nature* (what are the ethical implications across worldviews)
- *public nature* (what are the implications for the line between public and private)
- *divisiveness* (what are the implications for the divisiveness of the problem)

(5) Persistence

Consider social understanding and policy resolutions as part of a dynamic, incremental, iterative, ongoing process requiring persistence in response to changed conditions and to feedback from previous choices, to advance understanding of and potential resolutions addressing:

- *novelty* (some novel dimensions may be addressed later with more understanding)
- *complexity* (more dimensions may emerge and be addressed later)
- *ethically fraught nature* (worldviews may shift with impacts & understanding)
- *public nature* (the line between public and private may also shift)
- *divisiveness* (divisiveness may change as other characteristics change)

(6) Principles

Strive to identify limited, non-comprehensive consensus principles that capture shared understanding and policy resolutions adequate to a persistent process, to

advance understanding of and potential resolutions addressing:

- *novelty* (principles for coping with novelty and uncertainty)
- *complexity* (principles for coping with complexity)
- *ethically fraught nature* (principles that are shared across worldviews)
- *public nature* (principles for defining the line between public and private)
- *divisiveness* (principles for addressing divisiveness)

C. Grading Rubric for Assessing Fractious Problem Skills

- Excellent application of skill - (A grade)
- Proficient application of skill - (B grade)
- Fair application of skill - (C grade)
- Poor evidence of application of skill - (D grade)

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Use of Materials on the OEC

Resource Type

Instructor Materials

Topics

Ethical Decision-Making

Pedagogical Approaches

Discipline(s)

Engineering
Teaching Ethics in STEM