The Legacy Code: The Opportunity Cost

(Year 9 - Ages 14-15)

Lesson 4 of 9

Teacher Preparation

Introduction for Teachers

In this lesson, we shift from Ethics to Economics. Year 9 students are starting to think about careers, money, and independence. We use this to frame health not just as "feeling good," but as a Resource (Human Capital).

- The Concept: When a person has organ failure, their "Bandwidth" (energy/time) is consumed by survival. They pay a high Opportunity Cost—they miss out on education, work, and travel.
- The Donation: A transplant acts as a "System Upgrade" that restores bandwidth, allowing the person to contribute to society again.

Differentiation Note: The math in this lesson (QALYs) is simplified for the classroom but reflects real health economics used by governments to fund hospitals.

Safety and Sensitivity Considerations

- Valuing Life: When discussing "Quality of Life" scores (QALYs), be careful not to imply that a life with a disability or illness is "worth less."
  - Clarification: "A QALY measures health utility (functional capacity), not human worth. Every human is of equal worth, but low health limits what they can do."
- Chronic Illness: Students with chronic conditions may relate to the "Low Battery" metaphor. Validate that managing health is a full-time job.

Teacher Resources

- Visual: (0.0 = Death, 1.0 = Perfect Health).
- Prop: A phone with "Low Power Mode" on (or a battery icon).
- Video Suggestion: Search for "The Spoon Theory" (a famous metaphor for limited energy in chronic illness) or a video explaining Opportunity Cost.

The Alchemist's Data: The Cost of Illness (Year 9)

The Dialysis Schedule A typical dialysis patient spends 5 hours hooked to a machine, 3 times a week. Add travel and recovery time (feeling washed out), and it is like a part-time job (20+ hours/week).

- Economic Impact: Many people on dialysis cannot hold a full-time job or finish school on time.

The "Cystic Fibrosis" Job A teen with CF might spend 2 hours every morning and 2 hours every night doing physiotherapy and nebulizers just to breathe. That is 28 hours a week—almost a full school week—spent just on "maintenance."

Key Concepts & Language for Teachers

1. Opportunity Cost
   - Definition: The loss of potential gain from other alternatives when one alternative is chosen.
   - In Health: If you spend 20 hours a week on dialysis, the Opportunity Cost is the 20 hours you didn't spend studying, playing sport, or working.
   - The Donor: By removing the need for dialysis, the donor "refunds" that opportunity cost.
2. QALYs (Quality Adjusted Life Years)
   - A metric used by health economists.
   - 1 QALY = 1 Year of Perfect Health.
   - 0 QALY = Death.
   - 0.5 QALY = A year lived with severe pain or disability (e.g., bedridden).
   - The Math: If a transplant extends a life by 10 years, and improves the quality from 0.5 to 0.9, the "Value" of the donation is massive.
3. The "Bandwidth" Metaphor
   - Imagine your brain/body is a CPU.
   - Healthy: 10% used for survival (breathing/heartbeat). 90% free for Life (learning/fun).
   - Organ Failure: 90% used for survival (pain management/medical routines). 10% free for Life.
   - Transplant: Frees up the CPU.