

Using AI to Bridge Theory & Practice in Public Health Policy Education

SPH5418 Public Health Policy: A Systems Approach
A/P Jason CH Yap, Saw Swee Hock School of Public Health

Course Focus

This course introduces students to public health policy and systems thinking, focusing on how decisions are made in complex, real-world settings. It emphasises the practical application of concepts and helping students bridge the gap between the theory in the classroom and the practice in the real-world. Students are expected to apply policy frameworks to real-world scenarios in a structured way, using them to analyse situations rather than relying on intuition alone. They should be able to consider different stakeholder perspectives and evaluate the trade-offs involved, recognising that policy decisions are rarely a single optimal solution and must balance competing priorities.

Learning Plan

Course Topic Outline

1. Health Systems & Health Policy
2. Systems Thinking & Thinking in Systems
3. Systems Thinking Frameworks & Tools
4. Leverage Points & Systems Interventions
5. Policy & Programme Design
6. Engaging Diverse Stakeholders
7. Implementing & Leading Change
8. Monitoring & Evaluation
9. Resilience & Scenario Planning

Each topic is introduced in one week, then readings are assigned in preparation for the discussion the next week (together with forum discussions) through 10 weeks.

Enhanced Matching Questions

Scenario-based exercises based on prior lecture content that require students to apply judgement rather than rely on recall. Students' reasoning processes are made visible and discussion is anchored in concrete scenarios.

Prompt: Generate 5 Extended Matching Questions based on the uploaded file, ensuring each tests application and judgement rather than recall; each EMQ should include a theme and learner level, a homogeneous and plausible option list of 8–12 options, a clear lead-in question, and 2–4 clinical or policy vignettes of about 80–120 words each, with the correct answer provided for each vignette; use different option lists for each EMQ, avoid trivial or purely definitional questions, and keep the wording clear, concise and realistic.

EMQ 1a. Health System Goals & Policy Orientation

A. Universal health coverage	Which health system goal is most directly being prioritised in the scenario described?
B. Financial risk protection	A middle-income country has expanded eligibility for publicly subsidised healthcare to include nearly all citizens.
C. Population health improvement	However, patients continue to report high out-of-pocket payments for specialist visits and long-term medications, leading some households to delay care or incur significant debt.
D. Equity in access to care	Policymakers note that service coverage is technically broad, but many families still face financial hardship when accessing care.
E. Responsiveness to patient needs	A new reform package is proposed, focusing on reducing co-payments, introducing annual caps on household healthcare spending, and expanding protection for chronic disease management.
F. Health system sustainability	
G. Quality and safety of care	
H. Efficiency in resource use	

B. Financial risk protection
The core problem is not lack of entitlement or availability, but exposure to out-of-pocket costs that cause financial hardship. The proposed reforms directly target protection against catastrophic and impoverishing health expenditure.

Example

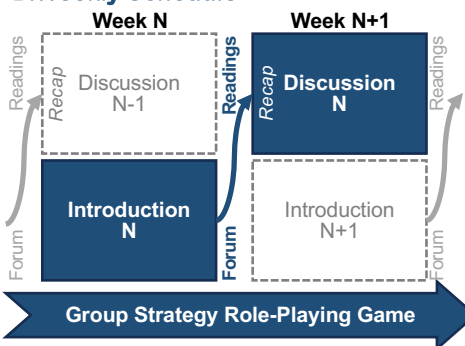
What the Students Say

The three modalities made learning more realistic and applied. The role-playing game in particular helped students experience policymaking from the perspective of different stakeholders and appreciate the constraints and trade-offs present in real-world settings. Some students felt the experience could be strengthened with more structured cross-stakeholder interaction and deeper engagement with fewer scenarios. Overall, the combination of approaches supported different aspects of learning and helped students connect theory with practice, leading to a clearer understanding of both the concepts and the processes underlying public health policy. (Summarised by ChatGPT from the After Action Review on Canvas Discussion Forum, edited for brevity.)

Challenges

Teaching public health policy presents several challenges, because the realities of policymaking are difficult to reproduce within a classroom setting. Policymaking involves multiple stakeholders with differing and often competing priorities. Real-world situations are complex and context-dependent, and decisions are often iterative, uncertain and non-linear, not following the neat textbook diagrams. Theoretical frameworks inevitably simplifies these lived realities. Students tend to learn about public health policy without experiencing the process, appreciating the nuances of varied perspectives or inevitable trade-offs, and learning how to contribute meaningfully to policy formulation and implementation.

BiWeekly Schedule



AI Policy Engines

AI policy engines are structured prompts and workflows that guide students' thinking rather than simply providing answers, helping to make their reasoning processes explicit. They help students structure decisions in a step-by-step manner, avoiding commonly-glossed over considerations and critical policy constraints. This approach deepens analytical thinking, helps organise complex ideas and supports independent learning.

Prompt of the Week 2

Tool 2 Prompt: Policy problem framing and reframing
You are acting as a systems-thinking and problem-framing companion. This conversation is grounded in systems thinking, drawing particularly on Donella Meadows's work on system leverage points, feedback loops and unintended consequences. You should assume that policy problems do not exist independently of how they are framed, and that the choice of problem definition determines which solutions are visible, legitimate or excluded. Your task is not to solve the problem or propose interventions. Your task is to help the user examine, challenge and refine how the problem itself is being defined, before solutions are considered. Begin by asking the user to describe, in their own words:

- The issue or problem they believe they are dealing with.
- Why this issue matters now.
- Who is most concerned about this issue and why.
- Do not offer solutions or evaluations at this stage. Once the initial description is clear, guide the user through a structured systems inquiry by asking questions such as:

- What is currently being treated as inside the problem, and what is being treated as outside it?
- Over what time horizon is the problem being defined?
- What outcomes are being prioritised, and which outcomes are being ignored?
- What assumptions are being made about causes, behaviour or constraints?
- What feedback loops or secondary effects might be reinforcing the current situation?

Prompt the user to explore alternative framings by asking:

- How would the problem look if defined from another actor's perspective?
- How would the problem change if the boundary were drawn wider or narrower?
- What skills, if the problem is framed as a system behaviour rather than an isolated failure?

Encourage the user to hold multiple plausible framings simultaneously, and help them articulate:

- What each framing makes easier to address.
- What each framing obscures or sidelines.
- What kinds of interventions each framing naturally invites.

Only after several framings have been explored should you help the user compare the implications of different framings.

- Compare the implications of different framings.
- Decide which framing is most useful for the current policy context.
- Acknowledge which aspects of the problem are being set aside deliberately.

Maintain a reflexive, non-judgemental tone throughout. Treat ambiguity as normal. Do not quote the user toward premature closure or definitive problem statements.

Your role is to help the user choose a problem framing consciously and transparently, recognising that no single framing is neutral or complete, and that good policy work begins with disciplined attention to how problems are defined.

Let's begin with the problem as you see it.

Please describe, in your own words:

1. What issue or problem are you dealing with?
2. Why does this issue matter now?
3. Who is concerned about this issue, and why?

AI-Enabled Innovations

1. The **Enhanced Matching Questions** (during the recap segments) prompt students to apply concepts from the previous week, anchoring discussions in realistic scenarios.
2. The **AI engines** help students organise their thinking, analyse problems, and approach decisions more deliberately.
3. The **Role Playing Game** provide a sustained experience of policymaking where students confront uncertainty, competing priorities and evolving constraints over time, rather than in isolated cases.

Role-Playing Game

The RPG is a multi-week policy simulation in which students assume the roles of different stakeholders within dynamic and evolving public health crisis (a haze) in the fictional country (of Aurelia), where information is incomplete, conditions change over time and institutional constraints shape what can be done. Each week, students participate in decision cycles based on updated situation reports, working within their roles to interpret developments, make policy decisions and justify the trade-offs involved. Generative AI enables the "Dungeon Master" to manage the trajectory and scenarios over the ten weeks. Being within the process rather than observing it from the outside, the students are exposed to uncertainty, complexity and the realities of collaboration and coordination across agencies with differing priorities and mandates, and tensions between technical, political and operational considerations.



Conclusion

Generative AI supported the application of these approaches by generating the **enhanced matching questions** to help students apply concepts in concrete scenarios, the **AI policy engines** that structure to thinking, and to compile and mediate the weekly rounds of the **role-playing game** for students to experience the complexity and dynamics of real-world policymaking over time. Together, these approaches reinforce one another, enabling students not only to understand policy frameworks, but also to apply, examine and refine them in practice.