'Serious Games' for unboxing Global Digital Health policymaking

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The news headlines report daily on the global political impacts of digital technology: the secondary use of social media data has been implicated in election meddling, though the complex issues surrounding data governance, data ownership and the ethics of personalised advertising remain to be addressed. Meanwhile, digital automation drives unemployment and income inequality, even as the global digital divide exacerbates discrepancies in access. The WHO's 'Global strategy on Digital Health' outlines a vision of 'Global Digital Health' (GDH), calling for partnerships, networks, public goods and a research agenda for engineering the 'GDH ecosystem'. As policymakers consider the political implications of the digital age with suspicion and caution, what are the repercussions for realising GDH?

GDH POLICYMAKING: THE NEED FOR PARTICIPATORY APPROACHES

While GDH necessitates technical innovations such as interoperability standards, it also requires 'social innovations' for ensuring that the digital revolution meets its social objectives.[1] Participatory methodologies (eg, citizen engagement, co-design, co-production) can play a key role in ensuring that social risks are pre-empted and prevented, or identified early and resolved.[2] Emerging examples of civic technology supporting digital democracy include participatory governance platforms like vTaiwan (info.vtaiwan.tw), Decide Madrid (decide.madrid.es) and CitizenLab (www.citizenlab.co). Similarly, participatory approaches could be used to prevent policy challenges from stalling progress towards GDH, by enabling a deeper and wider understanding of the processes of GDH policymaking.

ONLINE HEALTH POLICY DEBATE SIMULATIONS AS 'SERIOUS GAMES'

Several recent articles in *BMJ Simulation & Technology Enhanced Learning* describe the utility of simulations for developing policy.[3] [4] However, the participatory policymaking process itself, described as a set of discrete, goal-directed actions within a bounded environment, conforms well to the metaphor of the game. In fact, game theory has been shown to offer several useful insights for understanding and evaluating the legislative policymaking process itself.[5]

While the health sciences have long used games and simulation-based learning for clinical education, the concept of 'health political science' has only very recently begun to gain traction.[6] In the past decade, health policy debate simulations have modelled global,[7] international/regional,[8] national[9] and local policymaking bodies.[10] These addressed pertinent ethical, cultural and environmental issues in health, such as international maternal surrogacy legislation,[7] 'Health in All Policies',[10] the Affordable Care Act[11] and even the health impacts of climate change, as recently published in *The Lancet Planetary Health*.[8] The appearance of multiplayer simulations on digital platforms, such as the 'Online Model United Nations' (O-MUN),[12] places these policymaking simulations within the discourse on 'serious games'.[2] In this context, a 'serious game' is an applied game designed for a primary purpose other than pure entertainment, for example, education, training, problem-solving and simulating real-world interactions.

By considering online policy debate simulations as serious games that 'capture and integrate both the technical-physical and the social-political complexities' of digital health policymaking problems,[5] two possible approaches emerge:

An *educational approach* uses serious games as instructive tools to teach learners about the digital health policymaking process, empowering them with the knowledge to build community advocacy and digital literacy for local implementation.[9] [13] Open-source online platforms (eg, O-MUN) can enable universal accessibility for wider citizen participation.[12] For example, a policymaking simulation on the issue of health data privacy could be used to teach about the policy issues of data ownership, sharing and analysis; as well as the corresponding policy solutions, both regulatory and technical.

A *research approach* centres on simulating policy processes using real-life scenarios, where policymakers can simulate the process and outcomes of policymaking in a risk-free environment. Aside from the merits of policies themselves, policymaking outcomes are also determined by the players (eg, policymakers, lobbyists), their competing agendas, their negotiating strategies and the 'co-creation' process itself. Serious games offer opportunities for researchers and experienced policy professionals to 'unbox' these determining factors of GDH policymaking. To use the above example of health data privacy, a realistic policymaking simulation would take into consideration the lobbying power of large social media companies and well-funded insurance organisations who have much to gain from mining data to reveal users' current health status. By critically applying theories of the policymaking process to unbox the political science of digital health, we could better (i) understand the reasons for GDH policy developments; and (ii) inform policymaking predictions and decisions.[6] In this way, policy debates can be unboxed through games to inform and guide the citizenry on policymaking processes and pathways, and opportunities for influencing policy decisions to achieve GDH.

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drafted and revised it critically for important intellectual content, approved the final version to be published and agrees to be accountable for all aspects of the work. AM conceptualised the work, drafted and revised it critically for important intellectual content, approved the final version to be published and agrees to be accountable for all aspects of the work. STL conceptualised the work, drafted and revised it critically for important intellectual content, approved the final version to be published and agrees to be accountable for all aspects of the work.

Author note This authorship collaboration emerged from a discussion between AB and MAG, where areas of common interest and conceptual overlaps were identified, and each then engaged their respective working groups to collaboratively write this paper and provide expert perspectives on a topic of shared aims. PK, AM and AB brought together the fields of Digital Public Health, Computer Science and Software engineering and Health Informatics, respectively, for their paper on 'Serious Games and Participatory Research in Public Health', which was recently presented at the 9th International Digital Public Health Conference (November 2019, Marseilles, France). In this, MAG discovered the language and thinking to outline this framework for expanding his prior work on educational health policy debate simulations into the digital space, as guided and supervised by TL at the WHO Collaborating Centre for eHealth, (SPHCM, UNSW Sydney).

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