Review of: "Gamification of the overexploitation of natural resources. An operational game based on System Dynamics"

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Gamification of the overexploitation of natural resources. An operational game based on System Dynamics

This is a interesting paper reporting on a gamification project of system dynamics modelling using a historical example for a sustainable resource. The paper is structured around setting out the idea of overexploitation and "overshoot" in a somewhat lengthy introduction before providing a research background and then setting out ideas around modelling overexploitation. There is considerable room to tighten these sections as there are repetitions set out in the research background and the authors are occupied with setting out discipline specific knowledge and background which is not necessary for game dynamics or play; instead there is a need to – given that the game claims to be aiding and widening understanding of modelling and outcomes – to set up the writing more around aims of the game and perhaps also draw out the difference to the Fishbank game more. Rather than Hubert Curve and the Whale figure a paper on gamification surely ought to present the game itself at an earlier stage. The reference to the oil game here is also somewhat distracting.

As indicated above the paper takes a long time to lead into the actual gamification discussion and I found myself wondering why the conceptual terrain kept such a close and somewhat uncritical frame of overexploitation without mentioning ideas of sustainability nor the frame of capitalist production aims earlier on. These do appear but only in the later half of the paper where the suggestion is made that using the toolkit of gamifying modelling might generate different understandings about the finite nature of some resources or the practices that lead to rendering potentially sustainable sources finite.

If the paper wants to foreground play and gamification as a learning tool to generate understanding the paper needs to be clearer what the game is intending to do: is it about generating an understanding of how the modelling works? Is it about changing behaviours and practices on the basis of better understanding outcomes? Is it about understanding outcomes and contexts? Are there aims about understanding or integrating SDGs? More clarity on who this game is intended to would be welcomed in an overall better foregrounding of game aims and outcomes and, importantly, some discussions about gamification itself. There is a growing literature on using play and gamification in higher education which the authors

do not use (see below). "After the game is over…." Lacks the clarity of learning outcomes intent and the discussion in this section opens up various options rather than clear intents as well as modifications to the game itself. The competitive vs collaborative game mode, for instance, is a key game mechanics that could be used and linked more to differential learning outcomes. Also, the idea of tipping points is only introduced here and would deserve and earlier introduction in the overall framework of modelling, sustainability and competition vs cooperation. The game ends with the destruction of the resource which is well justified in terms of game mechanics but rather disheartening in terms of pedagogy. There is room to rephrase this and reframe it in more positive ways. Does the collaborative mode set the goal of the game as the preservation of the resource? Do the tutors play both version of the game?

The game itself is nicely outlined in the appendix but the relationship to the oil game which keeps getting mentioned is unclear. But the end section start to introduce several variations as potentials which are distracting but also limited (quotas as curveballs could be a key mechanism but surely on the course mentioned other forms of regulations and trade agreements or changing consumer behaviour could also be introduced). Finally, the evaluation of students playing the game is overly vague and it reads as though no actual evaluation process was applied and the paper relies, instead, on anecdotal narratives from students. Even without formal qualitative or quantitative evaluation methods more information could be provided in terms of how many students played it and what feedback they gave. The tool was clearly used multiple times so re-use was prompted by something.

Overall, it is a great tool and its various calibrations have the potential to assist students in numerous ways, some of which may still be under development. For the purposes and clarity of this paper, however, the emerging "maybes" and possibilities are distracting from the write up.

PS. We have developed learning tools/games with our students in sociology and would be more than happy to have more exchange. Located in both UK and Switzerland.

Resources of potential use:

Csikszentmihalyi, M. 1999. Implications of a systems perspective for the study of creativity in R.Sternberg (ed) The handbook of human creativity. NY

James, A. and Nerantzi, C. 2019 The power of play in higher education: Creativity in Tertiary Learning. Palgrave Macmillan.

Whitton, N. & Moseley, A (eds) 2012. Using games to enhance learning and teaching. Routledge.