

# Towards normative validity in the evaluation of game-based learning

**Jeroen Bourgonjon**

Ghent University

H. Dunantlaan 2

B9000 Ghent (Belgium)

[jeroen.bourgonjon@ugent.be](mailto:jeroen.bourgonjon@ugent.be)

## ABSTRACT

Studying the effectiveness of games for educational purposes (DGBL) has been high on the agenda. Mayer (2014) describes three dominant types of evidence-based research on DGBL: (1) media comparison research – randomized control experiments questioning whether students learn better with video games than with traditional media such as textbooks, (2) value-added research – studying the impact of specific game mechanics instead of full video games, and (3) cognitive consequences research – measuring changes in people’s cognition after playing (commercial) video games. Even though these evidence-based research approaches have their advantages in terms of replicability and adherence to standards of scientific rigor, they have been criticized based on concerns about transferability, generalizability and contextualization:

(1) In media comparison research the main concerns stem from the difficulty of finding representative video games, selecting activities for the control condition, and controlling the variables that are inherent to the activities, classrooms, students, teachers and the educational context. This problem is well known in other fields of study. In the field of clinical research, it has been argued that: “*the ideal control group probably does not exist, making potential biases in the controls one of the most common criticisms of case-control studies*” (Johnson 2012, 213). Similarly, there is not a single game that embodies all variants and types of video games in terms of design, genre and affordances. No game exists that speaks to all students, fits all contexts, and addresses all learning goals.

(2) Value-added research tries to overcome some of these concerns, by focusing on specific game mechanics (e.g. competition versus collaboration, time pressure versus free play) instead of a comprehensive approach to video games. This approach has yielded promising results (e.g. Habgood 2007), but it suffers from flaws. Firstly, scholars need to manipulate game mechanics, which is only possible in self-developed or open source games. As these games cannot be compared in quality to commercial titles, value-added research risks promoting a decontextualized understanding. Secondly, studying game mechanics in isolation also ignores the dynamic interplay between elements that is necessary to create a successful video game. Thirdly, even for research institutes working with enormous budgets, studying game mechanics in isolation proves to be a time-consuming undertaking. In the context of rapidly evolving media and video game landscapes, this might be problematic: “*Let’s say it takes 30 years to get a feeling for whether the process used to raise a child was right. And let’s also say the world fundamentally changes, even just in terms of technology and careers, about every 10 years. You can see the problem*” (Aldrich 2011, 87-88).

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(3) In cognitive consequence research the focus is on observable effects, such as players' visuospatial cognition, spatial skills, or visual search abilities. While these effects are interesting in many ways, they do not impact educational practice in a profound way. In fact, a quote by Paolo Pedercini is in place here: "*If you can measure it, then it's not the change I want to see*" (2014).

Although these concerns about technical validity can be (partly) overcome by following guidelines for good practice (All et al., 2016), this type of evidence-based research cannot be the sole basis for decision-making about the direction of education (Biesta, 2010). As the question of desirability will always be value-laden, scholars should also address questions of normative validity: "Are we measuring what we value?" (Biesta, 2010, p. 13).

Elaborating on these concerns, it becomes clear that we will need to expand the scope of educational research on video games to address the reciprocal relation between video games, technology, culture and education. Our hypothesis is that the normative validity can be increased by including five essential perspectives in DGBL-research: (1) a socio-cultural perspective which includes effects related to the social interaction at the level of the classroom, but also broader meanings with regard to the social purpose of game-based learning and potential future applications in all domains of life, (2) a critical perspective that is attentive to the debate about games and the power relations that affect who gets to participate, (3) a design perspective that acknowledges research as/through design, (4) a participation perspective taking on a strategic interventionist approach, and (5) a "let's see perspective" addressing unintended and unexpected learning outcomes at the individual and social level (Lankshear & Knobel, 2013).

### **Keywords**

Game-based learning, effectiveness, measurement, quantitative research, qualitative research, educational research, normative validity.

### **BIBLIOGRAPHY**

- Aldrich, C. *Unschooling rules: 55 Ways to unlearn what we know about schools and rediscover education*. Greenleaf Book Group, USA, 2011.
- All, A., Nunez Castellar, E.P., and Van Looy, J. "Assessing the Effectiveness of Digital Game-based Learning: Best Practices," In *Computers & Education* vol. 92-93 (2016), pp. 90–103.
- Biesta, G. *Good education in an age of measurement: Ethics, politics, democracy*. Paradigm Publishers, Boulder, 2010.
- Habgood, J. *The effective integration of digital games and learning content*. Doctoral Dissertation, United Kingdom, 2007.
- Johnson, L. L. "Design of observational studies," in *Principles and practice of clinical research* (2012). Elsevier, London, pp. 207-224.
- Lankshear, C., and Knobel, M. *A new literacies reader: Educational perspectives (New literacies and digital epistemologies)*. Peter Lang, Bruxelles, 2013.
- Mayer, R. *Computer games for learning: an evidence-based approach*. The MIT Press, Cambridge, 2014.
- Pedercini, P. "Making Games in a Fucked Up World". *Games for Change* 2014.