



SoTEL Symposium 19-20 February 2020

## Interface Xperience: Redefining UI/UX learning design from the perspective of the Santiago school of cognition

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**Submission Type:** Brief Presentation (20mins + 10minsQ&A)

**Keywords:** Autopoiesis, User Experience Design, Digital Learning, Self-Organisation.

### Abstract:

Digital technology has proven to enhance learning outcomes across educational sectors and contexts, yet critical challenges remain, notably: minimising the decay of digital interventions over time; and, achieving widespread learning outcomes in diverse, multicultural and complex settings (Aguayo, 2016; Dunn & Marinetti, 2008; Hennessy et al., 2019). One ambitious solution to these challenges may lie in a theoretical concept coming from biology called 'autopoiesis'. Autopoiesis, literally meaning *self-making*, defines living organisms as self-organising units capable of adapting to unpredictable changes in their environments while maintaining internal coherence over time (Maturana & Varela, 1980). The Santiago school of cognition (Luisi, 2016), founded on the concept of autopoiesis, considers this adaptive capacity of living organisms towards their environment as an 'intelligent' and 'cognitive' process. But most importantly, it establishes that human experience and cognition are unique to every individual and context (Thompson, 2007). This has profound epistemological consequences when designing digital technology in education, as the dominant 'one solution fits all' paradigm becomes invalid; on the contrary, digital technology and their associated educational processes on learners ought to provide as many (intelligent) solutions as individuals and contexts there are (Aguayo, 2018, 2019). Hence, from the perspective of the Santiago school, the notion of 'user experience design' (UX design) is inadequate.

Based on the above, Aguayo (2018) proposes that digital technology can be embedded with autopoietic properties found in living systems during the design of the 'user interface' (UI design), potentially creating 'intelligent' technology-enhanced learning tools, platforms, affordances, experiences and/or systems that can, in theory, self-adapt to changing conditions and socio-culturally different learners over time. This means that during the process of creating digital technology tools and affordances – or 'systems', the focus should be on developing adaptable and flexible interfaces that can actively facilitate the learning process and learning experience on users – a process termed here as 'interface experience design' or IX design. Such an epistemological view of technology-enhanced learning design becomes important given that learners bring into the learning process complex and unpredictable socio-cultural and emotional backpacks that determine their own learning experience in unique ways. Ultimately, the aim behind the notion of IX design is to promote a more efficient and adaptable type of design, development and use of technology-enhanced learning systems over time. In this session, the underlying theoretical and conceptual arguments from the Santiago school of cognition for reconsidering UI/UX design in technology-enhanced learning will be introduced and explored in relation to promoting adaptable and long-lasting meaningful learning processes on diverse audiences.

### References

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- Aguayo, C. (2016). Activity Theory and Online Community Education for Sustainability: When systems meet reality. In *Activity Theory in Education* (pp. 139-151). SensePublishers, Rotterdam.  
[https://doi.org/10.1007/978-94-6300-387-2\\_9](https://doi.org/10.1007/978-94-6300-387-2_9)
- Aguayo, C. (2018). Exploring autopoietic principles in technology-enhanced learning. In paper presented at the Inaugural Scholarship of Technology-Enhance Learning 2018 Symposium, 15-16 February, AUT South Campus, Auckland, New Zealand: SoTEL. Accessible at:  
[https://www.researchgate.net/publication/324329272\\_Exploring\\_autopoietic\\_principles\\_in\\_technology-enhanced\\_learning](https://www.researchgate.net/publication/324329272_Exploring_autopoietic_principles_in_technology-enhanced_learning)
- Aguayo, C. (2019). Autopoiesis in digital learning design: Theoretical implications in education. In paper presented at the Artificial Life Conference, 29 July-2 August, Newcastle University, United Kingdom: ALIFE. Accessible at: [https://www.mitpressjournals.org/doi/abs/10.1162/isal\\_a\\_00210#authorsTabList](https://www.mitpressjournals.org/doi/abs/10.1162/isal_a_00210#authorsTabList)
- Dunn, P., & Marinetti, A. (2008). Beyond localization: Effective learning strategies for cross-cultural e-learning. In H. Rahman (Ed.), *Developing successful ICT strategies: competitive advantages in a global knowledge-driven society* (pp. 155-164). London: Information Science Reference.
- Hennessy, S., Mavrikis, M., Girvan, C., Price, S., & Winters, N. (2019). BJET Editorial for the 50th Anniversary Volume in 2019: Looking back, reaching forward. *British Journal of Educational Technology*, 50(1), 5-11.  
<https://doi.org/10.1111/bjet.12731>
- Luisi, P. L. (2016). The Santiago school: Autopoiesis and the biologics of life. Retrieved February 20, 2018, from <https://wsimag.com/science-and-technology/19657-the-santiago-school>
- Maturana, H. R., & Varela, F. J. (1980). *Autopoiesis and cognition. The realization of the living*. Dordrecht, Boston, London: D. Reidel Publishing Company.
- Thompson, E. (2007). *Mind in life: Biology, phenomenology, and the sciences of mind*. Cambridge, MA: Belknap/Harvard Univ. Press.