# *Are STEM Games Intended To Be Educative?*

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**Abstract:**
Our research aimed to expand perceptions of learning in school science and mathematics as relational and dynamic selves and experiences in the making. We grounded our work in Ellsworth's (2005) notion of pedagogical pivots, thus recognizing STEM board games as texts that propel learning and learners forward through affective and aesthetic experiences, interaction as relationality, and boundaries as porous and fluid. To animate our theoretical framework, we held participatory review groups and reported on a group of eight pre-service teachers who played *Santorini* (mathematics) and *Evolution: The Beginning* (science). The results indicate that participants engaged in substantial moments of becoming across all three pedagogical pivots, which were made apparent in numerous ways through game play and interaction with the game, specifically exemplified through four emergent themes:
1) engrossment and presence both inside and outside of the game; 2) a becoming-play (about the process of play) and a becoming-game (bound by rules, security); 3) a becoming-community

(collective learning, reciprocity, relationality); and 4) a becoming-self (as identifies are (re)forming). The data that emerged is a confluence of connections that produce a "becoming-with-ness" of the game itself and are described through participant statements, displayed through bodily reactions and interactions with space (relational or architectural), with the game itself, with other players, and which are shown through field notes, video and audio recordings of game-play observations. Data from the observed "in between" spaces—moments where learning or thinking might occur—allows for an identification of games as rich "texts" for mathematics and science education.

**Keywords:** becoming; board games; pre-service teachers; relational learning; STEM

## References

Ellsworth, E. (2005). *Places of learning: Media, architecture, pedagogy*. Routledge.

## Biographical Notes

Adriana Boffa is a PhD(c) at the University of Alberta. Her work intercepts concepts from the philosophies of Deleuze and Guattari to explore what it might mean to engage with spaces and difference in a digi-techno society that is everyday restricting both notions of place and the process of being.

Janelle McFeetors is an associate professor of elementary mathematics education at the University of Alberta and co-director of the Centre for Math, Science and Technology Education. Her research interests include investigating opportunities for educative experiences in children's learning of mathematics that support their becoming through (inter)actions.

Marc Higgins is an assistant professor in the Department of Secondary Education at the University of Alberta and is affiliated with the Faculty of Education's Aboriginal Teacher Education Program (ATEP). His research labours the methodological space within and between Indigenous, post-structural and post-humanist theories in order to (re)think and practice education which works to ethically respond to contested ways-of-knowing and ways-of-being.