Research in Arts & Education
2/2024

Order and Chaos in the Research-Creation Classroom

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KEYWORDS

Childhood education; inter-disciplinarity; minor gesture; research-creation; thing power.

DOI

10.54916/rae.141894

DATE OF PUBLICATION

20/06/2024

ABSTRACT

In this essay I use posthuman theories and research-creation methodologies to explore the tensions between two disciplines (science and art) alongside children. Through a short video clip and still images of children engaging in abstract painting using magnets, washers, bolts, and nails, I showcase the importance of learning with and through art, and I argue that posthuman arts education enriches the pedagogical environment beyond core academic skills.

In the childhood classroom, the words *science* and *art* are often understood as separate disciplinary domains that focus on skill building. In recent years there has been development of STEM (Science, Technology, Engineering, Math) and STEAM (Science, Technology, Engineering, Art, Math) learning that emphasize interdisciplinary connections (Durall et al., 2022; Mejias et al., 2021). The integration of science and artistic practice can also be found in early years contexts such as kindergarten classrooms and daycare centres. For instance, STEAM within an early years Canadian context is grounded in a play and inquiry-based curricular stance which encourages experimentation, curiosity, and expression. In fact, in recent weeks, the Canadian government (at the Ontario provincial level) announced a complete overhaul of the kindergarten curriculum that will result in a focus on basic literacy, numeracy, and STEM disciplines. (Ontario Ministry of Education, 2024). Although there are continued pedagogical efforts to value the integration of curricular subject matter, I argue that artistic practice and the *arts,* more generally, are diluted into a skill to be learned and/or an art-object of representation (also see Barrett & Bolt, 2013). I propose a move from understanding childhood art as a skill-based discipline toward understanding art as a quality of experience (Manning, 2016a; also see Trafi-Prats, 2020). Art understood along this line of thought is not about art as an object and/or and ends to a means that produces a static work of art. Art as experience is a process and practice that outdoes curricular expectations. The move from thinking beyond core academic skills enables conditions that stimulate an attention to what gets produced in the middle or in the midst (Manning, 2016a) of making/learning. This involves a questioning of what potentialities might materialize when the interposition of the subject and object become the work of art. This questioning makes visible the relevance that posthuman theorizing has for the arts in childhood education. The arts, through the lens of a post-framework (Bennett, 2010; Braidotti, 2013; Manning, 2016a), attend to the relation between human/non-human, the material/immaterial, the social/cultural, which challenges dichotomous thinking and encourages new forms of engagement with the world. Posthuman arts education grapples with in-between states of learning that simultaneously produce subject and object, and order and chaos (Springgay & Rotas, 2014). This line of thinking is indebted to the feminist work of post thinkers who continue to vitalize the field, including Braidotti's (2013) seminal work on the *posthuman*, Jane Bennet's (2010) *vital* orientation to the object, and Erin Manning's (2016a) commitment to artistic *gestures* of experience. My work with children

Figure 1

is methodologically grounded in the practice of research-creation which is a "post-qualitative" (St. Pierre, 2021) approach to conducting research in schools. A post-qualitative approach as it relates to education refuses conventional, humanist social science research. In the field of education, the approach is often reliant on the use of posthuman and/or new materialist theories to guide innovative pedagogical practices that are creative in nature (see Taylor & Hughes, 2016).

In what follows, I assemble a composition of images (both photo and video) that story the tensions of two disciplines – science and art – as children (ages 8-9) engage in abstract painting using magnets, washers, bolts, and nails. These images are threaded throughout the written text of this essay and offer a "partial glimpse" (Agamben, 2000) of an interdisciplinary practice that creates pedagogical conditions of participation that outdo curriculum expectations and initial propositions to learn about 1) magnetism; 2) abstract painters; and 3) artistic movements. The process and, thus, the quality of the pedagogical experience will be emphasized and indeed valued.

Below, I describe the research context in order to provide an embodied and embedded (Braidotti, 2013) approach to doing research-creation in schools and with children. I then employ Manning's concept of the 'minor gesture,' which values the process of learning (not just the knowledge formed), and Bennett's concept of 'thing power' that similarly values the entangled nature of subjects and objects to argue that interdisciplinarity provides an opening to a minor practice that exceeds skill-based expectations. A minor practice is speculative. It produces new modes of existence where control is not in the hands of the child, but rather in the relational movement between subject and object, material and immaterial, and social and cultural that produce a work of art. I conclude with a continued call to engage in the valuation

Figures 2-4

of art-making in schools, and further call for an understanding of posthuman arts education as an experience grounded in the process of learning as opposed to what is learned. Directly below, I provide a video-image that offers a glimpse of the interdisciplinary practice children engaged in. The image does not represent what happened but rather shows how subject, object, science, and art co-compose an experience. The work of art – as it is being made – shows a quality of experience; a process where the language of science and art fails. Language fails because it is within the midst of a process where terms like 'subject' and 'object' are not yet organized (Manning, 2016a). It is in the midst where subject and object, and science and art co-compose a minor practice that cannot be reduced to its curricular intentions.

Research-Creation in the Childhood Classroom

The 2-year research-creation project was situated in a public elementary school in Toronto, Ontario, Canada. The project was embedded in an Ontario curriculum framework, drawing on the Ontario Science and Technology curriculum and the Arts curriculum for grades 1 to 8. The Science and Technology curriculum was recently revised in 2022 in order to place a greater emphasis on STEM skills through 'hands-on' experiential learning. The Arts curriculum, on the other hand, was last revised in 2009. As of yet, there are no plans for revisions. I believe that the lack of concern to modernize the Arts curriculum reflects the continued devaluation of the arts in schools.

The goal of the research-creation project was to foster and sustain creative/artistic and interdisciplinary practices that meaningfully engage children. Research-creation is a federally funded category in academic research in Canada. According to Canada's largest funding body (the Social Sciences and Humanities Research Council (SSHRC)), research-creation is a creative and innovative approach to research that supports knowledge production through artistic and scholarly practice. Research-creation is an artistic mode of research that cannot be reduced to empirical data and/or limited to researcher interpretation or analysis. Following Manning's (2016b) conceptualization, I understand research-creation as a scholarly, pedagogical, and mode of expression/artistic practice. Arts-based education scholars have similarly emphasized the inextricable link between artistic and pedagogical practice, embedding their work within research-creation frameworks (Rotas, 2021; Rousell, 2021; Shannon, 2023; Springgay & Rotas, 2014; Truman, Bozalek & Kuby, 2023). Using research-creation as a theoretical and practical tool was useful for the project because it provided opportunities to create research that connects philosophical concepts with education and artistic expressions like painting. At the same time, I used research-creation methods to gauge the impact of interdisciplinary learning, allowing children themselves to guide the search of the practice's potential value. Research-creation was a suitable methodology to engage children and the curriculum in ways that were creative, and in ways that paid attention to the process of interdisciplinarity in the childhood classroom. Below are a series of still images that offer a glimpse into the process of a minor practice that does not separate modes of knowing from modes of making.

The Minor Gesture as Artistic Practice

One of the concepts used to guide the research-creation process was the 'minor gesture' (Manning, 2016a), which engages the tensions between knowledge and value. Manning writes:

> A thought less concerned with the certainty of what it knows is more open to the minor in thinking, more open to the force of the as-yet-unformed coursing through it. This minor tendency values the force of form, not just the form knowledge makes. (2016a, p. x)

During the research process I employed the concept in a way that grappled with the tensions of the disciplinary knowledge of elementary school science and art. This tension was not only reflected at the macro, provincial level through prioritizations of STEM focused curriculum (as noted above), but also felt in the everyday of the classroom where the production and prioritization of disciplinary knowledge was the expectation. I approached each lesson differently each time, delicately intertwining the two disciplines, adding different techniques and ways of knowing. For example, one of my pedagogical techniques was to simply ask the children what they were interested in. I also asked the children to think about *how* they might learn about their interests, and many expressed their desire to learn through drawing and painting. Children were responsible for guiding the learning process and in turn determining the value of their own process and product. They were given many ways to express their knowing (oral, written, through digital technology and in the form of drawing, painting, and photography), and were given many materials to compose with – paint, brushes, spoons, paper, cardboard, washers, nails, bolts, and iPad etc.

The mode of operation when working within a research-creation framework is to ultimately attend to what is already going on in the classroom in creative ways. In one particle lesson, for instance, children were learning about abstract art through famous painters such as Wassily Kandinsky. Rather than learn about abstract painting through the didactic teaching of biographical information about the famous painter, research-creation emphasizes learning through

experimental and 'hands-on' techniques. Rather than solely learn about the life of Kandinsky, children thus learned through abstract painting themselves. At the same time, children were also learning about magnetism as outlined in the Grade 3 Ontario Science curriculum. Again, rather than learn about magnetism through sheet-work or the handling of repelling/attracting magnets, science and art were brought together by the very materials they worked with to in turn create a work of art that explored artistic abstraction and magnetism. Bringing unexpected materials together creatively is just one way of doing interdisciplinarity through the lens of research-creation. There are, however, many ways of doing the work of attending to student interest, managing curriculum expectations, and in hopes of outdoing routine (paper and pencil) ways of learning science and art. The classroom structure is always malleable, and there is always a speculative effort and choice in how learning happens. This is crucial for posthuman arts pedagogy and for research-creation.

A minor gesture thrives in classrooms of inquiry that do not have a given structure or status. The minor is connected to a lesson and/or pedagogical event differently each time. The fact that the project was not organized around the didactic lecturing of specific subject matter made room for a kind of participation that was not solely subject or child-driven. When a practice begins with a child-centred approach, it shuts down a kind of participation that emphasizes the quality of experience (Manning, 2020). A child-centred approach is, to this day, the cornerstone of teaching and learning in the early years. Notably, Montessori and the Reggio Emilia approach are enduring examples of pedagogies that root their practices in child-centred developmental stages of learning. Critiques of child-centred learning have emphasized the need to re-theorize the role of the child beyond developmentalism and to focus on the quality of an experience which is situated, non-linear, messy, and relational (Langford, 2010; Taylor & Pacini-Ketchabaw, 2015; Taylor, 2013). To emphasize the quality of a pedagogical experience is to aim for the child-*ness* of a process that understands the child as a situated, relational, and agentive being that affects and is affected by the world. Child-*ness* is a minor quality; it is an operative that connects and composes with more than itself (Manning, 2020). The quality of child-*ness* can also be described as the becoming-child (Deleuze & Guattari, 1987) that is always making in excess of its subjectivity. In other words, the child co-composes with its objects, simultaneously producing with and in its environment.

What I do believe posthuman arts education offers childhood education is an understanding that there are also ineffable/imperceptible moments of learning that operate at the level of the barely there (Manning, 2009). The childhood classrooms' relationship

Figure 5

Figure 6

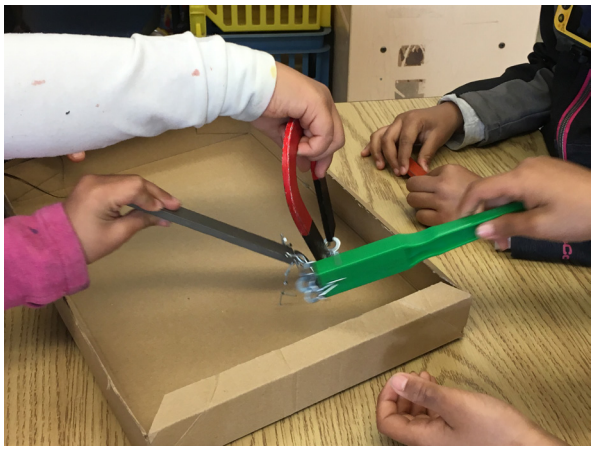
to objects must be re-thought, and there are childhood scholars who have similarly made this point (see Pacini-Ketchabaw et al., 2016). Jane Bennett's (2010) theorization of the object is important to the conversation of post-human arts education as she acknowledges the power of what cannot be seen by the human eye and insists that objects are actants that co-compose knowledge and understanding.

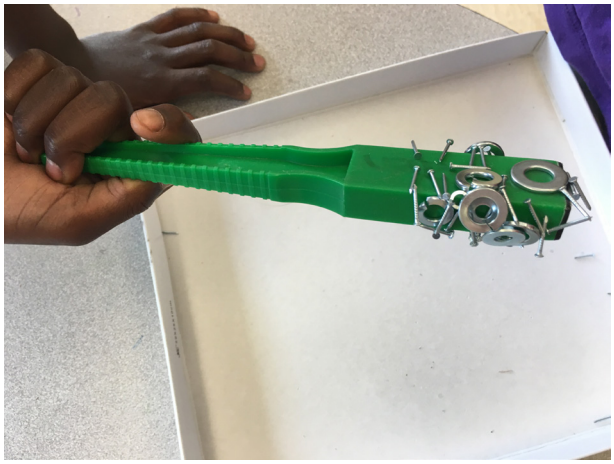
Thing Power

Objects are co-constituting actants that produce social, cultural, ethical, and political lives (Bennett, 2010). According to Bennett, objects are alive! She argues that theorizations of agency often fall back into interventionist methods that ignore nonhuman actants and uses the concept of 'thing power' to articulate an understanding of objects as co-composing 'things' that operate beyond their utilitarian use.

In her book *Vibrant Matter* (2010), Bennett dissects the power of metal – what she calls "metallic vitality" (p. 59). Metal bends and moves. It curves at the molecular level, consisting of tiny crystal grains that fill space. She describes the ontology of metal, highlighting its elusive materiality and thus its molecular nature to negotiate space by interfering with the other crystal grains that fill space. Importantly, she notes that the relation of the crystals determines the shape of the metal more so than its internal structure.

The elusive ontological movement of metal is important to note because it highlights the materialization of relationships that are beyond the human eye. Take, for example, the phenomenon of magnetism and the magnets that the children learned within the research project. Magnets repel and attract, and this process was made evident as it co-composed with the children, the paint, and the paper. Magnetism is a result of charged particles (i.e., electrons) which are alive in the atoms of magnetic materials. At the atomic level, electrons create tiny magnetic moments that are mostly randomly oriented but can also be aligned. Magnetic attraction and repulsion occur from the alignment or misalignment of magnetic moments, which are influenced by quantum mechanical interactions. The intricate interplay of forces can barely be seen. Advances in technology, including the invention of the microscope, have certainly made it possible to see at the atomic level, and so it is possible to account for what is barely there.





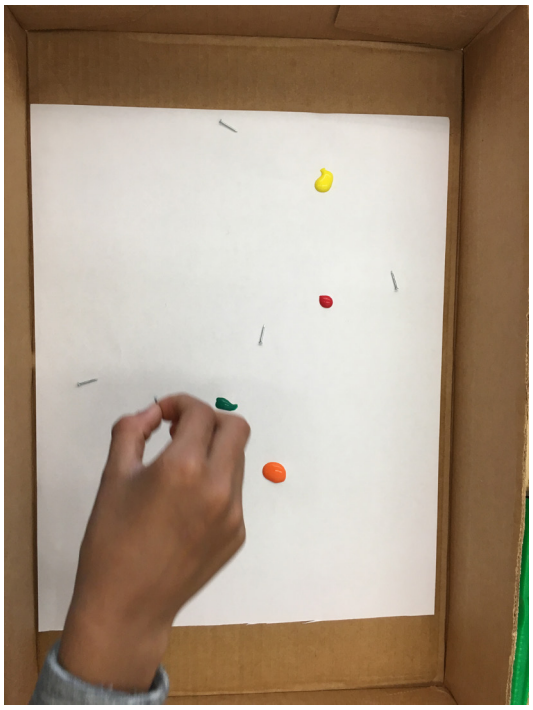
Figures 7-9

The purpose of delving into the nature of metals and magnets, here, is to provoke a conversation and perhaps a future practice that might not only acknowledge that metals and magnets elusively move, but account for the materiality of a learning process as it forms into matters of formal knowledge. In accounting for the materiality of a learning process, artist-educators might begin to showcase the value of the process of making and not just the object that is made (Hellman & Lind, 2017). Bennett (2010) describes metal as having "itself a life" (p. 57), and if we (artist-educators) might begin to think about the classroom as itself a life, we might then refocus systems of valuation toward that which cannot be implemented, but rather that which is felt in the moments of creating a work of art.

Might there then be a pedagogical time and space/place where we might notice and value the paint-*ness* of paint, the brush-*ness* of the brush, the nail-*ness* of the nail, the bolt-*ness* of the bolt, and the wash-*ness* of the washer? The -*ness* of the classroom is again the quality of a process that forms knowledge. What might the interdisciplinary classroom – that values the forces that form matter – then do? Quoting Deleuze and Guattari (1994), St. Pierre points out that what "cannot be thought and yet must be thought" is not an option, but rather becomes an ethical obligation (2021, p. 7). To then think that which cannot be thought or has not yet been thought is also Bennett's point in highlighting the life of metals and the power of things. Thing power is a speculative concept that narrows in on the agency of things. Bennet asks: "Does life only make sense as one side of a life-matter binary, or is there such a thing as a mineral or metallic life, or a life of the it in 'it rains'" (2010, p. 53)? To thus bring the concept of thing power in relation with education and the posthuman in the context of this project becomes a matter and obligation to notice otherwise and to see the 'it' of 'its barely there' in the life-*ness* of the classroom.

A Brief Note on Ethical Obligations in the Arts

It is a mistake to think that education needs a method and/or correct mode of existence (Manning, 2020). I will also add that it is a mistake to provide a definition of posthuman arts education and/or a post-definition of pedagogy. Echoing Manning and posthuman art education scholars such as Hickey-Moody and Page (2015), pedagogy and art are entangled practices and modes of thinking that are already in act. That is why it is challenging to define posthuman arts education and a disservice to concretize the practice in definitive examples. Education and learning, in general, is alive in the



Figures 10-11

midst, the minor, the *-ness* of children and objects that are always in relation. It is the task of the field of posthuman arts education to make visible the value of a process and its relationship to objects/objects of knowledge, and to push beyond the order of curricular demands (Rotas, 2019).

In this visual essay, I have refrained from representing what the children learned (i.e., poles of attraction, magnetic fields, prominent artists, artistic movements etc.). I have brought forth a speculative practice and have emphasized the importance of pedagogy and the disciplines to not be shackled to one right way of knowing. It is important to be aware of the relativity of pedagogy's power and the difficulties of translating its ideals into static art practices (Malaguzzi in Manning, 2020). As Proust (2002) infamously exclaims: "Thanks to art, instead of seeing a single world, our own, we see it multiplied…" (p. 204). The value in qualitatively multiplying pedagogical worlds is 'affirming' (Braidotti, 2013), and the work of the posthuman is to dare to think and do art, science, research and the 'disciplines' otherwise. I am optimistic about this move toward the qualitative at the academic level. Interdisciplinary connections continue to evolve into transdisciplinary networks where one can see the field of education threaded throughout the humanities, the arts, and sciences. At the level of the classroom, artist-educators must continue to connect and reconnect horizontally – across the disciplines – and in ways that generate the unruly chaos of practice, even if such a desire is stifled at the curricular level. To be clear, chaos is not chaotic or a chaotic state of being. The way of chaos is a becoming process and relational possibility. Chaos can be harnessed through many materials and ways of knowing, which in turn can create a messy pedagogical space to negotiate how learning happens and what is learned. Importantly, an attention to what is already going on in the classroom and a valuation of what children have the power to produce is what posthuman arts education has the capacity to do.

Figures

Figure 1.
Making Art in the Midst

Figure 2.
Modes of Knowing and Making

Figure 3.
Modes of Knowing and Making

Figure 4.
Modes of Knowing and Making

Figure 5.
The Life of Washers and Nails

Figure 6.
The Life of Spoons

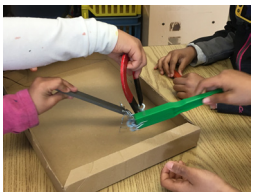


Figure 7.
The Life of Metal

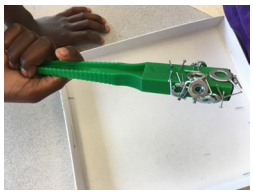


Figure 8.
The Life of Metal

Figure 9.
The Life of Metal

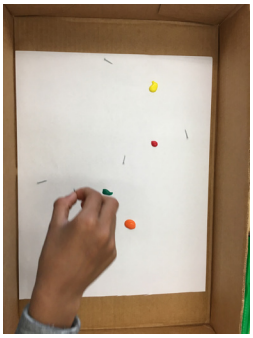


Figure 10.
The Way of Order and Chaos

Figure 11.
The Way of Order and Chaos

References

Agamben, G. (2000). *Means without end: Notes on politics*. (V. Binetti & C. Casarino, Trans.). Minnesota University Press.

Barrett, E. & Bolt, B. (Eds.). (2013). *Carnal knowledge: Towards a 'New Materialism' through the arts*. Bloomsbury.

Braidotti, R. (2013). *The posthuman*. Polity Press.

Bennett, J. (2010). *Vibrant matter: A political ecology of things*. Duke University Press.

Deleuze, G., & Guattari, F. (1994). *What is philosophy?* (H. Tomlinson & G. Burchell, Trans.). Columbia University Press.

Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia*. (B. Massumi, Trans.). University of Minnesota Press.

Durall, E., Carter, C., & Burns, K. (2022, June). Transdisciplinary education and innovation through STEAM. In *Proceedings of the Mini-Conference on Transdisciplinary Research and Design*: 14th February 2022, University of Oulu (online).

Hellman, A., & Lind, U. (2017). Picking up speed: Re-thinking visual art education as assemblages. *Studies in Art Education, 58*(3), 206–221. https://doi.org/10.1080/00393541.2017.1331091

Langford, R. (2010). Critiquing child-centred pedagogy to bring children and early childhood educators into the centre of a democratic pedagogy. *Contemporary Issues in Early Childhood, 11*(1), 113–127. https://doi.org/10.2304/ciec.2010.11.1.113

Manning, E. (2020). Radical pedagogies and metamodelings of knowledge in the making. *Cristal, 8*, 1–16. https://doi.org/10.14426/cristal.v8iSI.261

Manning, E. (2016a). *The minor gesture*. Duke University Press.

Manning, E. (2016b). Ten propositions for research-creation. In N. Colin & S. Sachsenmaier (Eds.), *Collaboration in performance practice* (pp. 133–141). Palgrave Macmillan.

Manning, E. (2009). *Relationscapes: Movement, art, philosophy*. MIT Press.

Mejias, S., Thompson, N., Sedas, R. M., Rosin, M., Soep, E., Peppler, K., & Bevan, B. (2021). The trouble with STEAM and why we use it anyway. *Science Education, 105*(2), 209–231. https://doi.org/10.1002/sce.21605

Ontario Ministry of Education. (2024, January 23). *Ontario unveils a back-to-basics kindergarten curriculum* [press release]. https://news.ontario.ca/en/release/1004097/ontario-unveils-a-back-to-basics-kindergarten-curriculum.

Pacini-Ketchabaw, V., Kind, S., & Kocher, L.M. (2016). *Encounters with materials in early childhood education*. Routledge.

Page, T., & Hickey-Moody, C. (Eds.). (2015). *Arts, pedagogy, and cultural resistance: New materialisms*. Rowman and Littlefield Publishers.

Proust, M. (2002). *Finding time again*. (I. Patterson, Trans.). Penguin.

Rotas, N. (2021). Architecting process-oriented research methodologies in early childhood education. In M. Tesar, N. Yelland, N. Fairchild, L. Peters, & M. Salazar Perez (Eds.), *The Sage handbook of global childhoods* (pp. 250–260). Sage.

Rotas, N. (2019). The minor gesture and curriculum studies. In T. Strong-Wilson, C. Ehret, D. Lewkowich, & S. Chang-Kredly (Eds.), *Provoking curriculum encounters across educational experience: New engagements with the curriculum theory archive* (pp. 160–170). Routledge.

Rousell, D. (2021). *Immersive cartography and post-qualitative inquiry: A speculative adventure in research-creation*. Routledge.

Springgay, S. & Rotas, N. (2014). How do you make a classroom operate like a work of art? Deleuzeguattarian methodologies of research-creation. *International Journal of Qualitative Studies in Education*, *28*(5), 1– 21. https://doi.org/10.1080/09518398.2014.933913

Shannon, D. B. (2023). 'Trajectories matter': Affect, neuroqueerness and music research-creation in an early childhood classroom. *Qualitative Inquiry, 29*(1), 200–211. https://doi.org/10.1177/10778004221096844

St. Pierre, E.A. (2021). Post qualitative inquiry, the refusal of method, and the risk of the new. *Qualitative Inquiry, 27*(1), 3–9. https://doi.org/10.1177/1077800419863005

Taylor, A.& Pacini-Ketchabaw, V. (2015). Learning with children, ants, and worms in the Anthropocene: Towards a common world pedagogy of multispecies vulnerability. *Pedagogy, Culture & Society, 4*, 507 –529. https://doi.org/10.1080/14681366.2015.1039050

Taylor, A. (2013). *Reconfiguring the natures of childhood*. Routledge.

Taylor, C. & Hughes, C. (Eds.). (2016). *Posthuman research practices in education.* Palgrave MacMillan.

Trafí-Prats, L. (2020). Aesthetic post-phenomenological inquiry: A compositional approach to the invention of worlds. *Qualitative Inquiry, 26*(5), 432–439. https://doi.org/10.1177/1077800419857454

Truman, S. E., Bozalek, V., Kuby, C. R. (2023). Undisciplined: Research-Creation and what it may offer (traditional) qualitative research methods. *Qualitative Inquiry, 29*(1), 95–104. https://doi.org/10.1177/10778004221098380