Book Review

A Nomadic Pedagogy About Technology: Teaching the Ongoing Process of Becoming Ethnotechnologically Literate

Dakers, J. R. (2022). *A Nomadic Pedagogy About Technology: Teaching the Ongoing Process of Becoming Ethnotechnologically Literate* (International Technology Education Studies, Vol. 18). Brill Academic Pub. ISBN: 978-90-04-53699-9 (Hardback), $152.00, 202 pages.

"It is only when machines seem to take over central processes that we grow uneasy. When they select stimuli, identify patterns, convert stimuli into forms more suitable for processing, categorize data, extract concepts, and follow problem-solving strategies, they perform function which in man are attributed to Mind…But the real question is not whether machines think but whether men do" (Skinner, 1969, p. 265). One does not have to search very hard to be reminded of the constant progression of technologies in our ever-changing landscape. Even easier to find, and engage in, are heated debates about those technologies and their uses. The public argues about policies regarding electronic vehicles, industrial emissions, renewable energies, vaccines, and most recently about the proliferation of artificial intelligence. In his book *A Nomadic Pedagogy About Technology*, Dakers (2022) states that while there is a distinct relationship between humans and technology writ large, little is provided through education that supports student understanding of their relationship with the pervasive technologies they encounter every second of their day. This is critical, he says, because "there is a distinct possibility that the development of technology, particularly those related to weapons of mass destruction and global warming, may well also, ultimately, result in the extinction of the human race" (p. 57). Presented in this context, it is imperative that students be taught not just to use technological tools, but to understand them and think about the impact those tools are making on the world. In education this will require moving beyond preparing students to be technologically literate, and instead toward becoming ethnotechnologically literate, where technology is considered within sociocultural terms.

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The overall purpose of Mr. Dakers's book is to provide the reader with a historical and philosophical understanding of what ethnotechnological literacy is and why the proposed nomadic pedagogy is more suitable for students to continually become ethnotechnologically literate. Dakers uses the philosophies of Deleuze, Guattari, Simondon, and others to inform the pedagogy he has fashioned and help the reader understand his definition of literacy.

Using thought-provoking examples, detailed descriptions from throughout history, and descriptions of how the current educational system is inappropriate for students to partake in the creative expression needed for this type of scholarship, Dakers provides a compelling argument for adopting this progressive pedagogy.

The book is organized into eight chapters. Chapter one introduces the topic and outlines the book by briefly describing the topics to be covered in each section. Chapters two and three look at definitions and characteristics of technology, technique, and technological literacy and where those stand in today's system juxtaposed with Daker's proposed ethnotechnological literacy. Chapters four, five, and six each explore philosophical concepts, though each with its own objective. Chapter four examines the philosophies of Nietzsche, Simondon, Stiegler, and others, providing the foundation for what Dakers describes as the nomadic pedagogy needed to teach ethnotechnological literacy. In chapter five, the reader is challenged to ponder whether to be human is to be technological or to be technological is to be human. Chapter six focuses on the philosophical foundations related to teaching about technology as a preamble to chapter seven where the reader is presented with the characteristics of the nomadic pedagogy that Dakers has been advocating for as the more appropriate approach for teaching about technology. Finally, chapter eight brings closure on the need to advance the nomadic pedagogy using specific examples of similar instances where progressive education and pedagogies have successfully taken root.

Dakers covers a great deal of content in chapters two and three, which is important for helping the reader to understand how technology is currently defined and taught. In chapter two, he traces the roots of the current definition and practice of craft-based pedagogy, where declarative and procedural knowledge are passed directly from teacher to student, to its Greek ancestral roots when Plato, Isocrates, and Aristotle debated the quantitative and qualitative nature of the craft. Such pedagogical roots are used to guide the reader toward Carl Mitcham's concepts of knowledge specific to both technology and technique. It is these perspectives of technological knowledge that prompts him to posit his definition of ethnotechnological literacy. This account is critical as it positions Dakers to show that current pedagogical models are lacking any true exploration of technological literacy, given in the current educational systems it cannot be taught traditionally – it cannot simply be

imparted onto the student. Developing technologically literate individuals necessitates immersion of students in authentic experiences: "one in which recognition is given to the values and perspectives held by all individuals, relative to the way in which technology affects each of them uniquely in the world they occupy" (pp. 27-28).

Dakers opens chapter three by informing the reader that his proposed nomadic pedagogy of teaching ethnotechnological literacy would be difficult to achieve because it strays very far from what is traditional. Moreover, it is without ways of easily measuring student progression and therefore cannot fit in with current "craft-based technology education" (p. 32). He reviewed previous concerns about the state of how technological literacy was being taught in schools, including calls for improvements from deVries as far back as two decades ago. Dakers does give attention to several current systems in the United States that have standards for teaching technological literacy, including the International Society for Technology in Education (ISTE) Standards for Students, the State Educational Technology Directors Association (SETDA), and the International Technology and Engineering Educators Association. He concedes that the ITEEA standards are the most "well-researched" but are mostly quantitative in nature. Dakers goes further to note that in the United States, the host of these organizations, individual states have adopted wide variations of each of these standards, further supporting his argument that there is no clear agreement from those outside the field of what constitutes technological literacy.

For the remainder of chapter three, Dakers discusses the current industrial, vocational model of craft-based technology education. He takes issue with the idea that technological literacy can be embedded into the curriculum as currently structured, even with the shifts toward making the subject cross-curricular through Science, Technology, Engineering, and Mathematics (STEM) integration efforts, through efforts to increase student immersion in technological and engineering experiences, and initiatives intended to integrate authentic design challenges into the current curricula. Dakers uses a poignant quote from Dow (2006) to clearly convey the point he wishes to make regarding the current pedagogical model that is antithetical to the one he is proposing:

> The mechanistic processes which underlie the dominant existing model have the effect of reducing technological knowledge to small discrete components which are learned, mostly through drill and practice, and subsequently tested in situations completely devoid of any meaningful context. (p. 49).

Dakers argues that the current education system is in dire need of reform and must shift away from the dominant pedagogical paradigm of rote learning

and knowledge transmission which will "suppress any truly creative and higher-level thinking development" (p. 58). In contrast, the nomadic pedagogical model Dakers is proposing does not fit into this system given creative and higher-level thinking are requisite to the development of ethnotechnological literacy.

Chapter four presents an analysis of the foundational philosophies of Deleuze, Guattari, and Simondon, that Dakers builds upon as the foundation for his development of a nomadic pedagogy. Notable in this chapter is the idea of *becoming other*. Dakers posits that ethnotechnological literacy is not a state that can be achieved, but rather a state of constantly becoming. This is important because it influences the type of pedagogy Dakers envisions is needed to teach this type of content matter. If the content to be taught were a skill or craft measurable quantitatively, then perhaps a nomadic pedagogy would not be as critical. Dakers does discuss the impact that Nietzsche's and Van Riessen's philosophies had on Deleuze, directly and indirectly, and from there goes on to discuss the impact Deleuze had on Stiegler. In so doing, Dakers draws on the story of Prometheus to begin a discussion of the co-evolution of man and technology. This concept of becoming other, the process for becoming of being, and the resulting tension between assemblages and multiplicities are discussed throughout the remainder of the chapter.

Chapter five descends into a thought-provoking exploration of the philosophical question of *what is the difference between man and machine*? Dakers opens the chapter by enticing the reader with the conundrum of "…whether being human is tantamount to becoming technological, or whether being technological is tantamount to becoming human." (p. 100). He asks the reader to consider whether man is becoming machine or even cyborg. However, both unexpectedly and thrillingly Dakers gives examples that prompt the reader to think far more critically than expected. He uses the example of Plato equating the bones in the back to hinges, more like parts of a machine than parts of an organ system. Pages later, he uses the warning words of Emmanuel Kant to bring attention to humans being used as machines:

> The hiring of men to kill or be killed seems to mean using them as mere machines and instruments in the hands of someone else (the state), which cannot easily be reconciled with the rights of man in one's own person. (Kant, 1998, p. 15, as cited in Dakers, 2022)

He then follows with the idea of humans being used in Mumford's coined "mega-machine" and cautions against it, following with Charlie Chaplin and Aldous Huxley's versions of what will happen if the technology develops boundlessly. These examples are to better prepare the reader for understanding why this pedagogy and literacy are so important.

In chapter six, Dakers takes the philosophical concepts that he has introduced and relates them to the nomadic pedagogy that he aims to use for teaching ethnotechnological literacy. The central idea here is of continually becoming, of freedom of voice and expression for the students, and collaboration of both teacher and student. It frees all the learners from the restrictions of the previous hierarchal system. Dakers notes that this is not a shift in power from teacher to student but rather empowerment for all involved. It also considers what a scripted curriculum cannot – the lived experiences of each learner, and their multiplicities, meaning that they are more than just the student of technology sitting in that classroom at any given moment. They come with many different identities at once, each of which gives the student a viewpoint that contributes to their ethnotechnological literacy at any point. Dakers further supports his nomadic pedagogy with the idea that learners construct their own meaning when they are actively involved in their learning and professes that within a nomadic pedagogy, learners have the opportunity to express themselves and hear values from others.

Dakers uses the ideas of Freinet for his characterization of a nomadic pedagogy for ethnotechnological literacy in chapter seven. In this chapter, Dakers focuses mostly on how to teach and discusses how difficult pedagogy actually is. A partial quote Dakers used from Heidegger (1972) captures it well: "Teaching is more difficult than learning because what teaching calls for is this: to let learn" (p. 153, as cited in Dakers, 2022). Dakers asks for teachers implementing a nomadic pedagogy to become involved in the learning along with their students, while concurrently providing support by actively "involving the learners in the contexts of their own experiences" (p. 154). Dakers considers this learning to be that which allows learners to bring their own knowledge, values, and experiences forth and use those in the challenge and creation of new knowledge, values, and experiences. Such a nomadic pedagogy and immersion in a ethnotechnological literacy is critical for our learners to better understand past, present, and potential future technologies.

Dakers draws his book to a close in chapter eight, where he offers insights into moving forward with his nomadic pedagogy and ethnotechnological literacy. He presents examples of successes across the world where progressive education has worked marvelously, but also tempered by concerns amongst those success for potential interference by political powers at a later time. He reminds the reader that to include a study of technological literacy in the traditional "craft-based technology education" (p. xiii) class would be to fail students, as this does not provide them with the freedom of expression, nor the objectivity needed to become ethnotechnologically literate. He suggests that a radical change is needed and that a nomadic pedagogy would address this need.

This book is recommended for technology education policymakers and administrators, technology education researchers, STEM education

policymakers and administrators, and STEM education researchers. Those in technology education will find some familiar philosophy and more recent research to support Dakers' pedagogical proposition and those in STEM education will find the history of technology education included by Dakers better informed to develop innovative instruction and engage in decision-making regarding technological literacy. The author provided a very clear narrative of the current state of technology education and the path for an informed citizenry across the different disciplines of STEM.

Dakers does a remarkable job at developing a foundation of philosophy and history for his nomadic pedagogy and defining ethnotechnological literacy. Not only does he break down the more difficult concepts for the reader in detailed descriptions, but he also provides images when needed and uses vivid imagery and stories to better capture the reader's attention. Overall, the reader will come away having gained a better understanding of why Dakers felt compelled to share this with the world.

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