

Making to Learn. The Pedagogical Implications of Making in a Digital Binary World



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Abstract Making has always been at the center of pedagogical reflection, as testified by the emphasis on the principle of *learning by doing*. Today, digital media and technologies provide more opportunities for expanding these concepts, given their potential to facilitate media production and creation. However, common practices in media-making in schools tend merely to emphasize the technical aspects—including the technical procedural skills, the creation of a product or the use of specific software—while overlooking the pedagogical dimensions associated with media-making processes. A reappraisal of the educational dimensions of making in the digital era may come from a reconceptualization of the relationship between manual and intellectual activities. Through the lens of Sennett’s understanding of craftsmanship, this chapter first explores the ways making and thinking can be set out in a single process that characterizes the human condition. Second, it explains how the Open Source Movement’s approach to software design is a sort of “digital craftsmanship” based on collaborative problem-solving, one that can inspire a renewed vision of the *learning by doing* principle for the digital world. The chapter concludes with several considerations on the implications of such an approach for the future of schools.

Keywords Learning by doing · Problem-based learning · Social learning · Open source · Digital technologies

1 Introduction

The idea that making sparks knowledge acquisition and learning is not new. Just think of the principle of *learning by doing* which is found at the root of the work of eminent psychopedagogues and education theorists such as Dewey [2] and Vygotsky [7]. Learning by doing can be defined as “the process whereby people make sense of their experiences, especially those experiences in which they actively engage in making things and exploring the world,” and also indicates “a pedagogical approach

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in which teachers seek to engage learners in more hands-on, creative modes of learning” [1, p. 108]. What is new, today, is that the opportunities learners have to create or to engage in making have multiplied with the proliferation of digital media and technologies that facilitate doing and making for learners. As clearly explained by Hobbs [4, p. 7], “when we create media, we internalize knowledge deeply—we own it. *Internalization* is the process of consolidating and accepting ideas, behaviors, and attitudes into our own particular worldview. After all, if we can represent knowledge, information, and ideas in a format that makes sense to others, that’s a form of mastery.” Indeed, what we and our students are continually engaged in today, with the media, is a meaning-making activity through which we interpret, understand and make sense of the world around us. In short, we learn. However, as always, things are more complex than that. At school, we are surrounded by examples of media-making or making with media that merely amount to applying technical procedures, with no room for creativity, understanding or making sense [5]. To consider media production as something that goes beyond a mere technical exercise, educators need to draw attention to pedagogically significant aspects. To do this they should seek to engage children in the manipulation of symbols, problem-solving, collaboration and interaction with their peers.

2 Beyond Making as a Mere Manual Activity

One initial step we can take towards moving beyond our traditional understanding of making as a mere practical activity is to go deeper into what precisely making does entail, in terms of the socio-cognitive processes involved in the art of doing. In this vein, Richard Sennett’s seminal work, *The Craftsman*, is particularly enlightening. In the opening pages, Sennett begins his argument by returning to Hannah Arendt’s theoretical contribution and, at the same time, questioning its assumptions. If, in the human condition, Arendt distinguished between the three figures of the *animal laborans*, the *homo faber* and the *zoon politicon*, by contrasting them and recognizing the primacy of political action over other forms of activity, Sennett recognizes these categories, but questions their separateness, as well as the premises on which this separateness is based; namely, the dichotomy between doing and thinking, with the latter having primacy over the former. According to Sennett, integration of doing and thinking sees its concrete implementation in the figure of the craftsman, by which he meant a specific condition of humanity rather than a historically specific social category. To understand the intimate nature of this condition, he uses the concept of “craftsmanship,” which he calls “an enduring, basic human impulse, the desire to do a job well for its own sake. Craftsmanship cuts a far wider swath than skilled manual labor; it serves the computer programmer, the doctor, and the artist” [6, p. 9]. Therefore, craftsmanship is not just manual labor, but art, mastery, the ability to achieve what we set out to achieve, which includes manual and intellectual activities alike. Considering it just a technical routine is a big mistake, as Sennett underlines: indeed, the craftsman achieves a synthesis between “the hand and the

head,” enabling concrete actions—even repetitive, habitual ones—conversing with thought and creativity. In order to grasp the mechanism that nurtures the virtuous conversation between making and thinking, one must have a deep understanding of the three fundamental abilities of craftsmanship, namely “the ability to localize, to question, and to open up. The first involves making a matter concrete, the second reflecting on its qualities, the third expanding its sense” [6, p. 277]. Finally, one further aspect highlighted by the American sociologist is linked to the social dimension of learning, which was peculiar to the transmission processes of knowledge in medieval workshops: this social dimension is inherent to mastery by way of the sociable expertise that individuals develop. “Sociable expertise doesn’t create community in any self-conscious or ideological sense; it consists simply of good practices. The well-crafted organization will focus on whole human beings in time, it will encourage mentoring, and it will demand standards framed in language that any persons in the organization might understand” [6, p. 249].

3 Unlocking the Digital Box: Making to Learn

The emphasis on quality-driven work is by no means an invitation to go back to the past. On the contrary, it is a timely attempt to set off in search of that human condition represented by craftsmanship, meaning the ability to do things well for oneself, regardless of one’s manual skills. According to Sennett [6], contemporary craftsmen are those who know how to use digital technologies with mastery, and consider quality, innovation and social cooperation to be fundamental values in their work. Hence, Linux operating system’s developers are seen as the craftsmen of the digital age. Himanen [3] dedicated his volume *The Hacker Ethics and the Spirit of the Information Age* to the modern artisans of software, and, in particular, to Linux developers. Looking at the technological and socio-cultural practices of young developers, Himanen outlines the hacker model of learning and illustrates the ethical principles that govern the behavior of the members of the community linked to Linus Torvalds. The first feature of the model is *openness*, which is essentially based on the free circulation of ideas and access for all. Indeed, Linux’s source code is public and accessible to all: anyone can use it and adapt it according to the “open source” model. Thanks to openness, more intelligences can intervene, manipulate programming languages and collaborate to solve common problems. As Himanen [3] explains, the hacker model is based on sharing the problem, the solution and the procedures that led to it. The latter two of these play a crucial role in the collaborative construction of new solutions, since the underlying information and discussions associated with the discovery of new solutions are more important than the results themselves.

The second feature of the hacker model of learning is that learning always starts with a *problem*. Here, the idea is that knowledge can be continuously improved: whenever a problem is seen, an advancement in knowledge is called for. Traces of this model can be found in the Platonic Academy, which Himanen [3] contrasts with

the monastery. In the first case, the main aim of teaching is to strengthen the ability of disciples to pose problems, develop thought and voice criticisms. In the second case, teaching can be summarized in the Benedictine rule whereby «speaking and teaching belong to the teacher, while silence and listening pertain to the disciple». We can also say that both the Platonic and the hacker models are based on a critical problem-based approach, aimed at identifying problems and raising questions. Conversely, the monastery model evokes the traditional lecture-style, teacher-centered method, in which the students are the passive recipients of the training process.

Finally, in hacker ethics, sharing is not only a right but also an obligation, as is the practice of citing sources: anything can be copied and transformed, as long as the source is mentioned. Intellectual property does not entail individual ownership of an idea, since ideas belong to everyone. What matters are the credit and recognition received from the community. Indeed, since the community validates the solutions and provides support or recognition, authority resides within the community itself.

4 Conclusion

A better understanding of the making process is, today, of fundamental importance in the context of a reflection on education and digital media. As Sennett [6, p. 8] observes, “material culture matters” in the sense that “we can achieve a more humane material life, if only we better understand the making of things.” This warning should be directed at several sectors of high-tech societies, including education and school. A school that knows and masters the technologies it uses, which develops and shapes them around its own needs, which is conversant in the technological practices of its students to promote reflexivity and distancing, and which suggests unexpected work paths to its community of learners would perhaps be able to implement an approach to technological innovation in contrast with the views that currently dominate the school arena. Instead of “viral technological injections” imposed from above and accepted misgivingly, there is participatory planning for “making well,” and mastery based on openness for a more humane school life.

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