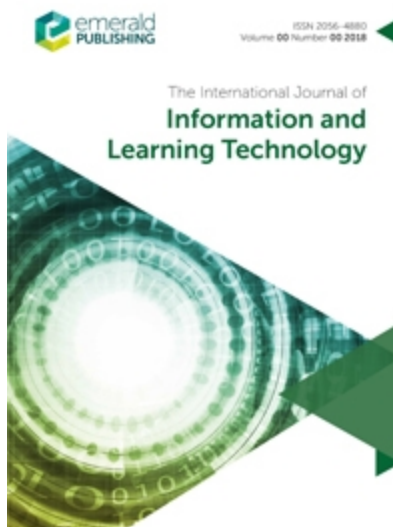




Capturing digital (in)equity in Teaching and Learning: A Sociocritical Approach

Journal:	<i>International Journal of Information and Learning Technology</i>
Manuscript ID	IJILT-05-2018-0059.R2
Manuscript Type:	Research Paper
Keywords:	Education, sociocritical approach, digital (in)equity

SCHOLARONE™
Manuscripts

Capturing Digital (In)equity in Teaching and Learning: A Sociocritical Approach

Abstract

This article proposes a theoretical contribution to the study of digital (in)equity in teaching and learning with digital technologies. We present a sociocritical approach to digital technology in education, one that can provide a theoretical backdrop relevant to the consideration of (in)equity issues. Our starting point is the observation that the most usual approaches to the study of digital technology in education have been instrumentalist or deterministic. Such approaches tend to gloss over certain issues of integration of digital technology in education, including those pertaining to digital (in)equity. We therefore present a sociocritical approach and describe how it is relevant to the study of digital equity in education.

Keywords: sociocritical approach; digital (in)equity; education

Introduction

The study of educational technologies has mainly been done in the school environment and has sought to document technological practices that can play a supporting role in teaching and learning (Erstad and Arnseth, 2013; Selwyn, 2010). Accordingly, researchers' main concern has been the issue of how effective digital technology is in education; the corollary of which is that they have tended to discount the attendant (in)equity issues. In education, is digital technology inclusive and fair? Can it contribute to greater inclusion and fairness in education? How? These questions have remained somewhat secondary relative to the issue of the effectiveness of digital technology.

However, a growing number of studies have examined digital inequalities among school-age children (e.g. Collin et al, 2016; Livingstone and Helsper, 2007; Hargittai, 2008, 2010; Gire and Granjon, 2012; Eynon, 2009; Plantard and André, 2016), concluding that in their daily life, where technology is concerned, they experience disparities in access, use, proficiency and interest that mirror existing academic and social inequalities. Among the projects undertaken to model digital inequity, the best known are certainly those of Van Dijk (2005), who postulated that digital inequity results from individual and social factors (e.g. gender, age, ethnicity, migration status, level of education, income, employment, place of residence, etc.), the socioeconomic factors being particularly significant in the scientific literature (Hargittai, 2010; Gire and Granjon, 2012; Livingstone and Helsper, 2007). The authors contend that the factors will add up differently for each individual and will, in particular, determine the financial, social and time resources available to them to successfully engage with the digital realm. Resource availability, in turn, will affect individuals' level of interest and skill in the digital technologies that surround them, their access thereto and the extent to which they use them. Individuals' degree of ease with digital media will make them more or less able to use them to participate in the life of society, whether in economic, political, or educational terms. Again, those less able to participate in social interaction on account of the digital divide are liable to be vulnerable to social factors that further hinder their access to digital technology, so that digital

inequality between individuals will persist or even worsen. When transposed to education, Van Dijk's (2005) model paves the way for several avenues of research, such as:

- How digital (in)equity manifests itself in the extracurricular as opposed to the school context. Here the question is to what extent schools help counteract or, conversely, replicate the digital divide faced by teachers and learners in their extracurricular lives.
- The academic impact of digital (in)equity, i.e. its tangible effects on students' progress, success and school retention, but also on teachers' working conditions.
- Schools' response to digital (in)equity. The focus here is on how technology can contribute to the empowerment of teachers and students, rather than to their subjection to school and social structures.

While interesting, most studies of digital (in)equity in education deal mainly with measures of digital (in)equity from the standpoint of differing access, usage, skills and representation. Such measures may account for formal (in)equities in education but tend to ignore substantive and durable (in)equities, which are entangled with broader structural (social) inequalities. Following Papendieck (2018), we believe that more research is needed to "build vocabularies and fluencies around race, class, gender and other lines of oppression" (p. 3). To continue along this path, theoretical work is needed to further clarify the conceptual ins and outs of digital (in)equity in education.

Hence, the article proposes a theoretical contribution to the study of digital equity in teaching and learning with digital technologies by outlining a sociocritical approach to digital technology in education, one that can provide a theoretical backdrop relevant to the consideration of (in)equity issues. This approach has been developed over the years by the French-language collective Kairos (<<http://reseau-kairos.org/>>) in an effort to synthesize knowledge of critical approaches to digital technology in education. We hold that a sociocritical approach to digital technology in education, by virtue of both its theoretical basis and its methods, affords a solid and consistent framework to help shape the study of digital (in)equity in such a way as to overcome certain limitations of the field.

Our starting point is the observation that the most usual approaches to the study of digital technology in education have been instrumentalist or deterministic. Such approaches tend to gloss over certain issues of integration of digital technology in education, including those pertaining to digital equity. Here, therefore, we present a sociocritical approach and assess its relevance to the study of digital (in)equity in education.

Instrumentalist and deterministic approaches to digital technology in education

A number of authors (Schmid, 2006; Selwyn, 2012; Oliver, 2011; Warschauer, 1998) hold that the most usual approaches to the study of digital technology in education have been instrumentalist or deterministic.

Digital technology in education, according to the instrumentalist conception, is considered neutral and value-free: educational stakeholders use and alter it to suit their needs. Digital technology, so considered, is more like something taken for granted than the basis of a real

theoretical conception of the technology/education relationship: “Common sense instrumentalism treated technology as a neutral means, requiring no particular philosophical explanation or justification” (Feenberg, 1999, p. 1). In other words, digital technology is seen as a set of objects that teachers and learners use in support of their activity, with no appreciable change to the educational situation (Warschauer, 1998). Thus, the instrumentalist approach does not lend itself to any consideration of how digital technology influences education.

The deterministic conception has certain things in common with the instrumentalist one: digital technology is seen as neutral, having no purpose other than to effectively support teachers’ and learners’ activities. Under the deterministic conception, however, educational stakeholders are seen as having little control over digital technology, which evolves linearly, in a relatively autonomous fashion, obeying no rule but the continuous pursuit of optimization (Feenberg, 1999). In other words, digital change proceeds in a quasi-Darwinian way: the technology has its own internal logic, which naturally tends toward digital advancements. These are seen as beneficial, by definition, to educational progress. What we have here is a common misunderstanding, whereby digital innovation is conflated with educational innovation, as if the former automatically gave rise to the latter. Hence, the deterministic conception can only sustain itself with the belief that digital technology is the salvation of education: as it becomes more perfect, education too must improve. This conception hews to a simplistic view of the technology/education relationship, such that “a computer is an all-powerful machine that in and of itself brings about certain determined results” (Warschauer, 1998, p. 757).

In both cases, the approaches mainly focus on the issue of the effectiveness of digital technology in education. As several authors point out (Bayne, 2014; Erstad and Arnseth, 2013; Ito et al., 2013), these approaches consider digital technology to be a way of supporting and improving the educational situation. It follows that studies loyal to these approaches tend to focus on digital technology’s positive and negative impacts on the conceptions, practices and processes of classroom teaching and learning. Such concerns are quite legitimate, but they fail to reckon with the (in)equity issues raised by digital technology in education. To address those issues, an approach needs to be taken “that moves away from a ‘means-end’ way of thinking about how best to harness the presumed inherent educational potential of digital technology and, instead, focuses on the socially contested and socially shaped nature of technology” (Selwyn, 2010, p. 66).

In what follows, we present a sociocritical approach to digital technology in education that can shed light on certain digital education issues that are not immediately apparent in the classroom but which inevitably affect the relationship between digital technology and educational stakeholders. This sociocritical approach appears to us to provide a relevant theoretical basis for the study of digital equity in teaching and learning with digital technologies.

A sociocritical approach to digital technology in education

By “sociocritical approach” we mean a way of understanding digital technology in education from a sociological standpoint combined with a critical dimension. This theoretical convergence has already been undertaken by some authors working on technologies outside the field of education (Feenberg, 1999; Granjon, 2004; George, 2012; Vidal, 2012). We shall build on their work and tailor it to the case of digital technology in education.

A sociological perspective on digital technology in education

A number of authors have emphasized how valuable a sociological approach can be in examining digital technology in education (Bennett, 2014; Kerr, 1996; Selwyn, 2016). Taking that approach, digital technology can be seen as an eminently social phenomenon (Dagiral and Martin, 2017): there is an inherent social aspect to digital technologies that colours their design, distribution, and end use. By highlighting the reciprocal connections between digital technologies and the social environments in which they operate, a sociological perspective can guard against partial analyses couched in terms of the linear, mechanical effects digital technologies have on society, as such analyses are generally based on an artificial opposition between technology and social systems, materiality and humanity.

The scope of inquiry into digital technology in education can be broadened, at two levels, under a sociological perspective. First, the analysis will take account of what is “upstream” of teachers’ and learners’ use of digital technology, namely its design and implementation phases. In that process, the integration of digital technology in education can be traced back through the partly indeterminate and unpredictable social contingencies that have shaped it (Selwyn, 2016); this integration is seen as a social process made up of dynamic, recursive phases, each of them involving more or less convergent stakeholders, choices and interests that help shape subsequent stages of the process. Thus, the integration of digital technology in education is determined not only by its intrinsic technical features, but also by the relationships it imposes on all those concerned (designers, politicians, administrators, teachers, learners, etc.). The explanatory power of such analyses has already been demonstrated outside the field of education, for example in the sociology of translation (Akrich et al., 2006).

Second, a sociological perspective makes it possible to place digital technology in the context of teachers’ and learners’ many other daily spheres of activity (Bennett, 2014; Erstad and Arnseth, 2013), including the home. A number of authors have pointed out that for teachers and learners, school is a secondary digital environment, after the home, where uses of digital technology are richer, more diverse and spontaneous (Buckingham, 2007; Furlong and Davies, 2012). Hence, the uses that teachers and learners develop out of school may have a (positive or negative) impact on their readiness to use the digital technology provided at school. This makes it possible to highlight the peculiarities and disparities in the ways teachers and learners use digital technology, while also examining how these relate to non-educational uses in the social experience of each individual.

To summarize, a sociological perspective enables systemic, dynamic consideration of digital technology in education as a complex social phenomenon involving multiple stakeholders and processes. Sustained attention can then be paid to the non-educational sphere, considering both teachers' and learners' extracurricular uses of digital technology and non-educational actors (e.g. industrial designers). A sociological perspective, therefore, "attempts to examine the use of technology in educational settings from the perspectives of all of the various contexts that shape and define educational technology—from the concerns of government and industry, to the concerns of the classroom and the home" (Selwyn, 2010, p. 70).

A critical dimension for digital technology in education

Under a sociocritical approach to digital technology in education, this sociological perspective is combined with a critical dimension. Selwyn (2015) notes that little use has been made of critical theories in the study of digital technology in education. That may seem surprising insofar as the study of digital technology in education is related to other fields having a well-established critical tradition, including: the sociology of education, which has seldom studied digital technology; and critical theories of technology, little use of which has been made in the field of education. However, several critical analyses of technology in education have been carried out over the years. Among the best known are those of Roszak (1986), Bowers (1988), Cuban (1988, 2001), Beynon and Mackay (1988), Postman (1992), Noble (1999) and Watters (2014, 2015, 2016, 2017).

Far from constituting a unified, homogeneous paradigm, critical theories reflect a variety of schools of thought, e.g. critical theory, cultural studies, and sociology of domination. They do however have a family resemblance (De Munck, 2011) that may be seen in a few common features. As regards content, critical theories focus on asymmetrical social relationships, both at the individual and collective level, which are seen as socio-historically constructed power structures involving individuals and groups with unequal relationships and positions within a society. Consequently, the typical objects of study of critical theories tend to be primarily related to issues of domination and emancipation (George, 2014).

More specifically, social domination and oppression are considered problematic insofar as they run counter to the aims of democratization and justice, whereas emancipation contributes to the attainment of those aims. Hence, the purpose of critical theories is not simply to document asymmetrical social relationships, but to further a change towards greater emancipation. This explicit, affirmed willingness to contribute to a more egalitarian society entails three inseparable principles, which distinguish critical work from other scientific work (Bohman, 2005; De Munck, 2011; Horkheimer, 1974): the explanatory, normative and practical principles. The first principle (explanatory principle) states that critical work is intended to describe and explain the real. Considered separately from the other two, this principle is not a feature of critical work, as it applies to all scientific research, whether of a critical nature or no. It is therefore the addition of the other two principles (normative and practical) that distinguishes critical work from other scientific work. The normative principle disclaims the researcher's supposed axiological neutrality.

On the contrary, it presupposes that the researcher cannot make a completely objective analysis, inasmuch as any scientific activity implies values, and will necessarily be shaped by those values, starting with the choice of questions to be asked (or not) of reality (Granjon, 2015). These values must therefore be made explicit and acknowledged; critical theories do so by openly pursuing goals of democratization and social justice, which they hold to be socially more legitimate than other alternatives. Finally, the practical principle implies that critical work must propose and foster possible alternatives to the asymmetric social relationships it documents and condemns in order to change the situation for the better. As Boltanski says (2009): “Critical theories feed off ordinary criticism, even though they develop such criticism differently, reformulate it, and are bound to return to it since their goal is [...] to commit the people to whom they are addressed to actions that will result in changing the contours [of reality]” (p. 20-21 [*translation*]).

When transposed to the case of digital technology in education, what is the implication of this critical dimension? It means seeing technology as the result of power relations, power games and multiple contradictory interests that influence not only its design and implementation in education, but also its use by teachers and learners. More specifically, the critical dimension affords a dual perception of digital technology in education: first as an object of power; then as a vector of power (Moeglin, 1993). As an object of power, digital technology gives rise to contention between different actors with multiple and often contradictory interests (economic, political, administrative, educational, parental, etc.). It is ambivalent insofar as it is always caught between different alternatives, which, from design right through to end use, are subject to the power relations between actors. Thus, the implementation of digital technology in education crystallizes the power relations and educational values that are inherent in digital tools’ technical properties (Feenberg, 1999). Far from being neutral, digital technology is therefore a vector of power and helps to convey “certain values/biases which reflect its own historical development and design” (Schmid, 2006, p. 50). To use Baoudard’s (2014) term, each digital tool represents a “technologization” of certain educational values rather than others. Feenberg (1999) offers a good summation of this technologization process:

Technologies are selected by the dominant interests from among many possible configurations. Guiding the selection process are social codes established by the cultural and political struggles that define the horizon under which the technology will fall. Once introduced, technology offers a material validation of that cultural horizon. Apparently neutral technological rationality is enlisted in support of a hegemony through the bias it acquires in the process of technical development. (p. 87)

Each new educational technology thus carries with it certain educational conceptions (e.g. about teachers and students, their ways of teaching and learning, etc.) that result from the various interests and power relations among the many actors involved in its design. To take a topical example, several works outside the educational field (e.g. Eubanks, 2018) highlight how algorithms embody potential biases that stem both from their designers’ choices—and unconscious impulses—and from the data, themselves biased, on which they are based. In education, given the increased application of algorithm-based automation in

school management (e.g. provision of educational services) and in teaching and learning (e.g. adaptive learning), we can expect the same biases to occur, although these have yet to be the focus of serious empirically-supported scientific analyses—which would be warranted.

Hence, educational technology acts as a vector of power. Teachers and students using this technology will inevitably reinforce the dominant educational values inherent in its operation, which must be scrutinized in the light of their greater or lesser compatibility with the mandate of democratization and emancipation of education (Plante, 2014). On this point, several authors state that digital technology in education, in its current state, is mainly a vector of technical rationality and industrialization (Hall, 2011; Moeglin, 1993), whose compatibility with the mission of education is questionable. In summary, the critical dimension of digital technologies in education makes it possible to analyse “in what ways, and by whom, the technologies are appropriated, subverted, resisted or ignored, and how this reshapes activity, and reflects and realigns the balance of power and influence in the sociocultural settings that characterise education” (Schmid, 2006, p. 72).

Implications of a sociocritical approach to understanding digital (in)equity in education

Thus defined, a sociocritical approach affords a relevant theoretical background for the study of digital (in)equity. More specifically, it aims to provide an epistemological and theoretical basis for the analysis of digital inequalities by closely linking them to the underlying dominance relationships. Digital (in)equity is approached from a dominance relationship standpoint by considering it from a relational, intersectional and experiential perspective.

A relational perspective on digital (in)equity. Digital (in)equity is closely linked to dominance relationships and hence may be explained by relationships between individuals according to their respective places in the social sphere, not by each individual's personal characteristics. It follows that the analytical unit is not the individual (whether female, socially disadvantaged, etc.) but rather his or her social relationships (e.g. women's social positioning relative to other gender groups; disadvantaged persons' social positioning relative to other socioeconomic groups, etc.). This relational view of digital (in)equity is not new. As early as 2005, Van Dijk suggested that there was a need to go beyond an individual view of digital inequalities, pointing out that “inequality is not primarily a matter of individual attributes but of categorical differences between groups of people” (2005, p. 10). A sociocritical approach—by explicitly placing digital (in)equity within the framework of dominance relationships—emphasizes its resolutely relational rather than individual nature. At the educational level, this perspective makes it possible to study digital (in)equity within heterogeneous populations of teachers and students, as well as between these and other actors involved in mainstreaming technology in education (political, technological, parental, etc.).

An intersectional perspective on digital (in)equity. If we view digital (in)equity as one element of dominance relationships, we can also appreciate the many oppressions to which individuals are subject and which contribute to shaping the forms of digital inequality they

experience—in education and other areas of their lives. Instead of merely summarizing the effects of one, two or three dimensions of inequalities, proponents of the concept of intersectionality stress the interwoven nature of these oppressive categories (Crenshaw, 1989). In other words, since an individual's social positioning is always at the confluence of a number of forms of oppression, the digital inequalities he or she faces are the unique outcome of a particular combination of dominance relationships. In this connection, Lord (1983), a feminist, lesbian author who also happens to be a person of colour, asserts that it is impossible to compartmentalize the forms of social inequality she experiences in her daily life:

I cannot afford the luxury of fighting one form of oppression only. I cannot afford to believe that freedom from intolerance is the right of only one particular group. And I cannot afford to choose between the fronts upon which I must battle these forces of discrimination, wherever they appear to destroy me (p. 9).

On the educational level, an intersectional perspective facilitates the study of the digital (in)equity experienced by educational actors (teachers and students) by foregrounding the particular form it takes for each of them. Its manifestations are far from homogeneous or uniform, instead taking a variety of forms in the extracurricular and school life of each teacher and student.

An experiential perspective on digital (in)equity. Finally, approaching digital (in)equity from the viewpoint of unequal social relations highlights the negotiations that take place between the dominance structures that partially determine individuals' actions and the latitude they enjoy in coping with them. To analyse the diverse inequitable uses of digital technology, it is necessary, as Granjon (2004) writes, to account "for the dialectic between microsocial behaviours and macrosocial orientations, personal experiences and collective structures (class, affinity group, institutions, etc.), between subjects' actions and the social system (...)" (p. 3 [translation]). Digital (in)equity is thus not a given; it emerges from a negotiation process involving social structures and actors. From this standpoint, studying digital (in)equity implies taking the existing structural mechanisms into account, as well as individuals' subjective experience thereof. However, since everyone has a different place in society, there is every reason to believe that people's ability to negotiate the dominance relationships in which they are involved varies between individuals. The study of Angus, Snyder and Sutherland-Smith (2002) is a notable example of this experiential perspective. These authors conducted a multi-case study of four Australian families who took advantage of a programme that helped them purchase an Internet-connected computer. Using the concept of cultural capital (Passeron and Bourdieu, 1970), they show how each family makes use of the hardware and the differing value they derive from it. Moreover, their study clearly shows that there was an element of freedom and unpredictability in the way the families took to the technology, as well as in their social trajectory generally. From an educational standpoint, this perspective calls for an analysis of digital (in)equity that is not limited to its objective markers (e.g. socioeconomic level, gender). Instead, the analysis should be focused at a midpoint between the educational and social structures of the educational actors (teachers and students), while also taking their individual and subjective experiences into account.

Implications of a sociocritical approach to the study and practice of digital equity in education

By adopting a relational, intersectional and experiential perspective, a sociocritical approach makes it possible to account for digital (in)equity in all its complexity by closely linking it to the various existing inequitable social relations. This way of conceptualizing digital (in)equity has certain methodological implications; we can sort the relevant studies into two categories, depending on whether they seek to document digital inequity or to take action to overcome it.

Documenting digital (in)equity. In documenting digital (in)equity in education, “formal goals and measures of equality” (Papendieck, 2018, p. 3), as measured by questionnaires or standardized proficiency tests, are relevant but not sufficient. While they do afford a macro-level portrait of the differing degrees of digital engagement (in terms of interest, access, use or competence) in a given sample, they provide scant information on how these differences are reflected in the lived experience of individual teachers and learners. Under a sociocritical approach, it is advantageous to combine these macro-level analyses with micro-level ones that are attuned to teachers’ and learners’ individual situations. Hence, analysis needs to take a middle path between the facts, on the one hand, and their meanings for teachers and learners, on the other hand, with the aim of reframing individual behaviours within the dominant social structures. Concretely, it must seek to complement these broad overviews with a methodical global approach, in particular in-depth interviews that will canvass teachers’ and learners’ perceptions. Ethnographic surveys could also be conducted. They can bring out evidence of digital inequity that participants themselves are not always aware of, in the form of “the internalized products of certain forms of social domination” (Granjon, Lelong and Metzger, 2009, p. 21 [translation]). For example, Robinson (2009) looked at the case of learners who, having no internet access at home, use computers at public libraries to do their homework. Her results showed that, compared to those with a home internet connection, these learners had less time and freedom to explore other types of internet use (e.g., relational, playful) and were reduced to “a taste of the necessary” (Robinson, 2009), i.e. to utilitarian, undiversified representations and uses. While phenomena of this kind are difficult for participants themselves to become aware of, they can be brought to light using comprehensive ethnographic methods that will enable the researcher to uncover patterns of action that are implicit at first glance.

Taking action on digital (in)equity in education. Schools and the community associations that support them are appropriate stakeholders in the effort to ensure digital equity among learners (Wilkin et al., 2017). They regularly undertake actions to train learners to use digital technologies and, as a corollary, to alleviate digital inequity (OECD, 2010). For example, currently numerous initiatives relate to training in computer coding. From a sociocritical point of view, however, such initiatives have certain limitations. In the first place, they often fail to take into account how deeply digital technology is intertwined with the broader social and educational structures and realities (Selwyn, 2014). The result is a mismatch between the responsible authorities’ intentions and official policies, on the one

hand, and learners' digital practices—which remain relatively unchanged—on the other hand (Wilkin et al., 2017; Warschauer et al., 2012). And, secondly, they are mainly predicated on pedagogical approaches of the “learning by doing” type (Pereira, 2017)—that is, on the idea that learners' actual use of digital technology leads to an understanding of how it works and its implications. But it is far from self-evident that technical knowledge (e.g., knowing how to code) will lead to empowering knowledge (e.g., of how the code works and what its implications are), as is noted by Miller et al. (2018): “there's a big difference between having skills—knowing how to use the internet—and having understanding—knowing the implications of using the internet. Digital understanding is not about being able to code, it's about [...] adapting to, questioning and shaping the way technologies are changing the world” (p. 5). If mere use of digital technologies is conflated with actual understanding of how the technologies work and what they imply, educational initiatives run the risk of pursuing narrowly technical goals that will not tend to empower learners.

One of the tenets of the sociocritical approach we favour is to further a change toward greater empowerment of teachers and learners. Yet, few studies (e.g., De Castell, Bryson and Jenson, 2002) have looked at how schools can best address it; consequently, there is no model for educational action to promote digital equity. Action research is a highly relevant type of research in the endeavour to achieve such a model, as, being based on broad participation and involvement of teachers and learners, it is best able to take their particular circumstances into account in shaping the changes that will lead to greater digital equity.

Conclusion

A sociocritical approach is an attempt to formulate a sociological perspective, such as has already been taken by several researchers in the field of digital technology in education (Bennett, 2014; Kerr, 1996; Selwyn, 2016), combined with a critical dimension that is less often adopted in the field of digital technology in education (Selwyn, 2015). More specifically, a sociological perspective broadens the scope of the questions that have heretofore been asked about digital technology in education, questions which, under the instrumentalist and deterministic approaches, have focused mainly on the issue of the effectiveness of the technology in the school context. Beyond the school environment, sustained attention can then be paid to the non-educational sphere, considering both teachers' and learners' extracurricular uses of digital technology and non-educational actors (e.g. industrial designers). The critical dimension, in turn, enables these broader questions to be understood in terms of unequal social relations and discussed in terms of their compatibility with the mandate of democratization and emancipation of education.

Hence, a sociocritical approach appears to us to provide a relevant theoretical basis for addressing digital (in)equity issues. On the one hand, it enables digital (in)equity issues to be linked to broader academic and social inequities, both at the design and implementation stages and in teachers' and learners' use of the technology, while also making it possible to propose fairer alternatives, to ensure that digital technology contributes to school equity efforts. This perspective is in line with Papendieck's (2018) suggestion that we ought to

“move beyond formal goals and measures of equality—like technology *access*, STEM *diversity*, or digital *participation*—and use technology to build vocabularies and fluencies around race, class, gender and other lines of oppression” (p. 3). **In our view, a sociocritical approach to digital technology in education, by virtue of both its theoretical basis and its methods, affords a solid and consistent framework to help shape the study of digital (in)equity in such a way as to overcome the limitations noted by Papendieck (2018).**

References

Akrich, M., Callon, M. and Latour, B. (2006), *Sociologie de la traduction*, Mines edition, Paris.

Angus, L., Snyder, I. & Sutherland-Smith, W. (2002), “ICT education policy: cultural lessons from families”, in Walford, G. (Ed.) *Policy and Ethnography*, Routledge, London, pp. 23-57.

Badouard, R. (2014), “La mise en technologie des projets politiques. Une approche ‘orientée design’ de la participation en ligne”, *Participations*, Vol. 8, No. 1, pp. 31-54.

Bayne, S. (2014), “What’s the matter with ‘technology-enhanced learning’?”, *Learning, Media and Technology*, Vol 40, No. 1, pp. 5-20.

Bennett, S. (2014), “Conceptualising technology use as social practice to research student experiences of technology in higher education”, in Herrington, J., Viteli, J. and Leikomaa, M. (Ed.), *EdMedia World Conference on Educational Media and Technology 2014*, Chesapeake, United States, pp. 2567-2572.

Beynon, J. & Mackay, H. (1988), “Information technology into education: towards a critical perspective”, *Journal of Education Policy*, Vol. 4, No. 3, pp. 245-257.

Bohman, J. (2005), “Critical Theory”, in Zalta, E.N. (Ed.), *The Stanford Encyclopedia of Philosophy*, The Metaphysics Research Lab, Stanford University, Stanford, available at <https://plato.stanford.edu/archives/fall2016/entries/critical-theory/> (accessed 30 May 2018).

Boltanski, L. (2009), *De la critique : Précis de sociologie de l’émancipation*, Gallimard, Paris.

Bowers, C. A. (1988), *The Cultural Dimensions of Educational Computing: understanding the non-neutrality of technology*, Teachers College Press, New York.

Buckingham, D. (2007), *Beyond technology: Children’s learning in the age of digital culture*, Polity Press, Cambridge & Malden MA.

Collin, S., Karsenti, T., Saffari, H. & Ndimubandi, A. (2016), “Connected Generation? Digital Inequalities among Elementary and Secondary Students According to Age and

Socioeconomic Level”, *Canadian Journal of Learning and Technology*, Vol 42, No 5, available at <https://www.cjlt.ca/index.php/cjlt/article/view/27525> (accessed 30 May 2018).

Crenshaw, K. (1989), "Demarginalizing the Intersection of Race and Sex : a Black Feminist Critique of Discrimination Doctrine, Feminist Theory and Antiracist Practice", *Univ. of Chicago Legal Forum*, Vol 89, pp. 139-167.

Cuban, L. (1988), "A fundamental puzzle of school reform", *Phi Delta Kappan*, Vol. 69, No. 5, pp. 341 -344.

Cuban, L. (2001), *Oversold and underdressed: Reforming schools through technology*, Harvard University Press, Cambridge MA.

De Castell, S., Bryson, M. and Jenson, J. (2002). Object Lesson: Towards an Educational Theory of Technology. *First Monday*, 7(1), <https://doi.org/10.5210/fm.v7i1.923>

De Munck, J. (2011), "Les trois dimensions de la sociologie critique", *SociologieS*, La recherche en actes, Régimes d'explication en sociologie, available at: <http://journals.openedition.org/sociologies/3576> (accessed 30 may 2018).

Dagiral, E. & Martin, O. (2017), "Liens sociaux numériques. Pour une sociologie plus soucieuse des techniques", *Sociologie, Presses Universitaires de France*, Vol. 8 , No. 1, pp.3-22.

Erstad, O. & Arnseth, H. C. (2013), "Learning Lives Connected: Digital Youth across School and Community Spaces", *Comunicar*, Vol. 40, No. 2, pp. 89-98.

Eubanks, V. (2018), *How Big Data Is Automating Inequality*, St. Martin's Press, New York.

Eynon, R. (2009), "Mapping the digital divide in Britain: implications for learning and education", *Learning, Media and Technology*, Vol 34, No 4, pp. 277-290.

Feenberg, A. (1999), *Questioning Technology*, Routledge, London.

Furlong, J. & Davies, C. (2012), "Young people, new technologies and learning at home: Taking context seriously", *Oxford Review of Education*, Vol. 38, N° 1, pp. 45-62.

George, E. (2012), "L'étude des usages des TIC au prisme de la recherche critique en communication", in Vidal, G. (Ed.), *La Sociologie des usages. Continuités et transformations*, Cachan, Hermes/Lavoisier, pp. 25-62.

George, S. B. (2014), *Towards Innovative Pedagogy*, Education Plus, The Hindu.

Gire, F. & Granjon, F. (2012), "Les pratiques des écrans des jeunes Français. Déterminants sociaux et formes d'appropriation", *Reset*, Vol. 1, N° 1, pp. 27-49.

Granjon, F. (2004), "De quelques éléments programmatiques pour une sociologie critique des usages sociaux des TIC", in David, R. (Ed.), *actes du colloque Journée d'étude les rapports société-technique du point de vue des sciences de l'homme et de la société*, Lares-Université, Rennes, pp. 1-6.

Granjon, F. (2015), "Du matérialisme comme *principium* d'un agenda de la recherche critique en communication", *Questions de communication*, Vol. 28, No. 1, pp. 36-53.

Granjon, F. Lelong, B. & Metzger, J-L.(2009) (dir.), *Inégalités numériques: clivages sociaux et modes d'appropriation des TIC*, Hermès, Paris.

Habermas, J. (1987), *Knowledge and Human Interests*, Polity Press, Boston.

Hall, R. (2011), "Revealing the Transformatory Moment of Learning Technology: the Place of Critical Social Theory", *Research in Learning Technology*, Vol. 19, No. 3, pp. 283-94.

Hargittai, E. (2008), "The Digital Reproduction of Inequality", in Grusky, D. (Ed.), *Social Stratification*, Westview Press, Boulder, pp. 936-944.

Hargittai, E. (2010), "Digital Na(t)ives? Variation in Internet Skills and Uses among Members of the 'Net Generation'", *Sociological Inquiry*, Vol. 80, No. 1, pp. 92-113.

Horkheimer, M. (1974), *Théorie traditionnelle et théorie critique*, Gallimard, Paris, France.

Ito, M., Gutierrez, K., Livingstone, S., Penuel, B., Rhodes, J., Salen, K., Schor J., Sefton-Green, J. & Watkins, S.C. (2013), "Connected Learning: An Agenda for Research and Design", *Technical Report*, Digital Media and Learning Research Hub, Irvine, CA.

Kerr, S. T. (1996), "Toward a sociology of educational technology", in Jonassen , D. H. (Ed.), *Handbook of research for educational communications and technology*, Macmillan, Chicago, IL, pp. 113-142.

Livingstone, S. & Helsper, E. (2007), "Gradations in digital inclusion: Children, young people and the digital divide", *New Media & Society*, Vol. 9, No. 4, pp. 671-696.

Lord, A. (1983), *From Homophobia and Education*, New York: Council on Interracial Books for Children.

Miller, C., Coldicutt, R. & Kitcher, H. (2018), *People, Power and Technology: The 2018 Digital Understanding Report*, Doteveryone, London.

Moeglin, P. (1993), Critique du marketing éducatif, *Mscope média*, No 5, pp. 43-53.

Noble, D. (1999), *Rehearsal for the revolution: Digital diploma mills*, Part IV, available at <http://communication.ucsd.edu/dl/ddm4.html> (accessed 30 May 2018).

Oliver, M. (2011), "Technological determinism in educational technology research: Some alternative ways of thinking about the relationship between learning and technology", *Journal of Computer Assisted Learning*, Vol. 27, No 2, pp. 373-384.

Organization for Economic Cooperation and Development (OECD). (2010). *Are the New Millenium Learners Making the Grade? Technology Use and Educational Performance in PISA*. Paris, France : OECD Editions. doi 10.1787/9789264076044-en

Papendieck, A. (2018), "Technology for Equity and Social Justice in Education: A Critical Issue Review", *Texas Education Review*, Vol. 6, No. 1, pp. 1-9.

Passeron J.-C. & Bourdieu P. (1970), *La Reproduction. Éléments pour une théorie du système d'enseignement*, Minuit edition, Paris.

Pereira, I. (2017), "Les grammaires de l'éducation critique aux médias à l'épreuve du numérique", *tic&société*, Vol. 11, No. 1, pp. 112-136.

Plantard, P. & André, G. (2016), "Adolescences numériques? Génération "Y" et inégalités éducatives" *Éducation et formations*, Ministère de l'éducation nationale, Les familles et les technologies numériques, pp.111-124.

Plante, P. (2014), *Pour une problématisation de la technologie en éducation : propositions théoriques pour un espace pédagogique alternatif de la technologie*, Unpublished doctoral thesis, Laval University, Quebec, Canada.

Postman, N. (1992), *Technopoly: The surrender of culture to technology*, Knopf, New York.

Robinson, L. (2009), "A taste for the necessary. A Bourdieuan approach to digital inequality", *Information, Communication and Society*, Vol. 12, No. 4, pp. 488-507.

Roszak, T. (1986), *The cult of information: the folklore of computers and the true art of thinking*, Pantheon Books, New York.

Selwyn, N. (2010), "Looking beyond learning: Notes towards the critical study of educational technology", *Journal of Computer Assisted Learning*, Vol. 26, No. 1, pp. 65-73.

Selwyn, N. (2012), "Making sense of young people, education and digital technology: The role of sociological theory", *Oxford Review of Education*, Vol. 38, No. 1, pp. 81-96.

Selwyn, N. (2014), *Distrusting educational technology: Critical questions for changing times*, Routledge, New York.

Selwyn, N. (2015), "Data entry: towards the critical study of digital data and education", *Learning, Media and Technology*, Vol. 40, No. 1, pp. 64-82.

Selwyn, N. (2016), "Minding our language: Why education and technology is full of bullshit ... and what might be done about it", *Learning, Media and Technology*, Vol. 41, No. 3, pp. 437-441.

Schmid, C. (2006), "Investigating the Use of Interactive Whiteboard Technology in the English Language Classroom through the Lens of a Critical Theory of Technology", *Computer Assisted Language Learning*, Vol. 19, No. 1, pp. 47-62.

Van Dijk, J. (2005), *The Deepening Divide, Inequality in the Information Society*, London, Sage Publications, Thousand Oaks CA.

Vidal, G. (2012), *La Sociologie des usages. Continuités et transformations*, Hermes/Lavoisier, Cachan.

Warschauer, M. (1998), "Online learning in sociocultural context", *Anthropology & Education Quarterly*, Vol. 29, No. 1, pp. 68-88.

Warschauer, M., Cotton, S. & Ames, M. (2012), "One Laptop per Child Birmingham: Case Study of a Radical Experiment", *International Journal of Learning and Media*, Vol. 3, No. 2, pp. 61-76.

Watters, A. (2014), *The Monsters of Education Technology*, Smashwords Edition, USA.

Watters, A. (2015), *The Revenge of the Monsters of Education Technology*, Smashwords Edition, USA.

Watters, A. (2016), *The Curse of the Monsters of Education Technology*, Smashwords Edition, USA.

Watters, A. (2017), *The Monsters of Education Technology 4*, Smashwords Edition, USA.

Wilkin, S., Davies, H. & Eynon, R. (2017). "Addressing Digital Inequalities amongst Young People: Conflicting Discourses and Complex Outcomes", *Oxford Review of Education*, Vol. 43, No. 3, pp. 332-347.