

Virtualization and e-Learning: A Reflection on Modern Ubiquity

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Abstract

This work discusses the instability of the modern world theorized by Berman, the ruptures indicated by Searle in the construction of modern scientific thought, and the globalization and virtualization discussed by Lévy that make the contemporary world fluid. From the re-reading of the scenario described by the authors, we address the consequences of the cyclical reinvention imposed by modern life and the changes caused in education with a focus on distance education and, mainly, on e-learning. In addition, being in the sixth generation of distance education, with e-learning, semantic Web, Big Data and ubiquitous education, we emphasize that agents and their relationships in the current educational process have to act according to this scenario. Facilitators mediate and foster learning relationships and students are active in building knowledge and are responsible for their learning. Finally, we conclude that the new constant is a permanent process of reevaluating our actions and learning models.

Keywords: modernity; virtualization; e-learning; distance education; modern ubiquity; ubiquitous learning

Introduction

One of the concepts of modernity that echoes in academia is theorized by Marshall Berman (1988) in his work *All that is solid melts into air: the experience of modernity*. The phrase that introduces and guides the work was taken from Karl Marx's *The Communist Manifesto*, and the reading of the modern world that, based on the assumption in this phrase, was made by Berman, echoes like a symphony in which we all still recognize ourselves: "all that is solid melts into air" (BERMAN, 1988, p. 15).

This phrase synthesizes and describes a series of events that mark an obligatory passage, an irremediable transposition from an apparently solid, predefined world to a world that reinvents itself cyclically. It is a comprehensive reading of the human adventure that places us all in a new order in which it eliminates, transforms, and recreates the previous and everything that already exists so that the new can exist.

Having this in mind, this manuscript¹ discusses the e-learning scenario in times of ubiquitous learning. It is organized in the following sections: 1) the instability and ruptures of the modern world discussed in the light of Berman (1988) and Searle (2000), 2) globalization and virtualization in view of Lévy (1956), and 3) ubiquitous teaching and learning in this scenario. In the sequence, it presents some final remarks.

1. Instability and Ruptures of Modern World

Written in the 80's, Berman (1988)'s text puts us on the edge of the precipice. It is situated as we are in the time when we leave behind both our certainties and the chains that hold us in the limitless space, a place where everything is possible, but nothing is guaranteed.

There is a mode of viral experience — experience of space and time, of the self and others, of life's possibilities and perils — that is shared by men and women all over the world today. I will call this body of experience "modernity". To be modern is to find ourselves in an environment that promises us adventure, power, joy, growth, transformation of ourselves and the world — and, at the same time, that threatens to destroy everything we have, everything we know, everything we are. (BERMAN, 1988, p. 15)

¹This manuscript is a shorter version of a book chapter the authors published in Portuguese under the name *Educação Online*.

Berman's (1986) reading of the world places man at the center of events, but not in control. In the author's view, modernity is something like a transforming force that disturbs and destabilizes us. It is human creation that modifies the creator. Its unity is in disunity, in the unusual, in the pressing need for a constant disintegration and rebuilding in order to disintegrate again. It is not a concept, but a way of life, a way of seeing the world in motion.

Modern environments and experiences cut across all boundaries of geography and ethnicity, of class and nationality, of religion and ideology: in this sense, modernity can be said to unite all mankind. But it is a paradoxical unity, a unity of disunity: it pours us all into a maelstrom of perpetual disintegration and renewal, of struggle and contradiction, of ambiguity and anguish. To be modern is to be part of a universe in which, as Marx states, "all that is solid melts into air" (BERMAN, 1988, p.15).

Chronologically, the modern era begins at the end of the Middle Age. It marks the period in which humanity leaves behind a world populated by witches and religious fear. The beginning of modernity also marks the significant transformation of the sciences. What used to be built with arguments is now subject to rigorous proof through successive experiments. What is scientifically proven is now supported by intellectuals and the confidence of the people in general. The elements of nature, the anatomy of the human body, the universe, and all the ancient mysteries now revealed give humanity the feeling that what is not yet known may be known very soon. The beginning of modernity was supposed to be the end of the dark age, and the beginning of the century of light. The hope for a glorious future for humanity took shape with the emergence of large cities, with the enchantment produced by the wide spaces lit by electricity, and with the supposed facilities of industrialization.

In other words, we could say that Modernity, as a historical moment, is characterized by anti-tradition, by the overthrow of conventions, customs, and beliefs, by the departure of particularisms and entry into universalism, or even by the entrance of the age of reason. However, some combinations of all times have always remained among us, guaranteed to be remembered. But this is a subject for another work. For this manuscript, it is relevant to have in mind that wars and so many armed struggles, as well as scientific discoveries or patent registrations of technological innovations of the modern era, sought to delimit a specific object and/or establish its belonging. In this way, we can say that many of the borders, as we know them today, were defined precisely in this period.

This could be a contradiction, among many, that we could infer if we employ the concept of modernity in Berman (1988) as applicable to every temporal period that history attributes to the modern era. It is important to highlight that, for the reading that is done here, the first period of the modern era was a race in search of certainties, and the second period, and this is where the author makes his reading, the trajectory itself reveals that "all that is solid melts into air" (BERMAN, 1988, p. 15).

Paraphrasing the author, we will employ the concept of boundary in a broad sense. In this manuscript, the term is understood as delimitation, belonging. In this way, we understand that, for Berman (1988), geographic demarcations delimit territories that shelter peoples who are divided into races that diverge about beliefs. And it is in this sense that we understand the establishment and strengthening of these borders at the beginning of the modern era. This is especially important if we consider the symbolic boundaries. Regarding science in general, the rationalism of the classical era has taught us to divide in order to know, to catalog and classify in order to belong, and to conceptualize in order to delimit. Every field of knowledge has also become a boundary, and every concept within that boundary has become an intellectual property. At each demarcated territory, be it geographical, religious, moral, or intellectual, the belief in the Cartesian certainty of the cogito increased, and the belief in the Cartesian certainty of the cogito was reiterated. The exaltation of the rational, which freed humanity from the beliefs and darkness of the Middle Ages, stretched across humanity's horizon as a promise of safe and guaranteed progress.

And if the universe of intellectuals has always sought to make an intelligent reading of the context, the works of the illuminists went further by actively participating in the construction of the new. Optimism in the face of progressive and liberal ideas applicable to the new systems of government, together with the fall of the totalitarianism of kings and emperors and the progress of science, all led to the belief that a promising future was on the way.

It is at the beginning of the 20th century that Berman (1988) describes the permanent vortex of disintegration and change, formed by a set of social processes that make up modern life. The author lists the great discoveries of the physical sciences, the industrialization of production, demographic transformations, urban expansion, development of mass communication systems, the progressive emergence of national states and representative social movements of the masses, which, for him, are a result of the capitalist system and that it is always expanding, adapting, and transforming itself. From this process, which the author calls *Modernization*, would result what he describes as an incredible variation of ideas and visions that aim to transform people into both the subject and the object of modernization.

From these visions would have emerged the idea that people have the power to transform the world and to find a way to make this world their own.

And if everything changes, the very concepts of the sciences, even those that seemed to be the most solid, such as the exact ones, can also be relativized. As examples of a stroke to the once very optimistic confidence that we were on our way to a completely intelligible universe, Searle (2000) mentions Einstein's theory of relativity, the discovery of the paradoxes of set theory, the proof of the impossibility of rationality arising from Freud's theories, the proof of Kurt Gödel's incompleteness in Mathematics, and the quantum mechanics theory that seemed to demonstrate that physical reality is indeterminate. Moreover, according to Searle (2000), the rationality of science itself was attacked by authors such as Thomas Kuhn and Paul Feyerabend.

Searle (2000) also mentions Ludwig Wittgenstein as the author who revealed that our discourse is a series of mutually untranslatable and incommensurable language games. According to Wittgenstein (1958, p. 27), the game “is played according to such-and-such rules because an observer can read these rules off from the practice of the game—like a natural law governing the play. — But how does the observer distinguish in this case between players' mistakes and correct play?”. The author says that the answer lies in observing the clues in the players' behavior.

Searle (2000) recognizes that this list could be much longer, but we believe that it is sufficient in the sense that, through it, the author shows us that if science, or rather, scientific proof, was still a safe stronghold in an ever-changing world, modernity was also able to shake its most solid pillars. This leads us to think about the correlation of events that demarcate the historical periods known as eras. If we understand modernity as proposed by Berman (1988), we also agree about the period it encompasses. Although much has been said about postmodernity, or that many references have been made to the as-yet-unnamed contemporary era, we could hardly disagree with the fact that we are still immersed in this turmoil of transformations and instabilities. Today, perhaps even more than the 1980s, we still are on the edge of the abyss, feeling the ground disintegrate under our feet, while we idealize wings to reach spaces only imagined until recently.

And if, as Berman (1986) says, the environmental experience of modernity unites the human species through the nullification of all geographic and racial boundaries, of class and nationality, of religion and ideology, this means that before these borders were established and that through them the human species was separated, divided, and labeled. And a closer look at the current context is enough to realize that annulling is a very strong term to be used in relation to what modernity has done to borders. They are still there. But its boundaries disintegrate here to regroup later, according to the interests at stake or the forces acting on them.

2. Globalization and Virtualization

Globalization and virtualization, two modern phenomena of inter-complementary power, allow and facilitate the free flow of information between continents, break down language barriers, make trade viable and expose the culture of human societies. If, as Berman (1986) says, modernity unites humanity, we can think of aspects related to cultural goods, such as music, cinema, and Art that can unite humanity. Besides, we can go further and consider the media, the use of electronics, streaming platforms, applications, social networks, clothing, and culinary preferences. They are not restricted to geographic territories anymore. For instance, WhatsApp, Facebook, Tinder, Instagram, and Twitter users are spread in the four corners of the world.

Moreover, the economic functioning is directly linked to the import and export sector, online commerce, delivery system, banking service applications, virtual stores, and bitcoin, for example. In this line of thought, Lévy (1956) states that

[a] general movement of virtualization has begun to affect not only the fields of information and communication but also our physical presence and economic activities, as well as the collective framework of sensibility and the exercise of intelligence. The process of virtualization has even affected our modalities of being together, the constitution of a collective “we” in the form of virtual communities, virtual corporations, virtual democracy. Although the digitalization of messages and the extension of cyberspace play an important role in the ongoing change, the wave of virtualization taking place extends far beyond the field of information technology. (LEVY, 1956, p. 15)

This wave also affects the education system, changing the teaching-learning relationship by affecting the relations among all agents involved in the process as well as the relations of the agents with the available resources. To exemplify, the content used to be centralized in the teacher's domain. And the material support for this content, previously basically written, could be found in the form of a handout, a book, encyclopedias, and compendiums. However, just like information, financial transactions, interpersonal relationships, the dissemination of images and facts, and almost every aspect of contemporary life, school content and academic knowledge also spread across the World Wide Web. And, as such, the way they are presented has also changed; it is now multimodal and ubiquitous.

3. Ubiquitous Teaching and Learning

Teaching and learning have had a significant presence in human life, especially in the face-to-face education scenario. However, the distance education modality has increased its presence. It started as just an option to try to solve problems of difficult access to formal education, and now the modality has been conquering a broader market, presenting itself as a viable option for people in pursuit of a formal education that could be achieved in their own pace.

Bearing in mind the Brazilian scenario, the distance education modality begun in the first years of the 20th century, and it has gone through several generations (or cycles) that are not marked by a well-defined date and they can even coexist. Furthermore, authors diverge on what characterizes each phase. But this is justified by the fact of unequal access to technology (and here, understand technology as letter, TV, internet, and so on). Even this approach that classifies cycles according to the type of technology employed to mediate education is criticized by Anderson and Dron (2011), who classify cycles according to the approach based on learning designs.

Considering the technology-based classification, in Brazil, according to Formiga (2011), the first cycle of distance education, beginning in 1904, was characterized by courses that employed the exchanging of letters as technology, and this cycle reigned alone for almost half a century. The second and third cycles, according to the author, started in the 1960s and 1990s, respectively. The former is marked by telecourses, which play a role of considerable relevance in the training of young people and adults until nowadays; and the latter is characterized by computer-mediated courses (such as those using CD-ROM) and internet-based courses.

According to Taylor (2001, in CALADINE, 2008, p. 19), in general, the fourth and fifth cycles are characterized, respectively, by a flexible learning model and by an intelligent flexible learning model (with automatic response systems). And finally, Caladine (2008, p. 20) addresses the sixth generation of distance education with Web 2.0 and e-learning 2.0 models, that use social software technology, allowing the sharing of experiences and resources and the creation of content by students. The fact is that with Big Data providing us with data to constantly adapt to students' needs, we are increasingly turning distance education into education without distance.

The resources of the virtual era have not only changed the way to access the content that is part of a teaching-learning plan, but they have also changed the way of teaching and learning. These resources have also entered the classroom and are part of the lives of students and teachers also outside the space destined to the relationships that unite them in this process. It is worth remembering that many of the tools currently used to enable virtual interaction were not created with the purpose of serving formal education, differently from the resources that were created with this particular purpose, such as the blackboard.

The adaptation of the teaching-learning process to the available means affects our sensitivity and our thinking because the plasticity necessary for this leads us to modify our way of life according to the available means. In this sense, what are the impacts of modernity on teaching and learning? What is the role of professors and educational institutions in serving their clientele? How to stimulate knowledge, manage its applicability, select the contents and teaching strategies in an era in which students can have access to any type of information they want on the Internet?

And if we are immersed in an ever-changing scenario, we certainly cannot allow ourselves to have static answers to these questions, as the only constancy of the present time is inconstancy. In this sense, new technologies and the Semantic Web democratize the learning process (BURTON, ONDERDONK & APPLEFORD, 2009), allow the teaching/learning duality to be broken, and are embedded in our society. "Technologies are the product of social needs. When they work for us, their social benefits sometimes prove to be more revolutionary than their technical specifications" (COPE & KALANTZIS, 2009, p. 5). Such social needs inevitably involve formal education. And, according to Coll and Monereo (2010), among all the technologies created by human beings, those related to the ability to represent and transmit information - that is, information and communication technologies - are of special importance, because they affect practically all people's areas of activity, from the forms and practices of social organization to the way of understanding the world. (COLL & MONEREO, 2010, p. 17, our translation).

The virtual age practically obliges us to rethink our pedagogical practices. Lectures, centered only on the teacher's speech and knowledge, are outside the dynamic and interactive context that stirs relationships between people in all environments. Many teachers still sit on a pedestal cemented in the belief that they are the central figure, the most important person and the most knowledgeable. They insist on practicing the 'banking education', coined by Freire (1981), 'depositing' knowledge in students.

The author already advocated that "the educator is no longer the one who only educates, but who, while educating, is educated, in dialogue with the student who, when being educated, also educates" (FREIRE, 1981, p. 73, our translation). The teacher becomes the facilitator of learning relationships.

The awareness that we are part of a collective, shared space, which we cannot control, but to which we are linked, was theorized by Berman (1986). The modern era already forced us to constantly reinvent. Contemporaneity only reinforces this need with more emphasis. And this is true not only for teachers or administrators, but for everyone involved in the educational system. In this context, the relationships have changed. The creation, consumption and distribution of knowledge is now also a student responsibility. Students were given the possibility and responsibility of managing their learning. “This is why this education, in which educators and students become subjects of its process, overcoming alienating intellectualism, overcoming the authoritarianism of the 'banking' educator, also overcomes the false consciousness of the world” (FREIRE, 1981, p. 86, our translation).

The very definition of e-learning proposed by Dabbagh (2005) already encompasses the idea of a knowledge construction space. The author defines e-learning as “distributed learning environment that utilizes pedagogical tools, enabled by Internet and Web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction” (DABBAGH, 2005, p. 31).

Empowering students does not imply to reduce the importance of facilitators in the teaching-learning process. As stated by Muck (2016), facilitators have an important role in online learning. However, according to the author, success in this learning modality will only happen with teachers willing to change their conceptions of teaching-learning in a constant rethinking about the forms of education.

And even with all these changes and advances in various aspects of society, and with the internet becoming what Myers and McGrath (2009) call *ubiquitous social infrastructure*, one of the crucial aspects of formal education remains the same or with very little change: the assessment. An evaluation system that measures content retention capacity is still used on a large scale, instead of evaluating the ability to think about a particular subject and the ability to make connections, solve problems, select what is relevant, and link everything to social sharing. One of the axioms of the teaching-learning process is that assessment needs to be based on what is developed during the learning process. So, if our social space has become ubiquitous and our learning has become ubiquitous, it is only fair that we develop an assessment based on proving the development of such skills. Berman's (1986) view of modernity as the transformative force is still shy in this aspect of learning.

Cope and Kalantzis (2012) enlighten this scenario with the New Learning theory. The authors discuss a renewed mission of education addressing the following dimensions: the social significance of education, the institutional place of learning, the learning tools, the learning outcomes, the agency balance, the importance of student differences, the relationship of new approaches with the old ones, and the professional role of the teacher.

Final Remarks

Therefore, there is an urgent need to disintegrate this comfortable solidity that permeates some aspects of education in general, and more particularly the online education. In addition to the evaluation system, the agents of the educational process, on many occasions, try to reproduce in the online educational environment their habits of the face-to-face classroom environment. However, while the online educational environment is a multicultural space, it is also an acultural space. The whole ends up creating a singular space with the mixture of all. And they are not all dissolved into a mass; but they are individuals imbued with agency and making up a whole. In other words, it is not a space that accepts and works with reproductions; it requires new performances and new learning models.

Thus, all these elucubrations need to be transformed into social practices consistent with each educational cycle, since education no longer has distance. What prevents us from having access to certain things are no longer geographical borders, nor religious beliefs or the color of our skin. In the current scenario, the two most effective and efficient frontiers are the lack of intellectual capital and economic capital. And it seems that intellectual capital has never been so available. If before it was necessary to ride weeks in remote landscapes to find a manuscript kept under lock and key, today it only takes one click to access an immeasurable range of readings. If higher education has taken centuries to be democratized, it can be said that we currently have very reasonable offers at our disposal. We certainly do not ignore the access inequalities faced by those seeking knowledge, but the scenario has already been much more complicated. And that goes for everyone involved in the educational process, as we all need to reinvent ourselves in a continuous process of reassessing our actions.

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