Introduction

In the dissemination of interactive systems aimed at education, teachers, pedagogues, programmers, designers, among others, have been incorporating their wealth of knowledge and experiences, through cooperative work, in order to obtain excellent results. Various disciplines of the social sciences and the new information technologies converge in these tasks. The contents of the various scientific disciplines are accessible from interfaces with their corresponding metaphors, cognitive models, interactive information, presentation strategies, and so on.

Today, there are a lot abstract models which are related to the transversality of education, and made from the union and/or intersection of various disciplines. However, from the didactic point of view and in emergency situations (health, citizen security, weather, and so forth) all this lacks a methodology or set of techniques to evaluate them and adjust them to the contextual reality. A contextual reality is related to the training centre and the students' home.

These emergency situations are usually one of the fundamental reasons for failure in online teaching, from home to the school (and vice versa), even though it is based on super advanced technological devices for interactive communication (mobile telephony 5G multimedia, interaction in 3D scenarios, computing devices with artificial intelligence, among others). In unforeseen events, which impede human and face-to-face communication, the main aim should be to satisfy new user requirements in an intelligent and efficient way. That is, without resorting to the rhetoric of finding solutions, in totally virtual or non-face-to-face education, either through virtual classrooms or campuses, intelligent tutors, three-dimensional holograms, etc., already developed, thanks to modern information technology and all its derivations.

However, many university teachers are more concerned with replicating banal or trivial content to social networks than in creating original content, multimedia or not, to mitigate emergencies. It is enough to observe measure and analyze the increase in the content of the messages (images, texts, music, etc.) in the Twitter, Facebook, TikTok accounts, and so on, since the beginning of 2020. In short, the main managers of the educational process do not quickly resolve the failures and errors in interactive communication, through new media, nor the fragmented and superficial knowledge of hypermedia content. Without guidelines for control, evaluation, verification of results, and so forth, these shortcomings and failures could be transferred to the development of future intelligent and next-generation systems. These errors in educational systems and structures only generate dysfunctions. In educational applications, they range from the design of the system interfaces, through the process of preparing and evaluating suitable theoretical and / or practical content, in the teaching-learning interrelation (inside and outside the classroom), until reaching the final user (student and teacher).

Considering each of the members of the educational process, with the current available technologies, there are no universal guidelines and metrics for qualitative evaluation to be followed by each of its actors (that is, programmer designers, teachers, students, organizers of plans of studies, among others), in unplanned or unforeseen situations. This lack requires a **"constructive critical" vision of "computer reason", based on the efficiency and quality of the interactive transmission of educational and scientific knowledge.** The knowledge resorts to the daily use of new technologies, inside and outside the classrooms of schools, secondary schools, universities, professional training centres, and so forth. There is also no correct orientation of valid and lasting content over time, for the better use of potential professionals, locked in the software and hardware of technological devices and used in the continuous process of teaching and learning. Inexorably, the need to overcome the mosaic culture or fragmented and superficial knowledge derived from the use of hypermedia / interactive systems and social networks. Here is the triadic set of components that interrelated with each other, make up the core of this research work.

The disciplines that will be discussed and following an alphabetical order are: Cybernetics, education, heuristics, human-centered design, information and communication technology, social communication, and statistics. The main and secondary topics, which do not exclude others, related to them, are grouped as follows: Heuristic evaluation, elaboration of metrics, methods and techniques; face-to-face education, distance education, new media, users and emotional satifaction, interaction with 3D reality, virtual classroom, virtual campus, open software, educational and creative content, metaverse, communicability, and usability engineering.

In our days, a diffuse way of promoting the education of new technologies is through the quantification of data, many of which are superficial for didactics, such as indexes of references, access counters to web pages, total of views of the videos on YouTube, among others. Some data are presented as magnets to attract students to educational courses. In other words, the education is a commercial product and it is not a public good and freely accessible to all. This is an attractive format in offline and online communication channels but it lacks metrics to build and evaluate knowledge and experiences, with a critical perspective.

Quantitative measures that a priori favour their enrolment and participation, depending on the modest cultural heritage of potential attendees of courses, seminars, masters, etc. and the persuasive effectiveness of advertising campaigns in the various media. It is a commercial marketing strategy, followed by the educational staff. Succinctly, individuals belonging to universities, industries, companies, banking or financial foundations, among others, whose mission consists only of attracting superficial and quantitative attention, using labels such as: Total of millions obtained in projects; online citation rates; roles or positions of president, director, expert, etc., national and international awards, rigged in advance; members of conference committees; editorial board of journals; among others. However, all of them do not address the "real qualitative factor" of the knowledge and experiences to be developed.

All this information is not useful to analyze and measure the quality of the promoted course. As a rule, the most important data are not presented for future students, such as the detailed program, the basis of the theoretical concepts, the practices being developed, the technical information of the software and/or hardware used, the verification of the experimental results in the laboratories, complete citation of information sources or bibliographic references, and so forth. That is, the basic or epistemological principles of the development of scientific knowledge, including education and learning, of everything that is related to the new information technologies, in the new millennium.

In a few words, our intention is to analyze and evaluate the efficiency of the teaching-learning process, to make the most of the potentialities coming from new technologies, examining the theories and

practices of interactive content, under the formula of **"constructive criticism."** All this based on the lessons learned and a set of works, belonging to the educational and computer field. Each of the chapters presented will serve to achieve this objective, since they will not only indicate the way forward in the face of unforeseen situations, but will also serve as a compass for the immediate future, keeping a look at the past, in order not to repeat the same mistakes.

Besides, innovative evaluation strategies, methods, techniques and metrics will be detailed to overcome fragmented, superficial and banal knowledge, promoted by the incorrect use of social networks, and that are directly and indirectly influencing the normal educational, cultural, and educational development as well as social, economic, etc., of the members of local and international communities. To this end, it is intended to achieve a wealth of knowledge and experiences, in universal guide format, to obtain better original results, in the realization of educational content, adjusting to the context of the participants, respecting equality and human dignity, promoting the process through continuous training, motivating the end user of information technology (inside and outside the classroom), and including intelligent systems as a reinforcement in the continuous cycle of learning and teaching.

In this continuous cycle, it is necessary to be very attentive to some new problems due to the rise of social networks. One of them, and perhaps the most important, is the theft of identities by hypothetical colleagues. However, it is not about digital or virtual identities as one might think a priori. It is about the cloning of profiles of real human beings to quickly climb the pyramid of social, educational, political, financial power, and so on. The tactic used consists of resorting to the temporary hiring of highly qualified people, from a theoretical- practical point of view, to solve highly complex educational, technical, scientific, social problems, etc., for the duration of the contract. Once the strategies of the hired expert have been detected and learned, the process of cloning their personality automatically begins, ranging from work aspects to the most trivial such as clothing, cultural preferences, hobbies, and so forth. The main mission of the "friendly and empathic" clone will be the lifetime destruction of the qualified expert, from whom he has learned methodologies, techniques, strategies and humawtechnological experiences, for problem solving. This phenomenon is not exclusive to the educational field, but also industrial, commercial, business, sports, etc. Therefore, many of the examples included in this work tend to prevent this new phenomenon that future ICT professionals and all its derivations must know how to deal with.

The examples that accompany these pages are true and verifiable cases. Some of them have required more than four long decades to be discovered. They are examples that do not tend to generalize situations but rather to describe particular cases in certain regions of our planet. Specifically, the reality described and analyzed extends over two continents: America and Eurasia.

Finally, which does not mean that it is the least important, is to defend the right of the human author of texts, excluding in the immediate and distant future that artificial intelligence is in charge of writing books, manuals, news, and so on. Simultaneously, protect copyright, although there are realities in large areas of the old and new world, where books, magazines, newspapers, etc., claim to be totally free, using electronic media (analog or digital) for illegal distribution. Although it is true that some civil servants in southern Europe receive subsidies from the State to write books, this is not the common denominator in the rest of the culturally developed world. These are functionaries of a kind of superior caste and are at the service of "pseudo-democratic" states, where freedom of the press, for example, leaves much to be desired, in countless cases. They continue to guide themselves in a camouflaged way by the totalitarian models of the 20th century. In our days, theoretically they dedicate all their time to teaching, as it supposedly happens in the main universities of the Iberian Peninsula.

However, when push comes to shove and in emergency situations, these personnel and the educational systems that contain them are authentic sieves of failures and embarrassments for the "serious" academic and scientific world, when compared to the rest of civilized nations. Apart from those infamous contexts and painful realities, guided by envy, ignorance, greed, lies, deception, betrayal, mockery, pedantry, narcissism and an infinite etcetera, it is repeated once again, that **the main goal of future generations must always be the modernization of science and education.** These are emergency situations where those basic human and technological aspects that serve for survival and daily coexistence are highlighted.

So much so that the compilation of these reflections and experiences began in the middle of a pandemic and ended in the middle of a war in the centre of Europe. Many of the considerations made have shown how culture and nature continue to be two valid elements that overcome by far the dark clouds that sometimes temporarily obscure the horizon. However, it is necessary to never forget that above those dark clouds, there is always a very bright Sun, which does not make any distinction between all the living beings on our planet, and its energy is totally free.