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Educational Experiences and Experience Styles

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Abstract. The on-going revival of educational processes as experiences leads to a complex reflection on the characteristics that can make such processes more meaningful, especially on a personal level. In this article we propose a cultural framework that, starting from the definition of a set of general features characterizing the "experience", allows to correlate universalities of the adopted model of process - in our case the 'organic process' - with the characteristics of individuals, including the preferences about the mode of interaction. This framework allows to go beyond the concept of learning styles and to introduce a more comprehensive set of styles - the experience styles - starting from which, once the appropriate indicators have been identified, one can perform a more comprehensive and precise monitoring of the educational experience, and more in general of all experiences.

Keywords: Learning styles, Experience styles, DULP, TEL

1 Experience: a complex and liquid process.

The diffusion of social networks has made clear a phenomenon that, actually, was evident to experts since the early age of Internet and the appearance of the first multimedia browsers: the net grows unabated because is able to meet the primary needs of humans among which is, undoubtedly, the socialization. This latter is a need that from one hand generates an exponential growth of relationships (not necessarily "meaningful" ones) and on the other the phenomenon of multiple and migrant memberships (sometimes also identities) to communities whose boundaries are blurred and change constantly, as if they were partially miscible fluids. The dissemination of services with a high level of customization (blogs, sites, etc.), than, micronized further the fluid mixture to a level of emulsion, a state in which the landmarks are gone, people is fighting for a crumb of attention and virtual spaces - more and more similar to each other - tend to assume the status of virtual non-places [1,2]. In this complex systemic framework liquidity becomes a dominant figure that can be viewed either as a pathological condition of the society [3] or as an opportunity [4] to restart from a renewed attention to the individual, not considered any longer as an user but, rather, as a person wishing to use the mediated communication to help give additional "sense" to her/his life through the immersion in meaningful experiences, supported by the presence of a discrete machine.

While within the educational world still resist the so-called "ivory towers" of the old-style educational agencies, their significance for digital natives [5], and more in general for public opinion (apart from few exceptions), is strongly and steady declining. Refocusing on the individual means recover her/his motivation and putting her/him in a position to develop a critical attitude to analyze the "fluid" in which s/he is immersed, to identify significant relationships that might allow her/him to design her/his own experential trajectory. It means also to ensure that such experiences sediment and stratify to make "places", included virtual ones, recognizable. It means, as well, to ensure that all dimensions of the experience benefit of the same level of attention.

It is not by chance that in the DULP vision [6,7], the letter P reminds us that all educational interventions should be designed keeping in mind the centrality of the person, her/his complexity and the interaction with the co-evolutionary "places" within which s/he operates (i.e. the physical spaces that each individual has contributed to enrich with social and cultural stratifications) [8]. And it also not by chance that the letter D remind us the relevance that the Design is going to assume as cornerstone of the XXI century's education. Indeed the Design, as compared to the fluctuations that have characterized the history of education [9] - nature/culture, utopia/pragmatism, humanities/sciences, theoretical/practical activities - places itself in a central position [10] that can integrate the various opposites, and automatically leads to the need of an effort to spread among the new generations a sufficient level of "design literacy" [11].
It is a scenario that inevitably raises two questions:

1) which is the process that suits at best the situation described above ?

2) which are the characteristics of a personal experience, including education, that can be considered universal and significant and which of these can also be helpful to monitor it ?

In our opinion the equivalence between the educational process and experience, which has strong historical roots [8], requires the design and use of a process that incorporates and reproduces the essential features of all activities, so that it could be flexibly readapted and universally applied. To this end we have tried to identify those features that characterize the behavior of all organisms of any complexity and the result was the organic processes (OP) [12] based on three parallel layer of functionalities:

- investigate: the environment to collect information & learn;
- elaborate: the information to design/produce;
- communicate: the "products" by means of "actions" that, in the case of very complex organisms, can make use of highly structured and conventional languages.

The above "vital" functions, can be carried on as collective activities and are always active during the whole development of what we may consider our inspirational process: "life".

It is not our intention to discuss and illustrate further here details of the organic process - they can be found in ref. 12. We wish only to remind that the Organic Process can be represented in the plane "time vs. intensity (of the functionalities)" as an "organic blob", see fig. 1, since it is a 'very flexible process in duration and intensity of the various functional layers. Nevertheless, like a river must flow into the sea, also the "organisms" are compelled to concretely act so as to fulfill their vital activities in a given time. Due to this, each "phase" internal to the layers (schematically represented

by the flexibly repositionable red dotted vertical lines) should be accomplished according to a precise time schedule.

We would like also to stress that functional parallelism is typical of all processes performed by living organisms but it is ignored by all the most popular processes that, like the cyclical ones, take place along a single track (although they may contemplate a partial overlap of the time-windows assigned to specific tasks).

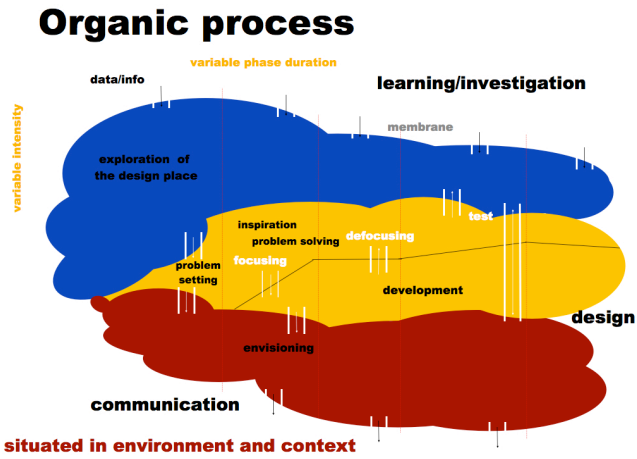

Fig. 1. Schematic representation of the Organic Process

Now that we have defined the OP, i.e. the backbone of our cultural framework, we must provide an answer also to the second question.

In the recent past there have been some attempts to define experience, both in terms of intrinsic features that might be called "structural", and in a more "operational" terms linked to the lived experiential of individuals considered as "users" (user experiences and qualities).

Among the first we would like to recall and discuss the model proposed Nathan Shedroff [13] that, being convinced about the possibility to design experiences, has coined the term "experience design" (subtly but profoundly different from the one we use "design for the experience", see below) and identified six basic components of the experience: significance, intensity, breadth, duration, triggers, interaction. To facilitate the reader in the comparison with the model we present in the next paragraph it is worth specifying that:

- triggers include all possible stimulations of the senses (inputs) and activation modes of the brain (linked to the recognition of concepts and symbols);
- interaction refers to the degree of active involvement; interaction, thus, is closely related to the intensity that refers to the degree of engagement, and ultimately, to the attentional resources involved in the experience;
- duration refers, obviously, to the temporal dimension of experience;
- breadth is connected to the commercial and evocative face of the experience, not very unlike from what is commonly called brand experience (for example, in education it

might be related to the attraction of the most renowned colleges or educational programmes);
- significance finally embraces expectations, cultural factors and personal considerations which may all contribute to the memory of the experience.
From the foregoing it is hard to believe that intensity and interaction can be considered independent dimensions. Among other criticalities of the model: the meaning assumed by interaction that is rather limited and the fuzzy definition of some other dimensions.

Among the systematizations that belong to the second category of models we want quote the user qualities (UQ) proposed by Jonas Lögren [14] developed within the digital design, but whose validity extends well beyond the limits of that field. Lögren has grouped them into five categories: those that can motivate the user - anticipation, playability, seductivity, usefulness, relevance - those that give a minings to an experience - ambiguity, surprising, parafunctionality -, those that characterize the interaction with all elements contributing to the generation of experience (artifact, service, etc..) - fluency, autonomy, pliability, immersion -, those that put in relation the experience with the outcome at social level - identity, flexibility, personal connectedness, social actability - and finally those that put in relations structural qualities and ideals - efficiency, transparency, elegance-, that might be someway compared with the breadth component of the Shedroff' model.

Of course we cannot dwell on detailed of each user quality, but we can stress how this model highlights in an explicit manner the need to consider additional dimensions of the experience, such as the social one. A critical point of this model is that the user qualities are not derived, as far as we know, from analytical work made on the field related, for example to the collection of questionnaires, opinions of users, etc., but are defined according to a top-down process based on his own experience.

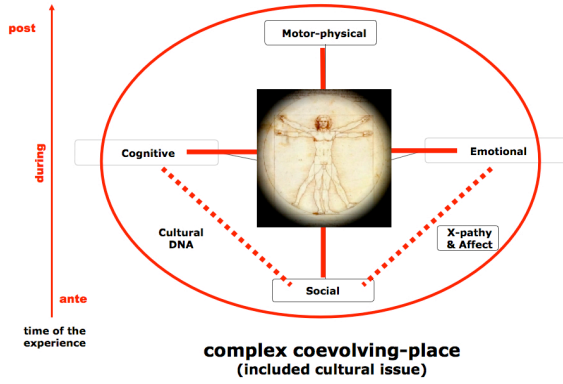

Fig. 2. Representation of the time dimension and of the interaction levels involved in an experience

We will not dwell here on further efforts performed in the past to tackle the problem of defining "experience" because we do not know others enough systematic models.

With respect to the above discussion we would like to stress that in our opinion it is not correct to pretend to be able to "design experiences" but, rather, we believe that one

should "design for experiences", i.e. design to ensure that the technological mediation could help in making experiences more meaningful, in the respect of their naturalness. An educational process, in particular, cannot be defined educational experience when it is fully programmed and will not leave openings for unplanned developments, i.e. if it is not a collaborative open "opera"; at most it could be considered "training" provided in accordance with the requirements and needs of a given cultural civilization.

From this basic beliefs, pursuing on the search for a convincing definition of "experience" we arrive to state, in a very general and sharable manner, that an "experience" is a complex process based on interactions, or communicative acts, performed simultaneously on multiple levels, the main fuels being, of course, the personal motivation, that maybe amplified or supported by a general or a specific curiosity. For this reasons we have schematically summarized in fig. 2 the characteristics of the human communication that, of course, are also the basis of all activities experienced by the individuals:

i) the four levels of interaction - physical-motor, cognitive, social and emotional - that in combination can produce further dependent dimensions, e.g. the combination of social and emotional levels produces affect & x-pathy (i.e. sym-pathy, uni-pathy , em-pathy), while the combination of cognitive and social levels leads to the definition and stratification of a culture, i.e. the codified cultural DNA necessary to make recognizable a places, included the virtual ones;

ii) its being a continuous co-evolution of individual and environment;

iii) the temporal dimension, either objective and subjective.

At this point it last only to stress that, of course, it is not possible to attempt to give a full definition of "experience" without considering also the personal characteristics of each individual, because this latter is, at the same time, its focus and active element.

In conclusion, the definition of a descriptive multidimensional space of the personal experience should come out as a result of the integration of

a) personal characteristics;

b) the specific dimensions of the human interaction;

c) any further dimension that can help to describe as completely as possible an "experience".

2 The Experience styles

By correlating the elements listed above with the OP we obtained the framework of tab. 1 which defines a set of "experience styles" and their relationship with each of the three functional layers of the process.

To the 'explore/learn' layer are associated the perceptual preferences of the individual; for example, the preferences about given sensory channels of input, or about the media through which we communicate (images, text, sounds, etc.).

Each of such preferences, then, may be further detailed by specifying what we call 'exploring styles' (used to visualize images, to read, to listen, to handle, etc.) [15]. The first layer of the OP is certainly related to the physical level of interaction and, inevitably, also to the cognitive one, for what concern attention, memory, interpretative

strategies, self-control, etc. The latter of these elements involve clearly the emotional level too, and emotions, as well known, affect the sensory inputs also because of individual inclinations toward specific emotional colorings. Actually all the levels of the human interaction (see fig. 2) maybe involved in each layers of the OP although, clearly, at a different intensity.

To the 'elaborate/design' layer belong personal styles used to process the information (e.g. analytical and sequential or intuitive and global [16], influence of emotion, etc.), to work (active or reflective, individual or collaborative) and to design (abstract or concrete, inclinations toward creativity, divergence and innovation). The prevailing interaction level in this layer is no doubt the cognitive one, that can be more or less 'colored' by emotional and social implications.

Table 1. Summary of the Experience Styles and of their correlation with the functional layers of the Organic Process

		Experience Styles					
				Interaction			
Organic Process	Explore Learning	motivational	perceptive (exploring)	physical cognitive interaction		subjective time perception	ludic (alea ilinx mimicry agon)
	Elaborate Design		info processing working design	cognitive emotional, social interaction	creative innovative		
	Actuate Communicate		extroversion introversion	social, emotional, cognitive			

The third layer of the OP, 'actuate/communicate', can be related to the inclinations of individuals toward extroversion/introversion, combined with their preferences regarding mode of social interaction and communication that, of course, may partially overlap perceptual preferences (do, say, write, produce images, etc.) and depend strongly on the ability to interact emotionally.

As shown in fig. 1 there is at least one "horizontal" dimension of the "experience" that cannot be neglected in defining the "experience styles": time. The 'ante', 'during' and 'post' of an "experience", regardless of their objective value, are often perceived in a very subjective manner. The subjectivity of the experience shows itself either at the perceptual level (duration of time intervals), as differences in the expectations about the experience and, as well, in its memory. The subjectivity of the time dimension is clearly related also to motivation.

Another cross-cutting dimension of the "experience" is the ludic one, related to the propensity of individuals to play. Although not completely independent of the other styles discussed above, it adds to the overall picture the inclinations of individuals toward 'alea', competition ('agon'), vertigo ('ilinx') and 'mimicry' [17].

The framework summarized in table 1, may also be linked to the 'use qualities': for example 'anticipation' may be related to the time dimension, motivation and subjective creativity; the playability to the 'agon' facet of the game and motivation; the ambiguity

and randomness to the 'alea' facet of the game dimension; the 'connecteness' to the social level of the interaction, etc.

The identification of all the dimensions of the "experience" is, in any case, still a very open issue. For example another aspect of the "experience" that is considered relevant is the 'sense' that it takes for the learner. However, intensity, breadth and perceived meanings of the "experience" are closely related to the motivation, to many of the styles already introduced above and, as well, to the design and management of the process that, in principle, should take into account the experience's styles of each individual. This is the reason because we have not included the 'sense' in the scheme of table 1.

Similarly, also 'seductivity' can be put in relation with strategic issues related to motivation and, as well, with the emotional level of interaction and the cultural background of the learner. And so the 'identity', that being relevant for both individual and process, involves, probably, a relationship between motivation and the characteristics of each process, besides the mimicry.

3 Learning styles: why one needs to go beyond

One can not propose a model of "experience" and an associated set of "experience styles" to be used also in educational processes without considering that, at least, in the last 40-50 years a considerable number of researchers have focused their attention on the so-called learning styles with the hope to offer customized educational processes.

The results of such studies are well summarized in a comprehensive overview [16] where 71 models of learning styles have been analyzed and grouped in 5 families sortable according to their degree of stability: one goes from the more stable one, the costitutionally (physiology and genetic) based, to those reflecting the cognitive structure (including patterns and abilities), to those considered components of stable personalities, then to flexible-stable learning preferences and, finally, to the learning approaches and strategies. A deeper analysis of the 16 most popular models led the authors to criticize the concept of learning styles whose utility they do not believe has been demonstrated convincingly.

Our impression is that such unavoidable conclusion may depend partially on the lack of a reasonable attempt to unify the different backgrounds of the various models in a more general framework, to take into account the whole complexity of the educational process and of the "experience". And this, in turn, may derive by the lack of common intentionalities among three areas of activity - theoretical, pedagogical and commercial - that are weakly interacting and that make use, often, of different terminologies.

It is not by chance, thus, that to improve such scenario, in the previous paragraph we introduced the "experience styles", that should be regarded to as an extension of the learning style's approach, derived from a framework, experiential, which we consider more robust and comprehensive. Here it is not possible to compare critically the experience styles with even only the most popular models of learning styles. Nevertheless we want discuss in more detail two of them: the Kolb's model [18] and the Felder and Silverman's one [19]. We have chosen such models because they are

quite popular, are considered to be flexible-stable learning styles and, what is more relevant, can be associated to a given model of learning process.

3.1 Kolb's model

The four learning styles identified by Kolb - converger, diverger, assimilator and accomodator - reside on the transitions connecting the four-stages of a circular process - concrete experience, reflective observation, abstract conceptualization, active experimentation - called Kolb's model. The Kolb's model, however, is nothing but the reproposition of the older and more popular four-stage *scientific method* - observations, correlation, model development, theory development - which inspired, by the way, also another popular four-stage iterative process, although appropriately readapted: the *design process* (observe, design, prototype, evaluate).

Figure 3 shows the differences between the above cyclic processes with respect to the time scale of activities.

The main difference among the design process and the scientific method resides in the final goals: the better understanding of the world for this latter, the modification of the world for the former. There is an initial full correspondence between the initial phases of observation after which both give rise to a creative phase - search for data correlation and models development in one case and diverging/converging design for the other -, before arriving at the product release - theories produced thanks to an effort of abstraction and systematization from one side, prototypes as concrete proposals of world modification in the other. The fourth stage of the design cycle - evaluation - in the case of the scientific method is already included in the observation phase; this latter, in fact, always refers on the theory of measure and serves as theories falsification procedure.

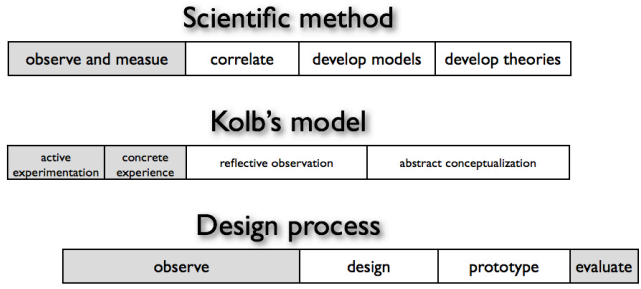

Fig. 3. Matches among the phases of three iterative processes: scientific method, Kolb's model and design process.

In the case of the Kolb model the observation phase of the scientific method is splitted into two - observations = active experimentation + practical experience - without a convincing justification. The reflective observation can be compared to the correlation phase of the scientific method and, partly, to the development of models, while an almost bijective correspondence appears to exist between abstract conceptualization and theory development.

The extreme similarity between the two processes is not surprising because both models are intended to represent the cyclical/spiral-like mechanism underlying the growth of knowledge. As well demonstrated by the success of the western civilization, the scientific method is a very powerful one and no one of its phases is less relevant of the rest: all are necessary for the development of the knowledge, so that one might wonders whether and how it would be possible to educate an individual by means of educational processes focused primarily on only a reduced number, even one, phases of such processes. In science, when one is in an advanced stage of study, begins to develop propensities toward the experimental or the theoretical works, but, as far as we know from long militancy in research field, good scientists do not renounce to follow all stages of a research program.

A final observation concerns a problem common to all linear processes - including circular ones which also run on an unique track - posed by the increasing and necessary attention to the complexity: the logic of "tertium non datur" has to leave an increasingly space to fuzzy logic, to parallelism of the trajectories, skills and competencies, and, as well, to liquidity.

3.2 Felder-Silverman's Model

The model of Felder-Silverman (FS), unlike the Kolb's model, is not proposing a set of styles distributed along a path of a process but a four-dimensional space of representation. At the extremes of the axis are pairs of opposite learning styles: active-reflexive, sensitive-intuitive, visual-verbal, sequential-global.

The main problems with this model is the not proven fully orthogonality of the axes of representation and the theoretical background that appear a bit nebulous.

Reading through the paper by Felder and Spurlin [20], it appears that:

- the first dimension, active-reflexive, is linked to two opposite transitions of the Kolb's model, as well as to an indicator of the Myers-Briggs's model (extravert-introvert);
- the second axis, sensory-intuitive, is linked to the other two transitions of the Kolb's model, and has strong roots also in the MBTI and VAK models;
- the third, visual-verbal, is also related to the VAK model and to the cognitive studies on the information processing;
- the last, sequential-global, to the differences in behavior of the two cerebral hemispheres.

In practice we are faced with a model for which half of the space of representation is associated with the iterative process of the growth of knowledge (Kolb's Model) and uses the four transitions as opposite extremes of two axes; the other half is associated with cognitive preferences and characteristics, in part perceptual (related to "input" channels) and in part to the information processing modality.

The aspect of this model that arise the major perplexity is, thus, the supposed lack of connection between the educational process (linked to two axes) and personal characteristics/preferences (related to the other two) that are proposed as independent dimensions of the space of representation.

In light of these reflections is not strange that all experimental studies to date leave considerable uncertainty on the orthogonality of the dimensions of the FS's model [21, 20].

The above discussion on a "sample" of learning styles' models should had convinced the reader about the need to rethink the theoretical foundations of this concept. One has to restart from a clear definition of the processes and to define the relationship between them and the personal characteristics/preferences that might contribute to make personal experiences more o less different from those lived by each other individual. Hence the need to define a new framework and a set of more comprehensive and robust styles: i.e. the "experience styles" that we proposed in the previous paragraph.

4 Still a challenge: the monitoring of the experiences

In a very general manner one can say that since “experience” is a complex process, it cannot be assessed any longer exclusively in terms of effectiveness and efficiency and/or on the bases of its outcomes, especially when the main focus is on persons participating in it, and not on the process itself.
The logical consequence of increasingly complex educational processes, like the “organic” one, is that assessment and evaluation should converge and integrate into the monitoring of the educational experience's quality. It is not an easy task, which, usually one tries to accomplish by defining grids and rating scales containing both qualitative and quantitative criteria derived upon her/his own personal idea of training experience.
Being well aware of the objective difficulty in defining the relevant qualities of an experience (see paragraphs II) and what may be their weight in the learning processes, one may wonder whether it would be possible to equip the teachers/tutors with tools able to help them in the quantitative and qualitative monitoring of the activities that are carried on during the processes. A request that becomes even more stringent in on-line processes which lack multimodal face-to-face interaction.

Fortunately, the educational processes mediated by the machine, like those taking place on-line or in blended configuration, generate copious amounts of electronic traces that, when properly channeled and analyzed, can come to our aid.

Whatever the tools and methodologies used, a shrewdness of those who design educational processes should be to pay attention that each activity leave at least some traces in a given place. Ideal from this point of view is the forum because it is particularly suited to collect analysis, brainstorming, storytelling, design diaries, etc. .

Texts, in fact, are still the traces that are left more likely by the learners in their training and the text analysis is still the most ecological way to obtain information on individuals, their socio-relational skills and, even, on the learning process.

Of course, once that traces have been collected one must ask her/himselves what aspects of the educational experience s/he intend to monitor and which indicators are the most appropriate to use. This is a very wide and quite new field of investigation!

It is clear that in the future TEL, DULP style, cannot avoid to take care of design and development of on-line environments able to ecologically monitor, synchronously and asynchronously (but in situ), the various levels of interaction and, in turn, the

experience styles of the learner and their dynamics. A related challenge will be to ensure that such monitoring tools will be fully integrated into the workflow of the usual educational processes and easy to use for everyone; not only useful to carry out "laboratory" experiments.

Monitoring the "experiences"	
experience's dimension	***strategies/tools***
cognitive level of interaction	internal: concept map (also from text analysis) I/O: visualization, reading styles, etc...
social level of interaction	quantitative: SNA qualitative: dynamic SNA, text analysis, social signals
emotional level of interaction	tests, text analysis, voice and para-verbal cues, biofeedback, behavioral patterns
physical level of interaction	activity patterns
motivation	questionnaires, verbal analysis, activity patterns
time - subjective dimension	questionnaires, verbal analysis, tests
time - objective dimension	test, activity patterns
creativity and propension to innovate	behavioral patterns, verbal analysis, tests
ludic propension	behavioral patterns, verbal analysis

Fig. 4. Monitoring the experiences: dimension and strategies/tools

Figure 4 summarizes for each experience style possible monitoring strategies.

Already some concrete steps in this direction have been made. In the past we have already shown how it is possible to monitor the cognitive evolution by mean of a quantitative evaluation of concept maps [22]; and more recently, how starting from an analysis of the interaction occurred in a forum, it would be possible to monitor the social and emotional characteristics of educative design processes [23], by integrating into learning environments, like LIFE [24], a combination of social network analysis

(SNA) [25] and automatic text analysis (ATA) [26]. In the future we may expect also the diffusion of real time analysis of emotional states and attention through facial expressions [27], and the proposal of further indicators and strategies [28] that we hope could be integrated in a unique vision.

5 Open questions and beliefs

At the end we do not want to present conclusions but, rather, open questions and beliefs.

While education, by its nature, should be characterized by a strong attention to contexts and characteristics of individuals, on the other the need to disseminate basic knowledge and optimize the use of human resources has led to the search for common "patterns" and mass solutions characterized by high levels of automation and standardization. And learning styles have been, obviously, part of this "business".

It is not by chance that designers, and instructional designers, engaged themselves in finding "glocal" concepts and solutions within which the peculiarities of the local culture could be associated with the universal characteristics of human behavior and those stemming from the requirements put forward by production processes on an industrial scale.

Many the questions then arise:

- if the experience styles are a good model to describe the experiences in their essence of complex process, how to use the data collected during their monitoring ? Should be used only to increase the level of awareness of the actors participating to the process to facilitate the acquisition of a critical attitude or, rather, to enforce or satisfy specific styles and behaviors? should it be done by a man or a machine?
- in this latter case to which extend high levels of automation can be developed and withstand the pressure of increasing complex and differentiated processes?
- would be possible to identify an intermediate level of local_universalities (glocalities) that could serve as a basis to support culturally contextualized processes mediated by flexible technologies ?
- if does make sense to think in terms of educational glocalities, what are the glocal technologies, processes and methodologies that could be flexibly readjusted to adapt themselves to other glocalities ?

Whatever the answers, our belief is that in the future Design and technologies have the duty to support the harmonious integration of all the experience's dimensions that make education of value for individuals.

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