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TROYES DECLARATION (2024)

Better Learning for a Better World 2.0. People Centred Smart Learning Ecosystems beyond 2030.

Executive Summary

This declaration should be considered as an update and complement to the Timisoara Declaration (2016). It accepts all the key statements in that document, and recognises its importance for the development from 2030 onwards of technologically augmented learning ecosystems centred on individuals who are expecting to become active and aware members of the social groupings to which they belong[1]. The hypothetical time horizon identified is 2040.
This new Troyes Declaration takes into consideration changes that have occurred during the last eight years: the role of learning ecosystems as an essential pillar of our societies, demonstrated to us very clearly by the COVID pandemic, and which requires constant attention from politicians and society as a whole, well beyond emergency situations; the burgeoning expansion of generative Artificial Intelligences; a growing awareness of the importance of skills based learning as a beacon for educational progress, capable of supporting students towards the achievement of their self-realisation, self-awareness and awareness of the finite resource of the world they inhabit; and finally, the emergence of the concept of 'wellbeing'[2] as a reference point and a goal for the design and development of processes, dedicated to supporting individual and collective learning experiences, from which the whole of society will benefit.
The following are the themes included in this updated declaration:

1) the integration of the ‘digital’ into educational processes in order to exploit the full potential offered by technologies and the political responsibility for achieving such goals; the inalienable right of the individual to have access to technologies to avoid the establishment of new and additional inequalities between human beings;
2) the inevitability of competence based learning and of ‘learning by being’[3] to guarantee students’ harmonious development and enable them to consciously and 3) responsibly inhabit the world and their own future;
3) the responsible use of technological and natural resources that must be the outcomes of appropriate educational paths and curricula;
4) continual awareness of, interaction with, and cooperation with artificial intelligences; V) 'wellbeing' as an aspiration for students, teachers, and all stakeholders actively involved in educational processes;

5) social responsibility for the education of new generations and intergenerational integration which is essential to foster the transmission of knowledge, skills, and competences;
6) the rethinking of physical spaces to adapt them for technologically augmented educational processes aimed at 'learning by being' and the development of appropriate competencies. The declaration concludes with a series of recommendations addressed to practitioners, policy makers and - ultimately - society as a whole, with the aim of inspiring actions and decisions for the years to come.

Premise

The Timisoara Declaration - reproduced in the appendix to this document - was drawn up in 2016 at a time when the disconnection between educational models still rooted in the needs of the industrial revolution and societies that were experiencing rapid technological 'r/evolution' at a speed unthinkable just a few years before through the transformative powers of web 2.0 was becoming increasingly clear. At that time, this disconnection was already being viewed with some urgency, and the recovery of the centrality of educational contexts (especially schools) as engines of social innovation and participatory territorial development was seen as particularly important.
The Declaration emphasised the relevance and the centrality of these educational contexts, which were undergoing a slow but progressive 'phygital' transformation (i.e. moving towards the integration of the physical and digital domains), and addressed them, perhaps for the first time, eco-systemically, through the definition of 'learning ecosystems' (LEs), which emphasised the centrality of the individual with respect to the technological context and introduced an innovative 'people-centred' definition of the concept of LEs 'smartness'.[1]
It identified seven themes, summarised briefly below, that were expected to emerge in the years to come and serve as reference points for the transformation of educational contexts into true people-centred smart learning ecosystems to support better learning for the realisation of a better world:

1) Smart learning ecosystems as engines of social innovation, territorial development, active citizenship and people smartness, all requiring the establishment of more meaningful relationships among educational agencies (schools, parents, and local community/stakeholders).
2) The social relevance of the school and work alternation schemes to generate virtuous interactions with productive realities, the third sector, research centres and the territorial community to increase and diversify students' skills, their employability and their capability to behave and perform as active and responsible citizens.

3) A fully interoperable tech ecosystem, accessible by all, to empower everyone, capable of fostering the realisation of phygital spaces (in which the physical dimension can be integrated seamlessly, when necessary and useful, with the digital one) and within which data can be easily transferred, and services used without barriers. At the same time we must bear in mind that technologies are smart not because they are capable of replacing human reasoning but rather because they can help towards achieving a people centred smartness, through streamlining mundane organisational tasks, and enhancing the skills of all actors involved in learning processes.
4) Open access to any kind of resources as an opportunity for all, supported by a network of people and professionals actively engaged in leading and supporting sustainable changes, regional and transnational cooperation which will foster personalised and contextualised learning for all.
5) Relevance of "new" thinking modalities and literacies with particular reference to: a) design and metadesign literacies which will help people find solutions to complex problems and become the authors of their own lives; b) digital literacies to be able to control technological environments safely and wisely, and analyse, filter and use the information they make available; c) data literacies to be able to distinguish between and evaluate multiple data streams and select the most useful and relevant ones (smart data) and extract actionable information and meanings through careful analysis.
6) The widespread culture of participatory benchmarking and evaluation of learning ecosystems' smartness to detect critical issues, monitor progress, suggest improvements and support co-design practices.
7) Continuous training and retraining of the actors involved in the design and delivering of learning processes to ensure that they can benefit from the transfer of advances in pedagogical and technological research, expected to act as drivers of innovation at both organisational and didactic levels.

Although these seven themes are still relevant today, the events of the past eight years, the progress of theoretical reflections on the underlying themes, and other experimental work, have highlighted the need to update the declaration so that it can still be offered as a landmark for the development of smart learning ecosystems well beyond 2030.
Among the events of the past eight years, the most disruptive has undoubtedly been the pandemic, which has made us realise how learning ecosystems are an indispensable pillar for the functioning of any society and, at the same time, how little attention and support they receive in times of non-emergency. In the course of the pandemic, many critical issues that afflicted educational ecosystems around the world with varying degrees of intensity emerged, together with potential mitigants developed by the served communities and territories. In this process, the need for lifelong learning on the part of those who work in schools emerged even more strongly, not only for updating on

the use of new technologies and the introduction of new methodologies but also for developing and managing relationships with all stakeholders in the educational ecosystem.

Another new element that has emerged in recent years has been the development of an awareness on the part of young people, in particular, of the need for a more responsible use of natural resources and of how behaviour on a local scale can produce significant effects at a global level (the butterfly effect). This growing awareness, even if it has not yet been transformed into an all-encompassing social commitment, bodes well for the construction of a future in which the habitability of our planet is preserved and protected, supported by the ability of smart learning ecosystems to train responsible citizens.

Finally, we cannot avoid considering the burgeoning development of generative 'artificial intelligences' (AIs) that, among other things, have also begun to challenge educational processes. Beyond normal discussion on the potential and dangers of any new technology, the advent of AIs inevitably leads to deeper reflections on the nature of what it means to be human, on the design of human-AI interactions, and raises ethical questions that impinge upon all the theoretical reflections of recent years. These include the concept of individual wellbeing, to which the context and the technological ecosystems that are part of it contribute, and the notion of competence[1] as an element capable of defining the difference between humans and AIs.

The updated Declaration that follows - written and signed by scientists, teachers, developers, and practitioners involved in the design, development, and operation of smart people-centred learning ecosystems - has attempted to take into account the events that recently had, and will continue to have, the greatest impact on the learning ecosystems and the processes they bring into play. It is hoped that this Declaration could be a source of inspiration not only for practitioners, but also for policy makers and society as a whole, and that it could therefore contribute to the development of an ever higher level of social responsibility, not only towards smart learning ecosystems but, above all, towards the future, which must be inhabited and protected by the citizens of tomorrow.

The pillars of the updated Declaration are:

I) Political and social responsibility to drive the digital transition of learning ecosystems - the revelatory power of the pandemic

The period of the pandemic (2020-2022) was revealing in that it allowed for the benchmarking of the growing digital transition of the learning ecosystems. In general, universities in developed countries proved capable of making the switch to online teaching within a few days, while much more time was required in the case of universities located in developing countries and by almost all publicly funded

compulsory educational institutions. It also emerged that the right to connectivity is not enjoyed by all school students, with disconnection rates, and hence potential dropout, ranging from 6-10% in developed countries and up to 50% in many developing countries.

Much worse was the situation from a pedagogical point of view, since only a relatively small number of teachers (perhaps 10%) demonstrated adequate preparation and technological awareness to quickly transform their didactic approach and redesign the educational process. The vast majority of teachers, irrespective of the level of the course of study on which they were teaching, did their best to bring their familiar, verified, and trusted methods online, but initially, at least, relatively few showed themselves capable of questioning traditional approaches in order to take advantage of the potential of technologies. This meant, for the most part, adopting well-tested tools for supporting collaborative work offered by big players such as Google, Microsoft, and Zoom, which were quickly made available to schools and universities. What also became clear was the relative insignificance of open source offers of equivalent tools and, likewise any potential they may have had for new educational applications that could be quickly and easily adopted by a large section of the teaching population.

It is also not particularly comforting that policy makers, having realised the socio-economic relevance of the learning ecosystem, and in particular of schools as social shock-absorbers, and after having done their best to support the continuation of educational processes in the emergency phase have since shown very limited leadership in supporting and guiding more extensive digital transition and a real transformation of educational processes.

All this emphasises the fundamental relevance of point 7) of the previous Declaration, with particular regard to teacher training, which must be transformed everywhere into continual lifelong learning, moving away from seeing competence in the use of new and emerging technologies as necessary only in emergencies. Furthermore, it highlights the failure of most research programmes devoted to the development of educational applications, which are still a long way from satisfying point 3) of the Timișoara Declaration. It is also evident that there is a need for political leadership capable of guiding the transition to augmented phygital learning ecosystems. Such leadership should be accompanied by an appropriate level of social responsibility on the part of all members of the community of reference of each LE - including the older generations - towards the development of new generations as responsible and resilient individuals capable of responding quickly and appropriately to unforeseen and/or endemic critical situations. This brings us back to point 1) of the Timișoara Declaration, and also includes the second one.

II) The necessity of competencies based learning and of learning by being

The school-factory model characterised by progression being associated almost exclusively with the age of the students, together with an increased focus on inclusion, has led over the years to a downward slide in the qualitative level of learning process and outcomes. In addition, as a result of rapid technological innovation, this model has actually widened the gap between the skills and competencies required by the new economic and social world, and those provided by schools. Increasingly, it seems that these can no longer be developed solely through institutional learning pathways (secondary and tertiary education), a phenomenon sometimes known as the skill/competencies mismatch.

It is therefore inevitable and necessary to begin a paradigm shift from learning by knowing (based on the transmission of knowledge), through learning by doing (aimed at the development of skills), to learning by being, in which progression within institutional learning pathways is determined by the progressive development of an integrated set of skills/competencies. But which skills/competencies? We are referring to basic skills/competencies, described by the OECD PISA framework, integrated with transversal/life skills, with the specialised skills relevant for a given sectors of interest (which determine the specialisation of individuals and workers) and finally with soft digital skills; the latter seen as an add-on and amplifier of the other skills/competencies and as a necessity for full digital citizenship.

It is important to emphasise that transversal/life skills/competencies are no less relevant than scientific ones, because while the latter allow us to solve well-defined problems and to model them (defining our knowledge and description of the world), the former are essential for tackling the ill-defined problems we are confronted with on a daily basis and which require the deployment of interdisciplinary approaches and an adequate design literacy in order to identify 'optimal' solutions (i.e. capable of modifying the world and the state of things), as already partially highlighted by the Timisoara Declaration.

At a time when applications based on artificial intelligences are rampant, the possession of an adequate level of competencies is what still allows the human to be distinguised from AIs. Thanks to their competencies, humans can go beyond the combinatorial space accessible to an AI and produce new cultural products and innovations which can enrich our cultural space.

Inevitably, the assessment system should also undergo significant changes. Grades and judgements should be gradually abandoned in favour of monitoring, formative assessment. Micro-certificates should attest to the competencies developed and should be associated with an e-portfolio that will accompany the individual throughout her/his life.

The implementation of such a system implies the definition of an integrated competencies space (identified above), that will eventually be accepted and used by most institutions.

III) Responsible use of technology and natural resources

Learning by being and being competent are important for individuals but also for society as a whole, because individual behaviour will be reflected in the responsible and ethical use of natural resources we have at our disposal and, thus, of the technologies and artefacts produced by them under human guidance. These technologies and artefacts inevitably consume energy, water, and other natural resources and lead to a qualitative change in the availability of these resources, as well as in the atmosphere in which we all live and breathe. The ethical and responsible use of technology is one of the factors contributing to individual and societal wellbeing.

IV) The role of the AIs

Artificial Intelligences are destined to pervade our daily lives far more than they have done so far. Therefore, it is important that younger generations understand their role and develop the necessary know-how to interact with them, using the strengths they possess while being aware of their weaknesses and the risks they may run. AIs are able to explore data spaces, which also serve as the basis for their training and speeds unthinkable for humans. Thanks to this capacity, they can produce, in equally short times, answers and inferences resulting from their exploration of the combinatorial space that can be generated from the databases at their disposal; answers and inferences that, with increasing probability, will come very close to the standard answers that a skilled, but not competent human could give. However, the day will soon come when AIs will be able to generate inferences whose patterns contain within them the seed of randomness. However, since they have no awareness or consciousness of the results produced nor of the context of reference, they will not be able to decide on their significance. For many years to come, therefore, it will be humans, thanks to their learning by being and the competencies they have acquired, who will be able to give value to such inferences and explore them creatively. The execution of repetitive tasks, the filtering of huge amounts of data, the selection of significant details, and their generative combination, also within evolutionary contexts, are among the main tasks in which AIs can assist humans. The latter, therefore, have to be educated to take advantage of such potentialities in order not to be the object of yet another technological divide. At the same time, the development of their own sets of advanced competencies should help humans to understand the limits to which AIs are subjected, for instance due to potential biases introduced by algorithms or to the limitedness of the databases used for their training. With the “democratisation” of the use of AIs,

these will almost inevitably be subjected to ever weaker controls. Younger generations, as well as the dangers of familiarity that might lead to an uncritical acceptance of the solutions proposed by AIs, will also have to be aware of the dangers of the loss of some abilities acquired by humans over the centuries, such as those associated with geospatial mobility, awareness of the diversity of cultures or of translating ideas between different languages.

V) Supporting Wellbeing

Supporting the wellbeing of all actors contributing to the development of the learning processes realised by the learning ecosystems is essential so that individuals can harmoniously develop their learning by being, that is, their being competent. Wellbeing, therefore, should not only refer to students and teachers, but must also concern those who are engaged at the organisational and management level. Moreover, wellbeing is a multidimensional factor that includes both the dimensions that can be affected by the physical and technological context with repercussions for the individual, and the dimensions determined by the interaction between individuals within that context. The well-being associated with a learning ecosystem and mapped onto its smartness can thus be traced back to point 7) of the Timișoara Declaration above.

VI) The social responsibility for younger generations' learning and growing

Learning ecosystems are not closed - like all ecosystems, they interact with the broader territorial context in which they are located, as well as with entities that are expressions of a regional, national and international systems. We might think, for example, of the European Union and its cooperation agreements with third countries. Therefore, the responsibility for the cultural growth of individuals should be assumed by society as a whole and by each of its members. Although the sense of social responsibility is quite high in some countries, it is not equally developed in all contexts. Particularly in the most difficult contexts, the learning ecosystem can become a bulwark against cultural poverty, marginalisation, and delinquency and can become a point of synergetic gathering and integration of all resources and competencies. Among these, it is also important to include the older generations in order to validate their experiences and skills acquired over a lifetime and transfer them to the new generations.

VII) The transformation of physical spaces into phygital spaces

The integration of digital environments in educational processes, the adoption of learning by being and competence-based teaching, the responsible use of resources,

the support for wellbeing, and the centrality of educational ecosystems with respect to society and the territory of reference, require a rethinking of spaces both in terms of distribution and - when they are not designed from scratch and cannot be readapted - in functional terms. The few experiments carried out over the past twenty years in which spaces with different functionalities have been occupied by learners on a rotating basis, depending on the skills to be developed, should become best practices to be imitated and used in all countries of the world. Similarly, the responsible use of resources and energy self-sustainability, the opening up of spaces to interaction with the territory, and technological infrastructures - including the embedding of sensors (smart spaces and objects) - should also become indispensable design principles.

Following on from the reflections proposed so far, it seems useful to provide a series of recommendations that hopefully could guide the work of all stakeholders (researchers, those who work in educational contexts, those in charge of production and service provision, all citizens) in the coming years. The mode of development resulting from these recommendations should be as participatory as possible, through co-creation processes involving the aforementioned stakeholders.

Recommendations

Raise awareness among politicians and decision-makers of the importance of supporting with adequate resources the development of garrisons of active citizenship, social innovation and territorial development centred on smart learning ecosystems.
Overcome the school-factory model in which advancement is largely age-driven, to embrace an education system whose progress is marked by the acquisition of progressive level of competencies (learning by being).
Define an integrated framework of competencies, develop a system of micro-certifications based on this integrated framework and an interoperable e-portfolio in which to collect the micro-certifications obtained, possibly anchored to blockchains.
Foster the development of a sense of responsibility towards the use of natural resources in the citizens of the future in order to preserve the wellbeing of society as a whole.
Foster an adequate awareness of the differences between AIs and humans and the potentialities of their collaborative interplay; foster and support a reflection on the social implications of the use of AIs and on the most significant ways of interacting with them, the robotic systems, and/or any other technology in which the AIs are integrated.
Support and monitor the development of the wellbeing of all actors contributing to the realisation of the learning processes, and that generated, as reflection, in the communities of reference.
Encourage social responsibility on the part of all members of the communities of reference towards the education of the new generations and the development of smart

learning ecosystems also by adopting new development models centred, for example, on participatory co-creation, crowd resourcing and the valorisation of the older generations.
Favour the design of new spaces, and/or the functional redesign of existing spaces through progressive 'phygitalisation' with the aim of fostering the adoption and dissemination of learning by being.

signed by

ANP, APSCE, ASLERD, ATIEF, CKBG, ISLS, IAIED, SOLAR

[1] It also makes explicit our support for ensuring ‘inclusive and equitable quality education and promote lifelong learning opportunities for all’, as articulated by UNESCO in Sustainable Development Goal 4.
[2] It is a multidimensional construct that integrates the contribution to individual well-being provided by the context in which one operates with that derived from personal psychological and social implications. The first of these contributions includes the quality of infrastructures, resources, services, the satisfaction of food needs, the quality of the environment, safety needs, etc. The second of these contributions includes, the quality of social interaction, the satisfaction derived from the level of competence expressed in the processes in which one is involved, the level of challenges presented by these processes, the level of perceived self-fulfillment.
[3] ‘Learning by being' is achieved thanks to learning processes, strategies and teaching methodologies that aim to accompany the individual in her/his becoming competent. In this it goes beyond, and is complementary to, ‘learning by knowing’ focused on the transmission of knowledge (both theoretical and practical), and ‘learning by doing’ focused on the development of skills and know-how.</small
[4] It is worth pointing out that the ‘smartness’ of LE is not exclusively given by digital tools, or even AI, but is above all people smartness, which often, but not always, can be augmented by technologies, including AI.
[5] Competence means “acted knowledge”: the ability to mobilise knowledge, skills, personal abilities, to handle situations and solve problems, autonomously and responsibly, even in unfamiliar situations, taking into account the boundary conditions determined by the context and, when possible and useful, with the support of creativity and innovativeness also in order to produce new ‘objects’ of knowledge.