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New learning scenarios for the 21st century related to Education, Culture and Technology

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Abstract

This paper presents a summary of proposals and new learning scenarios for the 21st century related to the theme of "Education, Culture and Technology". These proposals and scenarios are based on the work conducted in 2014 by a group of experts from Andorra, Catalonia, the United States and the United Kingdom during the International Forum on Education and Technology (FIET) held in Tarragona, Spain. The main aim of this work is to analyze the interconnection between education and culture through the discussion and selection of best practices and to identify the role played by technology in this process. The methodology used in this qualitative research was the focus group, whereby a group of experts analyzed and selected a range of good practices related to the main issue. The results of this process were shared at two plenary sessions with 100 expert reviewers and 500 educators. After considering the challenges faced by education in the 21st century and the best practices selected by the experts, it was agreed that digital technology can promote the dialogue that is needed to create a culture of innovation and enhance new ways of learning, participating, and contributing to local and global culture. At the end of this paper we make several proposals and recommendations for constructing learning environments that integrate education, culture and technology for a transformative experience.

Keywords

education, culture, technology, new learning environments, competences, transforming experience

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Nuevos escenarios de aprendizaje para el siglo XXI relacionados con la educación, la cultura y la tecnología

Resumen

Este artículo presenta un resumen de las propuestas y nuevos escenarios de aprendizaje para el siglo XXI relacionados con el tema de "Educación, Cultura y Tecnología" basado en el trabajo desarrollado en 2014 por un grupo de expertos de Andorra, Cataluña, Estados Unidos y el Reino Unido durante el Foro Internacional sobre Educación y Tecnología (FIET), celebrado en Tarragona. El objetivo principal de este trabajo se centra en el análisis de la interrelación entre la educación y la cultura a través de la discusión y la selección de casos de buenas prácticas, con el fin de identificar el papel que desempeña la tecnología en este proceso. La metodología aplicada en esta investigación cualitativa fue a partir de focus group*, donde un grupo de expertos analizó y seleccionó algunas buenas prácticas relacionadas con el tema principal. Los resultados fueron compartidos en dos sesiones plenarias con 100 revisores expertos y 500 profesionales del mundo de la educación. Tras considerar algunos retos para la educación del siglo XXI junto con los casos de buenas prácticas seleccionados por los expertos, se ha podido observar que la tecnología digital puede promover un diálogo para crear una cultura de la innovación, y al mismo tiempo mejorar las nuevas formas de aprendizaje, participando y contribuyendo a la cultura local y global. Al final del artículo se incluyen algunas propuestas y recomendaciones para la construcción de entornos de aprendizaje que integren la educación, la cultura y la tecnología para una experiencia transformadora.*

Palabras clave

educación, cultura, tecnología, nuevos entornos de aprendizaje, competencias, experiencias transformadoras

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Introduction

In March 2010, the European Commission launched the Europe 2020 Strategy[1], the aim of which was to overcome the crisis and prepare the EU economy for the numerous challenges of the next decade. In particular, these challenges include three features of the 21st century: the large number of digital technology users, ubiquitous learning, and the digitalization of culture.

Statistics show that in 2013 there were 2.7 billion Internet users around the world, representing 39% of the world's population (ICT Facts Figures, 2013; Eurostat, 2013). By the end of 2014, the number of Internet users was expected to be almost 3 billion, two-thirds of whom live in the developing world, and the number of mobile broadband subscriptions was expected to reach 2.3 billion globally (ICT Facts Figures, 2014). In Europe, over 250 million people use the Internet every day, nowadays with a major difference: people now carry the Internet in their pockets on their cellphones. This has definitively changed lifestyles and habits as users spend 80% of their time on their mobile devices, and more specifically on social media applications such as Facebook and Twitter (Hepburn, 2013). In 2013, there were almost as many cellphone subscriptions (6.8 billion) as people in the world (ICT Facts Figures, 2013).

The boundaries between the various digital devices are becoming blurred, while services are converging from the physical world to a digital world that has become universally accessible from any device. It is expected that by 2020 digital content and applications will be delivered almost exclusively online. The enormous potential of ICT requires attractive services and contents in a borderless Internet, with demand for higher speed and capacity in turn justifying investment in faster networks. The incorporation of digital technology into our daily lives has brought new approaches such as ubiquitous learning, where people can learn beyond formal contexts anywhere and anytime through social media, mobile devices and digital content.

Given the pervasiveness of technology in the knowledge society, a new digital environment has been generated in which digitization may be considered a marker of culture since it includes artifacts and systems of meaning and communication that clearly delineate contemporary lifestyle (Gere, 2002: 12). In this context, while technology has become a central element, we should not lose sight of its key role in the analysis of cultural policies.

All these aspects require significant reflection on the role of education and technology in providing easy access to the Internet and high quality learning opportunities for all.

A digital yearbook entitled the AC/E Digital Culture Annual Report[2], which aims to become a reference document for analyzing the changing trends in the world of digital culture, has recently been launched. This report has analyzed major technological and digital trends, from the impact of new concepts such as "gamification", "transmedia narrative" and "crowdfunding" in the cultural sector, to topics such as the culture of cloud computing, the selling of Internet culture, and the role of social networks in promoting culture (Celaya, 2014: 3). Identifying new approaches, relevant trends and best practices has therefore become essential to addressing future challenges by developing and implementing a strategic action plan related to education and ICT.

The aim of this paper is to analyze the interconnection between education and culture through discussion and the selection of new learning scenarios in order to identify the role played by technology in this process. We focus on the First International Forum on Education and Technology (FIET), which was held in Tarragona, Spain, in 2014. The

1. Europe 2020: http://europa.eu/rapid/press-release_IP-10-225_en.htm
2. AC/E Acción Cultural Española: www.accioncultural.es

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aim of FIET 2014 was to gather renowned experts from Catalonia and abroad to discuss and propose national and international recommendations on education and technology for the 21st century. FIET was one of the initiatives that commemorated the tercentenary of the events of 1714, one of the most important dates in Catalan history. This meeting gathered over 500 educators and education and technology professionals. The FIET expert team also provided strategic reports with significant proposals from a wide range of perspectives on what the future of Catalonia as a society should be like. The FIET report also included a showcase for the best projects and education-, culture- and technology-related practices in Catalonia and abroad in order to highlight new learning scenarios in those areas.

This event, which was organized by the Rovira i Virgili University (Tarragona), comprised eleven themes, each of which was discussed by groups of national and international experts in order to explore education for the 21st century. This paper presents the main outcomes emerging from the seventh theme, the aim of which was to understand the interconnections between education, culture and technology. The group responsible for this theme[3] aimed to identify new learning scenarios that integrated education, culture and technology, particularly to promote the development of key skills for collaborative open learning in the digital age.

Key skills for collaborative open learning in the digital age

Technology has provided new opportunities for promoting open "learning culture" for all by helping people to develop the habit of learning throughout their lives (Hodkinson, Biesta, James, & Gleeson, 2005; Delni, 1998; Kukulska-Hulme, 2010). Thanks to digitization and new technology, culture is shifting from being a sideline context to a central subject at the heart of life itself (Holden, 2008). The landscape has been transformed by the growth of the creative economy, mass collaboration, participatory culture, and peer production.

Informal settings and open environments such as museums and cultural centers offer great potential for communicating social, cultural and scientific information, correcting misconceptions, enhancing attitudes, and improving cognitive skills. Digital technology is allowing these cultural spaces to become more interactive and innovative (Okada, 2014).

Learning in informal environments such as real or virtual museums is, in the broadest sense, a product of the free interaction between visitors and exhibitions or performances. Cultural institutions provide unique opportunities not only to examine how people learn during their leisure activities but also to provide alternatives to the formal educational system (Screven, 1996; Hawkey, 2004).

Innovative teachers have been helping students integrate their learning beyond schools by creating opportunities for ubiquitous learning. Via mobile technologies, students can develop their critical and creative thinking with teachers at school and interconnect it with informal and non-formal contexts. The idea that education is everywhere is widely accepted today. In this sense, museums, theaters, libraries and cultural centers generally provide a stimulating environment and are excellent channels for communication and cultural learning.

3. This group was coordinated by Ramon Palau (Rovira i Virgili University). National experts from Catalonia were Valentí Puig (writer and political analyst), M. Carme Jiménez (Ramon Muntaner Institute), Ferran Ruiz (School Education Council of Catalonia), Xavier Cubeles (Culture and Tourism Laboratory of the Barcelona Media Foundation) and Gemma Sendra (CoNCA; Catalan National Council for Culture and the Arts). International experts representing the United States, the United Kingdom and Andorra were Larry Johnson (Horizon Report), Alexandra Okada (The Open University) and Cristina Yáñez (University of Andorra).

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These environments provide communicative and active spaces for encouraging individual and group learning. In free digital culture (Lessig, 2004), learners become more engaged as co-creators of experiences and resources. Cultural development and innovation bring benefits not only to the content industry but also to the general public and to creators. Museums, libraries and cultural centers should therefore be designed to suit individual needs and preferences and promote open content (Yáñez, Gisbert, & Larraz, 2013).

Based on free digital culture, the key skills for educators and professionals of cultural institutions are:

- Investigating cultural, technological, political and economic trends of importance to museums and cultural centers.
- Redefining the role of museums, libraries, archives and other cultural institutions within the learning ecosystem as well as the learning culture.
- Promoting the necessary objectives and outcomes for measuring the impact of learning in museums, archives and libraries through educational face-to-face and online events, activities and cultural projects.
- Enriching education in these cultural institutions as providers and exciting nodes in the learning ecosystem (Prince, 2014).
- Identifying and establishing more opportunities through technology for expanding and innovating learning through interactive interfaces, digital repositories, mobile devices, and online communities.
- Creating new opportunities for promoting co-learning (open collaborative learning) through innovative curricula, collaborative open projects, and cultural and scientific partnerships for formal, informal and non-formal education (Okada, 2014).

Some key skills for learners in formal, informal and non-formal environments in virtual or real settings are:

- Exploring the hyper-connected world, which includes real and virtual environments (e.g. museums, libraries and cultural centers).
- Using technology to develop better individual and collective understanding in various educational and cultural settings in and beyond schools.
- Searching constantly for learning opportunities and playing an active and participatory role in groups, networks and society.
- Recreating, sharing and collaborating with innovative knowledge in local and/or global communities.
- Developing technical abilities for continuous learning by keeping up-to-date and acquiring new skills in real and virtual environments.
- Developing creative and critical thinking in order to enjoy life and participate in society through ethical social and cultural citizenship.

Goals

Our main goal was to analyze the interconnection between education and culture in order to identify the role played by technology as a change vector in this process and make recommendations for constructing learning environments that integrate education, culture and technology in transformative experiences.

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The specific goals on which the interdisciplinary panel of experts based their discussions, key issues and proposals were:

1. To examine the state of the art in both the Catalan and international arenas.
2. To review and analyze exemplary good cases that have integrated education, culture and technology.
3. To establish actions as challenges for the future.

Methodology

The methodology used in this qualitative research was a focus group of eight national and international experts and two plenary sessions: the first with 100 expert reviewers and the second with a public audience of 500 educators.

FIET was planned in three large phases. The first phase included an analysis from a perspective that aimed to rebuild obsolete boundaries between education and culture. The second phase provided findings on a descriptive status of the issue and a selection of best practices in which culture and education come together via technology as a facilitator for designing new learning scenarios. The third and final phase compiled and presented the resulting proposals.

To achieve these goals, several key references and relevant documents were proposed and discussed by the experts, including: the Horizon Report (Johnson, Becker, & Freeman, 2013), Trendwatch (Merrit, 2014), the MIDEA program[4], UNESCO's brief on museum and education (Boyko, 2012), the LEM project[5], the Smithsonian Institution (2009), the New Media Consortium[6], Telos Journal (Telefónica Foundation)[7] and CoNCA (Catalan National Council for Culture and the Arts)[8].

Based on these references, emergent technologies were highlighted with examples of best practices suggested by experts from group seven. Also, the following categories were proposed by these experts in order to classify the practices and projects selected:

Categories

1. Creativity, art and knowledge through technology
2. Education and culture in an integrated curriculum
3. Accessing knowledge and promoting reading
4. Technology for creating knowledge
5. Robotics
6. 21st-century skills through "participatory culture" and open learning technologies
7. 3D and augmented reality applied to cultural heritage

Gangopadhyay analyzes two important issues. The first one deals with how museums and cultural centers in general can participate in the rapid innovation and transformation taking place in education and learning. The

4. MIDEA: Edward and Betty Marcus Institute for Digital Education in the Arts. http://midea.nmc.org/
5. LEM - The Learning Museum Network Project. http://www.lemproject.eu/
6. http://www.nmc.org/
7. TELOS, Journal of Communication and Innovation. www.telos.es
8. CoNCA: http://www.conca.cat/

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second one deals with how they can gain more attraction and visibility. The author focuses on new learning scenarios and experiences and highlights three core strategies: they must be proactive, relevant, and "top of mind" in education (Gangopadhyay, 2014).

a. **Proactive:** practices that enhance the building of knowledge, focus on youth as "knowledge creators" and transfer knowledge acquisition processes beyond the classroom. Learning can happen anytime and anywhere and therefore cannot be shoehorned.
b. **Relevant:** practices that contribute to learning processes through unique contents and multidimensional problem-solving methodologies and enhance people's engagement in technology for learning and developing knowledge and 21st-century skills. This practice should include the four A's, which allow a learning model to design relevant experiences: Acquisition, Association, Application and Assimilation of knowledge.
c. **Top of mind:** practices that offer attractive approaches such as: gamification, edutainment, the application of game mechanics in non-entertainment environments using resources such as augmented reality, coding, online publications, enriched videos, 3D printing, and any resource that combines on-off online practices.

Based on Gangopadhyay's three core strategies, the experts designed a grid with a Likert scale of 1 to 3 to analyze and evaluate each indicator case by case. This grid enabled the experts to analyze each of the experiences selected by the same criteria.

Projects and practices selected

The following table lists the national and international practices selected from the categories mentioned above.

Table 1. Summary of best national and international practices selected before FIET and analyzed and evaluated at FIET

Category	*Title of project*	*Description*	*Internet site*
1. Creativity, art, knowledge through technology	Gallery One, Cleveland Museum of Art	Interesting, new interactive gallery at the Cleveland Museum of Art. Creativity, art, knowledge through technology. Interface of human movement.	http://www.clevelandart.org/gallery-one/about https://www.youtube.com/watch?v=qWJqd6lyJ-E&feature=youtu.be
	DevArt creativity	DevArt is a new type of art made with code by developers that push the boundaries of creativity and technology.	https://g.co/devart
2. Education and culture in an integrated curriculum	Learning through the Arts	The Royal Conservatory reveals the profound impact music and the arts have on human development and demonstrates how these are needed to foster a cultured society. The aim is to develop a new digital strategy based on the creation of online music education courses, teacher certification programs, and an early childhood education curriculum for children up to six years old.	http://learning.rcmusic.ca/ltta

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Category	Title of project	Description	Internet site
3. Accessing knowledge and promoting reading	Library for All	Library for All is a non-profit organization that exists to unlock knowledge to those in developing countries without access to books. To do so, they have created an application to enable delivery of eBooks to people in developing countries at much lower cost than would be incurred by building physical libraries. The content is made available on low cost devices such as tablets, mobile phones and PCs.	https://www.libraryforall.org/
4. Technology for creating knowledge	CoderDojo	CoderDojo is a decentralized, non-profit, worldwide initiative that originated in Ireland and aims to teach programming skills to future generations. This is the example from Leon (Spain), where children aged from 8 to 15 share their knowledge and learn programming.	http://coderdojoleon.wordpress.com/
5. Robotics	Robots & Museums	The University of Lincoln's robot, Linda, which mingles with visitors at London's Natural History Museum, is designed to learn about its surroundings and make it easier to work in human environments. Taking Linda to the Natural History Museum is a fantastic opportunity for people to see how robots like Linda will, one day, be able to aid and assist humans in a variety of roles.	http://www.gizmag.com/linda-robot-self-learning-museum/32267/
6. 21st -century skills through "participatory culture" and open learning technologies	Key competences for collaborative open learning in the digital age	This work was supported by the Telefónica Foundation as part of a massive event on 21st-century education that integrated themes such as culture and technology. The aim of the participants was to collaboratively investigate key skills for co-learning in massive open social platforms.	http://oer.kmi.open.ac.uk/?page_id=3918 http://encuentro.educared.org/group/nuevos-enfoques-de-evaluacion-en-la-era-del-co-apr
	Apps for Good helps young people make their future with new technology	Apps for Good unlocks the confidence and talent of young people through creative learning programs in which students use new technologies to design and make products that can make a difference to their world. Its roots lie in the favelas of Brazil, where CDI (Center for Digital Inclusion) started computer-based learning programs in the 1990s. Their future is to become a global platform for creative learning through technology.	https://www.youtube.com/watch?v=PAOVyFnz0W8 http://www.appsforgood.org/public/about-us
	Cultural Heritage Experiences through Socio-personal interactions and Storytelling	CHESS (Cultural Heritage Experiences through Socio-personal interactions and Storytelling) is a project co-funded by the European Commission that aims to integrate interdisciplinary research in personalization and adaptivity, digital storytelling, interaction methodologies, and narrative-oriented mobile and mixed reality technologies, with a sound theoretical basis in museological, cognitive, and learning sciences.	http://youtu.be/fZRiE7VR-xw http://www.chessexperience.eu
	Berklee, the first university to offer music learning online	This online bachelor degree program was the first flexible option for studying a music degree online.	http://online.berklee.edu/music-degreesBerklee
7. 3D and augmented reality applied to cultural heritage	Google Art Project	The Google Art Project is an online platform through which the public can access high-resolution images of artworks housed in the initiative's partner museums. The platform enables users to virtually tour partner museums' galleries, explore physical and contextual information about artworks, and compile their own virtual collection.	https://www.google.com/culturalinstitute/project/art-project https://www.google.com/maps/views/streetview/art-project?gl=us

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Results

The core of this research lies in the discussion of several subjects concerning education, culture and technology compiled in the scientific literature and in various reports that have analyzed the future changes in technology and the trends in education and museums. One of the main goals was to highlight cases of exemplary good practice in both the Catalan and international arenas with regard to education, culture and technology.

The experts discussed key challenges facing education in the 21st century, the integration of education and culture, and key concepts such as cyber culture and the third culture. The group also aimed to:

- Explore the borders between education and culture, and analyze the role of technology as mediator between the two.
- Identify the main topics associated with education, culture and technology.
- Consider cultural centers as new agents that can play a leading role in informal learning where formal education does not succeed. Consider culture as a basic asset for education where technology must enhance the design of new learning scenarios.
- Highlight cases of exemplary good practices that deal with education, culture and technology in both the Catalan and international arenas and make proposals.
- Explore democratization and the access to culture through Web 2.0, technology, and the social media.
- Analyze the development of new forms of communication and creativity in order to reach a broader public.
- Identify emerging technologies and future scenarios and environments as necessary tools for innovation.
- Measure the impact of technology on culture and person-centered creativity.

The interdisciplinary panel of experts reached consensus on the following statements regarding the interconnection between education and culture and the role of technology for a transformative experience:

- Democratization and access to culture are expanding through Web 2.0 technology and the social media.
- New forms of communication and creativity can reach wider audiences.
- Innovation can come from exploring emerging technologies and future scenarios.
- Cultural centers may be new agents with a leadership role in informal learning where formal education is not effective.
- Culture is seen as basic education where technology should facilitate and improve the design of new learning scenarios.

The national group summarized key issues regarding the challenges and interconnections between education and culture in Catalonia.

- The new reality – digital culture – is an opportunity for talent, inventiveness and innovation, as well as a platform to enable Catalan culture to have a greater and better presence beyond our borders.
- The Internet can be a valuable ally for creators since it provides new spaces for artists to present their work and generate new abilities for their creative potential.

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- The cultural industry must have initiative and insight in order to anticipate new trends and adapt to digital transformation.

The panel of national experts reached consensus on the following statements regarding the interconnection between education and culture and the role of technology for a transformative experience in Catalonia:

- The new paradigm allows for more targeted content, horizontal circulation, more active consumers in the selection and evaluation of content, and new options for accessing culture. However, it also presents a new risk of exclusion.
- The culture industries need to adapt fast to the new digital reality.
- Agents must go further in developing public cultural digital versions of services, activities and contents.

From all the examples of best practices analyzed, those that scored highest in terms of relevance in promoting knowledge and education, enhancing proactive actions, and setting trends for the future use of technology, were:

Table 2. Selected best practices

Criterion	*Highest scoring practices*
Proactive: practices that enhance the building of knowledge and transfer knowledge acquisition processes beyond the classroom. Learning can happen anytime and anywhere.	1. Berklee, which is the first university to offer music learning online 2. Apps for Good, which helps young people create their future with new technology 3. CoderDojo 4. Library For All
Relevant: practices that contribute to learning processes through unique contents and multidimensional problem-solving methodologies, enhancing people's engagement in technology to learn and develop knowledge and 21st-century skills.	1. CHESS (Cultural Heritage Experiences through Socio-personal interactions and Storytelling) 2. Key skills for collaborative open learning in the digital age 3. Learning Through Art
Top of mind: practices that offer attractive approaches such as: gamification, edutainment, the application of game mechanics in non-entertainment environments using resources such as augmented reality, coding, online publications, enriched video, 3D printing and resources that combine on-off online practices.	1. Gallery One, Cleveland Museum of Art 2. Google Art Project 3. Robots & Museums

The three best international practices selected and presented at FIET by the panel of experts in group seven were:

Final best international practices
Gallery One, Cleveland Museum of Art Cultural Heritage Experiences through Socio-personal interactions and Storytelling Berklee, the first university to offer music learning online

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Discussion on future learning scenarios and trends

Discussions on the importance of technology and the digital revolution and their transforming effect are not new. However, it is important to make an assessment in order to better understand the new future learning scenarios for prospective and make the changes that are needed to enable adaptation. Trigos (2014) defines two fundamental pillars for meeting the new scenarios for digital technology in the cultural sector: (1) full and easy access to the digital world, in terms of total or unlimited accessibility of space or time (Hawkey, 2004); and (2) the creation of digital spaces for conversation, exchange and interaction between users and businesses.

There is no doubt that technology has brought about a change in content consumption and cultural experiences. The widening range of digital culture available requires a new response to consumers' demands. Institutions need to adapt to the public's needs and demands and therefore to new cultural consumption patterns. "The strategy revolves around the customer" (Trigos, 2014: 56). The objective is to align the entire content process from its conceptualization to its commercialization while taking into account the users' needs. It is important to retain the customer by offering highly demanded cultural content.

In 2002, the DigiCULT Report (2002) on the future technological landscape emphasized technology, organizational and financial aspects, operations, and services in accordance with the demand and need for a policy framework for the proper management of digital culture and heritage. The report included a series of recommendations for governments, administrations and museums that were intended to encourage greater context, more explanation and clearer interpretation of objects from collections through digital resources and therefore exploit the opportunities presented by the digital revolution (Mancini, 2008). It also analyzed the implementation of digitization and preservation in the cultural sector as tools for obtaining greater competitiveness and economic benefit (European Commission, 2010; European Commission, 2012; Alzua-Sorzabal, & Gil-Fuentetaja, 2006).

A map of skills and expected outcomes in education, technology and culture must be drawn up, while future trends in emerging technology and problems involving the use of technology must be identified.

Future challenges and trends

Several future challenges and trends arose from these discussions. Once the debate had ended, the experts summarized the research and discussions conducted with one long question: how can digital technologies be disseminated and used, digital inclusion and digital culture be enhanced, and culture be democratized? As the answer to this question requires several actions, the following recommendations were made:

1. Ensure worldwide accessibility and connectivity, especially broadband. This is the starting point when it comes to digital culture, inclusion, connectivity, sharing, or any other idea related to education, culture and technology.
2. Promote research into open content, open data and open practices. Facilitate the dissemination and co-creation of knowledge through research, which means open data, openness and open content. While open data is a huge challenge, ethics must also be considered. The rights of creators and artists should be respected and guaranteed. Borders must be constantly explored.

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3. Consider formal and informal education. Learning strategies should be developed in order to approach informal and formal education. The environment must be considered as an extraordinary and irreplaceable scenario for learning.
4. Increase the digitization of culture in order to safeguard and ensure wide access. This implies promoting the central role of culture in education.
5. Develop policies for inclusion and participation as well as co-authorship in the open world. Prevent technological exclusion. These policies must guarantee open access to data and safeguard the creator's intellectual property rights in the open world.

Some important actions were proposed in order to meet future challenges. With regard to national recommendations for Catalonia, it is important to bear in mind how different consumption is in the digital space, where discussion is more about content accessibility than about the property issue. It is therefore necessary to anticipate new scenarios in which artists choose to distribute their creations or art without royalties and commit themselves to other means of financial compensation for their work over the long term. It has become imperative, therefore, to create new business models.

Debate about the transformation due to the digital environment mainly focuses on the management and protection of copyright and, specifically, on the fight against the piracy that is threatening the cultural and creative industry. As a cultural and political community that banks on creativity and is committed to excellence, Catalonia needs to participate in this debate and lead future proposals. Both creators and industry must be able to ensure their rights, and the government must design the legal framework to enable control.

The first global recommendation is to draw up a 21st-century key skills and global competences map of the best practices in education, culture and technology. To do this, skills and competences in these fields must be clearly defined. The role of museums, archives and libraries, as part of the learning ecosystem, must be analyzed. These institutions should also think more critically about their role in the changing landscape of education. The selection of exemplary good practice from Catalonia and the rest of the world is a first proposal in the construction of this map.

The second proposal is the creation of an Ideas Lab, or Think Tank, for education, culture and technology that also incorporates technical resources. This digital laboratory could become a meeting space for research, analysis and reflection in these disciplines where innovation and creativity can be fostered and entrepreneurship enhanced.

The ideas and results that have emerged from this FIET panel of experts are a starting point for the debate that is needed on the central idea of the relationship between education, culture and technology. It is important to understand that we need to go beyond technological tools since these are merely facilitators for designing situations and scenarios that encourage informal learning while generating motivation and access to culture. However, there is still much work to do not only in reducing barriers between the above-mentioned fields but also in ensuring access to culture. Accessibility, connection, scanning, and policymakers are therefore the keys to producing the main desired changes.

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