The times they are a-changin’
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The times they are a-changin’ used to sing Bob Dylan - since he is a Nobel Prize winner, we can name it - a few years ago: “The waters around you have grown”

In fact it is the typical comment that can be made at every period of history.

Last July, 11th and 12th, I attended the conference, the summit, of the European Entrepreneurship Education Network. At the Panellist Session, at the end of the second day conference, Shyamal Majumdar, the Head of the Unesco-Unevoc for Technical and Vocational Education and Training, highlighted that the particularity of our time was not that the times were changing but the speed of these changes. In his daily work, he travels around the world and knows well what he is talking about.

Then, another panellist, Joe Dablaere, CEO of Accenture, reinforced Shyamal’s words, commenting that a high percentage of the current services at his company didn’t exist 5 years ago. They are renewing their portfolio of services permanently.

When talking about changes and transformations, the CEDEFOP mentions five major changes: Unemployment, Globalization, Migrations, Aging Population and the Technological Advances.

Let’s focus, for today’s session, on the last one, the Technological Advances, specifically in what is known, since 2010, as the Industry 4.0 concept. This embraces different elements: the advanced manufacturing materials and processes, the smart manufacturing systems, the connected factory and the sustainable manufacturing. And let’s pay attention to one of these very relevant parts, Big Data.

Recently, at the beginning of August, I could watch a TV documentary on the relevance of Big Data in future years. It was titled Deluged by Data, very interesting and clarifying regarding the changes which are taking place; I think it can be watched on Youtube too.
Apart from showing a few striking facts about the quantity of data being stored, the documentary mentioned the concept of the **Data Revolution** and the broad type of activities that nowadays are being already monitored by different types of devices: smart phones, wrist bands, watches, and so on. It also commented on the **new businesses** which are being generated due to the demand of data, mainly in the field of the wearable and implantable technology.

Looking at it with a certain perspective, I can remember a number of jobs existing when I was a boy and which have already disappeared: The Grinder, the Horseman, the Street Photographer, the Blacksmith, etc.

Big Data technologies, among others, are already causing an environment of uncertainty which compel us to face new challenges, now opportunities and up to now unknown jobs. Only in the last three years more than 10 million new jobs have been created. Most of them originated due to the emergence of the new technologies, but not all of them. The tattoo artist, for instance, due to new fashions or believes.

In some cases, existing jobs disappear and are replaced by robots, like the **Amazon Robot**.

Regarding the new opportunities caused by the technologies, some cases are really astonishing, like the success of the web “**Aceros de Hispania**”, an online business, a web which implies the participation of small town of Teruel province, in the global market.

The effect of the changes, of technology on us is even bigger that we can realize at a first sight. In an article on the Spanish press, I could read an opinion on how the continued use of thumbs on screens may alter the functioning of our brain. On the documentary Deluged by Data, which I mentioned previously, members of **Quantified Self** group talk about the real possibility of becoming **Cyborgs** in a near future just by inserting in our bodies some robotic implants to canalize data. They talked also about the risk of becoming a kind of **posthuman beings** to whom data will be more relevant than instincts. Finally, **Klaus Schwab**, founder of the World Economic Forum and author of “**The
Fourth Industrial Revolution”, seems also convinced that we are at the beginning of a revolution that is fundamentally changing the way we live, work and relate to one another.

At this stage and focusing on VET, our matter of concern, two questions come to my mind, two questions that I want to reflect upon with you: If we want to improve the prestige (placing VET as a first option, a smart option) and to increase the added value of VET, what should we change in our VET systems? What should remain?

To start with, we should start reflecting on the current role of the VET systems in Europe. I would say that we should have in mind, at least from my local, Basque perspective, the double role we play: On one hand, we are requested to favour inclusion, labour, social, cultural inclusion, considering the lower levels, European level 1, 2 and 3, of VET. On the other hand, we are expected to promote innovation in the industrial tissue, at the SMEs, through European levels 4 and 5 mainly. Do we agree with this perspective?

This reflexion should take us to a better understanding of ourselves, to better know some current difficulties of the VET systems: lack of prestige, not being a first option for many students and families, or the latent confusion on terminology and definitions: VET, HVET, TVET, PHE.

From my point of view, we have to consider the VET system of the future as something different and richer in meanings. It has to be a Framework of Training, Innovation and Entrepreneurship, integrating the system of European Qualifications and Professional Training and leading to a set of Certifications of Competences, Titles and Awards.

To manage this framework properly, we have to rethink the responsibilities on education and training. The Strategic Triangle is a model which is becoming popular and there are a few projects dealing with the idea that VET institutions and teachers should better cooperate and collaborate with students and industries, the world of work, to improve employability and reinforce the competitiveness of European VET centres and SMEs.
On their behalf, many European companies which have suffered the effects of the economic crisis have shown stamina and determination changing their business models, their production processes and products in order to remain alive in the global market. Many of them understand better now the need for collaboration on training and participate actively in VET dynamics like the Dual System or the Work-Based Learning.

Regarding the students, we are all aware that a new generation is coming and entering our VET centres, a generation, some called them Millennials, with very different characteristics to the previous ones and who are demanding a bigger variety of active learning methods. They are students who don’t value information by itself, as they can find it everywhere, students who like to interact with one another, and who like to be treated at a personal level by the teachers. The so called Flow Channel, taken from the videogames strategies, seems to be a promising idea of the type of practices they are demanding from VET teachers and schools.

With regard to VET authorities and institutions, apart from nice polices and glamorous declarations we need a sound initial teacher training and development system to speed up the generational replacement, support and investment on new spaces and new buildings and a more courageous bet on innovation and entrepreneurship.

In the end, I believe that the labour market will finally have a big influence on the future of VET and, on this respect, we have to try and influence European and national public labour polices and demand an improvement of the workers’ status, hindering the loss of their labour rights, requiring decent wages and not allowing precarious employment conditions.

To match the initial approach of turning the VET system into a Framework of Training, Entrepreneurship and Innovation, further proposals can be as follows:

Firstly, we suggest adopting new learning methods and processes, mainly, the idea of implementing Challenge Based Learning, a very innovative approach which demands a great organizational effort but can reach very good results.

Secondly, the entrepreneurship education
must be really implemented at every VET school. There is already a wide experience across Europe on this aspect and the focus should vary from creating new real companies at the VET centres and promoting the entrepreneurial culture among students to the detection and transfer of promising practices, teacher training and the development and valorisation of entrepreneurial skills and attitudes.

Thirdly, the introduction of innovative services to SMEs, linked with the Industry 4.0 concept, in the services portfolio of the VET centres. The daily contact with companies accelerates the transfer of knowledge and increases the possibilities of cooperation, enhancing the trust between both types of organizations.

What I call Smart VET is a reminder for making us aware that regarding the use of ICTs in the educational system there is still a long way to go. Few centres are taking advantage of the possibilities offered by the Internet of Things to renew their buildings and facilities turning them into more efficient and sustainable organizations. We still lack VET eLeaders who care about the organisational architecture of the computer system at their schools and compromise with the provision of online programmes, the support of smart classrooms, smart teachers, smart students and with the implementation of advance management systems (processes, finances and persons).

To support and favour the fulfilment of the Digital Skills and Jobs Coalition Goals by 2020, initiatives similar to that proposal of Smart VET must be undertaken on a large scale.

For underpinning the Sustainability of our VET institutions I put forward the idea of adopting new policies in that field regarding the implementations of new projects in the area of Aquiculture, Water and Energy, Building, Furniture making, etc.

On introducing some of these proposals we’ll become dynamic organizations able to face future challenges and the demands of new qualifications from the companies, and will be more efficient on preparing students for jobs of tomorrow we are not yet aware of today.

The agility and dynamism must also reach the provision of programmes, adjusting them in contents, methodologies, equipment, but also in length to the new requests of the Labour Market (Specialization Programmes).

An example I read about on the press is that of the DYE.org -https://diy.org- a community aiming at transferring innovative skills to the pupils at early stages of the education system.
Among the mentioned innovative skills, we have to include not only technical skills, in order to complete a good set of professional skills to be transmitted to our VET students, we have to include also the transversal skills. There are different models, and the selection of the skills varies from one model to the other (Teamwork, Sense of Initiative and Entrepreneurship, Communication, Critical Thinking, Problem solving, Civic and Social Competence, learning to Learn), the reason is that the demand on skills also varies with the years, as new technologies and new jobs require new qualifications. In any case, those seem to be the most valuable ones. At least, they are the best paid for and the most needed to succeed in environments of ever increasing complexity. So, paying the due attention to the transfer of these skills we are hitting the bullseye, as we are educating students for the changes they are going to live throughout their professional lives.

A scheme that should be established to reinforce the transfer of “skills for a time of changes”, and that I should also comfortably include in the initial general Framework, is that of the Career Guidance, a very complex work indeed as it needs the interdisciplinary collaboration of different administrations or departments. To improve the Career Guidance services offered by the departments of Education and Training, the departments of Industry, Employment are required collaborators.

But, apart from all these changes and suggested proposals, is there anything that, in spite of all, should remain?

Definitely yes! We are not starting from scratch, and at different levels of governance, there are achievements, initiatives and projects in progress that should be maintained.

The Unevoc Network has started its activities at international level and, personally, we are very pleased at Tknika of having been picked up to collaborate in the Network and think that this is a very sensible and sensitive initiative in the field of VET. The Three Pillars of Priority Areas broaden our vision of the VET field and add value and new perspectives to the work we are displaying in third countries.

At European level, the VET policies are run by the Skill Unit of the DG Employment, Social Affairs and Inclusion and its guidelines, tools, measures and programmes are very relevant for the VET sector. The objectives fixed by the Riga Declaration are really helpful, the initiatives promoted to fulfil them and the monitoring of the achievements very
encouraging. Then, we have also the **New Skills Agenda for Europe** initiative, whose proposals, like the Initiative on Graduate Tracking, are very inspiring for VET institutions.

In the **Basque Country**, the organization running the VET System is a Viceministry, so we can imagine the value these polices have for the Basque Government. We have a tradition of well-designed VET plans which have been an inspiration for the VET community. Now we are expecting for the approval of the New VET Act and the 5th **VET Plan** which will bring new resources to the projects we are undertaking now.

At **Tknika**, we are involved in some interesting projects, growing and introducing innovations, like the new **Area of Sustainability**, which turns our work highly motivating.

I wouldn’t like to finish this presentation without doing a serious call for the need of focusing our teaching approach on **Values**. Foremost, we should focus on getting Values-driven students.

It is embarrassing and disturbing to think that after spending five days of the week at some of our VET centres, some of our students could go fighting each other at a football field or to drink without control due to the lack of references, expectations and values. Values, as skills, seem to evolve also, but in any case, we should engage on keeping the good values of this western culture. There is a lot at stake!

I’d also like to bring to you this famous quote by **TS Eliot**:

Where is the life we have lost in living?

Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information?

It is the type of thought that comes to my mind when thinking about the **promise of the ICTs**, the potential of Big Data and the like: Will they make us wise enough to turn all the generated data into information, to get valuable knowledge from this information, to become sensible, reasonable enough based on the acquired new knowledges?
Because we have to admit that there is a dark side on new technologies, on internet, a potential danger: the dark web, the misuse of the social networks, loss of privacy, cyber bulling, cyber security, etc.

Progress in the control of new technologies doesn’t necessarily mean progress in the state of comfort of the population. On the contrary, technology, robotics can be use with evil intentions: Create a new generation of soldiers, etc.

On the other side, some worrying trends are emerging in western society and economies. In some activities, VET titles seem to be losing relevance (restoration, nursing homes, etc.) The quality of professional services gets worse and salaries fall. In other occasions, over qualifications are being requested by companies just to perform unskilled jobs. Job opportunities for the lowest qualified are scarce, which causes poverty and social exclusion and is a source of undesirable problems like radicalism.

To fight these challenges, my final proposal is to use technology (and the knowledge we get through it) to improve the transfer of values and fight Unemployment, Migration and Globalization.

Doing so, we will manage these big changes in a proactive way (we will generate changes) and fulfil our double commitment in VET: To Train and Educate the young generation for a better future.

All these reflexions can be summarized presenting them as new paradigm for the management of the VET sector. So we can talk about concept like Value VET, Open VET, Smart VET, InnoVET, Skilful VET, Reg-VET, Inter-VET, etc.

A paradigm which comprises several proposals, as described in the PowerPoint of this session.

Finally, a couple of things:

Quality! Quality is a guarantee for sustainability. At this shop in Dax, France, they have been making muffins, only muffins, for ages! A muffin, one euro. No need for changes, new technologies or new products, just well
done tasty muffins.

In any case, we can’t all own a bakery! So, coming back to Bob Dylan’s song, remember his request: Your old road is rapidly changing, please, get out of the new one if you can’t lend your hand, for the times they are a changing!

Joppap is a remarkable project. You are offering new tools, new processes and new ways of getting information and communicate to the new generation.

You, Joppap partners, are lending a hand in this time of changes. Thank you!

Tknika, 1th September 2017

Internationalization Area