This BIAC Education Committee vision paper presents a compilation of chapters by representatives of employer organizations and thought leaders operating in the field of education policy.

The opinions expressed and arguments employed herein represent those of the individual authors and do not necessarily reflect the views of BIAC.

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About BIAC
BIAC speaks for business at the OECD. Established in 1962, we stand for policies that enable businesses of all sizes to contribute to growth, economic development, and prosperity. Through BIAC, national business and employers federations and their members provide expertise to the OECD and governments for competitive economies, better business, and better lives. See www.biac.org
The 2008-09 financial and economic crises still have great repercussions on our economies and societies. Faced with an unusually weak and fragile recovery, policies that support a return to strong and sustainable growth must be a priority. But as countries try to achieve that goal with immediate action, they must also focus on the fundamental factors underpinning the competitiveness and inclusiveness of our economies and societies in the long-term. One such fundamental factor is education.

The unique combination of knowledge, skills, and character contribute in myriad ways to economic growth, innovation, productivity, and the employability of individuals. OECD evidence shows that people with at least an upper secondary education are far more likely to have a job than those without. Research also shows that adults with university-level education in OECD countries can expect to earn 70% more than those who have only attained upper secondary education. The benefits of education accrue not only to individuals and their personal fulfillment, but also to society as a whole through greater productivity, tax revenues, and the viability of a sustainable social security system. In sum, education is perhaps the most precious investment for the competitiveness and future of individuals and the cohesion of societies.

From a business perspective, the competitiveness of all companies, large and small, hinges to a great extent on the talent and knowledge of their employees. Employers therefore have a profound interest in ensuring that today’s and tomorrow’s jobseekers are versatile, skilled, and employable, and that they are prepared to learn throughout their professional lives. Consequently, employers pay close attention to education policy. According to the 2013 BIAC Education Survey among the leading business and employers organizations in OECD countries, greater employer engagement in education was consistently identified as a top priority for the success of companies in competitive markets.

This BIAC paper shares education policy priorities from the perspective of employers. It addresses selected aspects of education systems, including curricula, the assessment of learning outcomes, teaching, vocational training, apprenticeships, innovation, and higher education. The contributions to this paper reinforce the case for more and stronger cooperation among employers, policymakers, and education institutions.

Bernhard Welschke
BIAC Secretary General

Charles Fadel
BIAC Education Committee Chair
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CHAPTER 1 – WHAT TO LEARN AND WHAT TO ASSESS

Charles Fadel
Chair of the BIAC Education Committee
Founder and Chairman of the Center for Curriculum Redesign

Introduction

In the 21st Century, humanity faces severe challenges at the societal, economic, and personal levels. We need to address climate change and financial instability. We must find a way to stem political partisanship and religious fundamentalism. We see both promise and challenge in globalization, and know that innovation matters now more than ever. On the personal level, we want to be employable — to work in engaging jobs — and have a reasonable chance at happiness.

We all feel it — the weight of uncertainty and volatility. During times like these, we pin a lot of hope on our educational system — on its ability help young people prepare for our changing times. But education is falling behind the curve, as it did during the rapid changes brought on by the Industrial Revolution. The difference between then and now, however, is that, today, the stakes are much higher. More crucially than ever, humanity is searching for its sustainable future.

What to learn in the 21st Century?

The last major changes to curriculum were effected in the late 1800s as a response to the sudden growth in societal and human capital needs. Considering that the world of the 21st Century bears little resemblance to that of the 19th Century, education curricula are overdue for a major redesign, emphasizing depth of understanding and versatility.

For curriculum reform at the system level, most countries face political lifecycles that are too short-term-oriented for systems to innovate with long-term vision. Human dynamics also play a role, as decisions on what to learn are generally made by subject-matter experts in relative isolation from the demands of the ‘real world’.

Thus curricula worldwide have often been tweaked, and sometimes to a large extent, but they have never been deeply redesigned for all the dimensions of an education: knowledge, skills, character, and meta-learning. Adapting to 21st Century needs means focusing on all of these dimensions and their interplay simultaneously (see Figure 1).

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3 Also known as “standards”, “programmes” etc. depending on the country.
1. KNOWLEDGE

Knowledge, of course, is what we know and understand. Having students develop deep knowledge is as essential as ever. But today, we must also make that knowledge relevant.

Students’ lack of motivation, and often disengagement from school, reflects the inability of the current education systems to connect the content to real-world relevance. Relevance is critically important to our economic and societal needs, not only to satisfy students’ interests. Thus, in redesigning our curricula, there is a profound need for us to rethink the significance and applicability of what is taught, and simultaneously to strike a better balance between the theoretical and the practical.

Traditional subjects (mathematics, languages, history, etc.) are essential, but tough choices must be made regarding what to pare back in order to allow for more appropriate areas of focus (for instance, in mathematics: more statistics and probability and less trigonometry). At the same time, we need to build in room for a concomitant depth of study that will cultivate the other three dimensions — skills, character, and meta-learning.

Traditional disciplines must be augmented by modern disciplines (robotics, entrepreneurship, etc.) that are necessary knowledge to proper at the individual and societal levels.

One important change is to focus on interdisciplinarity — combining two or more academic disciplines in order for students to learn across boundaries. Interdisciplinarity is viewed as a strong binding mechanism for
traditional and modern disciplines alike, and for the practices they require for the learning in the skills, character, and meta-learning dimensions. For example, new interdisciplinary fields that are already relevant to tomorrow’s world are robotics, biosystems, social systems, wellness, entrepreneurship, media, and journalism.

At the same time, we need to infuse “themes” — important lenses such as global literacy, environmental literacy, information literacy, digital literacy, systems thinking, and design thinking — into our approach to teaching knowledge.

2. SKILLS

Our skills are how we use what we know. Helping students developing and strengthen their skills is absolutely necessary if we want the education outcomes that serve students well today and in the future.

Higher-order skills such as the “4 C’s” — creativity, critical thinking, communication, and collaboration — are essential for deeply learning knowledge as well as for demonstrating understanding through performance.

There is a reasonable global consensus on what the skills are at the broadest level, and how different pedagogies and assessment practices can affect skills acquisition. Yet, in spite of this consensus, we struggle to infuse them into the curriculum because of two major barriers:

- the overwhelming amounts of prescribed content for each school year that allow little time to address skills; and

- a lack of leadership support for educators to combine knowledge and skills in robust pedagogies and deeper learning experiences.

To make the shift to a better balance and interplay between relevant knowledge and 21st Century skills, we need to address both of these barriers.

3. CHARACTER

Character is about how we engage in the world. The challenges to approaching character education in schools are similar to those for teaching skills, with the extra complexity of accepting that character development is also becoming an intrinsic part of the mission of schools. Yet character learning is also likely to happen in out-of-school settings (such as sports, scouting, adventure trips, etc.), which heightens the

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4 There is no word that works equally well in all languages to convey the meaning of “skills,” which ends up being the best compromise. It could be “competencies,” “savoir-faire,” “proficiencies”, etc.


6 See for example: The Conference Board “Are They Really Ready to Work?”, AMA “Critical Skills Survey”; and OECD PIAAC analysis.


8 Just as for “skills,” there is no perfect word that covers all meanings of “character” in all languages. For instance, it may be “personality” in some. So, by "character" we mean all of related terminology such as agency, attitudes, behaviors, dispositions, mindsets, personality, temperament, and values. The OECD tends to refer to “character” in the form of “social and emotional skills.”
challenge within schools. Character qualities such as Leadership, Ethics, Resilience etc. have been deemed\(^9\) “very important” by BIAC members worldwide. Character education is explored in more detail in the next chapter.

4. META-LEARNING

Meta-learning is the awareness of one’s own learning and cognitive ability. Having such awareness is the best hedge against continuous changes. It is the process by which learners become aware of and increasingly in control of their habits of perception, inquiry, learning, and growth. And it is essential for building expertise and establishing lifelong learning habits.

Redesigning the curriculum

The Center for Curriculum Redesign (CCR) – a non-profit global organization focused on designing and propagating new curricula – proposes the development of a matrix to redesign curriculum to embed the four dimensions described above (Figure 2). The matrix highlights the intersection of skills, character qualities, and meta-learning with three types of knowledge: traditional knowledge, modern knowledge, and embedded themes.

Figure 2: A proposed framework for reforming curricula

Of course, this matrix needs to be fully developed by policymakers and curriculum designers for every stage of student learning, together with the appropriate pedagogies. But once we make the commitment to large-scale change, the change itself is eminently possible.

What to assess? The 21st Century assessment challenge

The art and science of measuring learning progress is rapidly evolving, though education systems have often been slow to adopt new methods. The progression can be seen as movement from assessments of learning, to assessments for learning, to assessment as learning (Figure 3).

Given a very long history of developing wide varieties of assessments of learning, and their inherent limitations for student improvement, the challenge now is to find and stimulate the creation of high-quality assessments for and as learning.

These student learning-focused assessments may increasingly take advantage of technologies that allow for capturing rich information and useful interactive data about the learner’s growing competencies, and can provide ongoing, personalized “whole learner profiles” of maturing knowledge, skills, character qualities and meta-learning strategies.

**Figure 3: The evolution of student assessment**

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<th>Assessments FOR Learning</th>
<th>Assessments AS Learning</th>
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<td>Usually summative recall or simple demonstrations of basic skills measuring whether students have recently developed knowledge, skills and other competencies compared to established standards, benchmarks and learning goals</td>
<td>Formative and some portfolio summative methods of identifying: student learning progress in ongoing work and performance tasks; new learning needs as they arise; and opportunities to revise work and improve competencies</td>
<td>Mostly formative, meaningful learning tasks with embedded assessments that provide immediate feedback as part of the ongoing learning experience, with a progression of challenges for increasing mastery with a wide variety of feedback</td>
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<tr>
<td>* Example: OECD PISA</td>
<td>* Example: Performance Task</td>
<td>*Example: Online learning game</td>
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**Conclusions**

Most of the education transformation efforts worldwide are focused on the how of education, which is very laudable. But little is being done about the what. Education badly needs an innovative curriculum adapted to the needs of the 21st Century student and society.

As emphasized in this chapter, curriculum reform will require simultaneously addressing all the dimensions of an education – knowledge, skills, character, and meta-learning – and their interaction.

To make this happen, a new approach is needed for curriculum redesign and student assessment – one that provides for ambitious long-term vision and which brings together all relevant stakeholders, including not only subject-matter experts but also employers, teachers, and students. And at all times, they should ask themselves two key questions: Is education relevant enough for this century? Are we educating students to be versatile in a world that is increasingly challenged and challenging?
CHAPTER 2 – CHARACTER QUALITIES FOR THE WORKPLACE

Grace Breen
Senior Policy Advisor for Skills, Confederation of British Industry

“What employers need is an education system that supports the development of rigorous, rounded and grounded young people.”

Introduction

Employers are intently aware of the importance of education and skills to the success of the economy and to securing future growth – without young people entering the workforce with the right skills, businesses and sectors will be unable to thrive. But the skills that employers look for when recruiting young people extend far beyond academic knowledge or vocational skill directly linked to specific careers.

What really matters to employers are the attitudes and behaviors that young people bring with them into the world of work – businesses thrive when working with rigorous, rounded and grounded young people who are prepared to succeed. 85% of the employers who responded to our annual education and skills survey highlighted the attitudes and character of young people as among the most important factors they consider when recruiting school and college leavers – well ahead of academic results (31%) and qualifications obtained (39%). Character must also be a focus.

In 2012, the CBI published First Steps, a comprehensive look at the education system in England and the changes needed to deliver the outcomes that we all want to see. Consultation with businesses as part of this work helped to create a framework of the key attitudes and behaviors that employers would like to see developed in young people through the education system – characteristics such as determination, resilience and emotional intelligence (Figure 4). These are the skills needed across all businesses in all sectors, but they are far too rarely a focus within the education system.

Policies for character

The Department for Education in England has begun to make some progress on this agenda. We have seen the addition of a new priority for the department to “support schools to prepare well-rounded young people for success in adult life” – which has also led to the creation of the “Character Awards”, which in 2015 for the first time rewarded individual schools for their achievements regarding the personal development of their pupils. These are real positive steps that should be warmly welcomed by both the

education and business community, but we still need to take steps to ensure this is mainstream and not seen as an ‘optional add-on’ that only the best schools choose to do.

In England, the accountability system that has been in place has for years incentivized a focus on solely academic outcomes at the expense of the wider personal development. In schools – as in business – what gets measured is what gets done, and in a system where we judge performance by narrow academic results and progress, the broader character development aspect of education understandably gets pushed to the side-lines.

Changing the way we measure and judge schools will help to ensure that the character aspect of education is embedded into the overall culture of schools – creating a holistic education system that will support the outcomes that we want to deliver at both primary and secondary level.

We need to create a system where we are holding schools to account for delivering broader outcomes for young people that includes a focus on the development of those key attitudes and behaviors that are so critical for a young person’s success in life, work and further study in addition to the knowledge and skills needed in particular career pathways.

In England, this means reforms to the way that Ofsted – the school inspectorate – judges schools. We have started to see some progress in this respect, with a new reformed framework that has introduced a new judgment on “personal development, behavior and welfare” that will now impact on the overall grading for a school.¹⁴ But this does not go far enough – this is still something that is seen as a secondary priority, and

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indeed has a broader focus than on the development of the character development areas we have discussed.

The next step towards really making this wider development of young people a real focus for schools is to embed this within all aspects of school life – not just something that happens in extra-curricular activities such as debating societies or sports clubs, but something that is present within the learning and teaching of core academic and technical subjects.

**Employers have a clear role to play in making this vision a reality**

There is already a huge amount going on in terms of employer support for the development of young people – our education and skills survey showed that almost three quarters (73%) of the businesses we spoke to had links of some kind with schools and colleges, ranging from offering **work experience placements** and supporting **career guidance** through to **subject-specific support** – but there is still opportunity to scale this up.\(^{15}\)

Quality career guidance and work experience are vital to supporting the development of these attitudes and behaviors in young people – helping them to see why they are important and relevant and what they look like. The LifeSkills program, created by Barclays, is a great example where business has stepped up to help deliver better outcomes for young people and their broader development. The scheme supports the provision of work experience placements (at both Barclays and other employers) that inspire young people about the opportunities available to them. Critically, it also has in place a course that can be delivered through teachers or business volunteers to support the development of important so-called ‘life skills’ to prepare the young person for both the experience and their next steps. The program has so far reached over one million young people, and continues to grow.\(^{16}\)

2015 witnessed the launch of the new **Careers and Enterprise Company** in England – a new employer led company that has been set up with the support of government funding to help build business links with schools around career guidance and enterprise activities, supporting the wider development of young people and the core characteristics that are valued in the labor market.\(^{17}\) This initiative is still in early stages – but has the potential to impact greatly on outcomes for young people in this space. The test will be in how well it can engage the number of businesses we need to make this a success.

However, this broader development is not something that only happens at secondary schools – and indeed is just as important to make a priority earlier in the education system: at primary schools. This is an area that warrants further exploration – particularly to explore the role for employers. Links at this stage of education remain far too rare despite the large impact that they can have.


\(^{16}\) Barclays. (2016). *LifeSkills helps over one million young people.* [online] Available at: https://www.home.barclays/news/2015/02/lifeskills-helps-over-one-million-young-people0.html [Accessed 1 Apr. 2016].

There is still some way to go before we have a system that truly places an equal priority on the personal
development of a young person and their character, but in England we are seeing steps in the right direction.
These attitudes and behaviors are the things that will carry real value for young people as they enter the
ever more competitive employment market, and will enable them to succeed in all routes and career
pathways. A broader vision for education and the outcomes that we are trying to deliver needs to be a
priority, and businesses – alongside government, schools and education professionals – have a clear role to
play in making this a reality.
CHAPTER 3 – ENTREPRENEURIAL EDUCATION

Tony Donohoe

Head of Education and Social Policy, Ibec

“Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural or social.”

Introduction

Entrepreneurial citizens have the ability to adapt to the challenges and think in new ways. Therefore, reinforcing entrepreneurial education in schools and within tertiary education institutions should have a positive impact on the dynamism of our economy and society.

However, there are challenges associated with entrepreneurial education. The first challenge surrounds definition and language. This is critical in order for business and the education system to develop a shared understanding of what can be a slippery concept. A second challenge centers on whether entrepreneurship can actually be taught and learned, or whether it is innate. This raises the question of what entrepreneurial education looks like and how can it be developed across the various levels of the education system.

What is entrepreneurial education?

To date entrepreneurial thinking within education is primarily viewed from an economic perspective. This works well for subject-specific courses which relate to business disciplines. However, the infusion of entrepreneurial thinking into the non-business disciplines such as arts, humanities and science at all levels of the education system is also equally critical.

There are many definitions of entrepreneurship, including the one provided at the start of this chapter. The required competences can be defined as the knowledge, skills, and attitudes that affect the willingness and ability to perform the entrepreneurial task of value creation (see Figure 5). This value may be derived from students going on to develop their own commercial or social ventures, or becoming innovators in the organizations in which they work.

Entrepreneurial learning requires experiential, real world and problem-based learning to enable individuals to learn from doing and risk-taking. This needs to be incorporated into existing models of education, coupled with more innovative ways of teaching and learning. It lends itself more to a cross-faculty or multi-disciplinary approach rather than traditional structures and programs of theoretical learning.

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An entrepreneurial education framework

Successive national and international reports have argued for the development of entrepreneurial education as a sustainable source of locally grown entrepreneurs. There are national variations in the cultural and social context for the proposed reforms. However, a recent Ibec policy document has attempted to group them around five main themes:

1. DEVELOP AND IMPLEMENT A NATIONAL ENTREPRENEURIAL EDUCATION POLICY

Government has a key role to play in facilitating a supportive policy framework conducive to entrepreneurial success. This should include an education policy that explains a clear educational concept and equips educators with the ability to prepare young people for a constantly changing world. It should give focus and direction on how to embed entrepreneurial education into the entire curriculum across the education continuum. This requires a strong political commitment to its long term planning.

The policy should set out the aims of the lead government department and connected departments or agencies. Many developed countries tend to have a myriad of often disconnected entrepreneurial education initiatives. The policy should seek to integrate these initiatives and incorporate best international practice, without undermining the enthusiasm of the local advocates. It should also consider specific actions for key stakeholders, including the senior management of key government departments, higher education institutes, primary and secondary school bodies, and the business and civic communities.

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There are a number of international benchmarking tools to measure outcomes. For example the Global Entrepreneurship Monitor\textsuperscript{21}, which began in 1999 as a joint project between Babson College (US) and London Business School (UK), includes entrepreneurial education ratings for over 100 countries at school and post-secondary school levels. The European Commission and the OECD have also developed a joint guiding framework for the Entrepreneurial University\textsuperscript{22} with the following dimensions:

- Leadership and Governance
- Organizational Capacity, People and Incentives
- Entrepreneurship development in teaching and learning
- Pathways for entrepreneurs
- University – business/external relationships for knowledge exchange
- The Entrepreneurial University as an internationalized institution
- Measuring the impact of the Entrepreneurial University

2. PROMOTE EXPERIENTIAL LEARNING AT ALL EDUCATION LEVELS

Entrepreneurial education must be considered as an integrated, horizontal approach and cross-circular subject throughout the learning program. The required thinking and mindsets cannot be encouraged by traditional teaching and instruction alone. To provide all students with an opportunity to develop and enhance the creative skills that are closely associated with entrepreneurial thinking, experiential learning, action-orientated learning, mentoring and group projects are vital additions. New teaching methods and innovations must be given the necessary supports and space to develop and succeed. It is important to recognize that this approach will not threaten academic abilities formed by conventional teaching practices, but rather enrich the academic experience and learning outcomes for both the student and educator.

The Irish government has introduced a secondary school reform plan\textsuperscript{23} setting out a model for the development of key skills and statements of learning that, in many ways, define entrepreneurial education. If properly implemented, these could help to encourage the development of the skills required for positive business and social entrepreneurship, including well-being, resilience, strong interpersonal skills, effective communication, self-awareness, self-motivation and management. The challenge is to embed these skills in the learning environment, curriculum, and assessment at all levels of education and training.

3. PROVIDE PROFESSIONAL DEVELOPMENT OPPORTUNITIES FOR EDUCATORS TO ENCOURAGE ENTREPRENEURIAL THINKING

Over three decades ago, the US commentator Larry Cuban stated\textsuperscript{24}:

“Education reforms have a similar effect to that of a storm on the ocean. The surface is agitated and turbulent, while the ocean floor is calm and serene (if a bit murky). Policy churns dramatically, creating the appearance of major changes ... while deep below the surface, life goes on largely uninterrupted.”

\textsuperscript{22} HEInnovate. (2016). Heinnovate. [online] Available at: https://heinnovate.eu/ [Accessed 1 Apr. 2016].
The challenge of embedding policy reform in classroom practice still exists today. Therefore the teaching profession is the key audience that must be convinced of the value of entrepreneurial education.

This requires a common understanding on the need for entrepreneurial education, to dispel any myths and misunderstandings around the concept and how it can be incorporated into existing school curricula, learning outcomes and school activities. Training should focus on supporting educators to make entrepreneurial education more explicit in learning outcomes and how current academic activity and entrepreneurial thinking correlate.

4. INSPIRE THE STUDENT
The individual student should be front and center of any initiative to encourage entrepreneurial thinking. Value and accreditation should be given to the development of entrepreneurial thinking and experiences, such as the involvement in clubs and societies and civic society projects. In addition, this is an excellent opportunity to foster a greater understanding of social entrepreneurship and the social economy.

Education of our wider society to appreciate the importance of entrepreneurship is crucial if we are to create the jobs that are needed into the future. It is essential to foster a culture that supports a level of risk-taking, curiosity, and learning from mistakes or failures, rather than focuses on punishment for failure. Failure and dealing with failure needs to be addressed within education to counteract the perceived risk aversion, more generally fostered within the curriculum.

5. ENGAGE BUSINESS AND CIVIC SOCIETY
Engagement by wider society in education takes many forms. It includes engagement with business, with the civic life of the community, with public policy and practice, with artistic, cultural and sporting life, and with other education providers. The benefits of greater engagement with the wider community are significant, not least in the establishment of a platform for the advancement of social, cultural and economic entrepreneurship. Therefore, teachers should be encouraged and rewarded for engaging with and developing links outside their institutions.

In many countries, business already contributes a great deal to existing enterprise experiences in schools and higher education institutions. However, the development of national strategies could formally recognize and promote good examples of collaboration. There are limits to the absorptive capacity of business and education for this type of activity and tighter programming of activity could improve the overall experience.

Conclusions
Fostering a national entrepreneurial culture requires a clear strategy for entrepreneurial education across the full spectrum of our systems. Building creativity, innovation, problem-solving, and risk-taking, including entrepreneurship, and at all levels of education, is necessary for our economic future. Whether internal or external entrepreneurs, the development of entrepreneurial thinking will ensure individuals are adaptable and capable of dealing with the challenges of the dynamic environment of a global economy. These recommendations are interrelated and have an important place in what should be an overarching government policy on entrepreneurial education. The result should be to develop students as they move through the education system and take their place in society with the ability to communicate, participate, initiate, innovate, contribute, and adapt to change. Our entrepreneurial talent must match academic ability if we are to harness young people’s potential to create value for our societies and economies.
The school mission for the 21st Century

In the 20th Century, developed countries succeeded in making education accessible to all and faced the challenge of adapting their schools to universal education provision. In the 21st Century, however, one should consider the new diversities of demands – including for example multiple forms of intelligence, different needs, talents and aspirations. As a consequence, the supply of education should be differentiated to also reduce school dropout and facilitate access to the labor market. Unfortunately, this deep shift in the mission of the school has all-too-often been attempted without the necessary changes to the nature and organization of schools.

The recommendations of the 1996 report “Learning: The Treasure Within”, written by the International Commission on Education for the Twenty-first Century, are in line with employers’ experience.25 The report recommends that schools must ensure equal attention is paid to the four principal elements:

- Learning to know
- Learning to do
- Learning to live with others
- Learning to be

Schools should continue to provide high quality basic skills and a solid foundation of knowledge. But they should also emphasize the social and personal skills, the values of citizenship and the ability to learn throughout life, which are necessary for work, mobility and quality of life in the 21st Century, as referred to in earlier chapters of this BIAC paper.

For employers, these principles mean providing students with: basic skills (literacy and numeracy, up to date and relevant knowledge and understanding), practical skills (knowing how to apply learning, problem solving, the ability to use ICT), social skills (such as communication with others, working with others in a wide range of environments and cultures, foreign languages, the core values of citizenship including a sense of autonomy and responsibility, emotional intelligence, and entrepreneurial attitude). Schools must also teach the importance of the fundamental values of societies.

As employers, we believe that any school reform program should address the following five key elements:

1. Empowerment of the teaching profession.
2. Modernizing of school management and the crucial role of heads.26
3. Updating curricula.
5. More autonomy for schools, but with external evaluation of their performances.

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26 The term “heads” refers to head teachers or school leaders.
1. **Empowerment of the teaching profession**

Heads and teachers make the difference. Empirical evidence shows that schools operating in similar socio-economic environments often perform very differently. In many cases, this is a consequence of the professional quality of heads and teachers: they are crucial to schools’ success.

Teachers must have high-level qualifications – to university level or equivalent, or beyond, together with practical training and access to continuous professional development – and should have a period of practical training in a school. In order to ensure teachers can develop their professional competences, training must be available on an ongoing basis, including training in non-educational environments. Businesses can help by being open to mutual exchanges of staff.

The status quo in some countries, where there is no evaluation or incentives in teaching, is not sustainable and serves to drive down quality in education and to degrade the status of teachers. There is no perfect solution to this challenge and a one-size-fits-all approach for all countries would likely not be appropriate due to different national contexts and structures. However, the terms and conditions of the profession must be updated to ensure that heads and teachers have the incentives to succeed, with differentiated rewards depending on their tasks and their performance. All teachers must also recognize the importance of innovation as their role evolves more into that of a coach. Their role will often require a greater emphasis on teamwork.

But we are witnessing a paradox: education is becoming more and more crucial to life and work today, but at the same time the status of the teaching profession is declining, leaving many countries (notably in Europe) with difficulties in attracting new recruits. This development is a threat to economic development and to society at large. It should be analyzed urgently and countries should take or reinforce the necessary counter-measures.

2. **Modernizing of school management: the crucial role of the heads**

Heads should be leaders of their schools, qualified for the task, and with the autonomy and the responsibility to make that leadership a reality. Each head should take responsibility for the development of his or her staff. They should be evaluated on results.

Managing and leading a school has become a highly responsible profession in itself. The head should be an educational leader as well as an expert in administrative management and human resource development. School managers need special qualifications to equip them for their important task. They should be carefully selected and evaluated on a regular basis.

However, strong leadership should be “distributed” – that is, the head should seek the help of few selected teachers (staff) to take certain responsibilities for the school’s management.

School organization has to be modernized. The use of time and spaces should be reconsidered. There is a need for more flexibility and differentiation in job profiles, new mixes of teaching and non-teaching activities to meet the needs and competencies of teachers in the different phases of their career (junior, experienced, senior), and professional human resource management (including the setting up of a school development
plan and agreements at individual level on personal development plans). Every school should work with a quality-improving management system.

Public funding should be mainly based on student numbers. This provides the necessary financial dynamic to make parental choice of school a reality and creates a demand-led system. Schools that improve their results should be publicly recognized. A percentage of the school budget should be set aside for incentives/rewards for teams or individual teachers and heads who make a significant contribution to quality improvement. Schools must take responsibility for operating within their budget. If schools are to be given the responsibility for achieving targets, they need the means to do so.

3. Updating curricula

There is a need for balanced curricula that can help meet students’ needs by reflecting the importance of arts, scientific and technical subjects, and modern languages. As described in the preceding chapters of this BIAC paper, schools should aim to produce rounded individuals who are equipped to participate fully in the wider world and understand the core obligations of citizenship.

4. Methods of teaching and learning

To equip students to succeed in the 21st Century, schools must revitalize not just their aims, but also their pedagogical methods. Modern education methods must be used to help pupils develop skills in an integrated way – developing several skills at once, just as they will in working life. Unfortunately, in many schools today, students still learn in the same environment and with the same tools as their parents, or even grandparents, but to prepare for a very different world.

Learning should provide all students with the same opportunities to succeed in society. This necessitates combining traditional learning methods with new methods of learning, making more frequent use of learning by doing, studying practical cases, doing project work, and making appropriate use of ICT tools and the Internet.

Interaction between teachers and students, and between student and student, is essential. The teacher should help students to learn autonomously. Schools should also aim to nurture and inspire students’ lifelong learning, recognizing that learning will continue throughout working life. Schools should encourage the curiosity of their students by emphasizing the practical and functional application of their knowledge and understanding. Information and communications technology should provide a tool which can help this process.

5. More autonomy for schools with a systematic external evaluation of their performances

Governments need to review the regulatory framework for schools. It will be necessary to decide what should be regulated at the national level (such as funding, national standards, and external evaluation) and what can be left to the schools and/or local educational authorities (such as selection and appraisal of teachers and heads, school organization and management, etc.).

Schools must have more autonomy to manage themselves and to be more responsive to the diversity of demands. At the same time, schools must recognize they are accountable for their results. To improve
quality, schools should take responsibility for continually raising their performance against national standards. Schools (heads or governing bodies) must be able to select their teachers, reward the best teachers, and remove the few who have a detrimental effect on students’ education.

Clearly defined national standards of knowledge and competences are needed as means to measure achievement in the most relevant subjects and provide the information schools need to evaluate their performance. National standards should lead to the highest standards of achievement; all schools must continuously set themselves targets to reach those standards. Student performance must be objectively assessed through a central exam system based on tests for each of the main stages of the school curriculum. As well as formal academic achievement, the practical and social skills which students need to learn should also be measured.

Each school should also develop a quality-improving self-evaluation system. Teachers should be involved in defining and installing this quality process. But self-evaluation in every school should be complemented by regular external evaluation. Through external evaluation, schools learn where they stand in relation to other schools and to average national results. Naturally, the results of external evaluations have to be considered in the context of the school (especially with respect to school population and surrounding socio-economic conditions). Student performance is undoubtedly only one of the aspects determining quality; other factors include, for example, the educational approach and the climate of the school. But the evaluation of student results is important in highlighting improvements made and detecting remaining weak points in the school’s performance.

Different areas and methods for evaluation and assessment, as mentioned above, are not separate alternatives to be considered in isolation; they should instead be understood as complementary ways to build a comprehensive national school evaluation system in each country, while respecting national contexts.

The role of employers

Schools must seek to draw lessons on best practice, innovation and guiding values from a wide range of environments, including the entrepreneurial world of business. Schools and employers should recognize that they can both learn valuable lessons from each other, and that they share common interest in the preparation of students for working life and society.

Good examples are already operating (see Box 1), but employers need to become more actively involved in supporting schools to prepare their students for working life and to manage themselves more effectively – particularly through career guidance, work experience, offering secondments, openness to placements for heads and teachers, and supporting the effective implementation of ICT changes. Schools, parents, and employers must co-operate to ensure that students make informed choices about further study and work. Businesses should make a particular contribution to the development of vocational education and to help students move from school into work. In summary, schools can certainly develop a range of skills important for society, but cooperation with companies is vital to ensure the development and application of these skills in professional situations.
Box 1: Example of employer cooperation with schools – “Schulewirtschaft” in Germany

SCHOOLBUSINESS (“SCHULEWIRTSCHAFT”) stands for successful cooperation and reciprocal support between schools and businesses. The network for school and business with more than 22,000 voluntary players deploys many forms of action, pools a broad knowledge drawn from experience, and has a sustained effect. Volunteers working at local level create perspectives for young people’s lives and professions, and successfully improve their transition from school to professional life. The network celebrated its 60th year of existence in 2013. In other words, the initiative is a model for success.

An essential part of SCHULEWIRTSCHAFT’s work is carried out in a decentralized way in regional working groups. The working groups, managed by representatives from companies, business organizations, schools, as well as chambers of industry and handicrafts, offer representatives of schools and businesses numerous events on a range of themes.

Services include business discovery trips and school visits, events on topical education policy themes, as well as a dialogue between schools and businesses. These events are a free, open service offer for anybody interested in schools and businesses. Furthermore, concrete service offers and projects are developed jointly for deployment at local level, e.g. vocational orientation fairs, mentoring programs, and application technique courses.

The Vocational Choice Seal is awarded to schools with excellent vocational and study orientation. Schools are rated for systematic improvement of their vocational and study orientation. Over 1,400 schools currently have the Vocational Choice Seal. Implementation takes place through more than 40 regional organizations in all federal states. These are linked in a country-wide community initiative with the objective of making excellent vocational and study orientation visible to the outside world and to continuously enhance quality standards.

This information is contributed by Irene Seling, Confederation of German Employers (BDA). More information is available at: www.schulewirtschaft.de
CHAPTER 5 – VOCATIONAL EDUCATION AND TRAINING

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Introduction

Many OECD countries currently witness the paradoxical situation that high levels of unemployment go hand in hand with a lack of skilled labor. Even in those countries that are hit hardest by youth unemployment, companies report problems in filling their vacancies. At the same time, the levels of formal education in the workforce and especially of young people are the highest in history. This situation points to a skills mismatch and a problematic decoupling of countries’ skills formation systems from the needs of companies.

An appropriate skills mix of the labor force is crucial for competitiveness. Most OECD member states focus in their education policies on the expansion of general and higher education. This approach is supported by various OECD recommendations and by the EU-2020 objective that at least 40% of an age cohort should graduate from higher education (or equivalent). Such references to the level of qualifications alone largely miss the point. Education and training systems must focus on delivering the “right skills”, those that are in demand on the labor market, and not just “high skills”. The signal sent to young people in a number of countries is that only higher education constitutes a “good” education. This is a highly problematic simplification. Academic tertiary education of course plays a crucial role in research and innovation and is also highly important in providing companies with cognitive skills for an increasing number of jobs that demand knowledge and abstract reasoning. At the same time, however, we must take note that technical and hands-on skills are, and will remain, in high demand by companies. Vocational education and training (VET) at upper secondary and increasingly also at tertiary level (“higher VET”) can deliver these skills.

In many countries the potential of VET is yet to be unlocked

Skills gaps from a company’s perspective can be seen as employment and career opportunities from an individual’s perspective. VET potentially can bring these perspectives together. Through its practical and inductive learning approach, good VET can reach a large and highly diverse target group and can offer an alternative and/or a complement to the more theoretical and deductive approaches followed by higher education institutions. But VET has been “marginalized” in many countries (OECD, 2010). The objective of having a labor force with a diverse skills mix translates in many OECD countries into the need to strengthen VET. The development of high quality VET systems that are responsive to companies’ skill needs and that are attractive to learners must receive more attention by policymakers.

A comparison of different countries’ youth unemployment rates with the relative importance of VET draws a clear picture: there is a strong correlation between the proportions of young people that are in VET at upper secondary level and the rate of youth unemployment in different countries. Furthermore, those VET systems
with strong work based learning components are more successful in bringing young people into employment. This relationship can be shown in a five year perspective (see Figure 6) and also in a 10 year perspective.

Figure 6: Correlating average youth unemployment and VET (2009-14)

Source: OECD-Data, Eurostat, ibw-calculations (data for 2009 to 2014). The index is calculated on the basis of the proportion of students at upper secondary level in general education, full time school based VET and dual VET

Current and future skills needs

Occupations at a medium skill level are by far the biggest job category in Europe. According to Cedefop skills forecasts (Cedefop, 2015) this will also be the case by 2025: about half of all jobs are estimated to be at that level, while a further 20% of occupations are estimated to be at an associate professional level. These are the types of jobs that usually relate to VET. Technological developments and new forms of work organization, summarized by buzzwords such as “smart manufacturing”, have huge repercussions on the specific skills needed. In the light of the expected developments, the biggest need for “upskilling” seems to come from changing skills needs within existing job structures and only to a lesser degree in a general shift to completely new jobs. This means the main challenge will be to provide the vast numbers of technicians, office clerks, service personnel and other skilled workers with the right skills for changing work environments. These are not only technical skills, but increasingly IT and other transversal skills. Much of this “skills challenge” will have to be solved through VET in a lifelong perspective.

Challenge

In order to deliver the skills needed by individuals and companies, VET systems need to be responsive to employers’ and individuals’ needs. They have to offer attractive learning pathways for young people and
also for mid-career individuals. There needs to be clearly designed progression routes in the sense of “qualification ladders”, both within VET and also from VET to higher education.

**Policy areas to be addressed and the role of businesses**

Highest priority must be given to **making VET responsive to the skills needs of the labor market** and the changes induced through technological and organizational change. This is no easy task and involves much more than just well-designed instruments for skills forecasting. While skills forecasting is important in shaping the right policy messages and can be used in career counselling, its usefulness in micro-managing VET systems is limited. Instead of relying solely on labor market intelligence in shaping VET and designing qualifications and their underlying curricula, countries should strive at making VET institutions and providers themselves more responsive to companies’ needs. In order to achieve this, **institutionalized dialogue with employers and related organizations** – companies, intermediate bodies such as chambers, professional organizations, etc. – is needed at system level as well as in the provision of the actual training. Strong involvement of companies through different forms of work based learning has become an objective in many countries in the past years. This type of learning indeed ensures that training is up-to-date and skills are obtained in real life as opposed to laboratory situations at schools. Therefore, all forms of internships, shadowing, and other forms of company exposure of students, clearly have positive effects on learning. Full-scale apprenticeship training systems add to these positive micro effects by generating an overall “built-in-responsiveness”, whereby companies offer apprenticeship places only if they perceive a mid-term need for skilled personnel in a specific profession. This results in apprenticeship training that is **demand led** as opposed to **supply led** school systems. The thousands of decisions taken by companies and individuals to enter into learning contracts in specific professions can be translated as “crowd wisdom” in relation to the fields of the economy and the occupations where there is a future need for skilled professionals and therefore employment prospects.

Companies of course cannot and should not be forced to engage in apprenticeship training. Nor should they be paid to offer apprenticeship places. In order for a “built-in responsiveness” to function, companies must base their decision to train on the expected return of investment of such training. **Companies must find it attractive to engage in formal apprenticeship training and other forms of work based learning in cooperation with schools.** The challenge at system level is to create the right conditions and have the right institutions and the right level of support for this to happen. The concrete policy solutions will differ between countries. But they must address the question of how to create a sense of “co-ownership” by companies. Such ownership can develop only if the world of work is involved at system level. This requires the willingness and capacity of employer organizations, chambers or other organizations, such as trade unions, to engage. And, equally important, this presupposes the willingness of ministries and other government agencies to delegate authority to such intermediate bodies or, depending on the background and traditions in a country, to bipartite or tripartite bodies. Such bodies should not only assume responsibilities in the design of qualifications and the administration of the system, but they should also provide companies with practical support, such as training guidelines, support tools for recruitment, and so forth.

In structural terms, an important aspect relates to **making VET part of the overall education system.** The notion of VET being only a second choice for pupils who do not succeed in general and higher education has to be avoided by all means. In order to make VET an attractive learning option, there should be clearly
defined routes into VET with well-designed progression routes to higher qualifications within VET, as well as bridge programs into universities. VET should not have any dead-ends. At all levels of VET, the notion of “excellence” needs to be stressed. Skills competitions, such as WorldSkills and EuroSkills, but also activities or awards aimed at training companies, can contribute to foster and further develop the notion of VET excellence. This needs to be complemented by clear commitment and strong messages at ministerial level. More effort is needed to communicate the value of VET qualifications. National qualification frameworks based on learning outcomes and the principle of “parity of esteem” between general/higher education and VET can send out such positive signals.

VET programs should combine theory and practice and therefore should also contain general education subjects. They should equip learners with transversal skills, such as IT, entrepreneurship and language skills. In dual VET programs that combine school education with work based learning in companies, careful consideration has to be given which learning place is better suited to impart which skills. Hybrid or double qualifications that bridge vocational training with general education are another way of increasing permeability between VET and general/higher education.

While the majority of VET in most countries is traditionally related to initial education and training at upper secondary level and tertiary level, attention must be given to strengthen the lifelong learning perspective of VET (see for example Box 2 below). In this context, non-formal and informal learning has to be recognized as an important learning path that should also be open to the attainment of a formal qualification. Validation arrangements and related information and guidance provision are areas to be further developed in many countries. Another important policy topic in this context relates to finance. Whereas initial VET is mostly publicly financed with important contributions from companies in the form of apprenticeships or internships, the financing of continuing VET is usually less straightforward but needs to be on the agenda of policymakers. Tax breaks for companies and individuals or schemes to organize co-financing, such as individual learning accounts, are possible instruments to tackle this issue.

**Box 2 – In focus: The Adult Vocational Training Program in Denmark**

At all levels there is a demand for maintaining or acquiring new skills and an adult education system must be able to provide this service. The Danish system of Adult Vocational Training (AMU program) contributes to securing a match between employee competences and the needs of employers, in both the short and the long term. Established in 1960 to make sure that employees with a shorter education had the opportunity to acquire necessary competences, and thus cope in a constantly changing labor market, the AMU system is designed to ensure mobility, transition, and flexibility in the Danish labor market.

The courses in AMU are mainly provided for low skilled and skilled workers already in employment. Workers and employers in private as well as public sector enterprises may participate. The social partners play a major role in the management, priority setting, development, organization and quality assurance of adult vocational training programs. The social partners have established 11 continuing training and education committees, each responsible for a specific sector of the labor market.

At the local level, providers of adult vocational training are in close dialogue with local trade committees and business life in the implementation of new programs. An advisory National Council for Adult Education and Continuing Training exists at the national level, of which social partners are members, and cooperates closely with the Ministry.
Adult vocational training in Denmark was given a considerable financial boost in 2007 through a tripartite agreement between the government, trade unions (LO), and the Confederation of Danish Employers (DA), resulting in an extra 1 billion Krones contributed by the state and an additional 1 billion Krones contributed by companies. While the provision of the adult vocational training in Denmark has been mainly publicly financed, now companies cover more than half the costs – and the system is still publicly regulated. A new tripartite agreement is expected in 2016.

Most training activities take part during working hours, which is an additional cost for the companies. However, upon paying employee salaries, companies receive a reimbursement. All companies pay into this reimbursement fund, but only companies that use the system will be paid an actual reimbursement according to the hours their employees spend in the AMU courses. On top of the AMU system, companies also spend billions on private courses and education activities for their employees.

Unemployed people outside the labor force may also participate in adult vocational training programs in Denmark, though only if there is a clear job perspective, and all training costs are covered by public funding. For example, where a shortage of particular skills in a particular sector is foreseen, unemployed people may engage in adult vocational training to maintain and update their skills, or acquire new skills, to better enable them to rejoin the workforce.

Lessons learned from the Danish AMU system suggest that a country’s adult vocational training system should include the following key aspects:

- The training courses must meet the needs and demands of employers. Companies or their respective employer organizations should be closely involved in planning the courses.
- The courses must be flexible in time and contents to fit production and tasks of the companies.
- The courses must be quickly adjustable, and ensure mobility and flexibility in the labor market.
- The activities must be planned to take place outside of working hours so that participation will not drain the labor supply.
- The training courses should increasingly be offered as e-learning. This will secure the possibility to participate in education at all hours.
- Each individual course should be as short and flexible as possible. The length of the courses should be adapted to the individual person and his/her prior qualifications, and also to the needs of the companies to create the most efficient way to acquire new skills and competences.

Contributed by Ann Poulsen and Berit Toft Fihl, Danish Employers’ Confederation.

**Conclusion**

VET must receive more attention by policymakers. High quality VET systems contribute to competitiveness and employment. The involvement of employers at system level and in the concrete delivery of training is crucial in order for VET to provide the skills that are in demand. The main policy question to be addressed is how to make VET an attractive learning pathway for individuals and how to engage employers. The concrete solutions will differ between countries, but they will have to address the issues of governance, capacity building in employers’ and other intermediary organizations, and the willingness of governments to delegate authority to such bodies.
CHAPTER 6 – WORK-BASED LEARNING
Alain Dehaze
Chair of the Global Apprenticeships Network (GAN)

Introduction
Businesses need skills. And people need jobs. Global unemployment levels are at an all-time high, especially for youth. In most mature economies, youth unemployment is more than double the average of regular unemployment rate. And predictions concur that the situation could endure for at least another decade.

At the same time, in Europe and the USA alone, more than 8 million positions remain unfilled. The 2014 Global Talent Competitiveness Index (GTCI) report, produced jointly by INSEAD, Singapore’s Human Capital Leadership Institute and the Adecco Group, indicates that there are several reasons why millions of youth remain unemployed and why companies are not able to fill their vacancies with the talent required for their needs:

#1 LACK OF WORK EXPERIENCE
Data shows that a lack of work experience is the principal barrier for young people seeking to reach the first rungs of the career ladder. The barrier of no or little work experience blocks many young graduates in general education from securing their first real job.

#2 SKILLS MISMATCH
While millions of young people are in search of work, their skills don’t match the demand of employers. Studies show that in Europe alone, 25-45% of employees are either over- or under- qualified for their jobs, pointing again to a substantial mismatch between supply and demand in the labor market. Virtually all nations are facing worrying rates of mismatch between the demand for specific skills and the supply of suitable candidates (see Figure below). Although talent has become a core currency of competitiveness for businesses and the economy, education systems have not caught up with the needs of the labor market.

Figure 7: The global talent crunch: projected trends in talent supply (2011–2021)
#3 QUALITY OF EDUCATION

A high degree of skills mismatch between education systems and the needs of the labor market is partly due to a lack of investment in formal education. People entering the labor market are often lacking in literacy, numeracy and soft skills, enhanced by a growing digital divide where millions of people still fail to master simple computer skills, such as using a computer mouse. At the same time, many countries are producing academically highly educated youngsters, only the knowledge acquired from University alone is not translating to 'employable skills' corresponding to the needs of the economy.

#4 ACCESS TO FLEXIBLE SYSTEMS OF EDUCATION

Another challenge is the access to and development of educational opportunities that present alternatives to a traditional educational path - such as vocational education and training programs. The challenge persists in developing countries, but too often also in developed economies across the globe, from the US to Spain, France and many other European, through to Asian and African countries. Too many countries have invested in highly educated individuals, at a significant cost, who do not correspond to the needs of the economy, hijacking resources from non-academic learning paths. So a look at the skills that employers seek shows that the need for work-based learning has never been more apparent.

Focusing on Jobs for Youth and Skills for Businesses

Every day, the Adecco Group employs more than 1 million people and this trend is increasing. Having access to so many people and opportunities, the Adecco Group vows to leverage its force to alleviate the global youth unemployment and skills mismatch crisis. The Adecco Group has implemented several programs to address these issues, such as:

- In 2013, Adecco launched Way to Work™, a global initiative including 2 major programs, and involving Adecco employees in more than 50 countries. The aim is to provide youngsters with tips and coaching for their job search and with work-based training opportunities able to boost their work experience and employability. With one of the programs, the Street Day, in 2015 alone, the Adecco Group provided over 3,000 internships and apprenticeships to young people around the world. And in 2016, the ambition of Adecco Group Colleagues is to provide more than 5,000 such opportunities.

- In addition to this, the second program, the ‘CEO for One Month’ initiative, offers a selected group of talented youngsters the chance to develop their skills and gain work experience directly alongside members of the Adecco’s top management. In 2015, the initiative has elicited 18,000 applications internationally, with 34 candidates progressing to become Adecco CEO for One Month in their home countries, working alongside their local Adecco Country Manager. In 2016, the Adecco Group extended the program to 50 countries where the Group is operating, giving the opportunity to the selected talents to gain qualified internships alongside the Country Managers of their country of residence. They will learn on the job, gain employable skills, push themselves out of the comfort zone and boost their experience and CV. One of them will also be able to spend a month working by my side, and get a taste of how to manage a Fortune 500 Company with a global business span and 32,000 colleagues around the world.
• In 2015, the Adecco Group committed to the European Alliance for Apprenticeships (EAfA) by pledging to create 5,000 apprenticeships in Europe by 2017.

• In recognition that efforts matter at national level, the Adecco Group is making a difference by committing to programs tailor made for Countries. In France, the Adecco Group launched, in September 2015, la Grande Ecole de l’Alternance. The aim is to address the decreasing trend of apprenticeships in recent years. For as promoting apprenticeships has been a key topic in France, the number of contracts continues to decrease: -5% in September 2015, -3% in 2014, -8% in 2013.

• The objective of the “Grande Ecole de l’Alternance” is to train 10’000 apprentices in 3 years and guarantee a sustainable job to all upon completion of their apprenticeship. This program responds to talent shortage through the creation of training facilities targeted to enhance sector specific skills in 15 branches with private partners. Some examples are:
  o Transport sector: Training rail road operators through a partnership with Eurotunnel
  o Digital sector: Training web/application developers and network administrators. Partnership with Microsoft announced in December to train 800 apprentices in 3 years
  o Financing: Development of innovative solutions to support students in terms of financing studies through partnership with EMLYON, announced in December (to finance a master degree through the CDI TT process).
  o Acting on future skills via partnership with Veolia to promote the environmental sector.

The key to the proposed solutions is for both public and private parties to come together to define educational and vocational training programs that foster the skills that meet businesses’ needs. Determining national education and training policies are key policy areas for governments to resolve, but the private sector, in cooperation with training institutions, can play its role in enhancing the employability of young people.

**Chairing and leading the Global Apprenticeship Network (GAN)**

In 2014, the Adecco Group joined the GAN, the global coalition of leading companies committed to end youth unemployment and skills mismatch by investing in work-based training. The GAN is a public-private partnership promoting work-readiness programmes as a solution to the problems of youth unemployment and skills mismatch. The GAN opens doors for youth within its wide network of members and partners on both global and national levels. GAN members together commit to action; advocate for work-readiness programs; share best practices and facilitate multi-stakeholder dialogue and partnerships with the ultimate goal to create jobs for youth and skills for business.

I was appointed GAN Chair at the beginning of this year, stepping up our Company’s engagement in line with my appointment as Group CEO in September 2015. My passion for this network, and my belief in the importance of its work, is based on my experience with many initiatives that I drove throughout my professional career. As the Regional Head for France for four years, I worked together with my team on implementing innovative solutions for youth employment, by launching apprenticeship and training programs. In my capacity as GAN Chair, I am proud to rally leaders of major companies such as Accenture,
Ericsson, Hilton Worldwide, IBM, Huawei Technologies, Samsung Electronics, Telefónica and UBS, around the common commitment to tackle the youth unemployment crisis.

One of the GAN’s unique solutions is to set up National Networks, which are being coordinated by a neutral entity based in international Geneva, and composed of Country Members of current and future GAN partners, such as the International Labour Organization (ILO), the OECD, the International Organization of Employers (IOE), the EU Commission and Private Sector Companies. With other global Institutions aligned as Partners, the coalition is one of the few outcomes of the current G20 and B20 efforts in the field of Employment. Representing 100+ members worldwide, the GAN commits to creating opportunities for youth through work-readiness programs, apprenticeships, internships and traineeships.

As a one-size-fits-all approach does not work on apprenticeship systems, the GAN ensures that each GAN National Network has an individual focus directed towards that particular region/country, while still being able to access and facilitate best practice examples among members and partners interested in designing a system that works for them. The GAN facilitates best practices and knowledge on apprenticeship systems between various countries and sectors. Although certain countries such as Switzerland are consistently referred to for having an ideal approach to apprenticeship systems, these systems must be tailored to each country’s institutional, cultural and economic situation.

**Summing up: education systems need to cater for employability!**

The Global Talent Competitive Index (GTCI) report not only identifies problems, it also offers suggestions about where we can find solutions. In 2014, it found that the countries ranking higher in competitiveness are those that invest in more lifelong learning through both formal and vocational training programs, and thus offering higher flexibility and mobility throughout the labor market.

The key to this work-based training approach lies in the cooperation between all actors involved: governments, businesses/employers, training institutions and the youth. While governments have prioritized youth unemployment as a key issue to tackle, businesses/employers have found it challenging to implement work-based training programs. Private employment service providers such as the Adecco Group know of the challenges that businesses/employers face and the skills that youth bring upon finalizing their formal education. They “see the gap” and can therefore play a significant role in contributing to the growth and development of talent.

Given these challenges and what is known about the needs of the labor market, the Adecco Group as the world's leader in HR solutions, proposes the following solutions:

**#1 INVEST BEYOND FORMAL EDUCATION TO INTEGRATE AND VALUE SKILLS DEVELOPMENT AND VOCATIONAL TRAINING**

Acknowledging that youth unemployment is a priority issue for almost all governments worldwide, countries should focus on investing in fostering employable talent, by notably developing vocational skills. According to the 2014 GTCI report, in many countries, university graduates can’t find jobs, while companies face a massive shortage of people with the right vocational skills. Research by the Adecco Group confirms that countries with established systems of work-based vocational training, such as Switzerland, Germany and
Austria, are most successful in tackling youth unemployment and addressing that gap. In Switzerland, the dual-track system allows an ease between vocational training and traditional learning so that one path does not need to be chosen over the other. Countries such as the US and UK have recognized the value of that dual apprenticeship model and have launched important campaigns to connect education paths for youth with business needs of companies.

Beyond the positive outcomes for youth, vocational training is an important lifelong learning instrument that keeps people employable and helps companies ensure the growth and retention of their talented staff. Data shows that continuous training and personal development programs are important elements in maintaining and boosting productivity, as well as retaining employees. Particularly in this age of digital transformations, work-based training programs that foster curiosity, flexibility and life-long learning are necessary.

#2 LINK EDUCATION TO BUSINESSES THROUGH WORK-READINESS PROGRAMS, INCLUDING APPRENTICESHIPS

Businesses/employers highlight the need for the right skills. As formal education systems do not provide the much needed talent, businesses/employers search for and depend on ways to equip young people with the skills that match their demand. Established vocational training schemes, such as the apprenticeships model, are key to develop those employable skills that meet businesses’ needs. As a Swiss company, the Adecco Group on a daily basis witnesses the benefits of the apprenticeships model built on a clear link between education to business, with employers investing and engaging for youth.

One of the challenges in many countries is to get youth acquainted with the world of work. Adecco Group opens its doors to youth and helps them take their first steps on the employment ladder by giving them work experience. Every day, the Adecco Group goes beyond helping youth towards their first steps in their career, by identifying their skills needs in line with the businesses/employers’ needs and thus building or supporting continuous learning, training and work-based or vocational training programs.

The Adecco Group will continue to build on its internal programmes and on solutions for businesses/employers and youth in all Countries it operates in. I will not tire to rally all stakeholders that are ready to bank on the employability of youth and Adecco Group will continue to invest in leading the GAN’s vision on both global and national levels. It is time to get Jobs to Youth and Skills to businesses!
"Innovation is a means to an end. We need to think of it not as an indicator of performance itself, but something that will translate into better educational outcomes."
Stephan Vincent-Lancrin, OECD

**Introduction**

Why care about innovation in education? As noted in many other policy areas, innovation has increased in importance over the last decades, in conjunction with rapid technological development, deepened globalization, and pressure on welfare states, especially in the wake of the financial crisis beginning in 2007-08. Innovation theories and studies have mainly focused on innovation driven by the private sector, as enterprises in competitive markets need to innovate to stay ahead, satisfy consumers, and keep down costs. Sectors of the economy that are usually publically-provided – education among them – are seldom subject to the same competitive pressures, and thus actors in those sectors may lack the incentive structure that makes innovation a natural and necessary ingredient of their everyday practice.

Governments can, however, choose to pursue strategies and efforts to enhance innovation in the public sector as well. Under pressure from voters to make efficient use of tax money, governments in countries with high spending and large public sectors will need to find ways to promote efficiency, choice, and quality in public sector services. One method is to promote innovation, mimicking the processes in the market-based private sector.

OECD published in 2014 “Measuring Innovation in Education”, a thorough study on the subject. The study identifies four main reasons why innovation in education matters: improving educational quality and learning outcomes, enhancing equity in and access to education, improving resource efficiency, and adapting to changes in the surrounding world and the societal needs. One crucial element of such societal needs is employers’ need for workers with the right skills and education. Thus, employers have a substantial interest in an educational system that is being geared towards innovation.

In many cases, employers and private sector companies can provide inspiration, guidance, and partnership for education providers in achieving and sustaining such ability to innovate. This chapter will focus on innovation in education from employers’ perspective, outlining areas with room for improvement, necessary reforms, and practical examples.

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Areas of innovation

There are several dimensions to education policy in which innovation is possible. Facilitating innovation is often associated with easing of restrictions on competition and private actors’ entry into the education market, but may also be conceived through other changes to existing policy structures. Innovation may also have a disruptive effect on existing production methods and structures, which indicates it must be dealt with from the policy perspective in a way that does not stifle the positive outcomes of innovation, yet takes into account the short-term challenges disruption can produce.32

PRIMARY, SECONDARY AND TERTIARY EDUCATION

As primary and secondary education (K-12) is commonly held to be a public good, it is regulated and provided mainly by public bodies (i.e. national governments or municipalities). Vocational education and training (VET) and higher (post-secondary) education are also viewed by most governments as public goods, albeit to a lesser extent.

Regulation of K-12 education might be the area with the least opportunity – and perhaps the least demand – for innovation. As regulation is set up through laws and ordinances by public and legislative bodies at different levels of government, employers have little room for participating in innovation efforts in this area. However, employers can provide governments with input and insights regarding the effects different modes of regulation have on the innovation potential in education systems, seen from the stakeholder point of view.

One recent example of innovation in regulation and provision is the UK government’s effort to create a “level playing field” in higher education, opening up the sector to new actors’ market entry through loosening of regulations.33 Such reforms would be an example of implementing innovation in regulation.

Another example is the findings of the Task Force on Federal Regulation of Higher Education in the US. The task force identified several ways in which regulation can be a barrier to innovation, and gave advice on how to remedy the obstacles in place. Analyzing regulation by its effect on innovation potential is another way of including the innovation perspective.34

VET

VET, both in a secondary and post-secondary setting, regularly involves employers in different ways. Sweden’s tertiary VET system is for instance founded on employers providing input on the design and dimensioning of VET programs. Program providers – which can be public as well as private actors – are given

license for programs for limited time, one purpose of which is to incentivize innovation in program design, through regular analysis of labor market skills needs. This model of regulation was introduced in 2009, following requests by employer organizations.

FUNDING
Another pillar of the public good nature of basic education is because funding is mainly public. Users (pupils and students) pay nothing or very small amounts for publically provided and regulated education in most OECD countries, and the main source of funding is the government.35

Funding policy is closely tied with regulation and oversight, especially in K-12 education. One major innovation in school funding is voucher systems, used to various extents in a handful of OECD countries. Instead of direct appropriations from government to school districts or individual schools, based on some kind of distribution key, vouchers attach a certain fund to each pupil, making funding of schools dependent on pupils’ choice.

Many countries have bans on top-up fees in schools, to establish greater equity in access. Funding can however be found from other sources than pupils/students. In Belgium, public-private partnerships have been used as a vehicle to provide private funding for school construction and maintenance, one of which encompassing over 200 schools.36

Higher education is to a higher extent funded by other sources, with a third of OECD countries having a share of 10 percent or more of tertiary education funding coming from private entities other than households (i.e. businesses, private foundations, and non-governmental organizations).37

Given the differences in the level of public funding in primary/secondary and tertiary education, respectively, and the public support thereof, more opportunity for innovation in funding mechanisms seems available in tertiary education. One could fathom further employer engagement in various kinds of funding schemes for higher education, i.e. through cost-sharing schemes or commissioned courses, where benefits are split between the university and the employer.

GOVERNANCE
Decisions regarding governance and organization of educational institutions are to various extents devolved to local and regional level, as well as to individual institutions. This can be observed for instance in higher education, through increased autonomy for universities. Such autonomy can be utilized to increase innovative forms of cooperation with employers and private businesses, i.e. when it comes to internship placements, co-founding of research programs, and sponsorship.38

38 More on university autonomy in Europe: http://www.university-autonomy.eu/
TECHNOLOGY

One area that has attracted a lot of attention lately is the use of online-based technology in teaching. The development is rapid, with leading US universities posting lectures online in the early 2000s, continuing with the growth and hype of MOOCs (Massive Open Online Courses), to the current development of “flipped classroom” teaching methods, hybrid learning environments, and tailor-made online programs with certification badges. In new and innovative learning environments, there are ample possibilities for partnerships with businesses and employers. Providers of technology to facilitate innovation in teaching and learning are often private businesses, tech firms etc., and many partners in online course distribution are private actors. New technologies are set to play an even greater role in teaching and learning in the future.

Further areas where room for innovation might be possible include pedagogy and curriculum design, assessment of outcomes, evaluation, and quality assurance. These systems differ vastly between countries and different stages of education.

Future possibilities for business and industry involvement in education innovation

There is a wide range of possible areas where employers and businesses can contribute to enhancing innovation and education. Some examples:

- Running schools in voucher/school choice systems.
- Providing continuous input on content for school curricula and university courses.
- Developing technological solutions and platforms for new learning methods.
- Improving leadership in education through sharing experience of management and resource efficiency in the private sector.
- Inspiring teaching innovation through sharing insights into communication techniques from work-life settings.
- Co-funding and designing industry focused student projects.

Governments and policy makers can take several steps to facilitate further employer engagement in education in general, and in enhancing education innovation in particular:

- Introduce school choice systems with vouchers and increased possibilities for private actors to start and run schools.
- Allow specialized curriculum.
- Encourage schools to invite business representatives for inspiration and career guidance lectures.
- Support youth entrepreneurship initiatives.

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40 For example, Khan Academy, Udacity, Udemy, etc.
CHAPTER 8 – HIGHER EDUCATION

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Global Open Networking: Scenario, vision, or state of the art for modern higher education?

HIGHER EDUCATION IN THE ERA OF THE FOURTH INDUSTRIAL REVOLUTION

The World Economic Forum published recently a report “The Future of Jobs – Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution”. According to the report, we are at the beginning of a Fourth Industrial Revolution. Developments in genetics, artificial intelligence, robotics, nanotechnology, 3D printing and biotechnology, to name just a few, are all building on and amplifying one another. This will lay the foundation for a revolution more comprehensive and all-encompassing than anything we have ever seen. Concurrent to the technological revolution are a set of broader socio-economic, geopolitical and demographic drivers of change, each interacting in multiple directions and intensifying one another. As entire industries adjust, most occupations are undergoing a fundamental transformation. While some jobs are threatened by redundancy and others grow rapidly, existing jobs are also going through a change in the skill sets required to do them.

What is the role of higher education in this revolution and what will be its future?

ALTERNATIVE FUTURES

The WEF report explains the technological, socio-economic, geopolitical, and demographic change drivers as having a profound impact on industrial sectors, professions, jobs and skills. In the case of education, there is a need to reform expected learning outcomes, programs and degree structures. However, the report is very clear that it is simply not possible to conquer the current technological revolution by waiting for the next generation’s workforce to become better prepared. Instead it is critical that businesses take an active role in supporting their current workforces through re-training, that individuals take a proactive approach to their own lifelong learning, and that governments create the right enabling environment, rapidly and creatively, to assist these efforts. In particular, business collaboration within industries to create larger pools of skilled talent will become indispensable to help individuals adapt to rapidly changing labor markets, as will multi-sector skilling partnerships that leverage the very same collaborative models that underpin many of the technology-driven business changes underway today. Additionally, better data and planning metrics are critical in helping to anticipate and proactively manage the current transition in labor markets.

Where can we find credible options for redefining the structures, programs and other vital elements of higher education for the challenges of the Fourth Industrial Revolution? The OECD and France co-organized a seminar in Paris in 2008 on the future of higher education. Four future scenarios were presented in the seminar, as follows:
1. **Open Networking**
   - Higher education is very internationalized and involves intensive networking among institutions, scholars, students and other actors such as industry. It is a model based on modularization of studies and more on collaboration than competition.

2. **Serving Local Communities**
   - Higher education institutions are focused on national and local objectives. They are embedded in their local and regional communities, and are dedicated to addressing local economic and community needs in their teaching and research.

3. **New Public Responsibility**
   - Higher education is primarily publicly funded, as is currently the case, but there is a greater focus on the use of “new public management” tools, including market forces and financial incentives.

4. **Higher Education Inc.**
   - Higher education institutions compete globally to provide education services and research services on a commercial basis.

As always, these scenarios were not meant to predict the future, but to reflect different perspectives on future developments and to serve as a basis for action. These scenarios are in many ways complementary, where for example new public responsibility is essential to increasing efficiency and quality in the deployment of new technologies in higher education. I was honored to comment on these scenarios on behalf of BIAC, and I “voted” for the first scenario: Open Networking.

**WHY OPEN NETWORKING?**

I argued for the Open Networking scenario based on the needs of businesses and industries. Profound changes in the ideological landscape in society, *including* the economy and business organizations, were well described by Ruben Nelson, Foresight Canada, already then in 2008 (see Figure 7).

**Figure 7: Transitions and transformations towards the future**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchical</td>
<td>Networked</td>
</tr>
<tr>
<td>Segmented Silos</td>
<td>Ecologies, Systems, Sub-systems</td>
</tr>
<tr>
<td>Command, Control &amp; Obey</td>
<td>Relate, Communicate &amp; Align</td>
</tr>
<tr>
<td>Minds Over Hands</td>
<td>Hands Embodying Minds</td>
</tr>
<tr>
<td>Short-Term, Superficial Views</td>
<td>Far-Sighted, Board-Minded Views</td>
</tr>
<tr>
<td>Telling Trumps</td>
<td>Experiencing is Essential</td>
</tr>
<tr>
<td>Experiencing</td>
<td>Capacity to Experience &amp; Make</td>
</tr>
<tr>
<td>Money is the Measure</td>
<td>Sense is the Key</td>
</tr>
<tr>
<td>Playing the game</td>
<td>Co-creating a new, open-ended &amp;</td>
</tr>
<tr>
<td>you inherit</td>
<td>reflexive game</td>
</tr>
<tr>
<td>by the rules laid down</td>
<td>Confederation of Finnish Industries</td>
</tr>
</tbody>
</table>
I believed in 2008, and still believe, that these fundamental changes in mental and behavioral models are also reflected in learning, teaching, innovation, and research. They must also serve as guidelines for policy.

**WORKING LIFE AND HIGHER EDUCATION RESPOND TO CHANGE TOGETHER**

The foresight project “Oivallus”, a competence needs anticipation project coordinated by EK in 2009-2011, sharpened understanding about the future of working life and education, including higher education. “Oivallus” concluded that we have been moving towards an information society or an experiential society (i.e. a society which emphasizes taking small steps forward, testing and piloting) for some time already. The capacity to work in a new way to achieve new or improved solutions has become crucial (see Figure 8).

**Figure 8: Change of work revolutionizes skills needs**

To rise to the challenge, companies have been changing the way in which work is performed. Mechanical thinking by the book will seldom be the case in the future. Strict instructions have been increasingly replaced by guidelines, and even the goals of work are becoming something that people must be prepared to define themselves. The role of leaders and supervisors is changing towards coaching, enabling, and creating a business environment where employees have the best opportunities to perform well in their tasks. Leaders must be able to convince their employees that company values create an engaging, motivating framework for work and “intrapreneurship”: an entrepreneurial attitude for work.

**CO-CREATION AT THE HEART OF HIGHER EDUCATION**

The changing world of work has strong implications for education. In order to prepare for the future, promoting creativity will become the foundation of all education. Creativity should be understood as divergent thinking: defining the fundamental phrasing of questions to be solved and alternative solutions to existing problems.

Education that promotes creativity adopts methods from working life: experimenting with others without the fear of making a mistake should be encouraged. This is why future education will focus on skills in
addition to knowledge, and working in groups instead of working in isolation. This change applies, one might say, especially for higher education, where the tradition as well as incentives (meritocracy) has often been focused rather on individual performance than collaborative thinking and working.

Adopting a broad range of learning methods, also in higher education, prepares students for work that is performed in a variety of ways. We should move away from a fragmented curriculum towards learning that is based on problems and phenomena. This would enable students (and teachers, as well as partners, e.g. companies) to handle more and more complex environments.

We should also increasingly enable individuals to enter higher education to develop skills in the middle of one’s career. In order to do this, we must create new types of cost-sharing models and public-private partnerships. Lifelong learning is not a monopoly for public institutes. Publicly funded higher education can be seen as a catalytic investment for privately managed and funded business operations.

Does this future for higher education endanger scientific expertise? To my mind it does not. Work is not the same for all of us. Some of us are specialists, some “fusion makers”. We need, more than ever, top level scientific exploration going extremely deep into scientific phenomena. But the need for networking and dialogue is acknowledged in that kind of work, too. The most exciting research results with high societal impact are often reached by combining expertise from very different scientific areas (e.g. biotech and medical research, and its applications in new drugs and health-care solutions).

GLOBAL OPEN NETWORKING IS ALREADY HERE
When looking back at the four alternative higher education futures proposed by the OECD in 2008, I still see the Open Networking scenario as most favorable and relevant for modern working life and business behavior. Some important success stories in businesses and industries are also a result of co-creating with competitors. Intensive networking is taking place in most jobs, and one should be able to prepare for it already while studying. Today in 2016, we see that learning is actually changing and expanding as universities are opening up to the society that surrounds them. Working methods and structures of education are changing, sometimes slowly but changing nevertheless, and enabling collaborative teaching.

The Internet has enabled the availability of free and open knowledge in businesses, but also in learning and research. As mentioned in other parts of this BIAC paper, the development of cross-border, open innovation learning environments has astonished us, in the forms of Massive Open Online Courses (MOOCs) and Open Educational Resources, e.g. (Udacity, Coursera, and FutureLearn).

There is more and more private provision also in countries where higher education is traditionally relying on public funding. Business opportunities arise when open interfaces are created for learning applications created and managed by private learning solutions companies. New forms of public-private partnerships are also emerging in the form of tailor-made, cost-sharing degree programs for specific business areas or even companies. Degree programs are also carried out in partnership with specific companies, such as Lidl and McDonald’s.

To sum-up: higher education is becoming more internationalized and increasingly involves intensive networking among institutions, scholars, students, and industries, among others. International collaboration is intensified by common quality assurance systems (accreditations), as well as joint and double degree
programs and other types of alliances based on common goals and values (e.g. the League of European Research Universities, LERU). Learning is becoming a part of the “platform economy” with different applications and solutions linked by open interfaces and service providers, where “public good meets business.”

**The vision: Global open networks enhancing new skills and strategies how to use them**

Future is in many ways a question mark. But one thing is for certain: we react to changes in our operating environment by networking with different actors. These networks are channels through which companies, organizations and individuals gain access to new knowledge and skills that complement their existing competences. Learning is essential not only when we are young and study; learning continues after we enter working life. For businesses, industries, and their employees, cooperation with universities is an important source for renewing skills, knowledge, and mental models.

“Open Networking” is still the best vision available for higher education. However, I would like to rename it to “**Global Open Networking**”. Higher education is becoming more and more international, challenging national borders and steering systems, and gathering learners from different parts of the world to sharing the same learning space (see Box 3). Networks are important to carry out the current skills strategies, but they are even more important as tools for learning new skills and creating new skills strategies. Institutions, companies, and wise governments create new strategies in a global dialogue. Publicly-funded organizations and services can find synergy via open interface-platforms, enhancing also market-oriented answers for different learner needs. Access to different service providers is open, and business opportunities are being “catalyzed” by publicly funded education activities.

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**Box 3 – An example of Global Open Networking? Japan’s Global 30 project**

In Japan, the national business organisation Keidanren is working with 13 universities participating in the Japanese Government’s "Global 30" project, in order to offer scholarships for undergraduate and postgraduate students to study abroad for one year. Keidanren provides pre-departure orientation for the students, advice on their study plans and future careers, and also holds a job fair upon their return in order to help integrate them into the labor market. As part of the same “Global 30” project, Keidanren is working with the 13 participating universities to develop specific courses with lectures by corporate executives.

*Information provided by Keidanren for BIAC Education Survey 2013. For further information on the Global 30 project, please see:* [http://www.uni.international.mext.go.jp/](http://www.uni.international.mext.go.jp/)

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As is often the case, alternative scenarios are not excluding but instead complementing each other. Besides “New Public Responsibility”, some elements of the second scenario (“Serving local communities”) would make an excellent combination with the vision of internationally active learning networks. One might think that in the era of the Internet and digitalization, place and physical community would no longer matter, but experience and research show that while international networks are important, the local community – offering a large enough scale of diversity and opportunities for creative contacts – is a vital element for boosting co-creation and innovation.
HOW TO DO IT IN PRACTICE?

University-business networks and partnerships can take place in various forms. Some forms of cooperation are complex processes; others consist of some small, practical steps. Universities can help companies in educating their staff, and this often starts with the university evaluating the prior learning outcomes of the staff. Expected learning outcomes of the degree programs are compared with the existing skills, and individual learning paths are then created. The courses may be underpinned by comprehensive work-based training programs, which allow trainees to put into practice what they have learned in university.

RETHINKING EXPECTED LEARNING OUTCOMES AND ENVIRONMENTS

One of the more complex areas where networking is important is curricula planning. The future of labor market is “foggy” and detailed forecasts on skills needs cannot be made. This does not mean that higher education and labor markets could not learn from each other – perhaps not to forecast but instead to build foresight. Faced with the speed of change in the 21st Century, this may be more important than ever before.

WEF (2016) takes a very positive view on skill needs foresight. Reskilling and retraining efforts may not yield the desired return if they are not cognizant of impending disruptive change and instead base their content primarily on today’s requirements or past successes. Foresight is necessary, but its working methods must change from the past. One cannot be too specific or too local in anticipating future businesses, professions, or skills. One must not be narrow-sighted. One must look beyond traditional borders (whether private, public, sector, region, nation, industry, service, user group, etc.). One must be prepared for the unknown, while nevertheless drawing upon history and expertise about the present.

It is most important to create opportunities for applying, testing, and piloting expertise. To do this, one needs to understand future skill and knowledge combinations, but also the enabling communities and spaces (physical, virtual, mental and social elements of space).

I strongly believe that higher education institutions would benefit from this kind of future-oriented dialogue with external stakeholders, including businesses and industries, in planning and executing their degree programs. This dialogue and co-creation should be carried out in a systematic way and on a regular basis. Besides leaders and planning staff, also teachers and personnel engaged in research, development, and innovation services, should be engaged.

AN EVIDENCE BASE SHOWING INPUTS AND OUTPUTS

Creative, long-term exchange of vision, ideas, and challenges is needed – but also concrete actions. A sufficient database about the inputs, outputs, and different societal outcomes of higher education needs to be created. Making use of data analytics enters the field of skills and education planning, serving both industries and higher education. Businesses will need to build a new approach to workforce planning and talent management, where better forecasting data and planning metrics will need to be central. Earlier mapping of emerging job categories, anticipated redundancies, and changing skills requirements in response to the changing environment, will allow businesses to form effective talent repurposing strategies within their companies, their own industry sector, and across industries. Human resources have the opportunity to add significant strategic value in predicting the skills that will be needed, and changes in demand and supply.
Higher education institutions should have a clear view what the career prospects are for their students. Not all educational fields are professionally-oriented, but it is important to understand what kind of alternative career paths students can have after graduation, including in research. The follow-up of graduated students should be systematic (evaluation reports of higher education, at least in Europe, are rather critical in this respect). Not all institutions seem to have detailed knowledge about what their alumni are doing: working, studying, or still looking for a job. It would be important to stay in contact with alumni, because they are the best experts on what skills they should have to succeed.

**RETHINKING HIGHER EDUCATION SYSTEMS - TOGETHER**

The WEF 2016 report is rather critical about the existing educational system, including higher education. Some of the criticism is quite similar to the Oivallus findings presented earlier in this chapter. For example, many of the Fourth Industrial Revolution trends will create many new cross-functional roles for which employees will need both technical and social and analytical skills, while most existing education systems at all levels provide training in a silo approach and continue a number of 20th Century practices that are hindering progress for today’s talent and labor market issues.

Two such legacy issues burdening formal education systems worldwide are the dichotomy between Humanities and Sciences vs. applied and pure training, on the one hand, and the prestige premium attached to tertiary-certified forms of education – rather than the actual content of learning – on the other hand. There is simply no good reason to indefinitely maintain either of these in today’s world.

To summarize: the future of higher education will be increasingly based on global open networking. New platforms arise, challenging the fundamentals of institutional higher education. Governments must co-create new higher education policies in a global dialogue. Businesses should work closely with governments, education providers and others to rethink the existing higher education system. Partnerships between multiple businesses, educational institutions, and accreditation providers can result in an overall increase in the quality of the talent pool, at lower costs, and with greater social benefits. Businesses also need to engage with governments strategically to build new talent pools and redeploy redundant skills between sectors, thereby addressing cost concerns and social stability.
Chapter 9 – Conclusions

Charles Fadel
Chair of the BIAC Education Committee

A common message throughout this BIAC paper is that education in the 21st Century needs to increasingly focus on versatility. Versatile individuals are educated, employable, and can continue to learn throughout their lifetimes. This versatility is important as a hedge against a volatile and uncertain world, but also as an aspiration for higher human achievements. Versatility calls for a comprehensive approach to education spanning curricula, assessments, teaching, school leadership, vocational education and training (VET), apprenticeships, innovation, and higher education.

Redesigning curricula is essential for relevance, by curating Knowledge and embedding competencies: Skills, Character, and Meta-Learning. This is an Education with a capital E, to respond to the forever need for fulfilled people for a sustainable humanity (including, but not limited to, employability). This understanding needs to be incorporated into existing models of education, coupled with more innovative ways of teaching and learning.

Assessments have to evolve in concert with the above goals, to become assessments for learning and as learning, rather than merely of learning. “For learning” should include formative and some portfolio summative methods to identify student learning progress in ongoing work and performance tasks, new learning needs as they arise, and opportunities to revise work and improve competencies. “As learning” should be mainly formative and meaningful learning tasks with embedded assessments that provide immediate feedback as part of the ongoing learning experience, with a progression of challenges for increasing mastery with a wide variety of feedback. Without this evolution in assessment, education systems will remain stuck in a routine of only measuring traditional knowledge, as “what gets measured gets focused on” (Lord Kelvin).

This evolution is particularly important when thinking about the transition from secondary to tertiary learning, whereby tertiary institutions’ entrance requirements need to reflect both modern curricula as well as broader assessments as soon as possible, or they will remain an impediment to progress.

A critically important part of the solution is the empowerment of the teaching profession, including incentives for teachers to succeed depending on their tasks and performance, coupled with updated methods of teaching. There must also be a modernization of school management and increased autonomy for schools, but with external evaluation of their performances.

Vocational education and training (VET) must receive more attention by policymakers. The involvement of employers at system level and in the concrete delivery of training is crucial in order for VET to provide the skills that are in demand. The main policy question to be addressed is how to make VET an attractive learning pathway for individuals and how to engage employers, including for apprenticeships. The concrete solutions will differ between countries but they will have to address the issues of governance, capacity building in employers’ and other intermediary organizations, and the willingness of governments to delegate authority to such bodies.
Looking to the future, innovation in education can take many forms, and should not be viewed as an end in itself, but rather a means to achieve other education policy objectives. Such goals need to be set based on independent factors, of which academic quality and work-life connection are highly important. Governments and policymakers should encourage innovation throughout all parts of the educational field, and include businesses and employers in such efforts, to encourage cross-sector learning and facilitate efficiency improvements in public services. A case-and-point is the future of higher education, which will be increasingly based on global open networking. New platforms are arising, challenging the fundamentals of institutional higher education, prompting publicly-funded organizations and services to find synergy via open interface-platforms. Access to different service providers will become increasingly open, and business opportunities are already being catalyzed by publicly funded education activities, thereby enhancing market-oriented solutions for different learner needs.

Employers are clear that a successful education system is one which supports the development of “modern Renaissance” humans. It is also clear that learning requires experiential, real world and problem-based learning to enable individuals to learn from doing and risk-taking. To make progress in all of these areas, and at all levels of education, businesses, education providers, and policymakers must cooperate to forge a shared understanding of the needs of the 21st Century learner. There is a clear role for employers to support the development of people throughout the education system, but this must happen alongside policy change. The OECD is uniquely well-placed to support governments in implementing appropriate policies, but also in encouraging closer cooperation with employers.
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