



## **Innovation in TVET: Challenges and Prospects**

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### **ABSTRACT**

Innovation in the world of technical and vocational education and training (TVET) is as natural as the biodiverse forests of Borneo. In this ever changing world, we are constantly challenged to create a more sustainable future. However, innovation is critically dependent on the leading organization and societies. Innovation is for the masses and not exclusively for research and development (R&D) projects. In this article, I will show that we all are innovators, we all do so in many cases involuntarily but as collectives we don't do so as naturally as we might and must. TVET is no different. Innovation is all about working together to create new ideas. In the emerging countries in Asia, Africa and the Americas and Europe, meeting the needs of industry and our growing population requires the utilization of technology, human capital and skills like never before. In Asia Pacific, there are millions of young people who need new skills – skills that are innovative, creative, entrepreneurial – to allow these unemployed citizens to see a sustainable and positive future for themselves. So in this context, I will take the audience on a journey through innovation, sustainability and leadership in TVET because the three elements are vital in the 21st century – the transformational age.

**Keywords:** TVET, innovation, leadership, sustainability, transformational age

### **INTRODUCTION**

History has shown that innovations have changed the world. Inventors and innovators are the great people who have the capabilities to create new products and services to transform our lives. In this article, I would like to briefly tell the story of the founder of the LEGO group. The LEGO group is a privately held, family-owned company with headquarter in Billund, Denmark, and has main offices in United States, United Kingdom, China, and Singapore. Founded in 1932 by Ole Kirk Kristiansen and he created the iconic LEGO® brick – it is one of the world's leading manufacturers of play materials (The LEGO group, n.d). The company is still owned by the Kirk Kristiansen family who founded it in 1932. Ole Kirk Kristiansen, a master carpenter and joiner, established his business in the village of Billund, Denmark. His firm manufactures stepladders, ironing boards, stools and wooden toys. Living in rural Denmark at that time was not easy. With a large family to support, he desperately needed a sustainable employment. Modified his carpentry business, Kristiansen began an enterprise which is now a brand name synonymous with innovation, creativity and play. In the late 1950's, he created the first and iconic red plastic brick. This period of creativity quickly followed by innovation after innovation has seen the LEGO group come a long way for the past 80 years - from a small carpenter's workshop to a modern, global enterprise that is now one of the world's largest manufacturers of toys.

The success of the LEGO group is the product of innovation. In my view, innovation is a new positive response to circumstances that produces sustainable and quality outcome. This is somewhat different from the standard definition of innovation which is the adaption of an existing idea for the first time as distinct from invention – the creation of a new idea (Rogers, 1995). Ole Kirk Kristiansen has the vision of continuous improvement in order to produce the best product. So in the context of TVET, shouldn't we also aspire the LEGO vision in terms of continuous improvement to be the best at what we do, the best for our learners and their development and the best that we could

offer to our community and partners? Nevertheless, there are many challenges for TVET in this era of globalization and uncertain global economy. The issues of TVET leadership, innovation, and sustainability are critical because the prominence of TVET is dependent of these three factors.

Leadership is key to the success in innovation. One critical component of leadership is commitment. Without strong commitment, a leader is out of the driver's seat. My own experience in the field of TVET began when I went to a technical university – the Dublin Institute of Technology to earn a vocational qualification in media. Then furthered my studies to obtain vocational qualifications in innovation, leadership and management – coaching and mentoring. My work has been heavily involved in the areas of education and training, labor market affairs, investment promotion and business development. I was for seven years in a senior position with City and Guilds of London Institute and most recently as development manager for Europe. My career has taken me to over 70 countries and I have extensive experience in vocational education and training in Europe, the Caribbean, Africa, the Middle East and Asia. Projects that I have been centrally involved in are mainly dealt with education and training, labor market supply and demand, skills advocacy, competency-based education, employability, innovation, and public-private partnerships. Based on my strong commitment to spearhead TVET, I could see innovation is the future driver for TVET.

## **INNOVATION IN VOCATIONAL EDUCATION AND TRAINING**

In Turkey, a culinary school called Mutfak Sanatları Akademisi (MSA) in Istanbul shows a deep commitment to innovation and excellence (MSA News, 2014). To understand the excellence of Mutfak Sanatları Akademisi, one needs to understand briefly the recent transformation in the Turkish economy and society. Turkey is the 18<sup>th</sup> largest economy in the world. In less than a decade, per capita income in the country has tripled and now exceeds USD 10,000 (The World Bank, n.d). Although economic growth was slowed by the onset of the global economic crisis in 2008, it has nonetheless remained resilient – making Turkey an example from which other countries in the region could learn. Labor markets have recovered fast after the crisis. Turkey has made considerable advances in competitiveness over the past decade, moving ahead six spots to number 43 in the World Economic Forum's Global Competitiveness Index. The rapid and sustained growth in Turkey is reflected in Mutfak Sanatları Akademisi. The Akademisi first opened its doors in 2004 – now has capacity to train of 108+ chefs and at one time graduating in excess of 500 hundred professional standard chefs per annum. In 2014, Mutfak Sanatları Akademisi joined forces with the leading and highly respected international hotel chain – Ciragan Palace Kempinski, to offer MSA graduates an opportunity to become interns (MSA News, 2014). Ciragan Palace Kempinski has excellent kitchen that MSA trainees could acquire in-depth professional experience and expertise. The Ciragan Palace Kempinski has also allowed a selection of its exclusive Tugra restaurant menu to be available at the MSA restaurant attached to the culinary school. This innovative approach to vocational education is exemplary.

Turkish government is taking its role in the transformation very seriously indeed. The *Movement of Enhancing Opportunities and Improving Technology*, known as FATİH, is among the most significant educational investments in Turkey. The FATİH project proposes that all schools and pupils across the country will be with the latest information technologies and will be transformed into computerized classes (Fatih Projesi, 2012). A total of 42,000 schools with 570,000 classrooms, not to mention how many millions of students that will experience 21<sup>st</sup> century innovative technology in their schools (Fatih Projesi, 2012). Interactive whiteboards and associated software development and tablet technologies for all pupils are a striking example of an ambitious innovative approach to education including vocational education and training. FATİH project is a great example of how innovation can be realized if there is strong and passionate leadership.

Regarding economic condition in Europe, the EU (European Union) is currently recovering and in some member states they are merely surviving the aftermath of the economic crash of 2008. TVET is now widely accepted at a policy level as being an enabler for competitiveness in Europe. In 2010, *the Bruges Communiqué on Enhanced European Cooperation in Vocational Education and Training* (2010) for the period 2011-2020 was published following a meeting of the European Ministers for

Vocational Education and Training, the European Social Partners and the European Commission held in Bruges, Belgium in 2010 (European Ministers for Vocational Education and Training, 2010). Current and future challenges are outlined clearly. A vision for the future, i.e., beyond 2020 is described and the *Communiqué* is brave, bold and innovative in its approach. Under the heading *Education and Training for Tomorrow's Europe*, Europe is trying to recover from a severe economic and financial crisis. Unemployment rates are high – in particular among young people. The *Communiqué* has emphasized the need to reform EU economies and societies. Europe wants to become smarter, more sustainable and more inclusive (European Ministers for Vocational Education and Training, 2010). To achieve this, we need flexible, high quality education and training systems which could respond quickly to the needs of industry.

Under the slogan *the Right Skills*, the *Communiqué* has charted the path for future education and training. In 2020, today's students will be in the beginning of their career with at least 30 years to go in their professional live, and some would be in occupations that do not exist today and others perhaps in occupations that are disappearing (European Ministers for Vocational Education and Training, 2010). We need to improve the capacity of TVET to respond to the changing requirements of the labor market. The *Bruges Communiqué* is a map for TVET transformation – how TVET should move forward in the midst of constant change. Thus, constant innovation is required in TVET.

### **ENABLING CHANGE THROUGH INNOVATION**

According to the Organization for Economic Cooperation and Development (OECD, 2014), innovation is a driver of growth and well-being. New technologies, products, services and organizations create jobs and rejuvenate industries – while making others obsolete. To reap the gains of innovation, policy makers need to understand the way industries are changing and what this implies for education and training policies. But how to innovate the TVET sector? The idea that public sector organizations are less innovative than business sector organizations does not hold for the education sector. According to the innovation profiles of tertiary graduate jobs (OECD, 2014), education is one of the most innovative sectors of society, especially for innovation in knowledge or methods. Among the sectors, higher education has the largest share of jobs involving innovation across disciplines, outperforming manufacturing and business activities, while primary and secondary education are close to the average (OECD, 2014). According to OECD (2014), although there are large variations across countries, educational innovation in schools is the most prevalent.

### **INNOVATION SKILLS ACROSS THE GLOBE**

According to the World Economic Forum's Global Competitive Index (2014), Switzerland ranks as the highest (1<sup>st</sup>) in *quality education*. Out of the 143 countries, Ireland ranks 5<sup>th</sup>, Malaysia ranks 10<sup>th</sup> followed by the United States of America (27<sup>th</sup>) in quality education. Each country is scored against a series of criteria. For the pillar of *capacity for innovation*, again Switzerland is ranked number one followed by the United States (2<sup>nd</sup>), Malaysia 13<sup>th</sup>, Ireland 17<sup>th</sup> and China 40<sup>th</sup>. The ranking comprises scores taken from each of the 12 categories. A summary of various countries overall scores and category scores is included in Table 1.

Table 1: Selected Country Rankings from the World Economic Forum  
Global Competitiveness Report 2014-2015

<b>Country</b>	<b>Overall Score</b>	<b>Capacity for Innovation</b>	<b>Quality in Education</b>
Switzerland	1	1	1
Malaysia	20	13	10
Ireland	25	17	5
USA	5	2	27
China	28	40	52

What makes Switzerland so innovative, with the highest capacity for innovation and the highest quality in education? According to OECD report (OECD, 2014), vocational education plays a

major role in the Swiss education system. More than 65% of students in upper secondary education are enrolled in pre-vocational or vocational programs at the upper secondary level compared to an average of only 44% across OECD countries. Furthermore, the report explicitly states unlike most OECD countries, where the vast majority of students graduate from upper secondary programs designed to provide access to academic tertiary education, in Switzerland, more young people graduate from an upper secondary education that leads to vocational programs.

According to the Swiss Federal Department of Foreign Affairs (n.d), a defining feature of the Swiss vocational education and training system is its close link with the labor market. Training is geared to the actual demand for vocational qualifications and to the jobs available. The direct connection to the labor market makes Switzerland as one of the lowest rates of youth unemployment in Europe. Education and innovation in Switzerland are overseen by a single government agency. The Federal Department of Economic Affairs, Education and Research (EAER) is the federal government's specialized agency for national and international matters concerning education, research and innovation policy.

### **LEADERSHIP AND INNOVATION**

In TVET, leaders must advocate for skills. We must encourage and lead on the potential that we have within us all. According to Llopis (2014), leaders are accountable to assemble teams and lead them to optimal performance outcomes. An effective leader recognizes the importance of embracing differences in people and knows how to connect the dots among those differences to obtain the best outcomes from the team. This is what cultivates a workplace environment of continuous improvement and innovation. Leadership's role in innovation is critical. It is always difficult and near to impossible to predict in a situation where ideas are generated and innovation is taking place, which ideas are going to lead to new policy, new practice, new processes, new services or for that matter what is the best source for such ideas. This is the context where some people in organizations have to become innovation leaders. Bottom up innovation as I like to call it could develop leadership where otherwise it may not be found or have been incubated. If we accept that leadership is a state of mind, an attitude, a culture and not a title or specific managerial role then we begin to understand that innovation and leadership are inextricably linked. Steve Jobs legendary innovator and the founder of Apple once said that innovation differentiates a leader from a follower (Jobs, n.d).

Organizational sociologists have noted that public sector organizations are usually large bureaucracies structured to perform their core tasks (Wilson, 1989). But bureaucracies would jeopardize the dynamics of an organization in terms of lagging to compete due to the delayed decision-making. In globalization era, in order to compete internationally, organizational bureaucracy should be reduced significantly. Globalization agenda has changed the way we see our roles as practitioners or leaders. There is so much potential in TVET to be the enabler for so much good in society. As we seek to change work practices, adapt to circumstances, seek government and state agency prioritization, adopt new technologies, respond to local and global situations and needs transformative leadership is critically needed. Without strong leadership, we will not have effective and sustained innovation. In the context of innovation in TVET, the utilization of the social innovation is appropriate. Social innovation is described by the European Commission (2013) *Guide to Social Innovation* as the development and implementation of new ideas (products, services and models) to meet social needs. To implement new ideas, TVET leaders must lead, engage and drive forward this agenda.

### **INNOVATION AND SUSTAINABILITY**

Currently, high unemployment rate among youth is a critical issue. In 2013, according to the World Bank (2013), youth unemployment rate is 60.4% in Bosnia and Herzegovina; 57.3% in Spain; 26.7% in Ireland; 15.8% in the United States of America, 11.1% Malaysia; and 10.1% in China. The McKinsey Centre for Government (2014) stated that the European Union has among the highest unemployment rate in the world apart from the Middle East and North Africa. In Europe, almost a quarter of young people in the EU were unemployed in 2013 (McKinsey Centre for Government,

2014). For one of the most developed regions of the world, this is truly startling—even more so when added to the fact that the youth unemployment rate has been more than 20 percent for the past 20 years. Youth unemployment has long been a smoldering crisis in Europe and to overcome this unemployment problem is a significant challenge.

In Ireland, for instance, the government is currently conducting a major overhaul of the apprenticeship system. Compared internationally, the standard of apprentices in Ireland is relatively high (OECD, 2013). The education system in Ireland was biased toward technical and male oriented crafts. Many apprentices from Ireland have been very successful in World Skills in aeronautical engineering, construction trades, metal trades and so on. But the problem as identified by the OECD (2013), several vocational education and learning programs make insufficient use of workplace training. The apprenticeship system (limited to a narrow set of occupations) lasts four years, during which apprentices hired by firms follow a predetermined sequence of on-the-job and off-the-job phases. Because of the economic crisis, fewer apprenticeships were available. Diversifying apprenticeships into more sectors can improve the offer and better meet the demands of the labor market.

The government has instigated an innovative and radical review of apprenticeships in Ireland. A wide ranging consultation has taken place and a new Apprenticeship Council was established with a broad public, private and civil society representatives and a call for new apprenticeships consortia was called for in March 2015. It is envisaged that the call and subsequent iterations of this process may lead to the establishment of apprenticeships for sectors such as ICT (Information and Communication Technologies), Hospitality, Financial-Services and so on. Hence, Ireland is not structured like other countries such as the UK, Germany and Switzerland who have apprenticeships systems that reflect the labor market and breadth of opportunity in the work place.

In Africa, the African Union (AU) is leading in the identification of its continent challenges and opportunities. The African Union's Agenda 2063 is both a vision and an action plan (African Union, n.d). It is a call for action to all segments of African society to work together to build a prosperous and united Africa based on shared values and a common destiny. Agenda 2063 is expected to be a source of inspiration for development of national and regional sustainable development plans. Sustainable development plans and in the context of transformation in this the 21<sup>st</sup> century with vocational education and training as an integral part. The development of any nation hinges on the social and economic growth. Educational, vocational and technical training plays a major role at promoting community and national development. Vocational and technical education occupies an important position in the sustainable development of the nation (Oguntuyi, 2013).

The experience in Central America strongly suggests that, unless the population has substantial human capital (especially education), even the right macroeconomic policies and structural reforms will not be sufficient to create the necessary number of employments (World Bank, 2012). The British Council (2013) commissioned an Economist Intelligence Unit to conduct a research on skills development in South Asia especially in Afghanistan, Bangladesh, India, Nepal, Pakistan and Sri Lanka. The report concludes that the region is lacking 96 million of the 100 million trainees currently required to meet the requirements for continued economic growth (British Council, 2013). The report estimates that one million additional skills training places are needed every month for the next eight years in order to avoid an unsustainable rise in unemployment and recession (British Council, 2013). Resource constraints have implications for the development of the skills system across the region. The potential economic rewards of greater public sector focus on skills could be immense, though the complexity of the challenge and other competing priorities suggest that such efforts must be targeted, guided by data and evidence, and done in collaboration with the private sector. A leap of faith on both sides will be essential for the development of a relevant, functioning and sustainable system in South Asia.

In the Asia-Pacific region, advancement of societies is predicated on putting knowledge and innovation to work and developing new products and new services. This requires governments to have appropriate policies and incentives to deepen talent pools and to expand access to market-relevant skills development to the disadvantaged sections of the population. In Malaysia, for example, a major role in this move to build a world-class education system that is flexible and innovative in

Malaysia as well as turning the country into a regional education hub and center of excellence. This the type of leadership that provides the empowerment and focus that leads to realizing the vision for the future – a future of hope, opportunity and excellence. The Prime Minister recently remarked the following regarding the Malaysia labor force at the *Invest Malaysia 2015* Conference in Kuala Lumpur (Office of the Prime Minister, 2015). Malaysia has a young and increasingly well-educated populations are among the most dynamic and innovative. The Human Resources Development Fund (HRDF) in Malaysia is administered by *Pembangunan Sumber Manusia Berhad* (PSMB), an agency under the Ministry of Human Resources via the *Pembangunan Sumber Manusia Berhad Act* (2001) is fulfilling the nation's aspiration to attain the status of developed country by the year 2020 (HRDF, n.d). The HRDF was established in 1993 with the aim of developing quality human capital and world-class workforce in order to achieve a high-income economy based on knowledge and innovation.

### TECHNOLOGY AND THE DIGITAL ERA

Technology and advances in the digital world have a significant impact on innovation. Innovative company like General Electric (GE) is successful because it focuses on nurturing innovative talent in the company. Since its formation in 1892, GE has been promoting unique culture of innovation. Its famous CEO Jack Welch once said he would make GE the world's most competitive enterprise. Thomas Edison, the GE co-founder was one of the greatest leaders of innovation. His famous saying: "There's a way to do it better". Edison had much experience of barriers to innovation – they are many and varied. GE Global Innovation Barometer (2013) explored how business leaders around the world view innovation and how those perceptions are influencing business strategies in an increasingly complex and globalized environment. The Barometer is an international opinion survey of senior business executives actively engaged in the management of their firm's innovation strategy. GE expanded the global study in 2013, surveying more than 3,000 executives in 25 countries (including Malaysia, Vietnam, China, Ireland and the United States). It is the largest global survey of business executives dedicated to innovation. The key finding of the survey is that workforce preparation and talent mobility are the top concerns for global business leaders seeking to strengthen innovation. The survey further states that education, development and access to talent is a critical concern for innovation leaders. The creativity and technical prowess of the global workforce seen as key to unlocking innovation potential across companies and countries. But the concerns around the preparedness of the workforce to innovate for tomorrow's economy are abound.

Technology could bring innovation faster. Technology disperses the change quicker and more efficiently via everyday channels such as the internet, social media and mobile devices. In respect of social media, platforms such as Twitter, Facebook, YouTube, Pinterest, WhatsApp, QQ, and LinkedIn make innovation in these spaces is and continues to be social, impactful and above all fun. LinkedIn founded in 2003 connects the world's professionals to make them more productive and successful. LinkedIn has 347 million users as of May 2015 for professionals, network groups and companies/organizations under specific terms. Table 2 shows the numbers of professionals who joined LinkedIn based on categories such as TVET, Education, and Innovation.

Table 2: Selected LinkedIn data

<b>LinkedIn Term Searched</b>	<b>Professionals</b>	<b>Groups</b>	<b>Companies/ Organizations</b>
TVET	5,631	11	40
Vocational Education	269,401	58	2,858
Further Education	703,693	245	4,612
Education	24,789,693	47,910	233,135
Innovation	2,244,438	13,584	99,928

Source: [www.linkedin.com](http://www.linkedin.com)

LinkedIn and the myriad of other broad-based and specific social networks provide an abundance of opportunity for professionals to connect to each other. In education alone, about 25 million professionals joined LinkedIn. Professionals who work in innovation sector who join LinkedIn are more than 2 million. With the advent ICT and digital age, the technological innovation has accelerated exponentially. The users of digital technologies have also increased. According to the Global Digital Statistics (2015), the global population is 7.21 billion and 42% or just over 3 billion people are active internet users, 29% or just over 2 billion people are active social media users, 51% (3.64 billion) are unique mobile phone users of which 1.68 billion have active social mobile accounts. The figures are equally staggering for the number of hours per global citizens spend in the digital space. Global Digital Statistics (2015) also stated that the average number of hours per day spent on digital media is 4.4 hours with 2.7 hours being via mobile devices. Of the 20+ countries surveyed, the Philippines has the highest per day time spent on the internet of 6.3 hours per day (3.3 hours on mobile devices), Malaysia 5.1 hours of which 3.7 hours is mobile related and last in the ranking is Japan, with 3.1 hours per day of which 1 hour is on mobile devices.

Examples of digital and technological innovation are abound in TVET. In the Philippines where DigiBayanihan (DigiBayanihan.org) was initiated by a multi-sectoral group of digital literacy champions to bring together all types of initiatives, big or small, to create bigger impact and to reach farther. This same group is calling on individuals, groups and organizations to become part of DigiBayanihan, to become volunteers and help spread digital literacy. Partners in the venture include the ITAP (Information Technology Association of the Philippines), INTEL Corp., University of the Philippines Open University, the Department of Science and Technology ICT Office. The aforementioned FATIH project is again worth mentioning. Every classroom, every school is wired with digital hardware and software to catapult Turkey into the digital era thus reducing the digital divide.

## CONCLUSION

There are myriad of challenges faced by TVET. Youth unemployment, training mismatch, economic stagnation, bureaucratic leadership, and innovation deficiency are examples of malaise that could be disentangled by quality TVET system. Investment in education and training for skills development is essential to enhance growth and competitiveness. In the long-term, skills can trigger innovation and growth, move production up the value chain, stimulate the concentration of higher level skills and shape the future labor market. We should support the development of innovation hub in education system. It is my view we have no choice but to embrace innovation. What is the prospect for our future generations? The need for transformative leadership that can bring about innovation is critical. We must advocate for skills to create better pathways. We should channel our thinking on how to produce innovative outcomes. Stakeholders must be convinced that innovation is the way forward. Innovation in TVET is not the same as *change for change sake*. It is a positive affirmation that in this era of transformation, innovation in TVET is a tool we all must embrace and employ. In sum, transformative and innovative leadership is needed to sustain TVET competitiveness for future prosperity.

## REFERENCES

- African Union (n.d.). *Agenda 2063*. Retrieved 11<sup>th</sup> May 2015. ([http://agenda2063.au.int/en/about/Agenda 2063 AU](http://agenda2063.au.int/en/about/Agenda%2063%20AU)).
- British Council (2013). *Asia skills report*. Manchester, UK: British Council. Retrieved 11<sup>th</sup> May 2015. (<http://www.britishcouncil.org/sites/britishcouncil.uk2/files/south-asia-skills-report-summary.pdf> )
- Commission of the European Parliament (2012). *Rethinking education: Investing in skills for better socio-economic outcomes*. Retrieved 11<sup>th</sup> May 2015. ([http://www.cedefop.europa.eu/files/com669\\_en.pdf](http://www.cedefop.europa.eu/files/com669_en.pdf))

- DigiBayanihan (n.d.). Retrieved 11th May 2015. (<http://digibayanihan.org/>)
- European Commission (2013). *Guide to social innovation*. Retrieved 11th May 2015. ([http://ec.europa.eu/regional\\_policy/sources/docgener/presenta/social\\_innovation/social\\_innovation\\_2013.pdf](http://ec.europa.eu/regional_policy/sources/docgener/presenta/social_innovation/social_innovation_2013.pdf))
- European Ministers for Vocational Education and Training (2014). *Communiqué of the European Ministers for Vocational Education and Training, the European Social Partners and the European Commission, meeting in Bruges on 7 December 2010 to review the strategic approach and priorities of the Copenhagen process for 2011-2020*. Retrieved May 11th 2015. ([http://ec.europa.eu/education/policy/vocational-policy/doc/brugescom\\_en.pdf](http://ec.europa.eu/education/policy/vocational-policy/doc/brugescom_en.pdf))
- Fatih Projesi, (2012). Retrieved May 11th 2015. (<http://fatihprojesi.meb.gov.tr/tr/english.php>)
- Federal Department of Foreign Affairs (n.d.). *Vocational education and training*. Retrieved on May 12th 2015. (<https://www.eda.admin.ch/aboutswitzerland/en/home/dossiers.html/content/aboutswitzerland/en/meta/news/umwelt>)
- GE Global Innovation Barometer (2013). Retrieved 10th May 2015. ([http://www.ge.com/sites/default/files/Innovation\\_Overview.pdf](http://www.ge.com/sites/default/files/Innovation_Overview.pdf) GE Global Innovation Barometer 2013)
- Global Digital Statistics (2015). Retrieved 12th of May 2015. (<http://wearesocial.net/blog/2015/01/digital-social-mobile-worldwide-2015/>)
- Jobs, S. (n.d.). *A collection of inspirational Steve Jobs quotes about life, design and Apple*. Retrieved May 12th 2015. (<http://www.macstories.net/roundups/inspirational-steve-jobs-quotes/>)
- LinkedIn (n.d.). Retrieved 15th May 2015. (<https://www.linkedin.com/company/linkedin>)
- Llopis, G. (2014). *Five ways leaders enable innovation in their teams leadership*. (<http://www.forbes.com/sites/glennllopis/2014/04/07/5-ways-leaders-enable-innovation-in-their-teams/>)
- McKinsey Centre for Government (2014). *Education to employment: Getting Europe's youth into work*. ([http://www.mckinsey.com/insights/social\\_sector/converting\\_education\\_to\\_employment\\_in\\_Europe](http://www.mckinsey.com/insights/social_sector/converting_education_to_employment_in_Europe))
- MSA News (February 26th 2014). *MSA & Çıra an Palace Kempinski stanbul join forces for young chefs*. Retrieved May 11th 2015. (<http://www.msa.com.tr/item/msa---ciragan-palace-kempinski-i-stanbul-join-forces-for-young-chefs.aspx>)
- OECD (2014). *Country note: Education in a Glance – Switzerland*. Retrieved May 12th 2015 (<http://www.oecd.org/edu/Switzerland-EAG2014-Country-Note.pdf>)
- OECD (July 2014). *Education indicators in focus: How innovative is our education sector?* Retrieved May 12th 2015. (<http://www.oecd.org/education/skills-beyond-school/EDIF24-eng%282014%29en.pdf>)
- OECD (n.d). *Innovation strategy for education and training*. Retrieved May 12th 2015. (<http://www.oecd.org/edu/ceri/innovationstrategyforeducationandtraining.htm>)



- OECD (2013). *Education policy outlook: Ireland*. Retrieved May 15th 2015.  
([http://www.oecd.org/edu/EDUCATION%20POLICY%20OUTLOOK%20IRELAND\\_EN.pdf](http://www.oecd.org/edu/EDUCATION%20POLICY%20OUTLOOK%20IRELAND_EN.pdf))
- OECD (2009). *Working out change: Systematic innovation in vocational education and training*  
Paris: OECD
- Office of the Prime Minister (2015). *Speech to the invest Malaysia 2015 conference*. Mandarin Oriental Hotel, Kuala Lumpur.  
([https://www.pmo.gov.my/home.php?menu=speech&page=1676&news\\_id=758&speech\\_cat=2](https://www.pmo.gov.my/home.php?menu=speech&page=1676&news_id=758&speech_cat=2))
- Oguntuyi, A.N. (2013). A viable vocational technical education curriculum: A tool for economic and technology development in Nigeria. *Scholarly Journal of Education*, 2(2), 22-26,
- Rogers, E. (1995). *Diffusion of innovations*. New York: Free Press.
- The Lego Group (n.d). Retrieved May 11th 2015. (<http://www.lego.com/en-us/aboutus/lego-group>)
- The World Bank (2012). *Better jobs in Central America: The role of human capital. Human development department Latin America and the Caribbean region*.  
(<http://www.worldbank.org/content/dam/Worldbank/document/Better%20Jobs%20in%20Central%20America.pdf>)
- The World Bank (2013). *Unemployment – Youth total*. Washington D.C.: The World Bank.  
(<http://data.worldbank.org/indicator/SL.UEM.1524.ZS>)
- The World Bank, (n.d). *Turkey overview*. Retrieved May 11th 2015.  
(<http://www.worldbank.org/en/country/turkey/overview>)
- Wilson, J. (1989). *Bureaucracy: What government agencies do and why they do it*. New York: Basic Books.
- World Economic Forum (2014). *The global competitiveness report 2014-2015*. Switzerland: World Economic Forum.