Fundamentally changing the way we educate students in the Middle East and North Africa (MENA) region

Key messages

- This paper suggests a new educational approach that fosters innovation, technology and entrepreneurship as a lever for graduates’ marketability and ultimately their self-employment. This approach could be referred to as “education for (self-) employment.”

- This paper offers thirteen recommendations for action, which can be summarized as follows:
  1. Also focusing on providing “education for self-employment,” not just “education for employment;”
  2. Incorporating new pedagogical approaches, such as “learning-by-doing” (also referred to as “action-based learning”);
  3. Removing the silo mentality that has existed for years in the MENA region’s universities, and the subsequent mono-dimension of knowledge and learning;
  4. Re-engaging with teaching staff, administrators, and students to motivate, empower, and re-instill their sense of responsibility and purpose;
  5. Developing international and regional student exchange programs, which contribute to developing grit, diverse points of view, international contacts, and global mindset;
  6. Initiating actions to involve the diaspora and get benefit from their international exposure;
  7. Strengthening the linkage between universities and employers, so as to ensure a better fit between educational programs, and job market needs;
  8. Leveraging innovative concepts and technology, such as, “Self-Organized Learning Environment (SOLE),” “flipped classroom,” and “massive online open courses,” and the enormous amount of new educational resources, that have now been put at the fingertips of the MENA countries’ teachers and students;
  9. Improving learning and teaching facilities within universities and higher education institutions;
  10. Setting up a trainers’ training program to improve and update the teaching skills, and competencies of faculty;
  11. Taking into account the market impact of new types of entities delivering education and content;
  12. Ensuring some continuity of educational policies while providing flexibility, and local autonomy; and

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The Arab Spring brought to the fore, political and socio-economic problems, including the very high jobless rate among university graduates. This situation calls for a drastic change in higher education, to lift the MENA region’s educational quality and foster the employability of graduates, including their self-employment.

One of the root causes of unemployment is quite often the mismatch between graduates’ skills and recruiters’ needs. Indeed, graduates have a mono-dimensional education with limited competencies, restricted lines of employment, and little job mobility. Moreover, the rapidly growing students’ population has not always had a commensurate development in the quality of university faculty and infrastructure, and the creation of the corresponding number of jobs.

For example, Tunisia, a country of about 11 million people, in spite of having achieved an average annual GDP growth of approximately 5% over the last decade, could not create enough jobs to match the university population expansion, hence its current very high unemployment rate of over 30 per cent among university graduates. Moreover, the gap has been widening between the quantity of graduates and the quality of their skills, and competencies.

More generally, MENA governments have historically been at the center of job creation instead of the private sector. Such a role could not be sustained and graduates now need to rely less on the public sector and more on themselves, and the private sector. After all, the private sector is the engine of entrepreneurship. To this end, the region’s universities need to be revitalized to enable students to develop entrepreneurial skills, and talent to compete in a rapidly changing, global and technology-based business environment. The traditional role of universities needs to change to engage the industry, and to help the economy by fostering entrepreneurship, innovation, and technology-enabled value creation through educational programs.

New or revamped courses and programs that emphasize cross-disciplinary learning, hands-on experience, students’ exchange programs, and entrepreneurial initiatives will allow students to learn best practices, interact with diverse cultures, and help to remove the silo mentality that has existed in the MENA universities for years. A strong linkage or partnership between universities, government and industry is another way to ensure that there is a supporting eco-system fostering job creation, and new educational venture, and therefore, opportunities for (self-) employment. By so doing, university graduates would be more marketable and better equipped to use their talent and knowledge in a more rewarding, and lasting job, thus, creating value for themselves, and their country’s economy.

This paper suggests a new educational approach that fosters innovation, technology, and entrepreneurship as a lever for graduates’ marketability, and ultimately their self-employment. This approach, which could be referred to as “Education for (self-) Employment (EfE),” is based on field research, including experts’ interviews, and draws on the authors’ extensive higher education and management development experience in the MENA region, Europe, and the USA.

To formulate an effective education reform for the MENA region, this paper offers thirteen recommendations for action, which can be summarized as follows:

1. Focusing on also providing an “education for self-employment,” not just an “education for employment;”
2. Incorporating new pedagogical approaches, such as, “learning-by-doing” (also referred to as “action-based learning”);
3. Removing the silo mentality that has existed for years in the MENA region’s universities, and the subsequent mono-dimension of knowledge and learning;
4. Re-engaging with teaching staff, administrators, and students to motivate, empower, and re-instill their sense of responsibility and purpose.
5. Developing international and regional student exchange programs, which contribute to developing grit, diverse points of view, international contacts, and global mindset.
6. Initiating actions to involve the diaspora and get benefit from their international exposure.
7. Strengthening the linkage between universities and employers, so as to ensure a better fit between educational programs, and job market needs;
8. Leveraging innovative concepts and technology, such as the SOLE, “flipped classroom,” and “Massive Online Open Courses (MOOCs),” and the enormous amount of new educational resources, which are now put at the fingertips of the MENA countries’ teachers and students;

9. Improving learning and teaching facilities within universities and higher education institutions;

10. Setting up a trainers’ training program to improve and update the teaching skills, and competencies of faculty;

11. Taking into account the market impact of new types of entities delivering education, and content;

12. Ensuring some continuity of educational policies while providing flexibility and local autonomy; and


It is the authors’ belief that changing the way we educate students in the MENA region along the thirteen recommendations listed above would drastically change the education and learning paradigm. The ultimate aim of the suggested approach is to reduce the high jobless rate in the MENA countries, and foster the region’s socio-economic development.

The MENA region is evolving and its educational approach should evolve as well. Once in place, this approach could serve as a model for the other countries around the world that are in the throes of social, economic, and political upheaval.
I. Introduction

1. Background and rationale for this study

The Arab Spring brought to the fore political and socio-economic problems, including the very high jobless rate among university graduates. This situation calls for a drastic change in higher education to lift the MENA region’s educational quality, and foster the employability of graduates, including their self-employment.

One of the root causes of unemployment is quite often the mismatch between the graduates’ skills and recruiters’ needs. Indeed, graduates have a mono-dimensional education with limited competencies, restricted lines of employment, and little job mobility. Moreover, the rapidly growing students’ population did not always have a commensurate development in quality university faculty and infrastructure, and the creation of the corresponding number of jobs.

For example, Tunisia, a country of about 11 million people, in spite of having achieved an average annual GDP growth of approximately 5% over the last decade, could not create enough jobs to match the university population expansion, hence its current very high unemployment rate of over 30 per cent among university graduates. Moreover, the gap has been widening between the quantity of graduates and the quality of their skills, and competencies.

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New or revamped courses and programs that emphasize cross-disciplinary learning, hands-on experience, students’ exchange programs, and entrepreneurial initiatives will allow students to learn best practices, interact with diverse cultures, and help to remove the silo mentality that has existed in the MENA universities for years. A strong linkage or partnership between universities, government and industry is another way to ensure that there is a supporting eco-system fostering job creation, new educational venture, and therefore opportunities for (self-) employment. By so doing, university graduates would be more marketable and better equipped to use their talent and knowledge in a more rewarding, and lasting job, thus, creating value for themselves, and their country’s economy.

This paper suggests a new educational approach that fosters innovation, technology, and entrepreneurship as a basis for enhancing students’ skills, and graduates’ marketability, as well as their self-employment.

2. Research methodology

The research methodology used in this paper is based on desk research, as well as field investigation, including numerous interviews (mainly face-to-face, but also phone-based) conducted by the authors of this paper with policy makers, deans of higher education institutions, university professors, and subject matter experts, including Nobel-prize and TED prize winners. These interviews took place between February and September 2013 in Tunisia, Morocco, Egypt, and the USA. The content of this paper also draws on the authors’ extensive experience in higher education and management development in the MENA countries, Europe, and the USA.

3. Structure of this paper

After this introduction, this paper proceeds by highlighting in Section II, some contextual aspects of the MENA region, which the authors believe are relevant for this study on reforming education. It then goes on to describe in Section III, the specific case of Tunisia, which was chosen as the focus of the analysis for the following two reasons. First, it was the country that ignited the Arab Spring after the national uprising led by the youth, and jobless graduates. Second, two of the study authors are Tunisians and have first-hand, field-based knowledge of the educational system, and the urgent need to reform it.

Section IV focuses on education and youth unemployment in Tunisia and reviews in this context some of the key factors, which call for a major reform of the way we educate students. Section V offers a cross-
country benchmarking of educational reforms in the MENA region. It first reviews the limited reform that took place in Tunisia after the Jasmine Revolution (January 2011). It then briefly presents the way Egypt attempted to spark entrepreneurship through science.

Section V suggests a way to reform education in the MENA region. It is based on three major pillars: (1) Taking an “education for self-employment” approach instead of simply following an education for employment strategy; (2) Incorporating entrepreneurship in educational programs; and (3) Leveraging innovative technology in the educational reform in order to boost entrepreneurship, and thus self-employment.

This paper concludes by offering a set of recommendations for action, which are meant to, on the one hand, better align graduates’ skills with recruiters’ needs, and on the other hand, create more entrepreneurs who will not only have a job, but also help to reduce unemployment by becoming themselves recruiters.
II. Facts and figures about the MENA region

In this paper, we use the World Bank’s definition of MENA as the geographical region spanning 21 countries from Morocco to Iran, with a total population of 340 million people. It is an economically diverse region that includes both the oil-rich economies of the Gulf States and the resource-poor countries, which are oil importers. With a GDP of US$ 1,540 Trillion in 2012, 23 per cent of the MENA population lives on less than US$ 2 per day. The region also has the highest youth unemployment rate in the world (25 per cent), and the lowest female participation rate in the labor force. Its job market is characterized as being inefficient, inequitable, with a low-mobility of workers.

1. Foreign Direct Investments (FDIs)

From 2010 to 2011, North Africa as a whole had a 57 per cent drop in Foreign Direct Investments (FDIs). The impact was uneven: Egypt and Libya experienced a drastic drop; Morocco and Algeria actually saw increases while Tunisia’s net loss is less significant. Overall, FDI declined year-on-year by nearly $8bn.

![Figure 1: Net DFI 2007-2011 (In Millions) in selected MENA countries](image)

Source: World Bank Data Bank

While in the MENA region, the private sector plays a more important role today than before, it is still not a strong engine of growth. Indeed, the contribution of private investments to growth is among the lowest in the world. Except for some of the resource-poor countries (oil importers in the Maghreb countries), where the private investment ratio has actually increased, owing to a substantial increase in FDI, the composition of investment still favors public investment in most of the resource-rich countries.

Most private investments directed to the region have been biased toward either capital-intensive or low-skill, labor-intensive sectors, such as oil, construction, and tourism, rather than toward more dynamic jobs-creating sectors like financial services, and manufacturing (see figure 2).
2. Public spending on education

North Africa has been making major investment in education. According to the World Bank, the region’s educational spending averages 4.8% of the GDP (see figure 3), with Tunisia and Morocco leading the way.

![Figure 2: FDI structure in selected MENA countries and the EU (2000-2007)](source)

![Figure 3: Public spending on education in North Africa, Total (% of GDP)](source)
3. Quality of education

Over the past decades, MENA countries have significantly expanded access to education, with substantial growth of enrollment in secondary and tertiary education. However, employability defined as the capital of skills, competencies, academic certificates, and professional qualifications, and the capacity to function in a job, remains a major challenge for the region.

The quality of learning in the MENA countries, as measured by international tests, is still below expectations, given the per capita income in the region (see figure 4). At the same time, evidence points to pervasive mismatches of skills. Compared to companies elsewhere in the world, more firms in the MENA region contend that inadequate labor force skills, both technical and software, impede growth.

Figure 4: Quality of education as measured by TIMSS and PISA (2009 and 2011)

Source: TIMSS and IMF World Economic Outlook (database), January 2013 update
In the MENA region, in addition to the ill-effects of the financial crisis, and the rising levels of unemployment, the poor quality of education is producing a workforce lacking the basic knowledge and skills needed for the job market. The educational system is characterized by crumbling infrastructure, outdated content, and poorly trained teachers. Students are rarely exposed to interactive classrooms or experiential learning methods that would allow them to develop their critical thinking, decision-making, and teamwork capacities.

4. Youth unemployment

According to the International Labor Organization (ILO), the world needs to create more than 500 million new jobs by 2020 to provide career opportunities for those who are currently unemployed, as well as young people who will join the workforce. Close to 90% of the new jobs needed in the next eight years must be created outside the USA, and Europe. Individuals aged 15 to 24 years are now three times more likely than other workers to be unemployed (GBSN, 2013).

Employment, particularly youth employment, is undoubtedly the main challenge that Arab countries face after the 2011 revolution. Indeed, the MENA region has the highest rate of youth unemployment in the world; it currently stands at approximately 25 per cent, which is double the world average (see figure 5).

In some MENA countries like Egypt and Tunisia, the highly educated youth are more likely to be unemployed (see figure 6), while in most countries, the majority of the unemployed are medium- or low-skilled individuals. Among those who are employed, low-quality jobs—those characterized by low pay and productivity, as well as lack of access to social security—tend to be the majority.

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2 The 2013 GBSN Report was published in conjunction with the 10th annual GBSN conference on “Education, Employment and entrepreneurship,” 10-12 June 2013, Tunis.
The formal private sector—quite likely the most productive segment of the economy—is small, and in no MENA country for which data is available does the formal private sector employ more than 20 per cent of workers. At the same time, public sector employment continues to be large in the Gulf countries, and in countries like Egypt, Iraq, Jordan, and to a lesser extent Tunisia, making up between 60 per cent and 80 per cent of total employment (see figure 7).

According to the 2013 report of the Global Business School Network (GBSN), youth unemployment could lead to long-term negative effects, and social unrest. This ill-effect is due to the fact that employers are less likely to hire a young person who has experienced a long period of unemployment. Studies have also found a link between unemployed youth, political unrest, and violence, as was seen in several MENA countries during the Arab Spring uprising.

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Figure 6: Unemployment rate by educational level of youth (aged 15-29 years) in Egypt and Tunisia (2010)

Source: Egypt and Tunisia’s Labor Force Survey (LFS), 2010

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There are three main reasons why young people are experiencing high levels of unemployment:

1. In economic downturns, companies tend to retain older staff and dismiss younger workers as part of the “last hired, first fired” strategy.
2. In many MENA countries, finding a job is dependent on personal and political connections rather than merit.
3. Young people are not being provided with the means of learning the skills they need for employability. Employer surveys confirm that businesses cannot find graduates with the mix of skills and competencies that they require (GBSN, 2013\textsuperscript{5}), and the youth perspective is no different. According to a 2012 “Education for Employment” report on Arab youth entrepreneurship,\textsuperscript{6} only a third of the youth surveyed believe their education adequately prepared them for the job market.

\textsuperscript{5} Idem
\textsuperscript{6} Education for Employment, Report on “Realizing Arab Youth potential”. 2012.

Source: Based on the Jordan Labor Market Panel Survey (LMPS) 2010; the Egypt LFS 2010; the Tunisia LFS 2010; the Iraq Household Socio-Economic Survey 2006, 2007; the West Bank and Gaza LFS 2006; United Arab Emirates LFS 2009; the Yemen Household Budget Survey (HBS) 2005–06; and the Morocco Household and Youth Survey (HYS) 2009.
III. Facts and figures about Tunisia

1. Demographic evolution

Regarding Tunisia’s demographic evolution, a recent publication revealed the following two facts:

1) The population in a working age (i.e., people aged 20 to 59 years) has increased from 3.7 million inhabitants in 1990 to 6.2 million in 2010, that is from 44.8 to 57.7 per cent of the total population; and

2) The exponential growth of the youth population had first reached plateau and then began declining. The proportion of young people aged 15 to 24 has fallen since 2000 to 19.3 per cent and this trend is continuing.

2. Growth rate

The pre-2011 revolution Tunisian government had assumed that by 2016, the demographic increase will be reversed and the growth rate will be enough to create sufficient jobs for new graduates. However, the actual growth rate was below expectations, and the economy was able to create only 20,000 new jobs, while the higher education institutions annually graduated 60,000 to 70,000 students. Moreover, Standard and Poor’s used the World Bank’s growth rate figure of 2.4% in 2012 to justify its lowering of Tunisia’s sovereign rating, which makes economic growth, and new job creation more challenging.

3. Foreign Direct Investments (FDIs)

FDI projects that became operational in 2012 generated only 8,944 jobs in that year, representing a ratio of 16.8 jobs per 1 MTD invested. This ratio is significantly lower than the one of 2011, which was 28.6 jobs per 1 MTD invested. 56 per cent of the 2012 projects were low value-added and generated few low-qualification jobs.

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8 In 2012, approximately 2 Tunisian Dinars = 1 Euro

In 2012, FDI did not contribute to the development of the poor regions of the country. Investment continued where it was previously made and where the infrastructure is of relatively good quality. According to the Foreign Investment Promotion Agency (FIPA). Report 2012, the Northeast and Central-East parts of the country still account for 87 per cent of foreign export-bound companies and continue to attract 66 per cent of FDI (see figure 8).
4. Regional disparity

Tunisia’s inner-land regions are isolated from the coastal hubs of economic activities, due to a lack of transportation infrastructure, and good IT networks. People in these regions lack access to market, and economic opportunities. For example, without the government’s support for a basic irrigation system, they cannot make good use of their land. The unemployment rate in these regions typically ranges between 20 and 30 per cent, compared to the less than 10 per cent rate in coastal areas.9

Furthermore, nearly 40 per cent of the Tunisian population lives in poor areas.10 The unemployment rate varies from one geographical area to another, with some of the interior areas bordering Algeria having an especially high unemployment rate (see figure 9). Some regions that had the highest unemployment rate in 2005, such as Gafsa and Tataouine suffer from mobility constraints. Furthermore, lower-skilled people and jobless women face distance issues to available jobs, which lead them to rejecting interesting job offers.11

Figure 8: FDI geographical disparity in Tunisia (2012)

Source: IDE: la réalité des chiffres, Hichem Jouaber, February 2013

10 Idem.
5. Youth unemployment

In Tunisia, Stampini and Verdier-Chouchane (2011) show that the more educated one is, the lower his or her chances of employment are. The unemployment rate is lowest for those who have not completed secondary school. Unemployment increases for those who have enrolled in higher education programs, and unemployment is highest for university graduates holding a Master’s degree in economics, management or law (see figure 10). In some higher education institutions in Tunisia, graduates’ unemployment rate can be as high as 82 per cent, as was the case in 2011-2012 at the Institut Supérieur d’Études Technologiques (ISET) of Kasserine, a city in the interior part of the country.\footnote{Face-to-face interview conducted with Said Aldi, Minister of Employment and Vocational Training in the 2011 Tunisian government in Tunis, February 2013.}

The high rate of unemployment for highly educated youth is, to a certain extent, a qualitative problem, owing to the lack of relevant skills and knowledge development, but fundamentally it is a quantitative problem. Indeed, the country’s higher education institutions deliver degrees each year to 75,000 graduates, while the economy can only offer 25,000 jobs.\footnote{Idem.}
This structural unemployment is mainly due to the fact that Tunisia does not have many large companies or regional multinationals, which need to hire people in large numbers. The economy is primarily driven by small- and medium-sized enterprises that make up more than 90 per cent of the enterprises in the country and have very limited recruitment capacity. Most successful companies are family-owned, with diversified activities in sectors such as agriculture, textile, tourism, and real estate. These companies mainly require basic technical skills among their staff, and thus, have low needs for university graduates.

6. The informal labor market

Some studies have shown that the majority of small businesses in the MENA region operate outside the legal system and do not have access to mechanisms that facilitate entrepreneurship. The informal economy was an underlying cause of the Arab Spring.

In Tunisia, more than 500,000 companies out of a total of 620,000 (about 85 per cent) are informal. These companies do not have access to documented knowledge, and encouragement mechanisms that allow them to become profitable. The total value of informal businesses in Tunisia is estimated at 115 billion dollars, 11 times the capital value of companies quoted in the Tunisian exchange market in 2010.

![Figure 10: Youth unemployment rate by educational level in Tunisian (2007)](image)

Source: Stampini et Verdier-Chouchane (2011)

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14 Face-to-face discussions held with Mustapha Kamel Nabli, Governor of the Central Bank of Tunisia in Tunis between February 2011 and July 2012.

15 De Solo, Hernando. Research Project "l’économie informelle, comment y remédier ?", 2012.
IV. Education and youth unemployment in Tunisia

1. Process for admitting students into universities

Since 1976, the Ministry of Higher Education and Scientific Research (MoHESR) has been using a computerized information system to manage the admissions processes into Tunisia’s universities. The admissions process factors in applicants’ baccalaureate grades (school leaving examination), and their preferences for areas of study, and allocated students to schools according to each institution’s teaching capacity.

The admissions process suffers from several significant weaknesses:

1. Young people have insufficient information to make the right choice as to which areas of study have the greatest employment opportunities. While engineering, medicine and architecture are considered “prestigious fields, and reserved for students who rank very highly,” these choices do not guarantee employment because there are far more engineering graduates than engineering jobs.16 Information and advice on what track to pursue are scarce resources, and one anecdote from Maher Kallel describes how an applicant filling in his online application received advice on which academic track to follow from the cyber-café manager!17

2. Student preferences are not taken into consideration. 87 per cent of the students do not obtain their first choice of a study track.18 According to the World Bank report, the misalignment between the desired field of study of high-school graduates and their allocation by the MoHESR to a given university track and later on their post-graduate employment has resulted in distortions in the economy and a lack of faith on the part of students in Tunisia’s higher education system.19

3. The admissions process is not an accurate predictor of student success in a specific institution. According to Badreddine Ouali,20 for a large number of students, though they have been admitted into the higher-education system, they are not qualified to be there as they lack the proper skills and foundational knowledge to succeed. This means that fundamentally, the allocation process is entirely driven by supply. The system takes into account the supply of available seats in existing institutions, with no consideration of demand, either of students or of current or future market needs. Ultimately, when the needs for specific skillsets or the total recruitment capacity in the market are not factored into this system, this means that in the foreseeable future, the structural unemployment for university graduates will remain.

2. Geographical distribution of higher education resources

In Tunisia, the distribution of higher education resources seems to be more aligned with the broader patterns of resources’ allocation in the country. The majority of universities are located along the country’s coastline and in wealthy cities like Tunis and Sfax.21 The same applies to research centers and techno-parks (see figure 11).

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17 Face-to-face interview conducted with Maher Kallel, Founder and General Manager of Carthage Business Angels in Tunis, March 2013.
18 Idem.
20 Face-to-face interview conducted with Badreddine Ouali, Chairman of TACT and Chairman of Vermeg Co., and Neïla Ben Zina, Deputy Chairman of TACT and Managing Director of Business & Decision Co. in Tunis, March 2013.
3. IT connectivity and usage at universities

In 1997, the Tunisian MoHESR launched the “Réseau National Universitaire” (National University Network, or RNU). This initiative was intended to put in place a mesh network alongside a set of applications and services (email, remote resources, videoconferencing, etc.) connecting all academic institutions, research laboratories, and administrative services. To implement this initiative, the MoHESR also set up an Internet access supplier in 1997, called “Centre de Calcul Khawarizmi” (CCK). RNU was later complemented by RNU 2, a project aimed at developing a more sophisticated broadband infrastructure and creating intranets at three levels: (1) for the entire higher educational system; (2) for each university; and (3) for each school. However, out of over 170 higher-education institutions, only 15 have benefitted from this infrastructure. According to the MoHESR, during the 2010-2011 academic year, there are 380,000 RNU users, including 314,146 students (out of a total of 346,876), and 14,607 teaching staff (out of 21,552). However, it remains unclear how these RNU users are defined, as there are only 26,050 active users (students and teaching staff included) with email accounts.\(^\text{22}\)

4. Unbalance between university and vocational training programs

In Tunisia, 70,000 students graduate each year from the university educational system and only 20,000 from vocational training. This is the opposite of what occurs in a country like Germany where only 30 per cent

\(^{22\text{ “Tunisia: From revolution to institutions”, InfoDev, The World Bank, 2011.}}\)
of students graduate from universities. Since the graduates of the vocational training programs typically have an entrepreneurial drive and end up creating their own venture, if we want to achieve short-term results employment wise, we should foster vocational training activities and programs and not only focus on educational reforms which will bear fruit in the medium- to long-term.\(^{23}\)

5. Youth unemployment linked to education

Over the last decade, Tunisia has witnessed an exponential growth of the students’ population. The number of students has increased from 200,000 to 400,000. Consequently, the number of universities and of professors has swelled up. However, despite this drastic increase, the budget allocated to educational reforms remained unchanged. Also, during the same decade, Tunisia witnessed a growing stock of unemployed university graduates due to a structural problem: universities annually graduate 60,000 to 70,000 students, while the country creates only 20,000 new jobs. Moreover, the skills of three-fourths of the new graduates do not fit the job market needs. For instance, all graduates from fields such as Arabic language and civilization, philosophy, geography, and history often need a complementary training to become employable.

The pre-2011 revolution government had assumed that by 2016, the demographic curve in Tunisia will be reversed and unemployment resorbed. Unfortunately, this forecast does not seem to be on the right track as the growth rate has been below expectations and graduates’ skills do not fully match job market needs. For Maher Kallel,\(^{24}\) university programs have not been market-oriented; he said: “universities have been producing a product designed to be stocked up!”

The standardization of universities’ curricula led to a mismatch between higher education programs and the economic environment in Tunisia. For example, the University of Jendouba, (which fared lowest in the Shanghai universities’ ranking, requires that students carry out an internship during their studies, but there are no companies within a 50-kilometer radius of this university!

Due to the high number of enrolled students, universities have not been student-centric. They have trained all students identically, thus, not paying attention to the unique talents that some students may possess. In business terms, the educational strategy that has been followed is more based on a “mass-production” approach than a “mass-customization” one. As a result of this, the system that is used does not enable the nurturing of high-potential students, and quite often not even identifying them and revealing their capacities.

According to a 2011 report prepared by Tunisia’s National Commission on Employability,\(^{25}\)

- In 2009, 22 per cent of job applications were unmet.
- In the 23-29 years’ segment, the graduates’ jobless rate is higher among women (46 per cent) than among men (33 per cent).
- 19% of non-degree holders work as free-lance, compared to just 4,8% among degree holders.
- Tunisia’s universities annually graduate 60,000 to 70,000 students.
- University graduates represent 60 per cent of today’s new job seekers.
- The Tunisian economy can only create 70,000 to 80,000 new jobs per year.
- The number of job applications filed by university graduates exceed by approximately 30,000, the number of available job offers.

\(^{23}\) Idem.

\(^{24}\) Face-to-face interview conducted with Maher Kallel, Founder and General Manager of Carthage Business Angels in Tunis, March 2013.

V. Taking stock of educational reforms in the MENA region

In this section, we look at the education reform initiatives of three MENA countries, namely Tunisia, Egypt, and. In Tunisia, some governance aspects of the educational system were changed and some recommendations were made to improve the graduates’ employability. However, in spite of the 2011 Revolution, no major reform was undertaken to improve the educational system apart from some initiatives carried out by the civil society. In Egypt, several initiatives have been launched, and we examine one changes were in particular aimed at sparking entrepreneurship through science.

1. In Tunisia: reforming governance and improving graduates’ employability

In Tunisia, the need to integrate youth graduates in the job market was recognized in the mid-1980s, but no proper actions were effectively taken. However, by the mid-1990s, the issue became more problematic, which required rethinking a number of training programs and courses, as well as carrying out some job placement actions. It was only in the 2000s that the situation worsened, requiring urgent action. There was an increasing unemployment rate and mismatch between graduates’ skills, and job market needs. In the early 2000s, the unemployment rate for graduates was 8% while it was 20 per cent for unskilled people. In the late 2000s, the situation was reversed with more unemployed graduates than unemployed non-graduates (see figure 13).

In view of the growing jobless rate among university graduates, the MoHESR set up in June 2010, an independent commission to analyze the problems related to higher education and employment, and to make recommendations for alleviating the rate of jobless graduates.

![Figure 12: Unemployment rate of youth graduates in Tunisia](source: Report of the National Commission on Employability, Tunis, 2011)
The main findings of the commission’s work were:

- Jobless university graduates come from different higher education disciplines, although there are some differences between study tracks and regions of the country. Nearly 50 per cent of the 2009 university graduates were still looking for a job in July 2010.
- Almost half of the 2009 university graduates had obtained a below-average grade in the national baccalaureate examination (school leaving examination). With the exception of students pursuing a few higher-education disciplines, such as the medical tracks and preparatory studies for admission into engineering schools, which together account for 5% of the total number of students, other universities’ students do not meet the required level to pursue higher education.
- Only 10 per cent of the universities’ teaching staff of nearly 20,000 people has the associate professorship rank. Furthermore, half of these associate professors teach in the medical study tracks.
- Universities do not allocate the human and financial resources that are needed to enhance their graduates’ employability.
- The development of an educational program is centralized at the MoHESR level and does not sufficiently take into account the specific local context of a higher education institution. Consequently, curriculum design is very standardized and rather provides a too generic content. Programs are therefore, a kind of ‘one-size-fits-all’ offerings since they are not made sufficiently specific to the region where a given university is located, or to the industry or business sector to which it caters graduates.
- Universities have very little autonomy in terms of decision making, budgeting, etc.
- Recruiters complain about not knowing the content of universities’ curricula, and also about a lack of students’ training in soft skills.

Based on its investigation findings, the commission made the following recommendations:

- Encourage universities to improve their graduates’ employability prospects by having more contacts with recruiting organizations, setting up a placement center, collaborating more with companies, etc.;
- Take into account the specificities of the regions by implementing more appropriate educational programs; and
- Have a better coordination and information sharing within the MoHESR, and also between the ministry and the various universities across the country.

Limited educational reform after the revolution

In August 2011, university councils voted a bill allowing them for the first time, to elect university presidents and deans/directors of higher education schools. Previously, the MoHESR appointed people to these positions, although academic directors were elected, but staff participation was low. After the revolution, the new educational system established for each university an, “Academic Review Board” comprising of five professors and five assistant professors and acting on behalf of the staff at large. This board administers elections for the university council, which in turn elects the university president.26

Moreover, to encourage students’ recruitment, the employability commission initiated by the MoHESR suggested in 2011, the creation of the Centre Universitaire de Promotion de l’Employabilité (CUPE). The subsequent MoHESR decision was an addendum to the 2008 educational reform, which set up in each university, an observatory board to support graduates’ recruitment and monitor their career progress. CUPE’s mission is fourfold:

- Foster curriculum design for a better employability;
- Develop partnerships between higher education institutions and recruiters;
- Develop inter-disciplinary research on university curriculum and employability; and
- Support existing units that promote graduates’ employability.

Although it was well meant, the above-mentioned initiative has faltered over time.

26 “Tunisia: From revolutions to institutions,” InfoDev, The World Bank, 2011. Although it was well meant, the above-mentioned initiative has faltered over time.
Recent initiatives and public-private partnerships to foster graduates’ employment and entrepreneurship

- **Education-for-Employment (EFE):** EFE Tunisia is part of EFE-Global, which was created in 2011, and is funded by the Middle-East Partnership Initiative (MEPI), US State Department program. EFE started operations in Tunisia in June 2012 and carries out training programs that are customized to companies’ recruitment needs. These programs include “finding a job is a job,” which helps graduates with job placements, and “build your business,” which aims at forming entrepreneurs. 98 per cent of EFE-Tunisia’s students graduate from their training programs. From its inception to date, it has placed 100 per cent of all “jobs track” graduates into jobs, with a 98 per cent retention rate after three months on the job. To date EFE-Tunisia has trained over 215 youths in entrepreneurship skills.

In Tunisia, EFE has been working with universities in the interior part of the country, such as Gafsa, Jendouba, Kairouan, Kasserine, and Zaghouan. Between June and December 2012 and January 2013, it trained 580 university graduates, 128 of which have already been hired by local companies, including the Magasin Général retailing company, the UBCI bank, Consolidated Construction, and Vista Print. For 2013, EFE aims at training 1,350 university graduates.

- **Tunisian Association for Communication and Technology (TACT) Academy:** This program aims at promoting Tunisia’s Information and Communications Technology (ICT) sector overseas. It consists of training unemployed university graduates coming out of engineering programs and to make them marketable within the country, and internationally. To meet this objective, TACT launched a public-private partnership involving the Ministry of Employment & Vocational Training and Ecole Supérieure Privée d’Ingénierie et de Technologies (ESPRIT) in 2011, an educational program in the field of information and communication technologies. The uniqueness of this public-private partnership is the commitment, prior to the start of the training program, of some large companies to recruit the graduates if they achieve a certain level of qualifications at the end of the training.

The program is made up of a nine-month curriculum and a six-month required internship in one of the companies sponsoring the program, with the possibility of extending the internship by another six months. The curriculum includes courses in French and English languages, as well as on some topics in the field of information and communication technologies. It is worth noting that the government provides a tax incentive for companies receiving interns from the program by waiving the social contributions that are normally due for interns’ pay. Initiatives such as the TACT should be scaled up geographically and sustained over time.

Aziz Mebarek believes that it is important to scale up “Catalyst Project” to the whole country in order to have a significant impact on new venture development and job creation. Moreover, he believes that the public sector should also be involved in such an effort since it can invest resources and infrastructure, ease-up regulation, and offer tax incentives. According to Aziz Mebarek, “if we can create 10 catalyst projects with a unit funding of 10 million Tunisian dinars, and if the public sector invests 10 per cent of the total capital, then the government’s cumulative financial contribution would be 10 million dinars and that will create 15,000 new jobs.”

**Fostering entrepreneurship**

So far, university graduates who wished to become entrepreneurs have faced several stumbling blocks, especially if they lacked good

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27 Face-to-face interview conducted with Lamia Chaffai, Executive Director of EFE Tunisia in Tunis, February 2013.
28 TACT stands for Tunisian Association for Communication and Technology; it is a non-profit organization dedicated to advancing the IT and the Telecom sector in Tunisia.
29 ESPRIT (Ecole Supérieure Privée d’Ingénierie et de Technologies) is a leading private engineering school in Tunis.
30 Face-to-face interview conducted with Badreddine Ouali, Chairman of TACT and Chairman of Vermeg Co., and Neila Ben Zina, Deputy Chairman of TACT and Managing Director of Business & Decision Co. in Tunis, March 2013.
31 Face-to-face interview conducted with Said Aïdi, Minister of in Tunis, February 2013.
32 Face-to-face interview conducted in Tunis with Aziz Mebarek, co-founder and managing partner of Tuninvest and Africinvest in Tunis, February 2013.
connections or substantial wealth. These difficulties include the following:

- Uncompetitive business practices;
- Difficulties in carrying out foreign exchange transactions due to government limitations;
- Bureaucratic inefficiencies in contracting and procurement processes;
- Lack of a secure and reliable payment system for online consumer transactions; and
- Unavailability of supporting incubators and accelerators that can host start-up ventures and provide the necessary mentoring, and coaching to the young entrepreneurs.

As part of a national strategy to foster Tunisia’s knowledge economy, the government decided to invest in business incubation in 2001. A cornerstone of this investment was setting up a network of incubators housed within existing techno-parks, which are spread out all over the country. However, the success of incubators was often assessed through the use of inappropriate metrics—such as occupancy rather than job creation, revenue growth, or other measures of economic impact. The measure of overall incubators’ effectiveness is thus distorted and does not often capture their true efficiency.

A different approach from the initiative mentioned above was the creation of the 100 per cent private incubator in Tunisia in 2011, called Wiki Start-Up, which was founded by successful entrepreneurs and subject matter experts. It provides the resources and knowledge that an entrepreneur needs in order to transform an idea into action. Mondher Khanfir adds that “we provide the support and assistance that new ventures need, including mentoring and fundraising.” One of Wiki Start-Up’s key offerings is the “business accelerator program,” which has so far assessed 86 submitted projects, pursued 21 of them through a boot camp, and finally retained 5 projects.

We also count other after-revolution initiatives that foster entrepreneurship in Tunisia:

- The launch of a new product called “Bidaayah” in the Employment Non-Discrimination Act (ENDA) to encourage entrepreneurship.
- “Bidaayah is a loan used to finance new project. The average amount accredited to “Bidaayah” is 3,000 DT. Presently, ENDA counts almost 2,500 customers of this product.”
- The launch of 2 branches of “Rêseau Entreprendre” (RE) in Tunisia, a French association founded by André Mulliez. The main objectives of RE are:
  1) Assist new entrepreneurs to launch their businesses (2 year period of coaching); and
  2) Create a European and Mediterranean network of entrepreneurs.
- The launch of a new union of employers that struggle to foster the companies’ corporate social responsibility, and aim to establish a favorable eco-system for newly graduated students.

However, in spite of the success of the TACT Academy and Wiki Start-Up initiatives, for Tunisia to overcome the difficulties mentioned in the earlier part of this section, and create a better entrepreneurial ecosystem, there is a need to offer:

- More opportunities for engagement with large and multinational companies;
- Training in various areas, including research and development, soft skills’ development, and management/business administration;
- Higher-value contracts and commitments from international partners; and
- Increased coaching and mentoring programs.

2. In Egypt: sparking entrepreneurship through science

The challenge in Egypt is not only to reformulate education to better meet the needs of the private sector, but also to promote entrepreneurship and innovation to drive economic growth, enabling the country to create sufficient job opportunities for the millions of youth in the country.

While the Egyptian education system is the largest in the Middle East and North Africa, its outcome is among the poorest. In fact, as one aid...
agency writes, “Egypt suffers from the phenomenon of “educated unemployment.” Egyptian college graduates are almost 10 times as likely to be unemployed than individuals with primary educations.” In the push to democratize access to higher education, which has been the focus of the Ministry of Education since 1957, the quality of education has not followed suit. Classrooms are overcrowded, facilities are under-resourced, teachers are under-qualified, and curriculum is out of date for the nearly 1.5 million students enrolled across Egypt’s seventeen public universities.

The economy cannot offer enough jobs to meet the annual graduating class, and worse, for the jobs that do exist, graduates are often not qualified to hold them. More than 64 per cent of the students pursue degrees in humanities (Commerce, Education, Arts, and Law), which offer relatively few job opportunities; less than 30 per cent strive to get degrees in engineering and applied sciences, degrees that are in slightly higher demand. On the whole, the educational system struggles to meet the needs of employers, and as a result of this, youth unemployment has swelled to 24.5 per cent.

The Ministry of Education (MoE) has launched several initiatives to address the problem. One worthy of note for our purposes is their initiative focused on jumpstarting innovation and entrepreneurship through applied sciences. The MoE, in conjunction with several external organizations, has launched an initiative to open 3 to 5 new Science, Technology, and Math (STEM) secondary schools over the next four years. The United States Agency for International Development (USAID) has contributed a $25 million grant to the program and it has worked with several other external organizations to gain expertise in pedagogical and subject matter areas. The fundamental premise of the program is that by fueling scientific discovery, this initiative will generate employment opportunities, and contribute to economic growth.

The STEM schools take an entirely different orientation to learning than the rest of the Egyptian school system. For one, these schools are single-sex boarding schools, reducing the distractions and challenges that many students face, especially those coming from impoverished environments, in addition to making it easier to promote a learning culture. Secondly, the curriculum is largely comprised of project-based learning, where the focus centers on learning through application in real-life scenarios. This way of teaching, which eliminates rote-learning, is known to help students develop their curiosity and hone their scientific inquiry skills, which is at the heart of scientific discovery.

Finally, the MoE has eliminated the requirement for graduates of these schools to pass the standard baccalaureate exam (school leaving exam) for admission into the higher educational system. Since the examination is entirely based on rote-learning, the choice has been made to give students automatic passes, rather than have them spend extra time preparing for the examination. Though the return on investment is still some years away, this is one significant investment that Egypt has made in promoting a culture and community of entrepreneurs, and innovators.

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41 Idem.
43 http://www.prweb.com/releases/2012/10/prweb9971057.htm
VI. Changing the way we educate students in the MENA region

In the previous section of this paper, we reviewed a number of problems and shortcomings in the university educational system of the MENA region, with a focus on the case of Tunisia.

The critical questions to resolve are:

1) How can we improve the quality and relevance of higher education to meet the needs of employers?
2) How can we change the way we educate students in the MENA region to foster entrepreneurship and thus, reduce youth unemployment?

In the next sections, we will try to answer these questions by suggesting an education for self-employment approach, and not just an education for employment prospects, incorporating entrepreneurship in educational programs, and reforming some other aspects of the educational system.

1. Education for self-employment

Over the last few decades, the educational system in the MENA region has been mainly offering cookie-cutter programs that produced look-alike graduates, while recruiters needed competent and collaborative workers. Generally speaking, universities and schools did not and still do not, in our view, adequately prepare people for the challenges they will face when they start their careers.

The real question is: does the educational system in the MENA region offer students a set of skills that is going to enable them to get a job and subsequently serve them well in their careers? Several studies and surveys offer striking findings and suggest that the answer is clearly no, although there may be some exceptions here and there for which the answer could be: “on the average, yes.” However, we think that “on the average” is not good enough anymore for 2013 and beyond, due to higher recruiters’ demands, and stronger employers’ expectations, tougher competition for talent, global sourcing of knowledge workers, and an increasing mobility of graduates. Therefore, universities and schools need to do a better job at preparing their students for successful and fulfilling careers. More specifically, they need to address students’ deficiencies in some categories including: goal setting, information gathering and analysis, quantitative skills, innovation, technology, and entrepreneurship. Other critical areas include inter-personal skills, initiative taking, leadership, relationship building, and sense making.44

In particular, students need to be able to communicate well (orally and in writing) with different stakeholders, as well as to develop problem-solving and decision-making skills. Students who aspire to take a management position need to also develop a strategic thinking ability and be able to manage crises, and resolve conflicts. They should also be able to motivate and guide people and teams from diverse educational backgrounds, and work with different constituencies ranging from public and private sector institutions to non-governmental organizations, and civil society associations.

In the remainder of this section, we will focus on ways of incorporating entrepreneurship in educational programs, and the role that today’s technology can play as an enabler of a more effective way of learning.

2. Incorporating entrepreneurship in educational programs

Entrepreneurship can be seen as a special form of employability. More than a key factor to improving economic growth in the MENA region, it is also an important way to reduce graduates’ unemployment by helping them to seek opportunities to create new ventures. In order to be successful, entrepreneurs need skills like creativity, problem solving, and business plan development.

The above mentioned skills can be developed through entrepreneurship education and training programs specifically targeting enterprise founders, and owners. Such programs focus on providing individuals with practical education that builds soft skills, communication, social intelligence, critical thinking, as well as hard skills like accounting and financial management. Additionally, such programs foster networks of like-minded individuals that lead to the creation of an entrepreneurial ecosystem to enable increased entrepreneurial activities. In brief,

educators should create a sense of awareness among students and also a “if you need a job, then invent it” mindset.

Evidence of this impact is apparent, for example, in the case of a certificate in entrepreneurial management program in Nigeria. This program, which was initiated in partnership with the Global Business School Network (GBSN) has graduated as of 2013, over 1,300 entrepreneurs and is still growing. In a survey of 255 graduates, it was found that half of the graduates believed that the program had a significant effect on them, where nearly half of the respondents more than doubled profits after their third year in the program (GBSN, 2013).45

As also stated in the 2013 GBSN report, “in order to maximize the benefits of education while increasing the employability of graduates, collaboration is needed between the government, the private sector and educational institutions. Such collaboration could support the preparedness of workers by aligning the supply and demand of skilled graduates while ensuring the system operates in a favorable policy environment. For example, the German dual system of apprenticeship is often touted as a model for other countries in reducing youth unemployment. The German system involves close collaboration between government and the private sector where the cost and development of the training’s content is shared by both bodies.” Aziz Mebarek believes in the context of the MENA region, alternating educational modules with in-company internships is also a good way to foster entrepreneurship.46

Furthermore, technology provides innovative ways to encourage employment, improve the educational system, and enhance entrepreneurship. Mobile phones and e-learning programs can reduce the costs of training, provide the youth with virtual experience, and allow young workers to combine on-the-job training with academic instruction.

According to a GBSN global research project on mobile education opportunities,47 mobile education ventures offer a wide variety of solutions. They offer adult literacy and numeracy classes via cell phones, create mentorship networks, and provide platforms for learners to access general business education material at any time. This flexibility allows individuals from a variety of backgrounds to take advantage of training and networking as never before. Mobile phones can also help to link employers with interested applicants, as well as to allow job seekers to market themselves to a larger audience.

To illustrate the mobile education opportunities mentioned above, we can cite the following examples from Tunisia and Kenya:

1. Najahni is a joint project between the mobile telecom operator Tunisiana and the venture capital firm Proinvest. It is an innovative application that links job seekers in Tunisia through the mobile phone with available job opportunities in the country.

2. G.maarifa is a company founded and managed by Evanna Hu. It is a start-up venture based in Kenya that offers solutions for education and training through mobile technologies.

Furthermore, online education platforms allow universities and other training institutions to provide web-based courses for students who cannot attend school full time or have geographic barriers to attending class in person. For example, the Kenan-Flagler Business School at the University of North Carolina (USA), offers a web-based MBA program through online software that has minimal technological requirements for students. This allows students from all over the world to take advantage of Kenan-Flagler’s knowledge and instruction. Moreover, technology helps to reach students who face time constraints, limited finances or are unable to travel. Additionally, technology allows people to receive just-in-time specific courses, providing the skills needed on the job.

Guy Pfeffermann and Jonathan Doh48 suggest that multinationals from high-income countries build partnerships with developing countries. They can take advantage of technological progress to reengineer products and processes so that they can deliver high value at a lower cost. This is consistent with a business strategy targeting “the base of the pyramid,” which represents a potential of 4 billion lower income-consumers worldwide. Indeed, according to the authors, while in advanced high-income countries, between half and 2/3 of student-age youth are enrolled in tertiary education, only 16 per cent go to universities in South Asia and 9% in sub-Saharan Africa. In these two regions, half of the population has access to mobile phones, and increasing affordability of broadband. Thus, mobile education business models become more and more feasible and affordable.

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46 Face-to-face interview conducted with Aziz Mebarek, co-founder and managing partner of Tuninvest and Africinvest in Tunis, February 2013.
In addition to the technology role in education that was mentioned above, the next section of this paper presents in detail some breakthrough concepts that are enabled by the new capabilities of information and communication technologies. These concepts include Massive Open Online Courses (MOOC), the flipped classroom, and the Self-Organized Learning Environment (SOLE). They represent a disruptive innovation in education and learning, and offer a lot of potential for the MENA region to overcome the shortcomings and weaknesses presented in the earlier sections of this paper.

3. Leveraging innovative technology in the education reform

“The significant problems we face cannot be solved at the same level of thinking we were at when we created them”. Albert Einstein

Technology has fundamentally changed our relationship to information. In the era of instantaneous news, social media, blogs, wikis and big data, information is ubiquitous: widely available, constantly updated, as infinitely broad as it is deep, and free. Whereas information once found its value in its rarity, today access to information is no longer at the root of its worth. In the 21st century, real value stems from getting the right information, at the right time and knowing how to use it.

This transformation of the value of information poses a rather serious challenge to our current educational paradigm. The present-day format, as we all have experienced it, essentially revolves around lecture-based instruction, wherein the chief occupation of the teacher is delivering information to students. Barr and Tagg have called this educational system the “instructional paradigm,” where the focus is exclusively on the teaching input, in contrast to a “learning paradigm,” where we are concerned with the learning outcome, or the impact of that instruction on students.49

As it becomes easier for students to find and access information online, one key question is whether the instructional approach in the classroom is the best use of teachers’ and students’ time? And secondly, in our fast-changing, internet-based world, how does technology require us to change our curriculum? As we think about how to fundamentally change the educational system in the MENA region, it is helpful to look at how various actors across the globe are engaged in learning experiments to answer these questions.

Today, the world’s best universities—Stanford, MIT, Harvard, and Cambridge to name a few—are putting their best materials online for free. Materials can be uploaded to the web as videos, such as the Stanford Business School channel, or as full-blown courses on organized platforms, such as iTunes U. In both cases, these MOOCs are causing a major innovative disruption in the traditional academic establishment.

One MOOC platform aggregates materials from over 2,400 primary schools, universities, libraries, and museums. Downloadable as an application, this platform offers access to courses on thousands of subject matters, which typically include videos or recordings of lectures, course syllabi, suggested readings, and homework assignments. Students can download these materials for free on an ad-hoc, on-demand basis. As of February 2013, it had registered over 1 billion course downloads.50

Other MOOC platforms offer certificates of completion for students who take online courses. These classes, which necessitate active student participation, are not on-demand, but rather programmed throughout the year, regularly reach enrolment of over 100,000 participants, and their open nature allows for quite astonishing diversity in geography, age, and experience level.

Due to the sheer volume of students who have taken up this new education offer and the radical value for money proposition, MOOCs are forcing traditional academic institutions to re-assess what can be the value-added classroom time, as well as their overall value proposition to students.

3.1. How technology is changing the classroom

Taking a closer look at how MOOCs and new technology in general are being used, we see several key trends starting to emerge.

1. Firstly, individuals are becoming more and more proactive in taking their own education and development in hand, at each stage of their lives.

2. Secondly, teachers and indeed some academic institutions are leveraging MOOCs and new technologies, incorporating them into their traditional curriculum to change what and how they are teaching.

3. Thirdly, the phenomenon of online learning has blown wide open the learning space, once formerly reserved for brick and mortar...

academic institutions, which has led new actors—companies, NGOs, other public institutions—to enter the market and propose new learning solutions to their own stakeholders.

In all three of these trends, there are significant benefits to be gained for entrepreneurs, which we will explore below.

A. The empowered individual: MOOCs enabling learning on-demand

Traditionally, the structure of learning around the world looks surprisingly similar: students typically go through roughly 10 years of mandatory school, followed by about 5 years of optional higher education, for the select few, and then enter the job market. MOOCs and online learning are throwing this traditional cycle into flux. “Fundamentally, the structure of learning is changing,” says the CrossKnowledge CEO, Mickaël Ohana, “in that the model for education is no longer a 15-year stretch at the beginning that suffices for life, but quite literally the opposite. People must continue to learn and adapt throughout their lives.”51

As job requirements shift to stay in line with the changing landscape in which companies work, so employees and entrepreneurs alike need to be able to upgrade their skills, complement their expertise, and continue to learn. Lifelong learning is becoming the norm, and new technology is becoming the principal means by which to achieve this.

The findings by a team of multidisciplinary researchers at MIT and Harvard University on edX’s first MOOC, “Circuits and Electronics,” illustrate the lifelong learning phenomenon.52 For the 155,000 participants enrolled from roughly 190 countries, with ages ranging from 14 to 74, reasons for enrolment include personal interest, desire to improve in current job, desire to get a new job, and the need to complement other academic course works.

For entrepreneurs, customizable education is particularly valuable

By definition, entrepreneurs must be close to the market to understand the evolving needs of customers and emerging market niches. This often means improving their understanding of certain technical or management-related matters to improve their business plans or gain a competitive edge. On-demand education supports entrepreneurs in these efforts. Additionally, as their companies get bigger, entrepreneurs need to be proactive, especially in acquiring the managerial know-how to successfully navigate the growth phase.

B. Leveraging MOOCs and new technology in the classroom

In response to MOOCs, many have started to experiment with how to leverage the trend to transform the classroom experience. Experiments include establishing open education environments, setting up open learning networks for teachers (learning platform created by the Mohammed VI Foundation in Morocco).

In this paper, we will focus on two examples that have contributed to transforming the classroom, which have also shown evidence of moving children’s attitudes towards independent-thinking and open-mindedness, key ingredients for entrepreneurship. These are the flipped classroom and the SOLE.

E-learning platform for Morocco’s Teachers

In 2013, the Mohammed VI Foundation in Morocco launched a new e-learning platform for teachers. The platform is intended to help improve teachers’ proficiencies in computers and technology, with courses on software, new languages, as well as courses aimed at personal development. It is not a requirement for teachers to log on or follow any of the courses, but employs a pull strategy, marketing to teachers’ “thirst to learn, to exchange, and to achieve excellence.” The idea is to open the platform first to teachers, who will engage and share with their families and friends, and slowly open it up to a wider population across the country.


B.1 Flipped Classrooms: doing homework at school and listening to teachers at home

The main idea behind a “flipped classroom” is simply to turn the instruction-practice ratio on its head: instead of instructing in the classroom and sending students home to practice on their own, the flipped classroom allows students to view the information at home via a video or MOOC and spend valuable classroom time practicing with their teachers and peers.

51 Phone-based interview conducted with Mickaël Ohana, CEO of the e-learning platform CrossKnowledge, August 2013.
Examples of flipped classrooms exist at different levels in the educational system. They are as follows:

- **At the university level**, edX offers one example of institutionalizing a flipped classroom model. edX has established partnerships with several colleges across the United States, wherein the edX lectures and materials as developed by MIT and Harvard are being embedded into the college’s course curriculum. Professors at the partner college use the lectures developed by edX as the informational input for their students to watch as homework, and use classroom time to contextualize the information, and practice how to effectively apply and use that information.

- **At the primary and secondary level**, teachers and some schools have been experimenting with the flipped classroom as well. At this level, many teachers have been developing their own materials, uploaded onto YouTube, or using materials created and shared by other teachers, such as Khan Academy, for the same purpose.

Evidence points to important benefits of the flipped classroom in learning outcomes as well as promoting behavior and mindset that are vital for entrepreneurship.

One immediate impact of the flipped classroom is that the teacher has more time to cater to the specific needs of each student or group of students during class time, focusing on basic acquisition for students who are struggling with the course material and challenging students who have already mastered the basics.53

Furthermore, the additional time to practice and apply learning gives students the chance to see learning in the bigger context. Best practice in flipped classrooms highlights the fact that students can move beyond mastering practice sets and start to apply learning in real-world scenarios. The impact of learning is greater when students see its relevance and applicability of the information outside the classroom.54

Finally, the fact that students are taking care of the passive information-intake at home means that the classroom becomes a much more interactive and hands-on experience. **Students are required to participate, to challenge their peers, to speak up, and to learn how to work in groups, and collaborate.** These are key skills in the outside world in general, and also necessary inputs for successful entrepreneurs.

If the instructional paradigm, where “teachers talk and most students listen is contrary to almost every principle of optimal settings for student learning” (Barr and Tagg, 1995), then the flipped classroom is a giant step to putting student learning at the heart of the classroom.

### 2.2 SOLEs: Where children teach themselves

“A teacher who can be replaced by a machine should be... If children have interest, then education happens.” Sir Arthur C. Clark as quoted by Sugata Mitra, TED Talk, 2013.

Technology is enabling another type of transformation of the classroom, the self-organizing classroom. Sugata Mitra has done some groundbreaking work on self-organizing learning environments, or environments where children teach themselves.

The ‘Hole in the Wall’ experiment shows how adeptly children can teach themselves

In 1999, Sugata Mitra and his team started the ‘Hole-in-the-Wall’ experiments in India. These experiments consisted of installing computers with internet connection in extremely impoverished areas, such as slums and rural villages, to see if local children, left entirely on their own, could learn to use them.55 Their findings were astonishing. Within three months, these children, with no prior access to computers, had taught themselves sufficient English to email, chat, use search engines, download programs, and much more.56 Since then, Mitra and his team have made further investigation to test why and how children learn on their own, that has developed into a methodology for creating SOLEs that can be incorporated into the classroom. As Mitra says, “if children can learn many things on their own then let us isolate what should be learned on their own and let them do it.”57

**A Methodology to incorporate SOLEs in the classroom**

To roll out SOLEs in different contexts across the world, Mitra has developed a methodology for optimal learning by children. The SOLE methodology discusses how to create the environment—such as a

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57 Phone-based interview conducted qith Sugata Mitra August 2013.
maximum of one computer per 4 children, no limits on talking to and interacting with other groups, or even changing groups—and how to frame questions that engage children’s natural curiosity. The questions should be “big” ones—what is the Colosseum and why is it broken? How does an iPad know where it is? Why do people slip on wet surfaces—that should lead children to discover rather complex ideas and theories, such as in the above examples, the Roman empire and its demise, GPS, satellites and trigonometry, and friction.

B.2. The Benefits of SOLEs and the link to better entrepreneurship

Firstly, this method enables good teachers to make better use of their teaching time and compensate for the lack of good teachers in areas where they remain a scarce resource.

Secondly, their research shows that children learn differently when they are asked to do it on their own. Children retain information longer, and often their knowledge of the subject matter improves as children continue to discuss the subject on the playground or access more information online (they were, after all, the ones that found it in the first place).58

Can Tamil-speaking children in a remote Indian village learn basic molecular biology in English on their own?

In 2007, Mitra and his team pushed their premise to its extreme by setting up a “Hole in the Wall experiment in a rural Tamil village to see whether children could teach themselves molecular biology. The results were unambiguous: not only were children able to grasp the material when left on their own, but their understanding after 3 months, as measured by a test, surpassed that of students in an nearby rural government school at the same level, where students were learning the material in a classroom with a teacher. After another 3 months, with the encouragement of an untrained “mediator,” the self-taught students’ performance was on par with that of the students of the same level in an elite urban school in New Delhi, with a well-trained teacher.

Thirdly, evidence shows that SOLEs have a positive effect on other capacities, encouraging interest beyond the subject at hand. Research has shown that SOLEs have served to improve general mathematics and sciences scores as well as improve children’s reading comprehension and analytical skills.59

Finally, SOLEs show a positive impact on other social skillsets that are critical for entrepreneurs and that are difficult to improve in rote-learning environments. “From a pedagogical standpoint,” remarks Sugata Mitra, “it is important to note that children’s self-confidence drastically improves.”60 During a SOLE exercise, children are essentially being asked to take a risk, where there is the possibility of failure. They are also being encouraged and told by their teachers that they can do it on their own. By the end of the exercise, they have confirmed that this is true. Beyond self-confidence, work in a SOLE helps to create an environment for risk-taking. In addition, by working in groups, students are enhancing their social interaction skills, further developing their Emotional Quotient (EQ). Finally, the self-directed quality of the exercise allows students to work on forming independent opinions, test hypotheses, and determine trustworthiness of sources.61 All of which are qualities that underpin a successful entrepreneur.

3.3. Technology opens the educational market to new actors

Today, we seem to be witnessing the end of the monopoly of academic institutions on learning. Technology has provided a platform for new voices to emerge and social media has started to give more legitimacy and credibility to those voices. In this environment, non-traditional providers are moving to the fore, among them, companies, public institutions, NGOs, and new public-private partnerships.

Corporate universities move from supporting the education of their staff to the education of their larger stakeholders

Companies have long been involved in their staff’s professional training. In the 1950s, Arthur Anderson and General Electric were pre-cursors of the corporate university trend, opening in the USA, campuses exclusively dedicated to intensive training at Saint Charles (Illinois) and Crotonville (New York), respectively. In 1985, Accor Academy launched the concept in Europe and helped start a global phenomenon of corporate education, the cornerstone of which has been to provide in-house, specialized technical training and business fundamentals, often in the form of the “corporate university.”

58 At the end of a SOLE session, Mitra tests for understanding of the subject matter covered—trigonometry, for example,—which may be at the 75 per cent level. Tested on the same material 3 months later, student test scores will continue to be 75 per cent or higher. When asked why the test scores are improving, teachers note that children have continued to discuss the SOLE experience or even seek more information on their own.
60 Phone-based interview conducted with Sugata Mitra in August 2013.
Today, companies are beginning to move beyond the confines of their own walls to provide education and training to their larger community of stakeholders. One of the main impetuses driving this change is that academic institutions are not meeting the needs of these stakeholders (i.e., clients, suppliers, and constituents). As Peter Drucker once said, “when a subject becomes totally obsolete, we make it a required course.” In other words, the traditional curriculum cannot keep pace with the changing needs of society.

In general, the trend of non-academic actors entering the educational market is on the rise

As technology continues to disrupt the academic structure, new actors will emerge at each stage of the education value chain from course development to course delivery to grading student performance, and to awarding certification and diplomas. New actors that are closer to the marketplace, actors that understand the needs of its stakeholders are often in a better place to develop and deliver training. There are multiple examples that illustrate the trend across companies, NGOs, and government agencies, including the following ones:

1. **Supporting entrepreneurship in Spain:** Today, one of Spain’s leading banks, Banco Bilbao Vizcaya Argentaria, S.A. (BBVA), has launched a new program “Yo Soy Empleo”62 in partnership with 4 universities to provide training to the owners of Small- and Medium-sized Enterprises (SMEs). The bank’s largest customer segment is SMEs and it sees its future closely tied to that of SMEs, which have been struggling since the economic downturn. Therefore, BBVA has created a program to deliver training to SMEs that combine the bank’s know-how on financing for SMEs with the universities’ general knowledge base and professors in order to improve SMEs’ capacity to manage their companies for growth and create employment.63

2. **A new MBA program for top executives:** Mazars, an international audit and advisory firm, is re-orienting its corporate university programs to service its clients. The initiative was launched on the premise that traditional Executive MBA programs are not keeping pace with the real operational needs of business, nor do they specifically cater to the company’s top executives. In 2011, the firm launched an entirely independent Executive MBA, the first of its kind that is not partnered with an academic institution, for leaders, both internal and external, in large corporates and SMEs.

3. **A public-private partnership in Brazil to support rural areas:** CrossKnowledge CEO Michael Ohana explained, “the largest public electricity provider in Brazil and the Brazilian Central Bank have recently teamed up to provide a CrossKnowledge internet learning platform for 10 million learners in rural areas.”64 The students will earn certificates that have the same value as those delivered by state-run academic institutions.

Non-traditional actors, especially companies, entering the educational space can have a positive impact on entrepreneurs. As in the case of BBVA or Mazars, supporting SMEs or IDEs through education, is in their mutual, best interest. These new types of programs find their place alongside other types of programs traditionally offered by companies, such as providing training and mentoring to entrepreneurs through incubators, providing training to their entrepreneurial suppliers, etc. As this trend continues, the social recognition, and therefore, the value of such non-traditional education and training will only increase.

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62 This literally means in English: “I am job”.
64 Interview conducted with Mickaël Ohana in August 2013.
VII. Recommendations and conclusion

In addition to the urgent need in the MENA region to reduce the unemployment rate among university graduates, the world is witnessing innovative solutions in the field of education, in both how and what we deliver to students. When rethinking the educational system, the following thirteen pillars should be taken into account to radically overhaul the purpose and approach to teaching, learning, and skills/competencies’ building:

1. Instead of only taking an “education for employment” approach, focus also on providing “education for self-employment.” The latter would create among students, an out-of-the-box thinking ability and an entrepreneurial mindset by exposing them to educational programs and courses on creativity, innovation, technology, and entrepreneurship. To achieve the biggest impact, these subjects should be included in the curriculum not only at the university-level, but also at the high school, and even primary school level. At this educational level, we need to focus more on teaching skills and bring into the classroom the three most powerful ingredients of intrinsic motivation: play, passion, and purpose. We need lab schools where students earn a high-school diploma by completing a series of skill-based ‘merit badges’ in subjects like creativity and entrepreneurship.

2. Incorporate new pedagogical approaches such as learning-by-doing (also referred to as action-based learning), as the STEM school in Egypt or the flipped classroom approach, learning through problem-solving and practical application achieves far better results than rote-learning and traditional instruction. Not only does the knowledge stick better, but such activities serve to develop other skillsets like teamwork, communication, public speaking, and collaboration.

3. Remove the silo mentality that has existed for years in the universities and schools of the MENA region, and the subsequent mono-dimension of knowledge, and learning. As companies adopt strategies of adaptation and agility in the face of significant market changes, the nature of work itself is changing. Job descriptions are becoming more flexible and multi-disciplinary, and there is a need for workers to adjust quickly. In preparation for such work, students should be exposed to multiple disciplines to understand different approaches to problem solving, as well as to get a more holistic vision of systems. Additionally, according to Dr. Mahmoud Triki, cross-disciplinary initiatives are ways of fostering greater innovation and entrepreneurship, and synergies can be created by locating, for example, a business school and an engineering school next to each other.65

4. Re-engage with teaching staff, administrators, and students to motivate, empower, and re-instill their sense of responsibility and purpose. In a system in which key stakeholders have lost confidence, it is crucial to the success of any change strategy that these groups understand the big picture and what is at stake; they understand the role they have to play, the challenges they face, and the opportunities that will emerge. Such an action will engender a shared value system, and a shared sense of responsibility.

5. Develop international and regional student exchange programs, which contribute to developing grit, diverse points of view, international contacts and global mindset. Through exchange programs within the home universities and abroad, students discover other educational, cultural, political and social environments, and approaches, requiring them to think differently, approach problems differently, challenge their own biases and perceptions, and widen their references.

6. Initiate actions to involve the diaspora and get benefit from their international exposure. They are the best ambassadors in their international companies and organizations to promote skills and competencies. They are usually pleased to help young jobseekers to get a value added jobs in the companies they work for. For instance, Tunisian professors represent more than 7000 in worldwide schools, and in various fields. Many of them are prominent professors, and facilitate the connections between their institution and Tunisian stakeholders.

65 Face-to-face interview conducted with Mahmoud Triki, Dean of the Mediterranean School of Business and the Mediterranean Institute of Technology, in Tunis, March 2013.
7. **Strengthen the linkage between universities and employers in order to ensure a better fit between educational programs and job market needs.** Both public and private institutions should be viewed by universities as partners and customers. As seen in the example of TACT in Tunisia, close collaboration between companies and universities creates an eco-system that fosters job creation and new venture formation, and thus, boost opportunities for employment, and also self-employment. This can be achieved by creating more internship programs, establishing mentoring or coaching programs between students and executives or entrepreneurs, creating advisory bodies for schools to inform curriculum design, including professionals (and not only academics) in the faculty.

8. **Leverage technology and the enormous amount of new and accessible educational resources that it has now put at the fingertips of the MENA countries’ teachers and students.** There are several ways that teachers on an individual level and educational decision-makers on a national level can start to incorporate these new resources into the curriculum, whether through flipping the classroom, setting up SOLEs, establishing teaching networks, or others. The benefits of these new teaching styles include not only more customized information, but also encouraging attitudes and behaviors that are critical for entrepreneurs: self-confidence, risk-taking, scientific inquiry, and social interaction skills.

9. **Improve learning and teaching facilities within universities and higher education institutions** by incorporating technology in the classroom to enhance the learners’ experience and encourage students to use, when needed, technology-enabled on-demand learning. Most of the MENA region suffers from a poor educational infrastructure—schools are often over-crowded and have old facilities, with poor IT infrastructure, and few, if any, reliable systems for information processing, and sharing. Many faculty members, university administrators, and students do not have access to email, and lack streamlined and user-friendly IT systems. In many locations, the internet is not a first or second means of contact or information sharing among educational stakeholders. The poor physical and digital infrastructure cannot enable quality education and the rather low salaries paid to the teaching staff are not a motivating factor.

10. **Set up a trainers’ training program** in order to bring up to speed instructors’ expertise and teaching ability by exposing them to up-to-date content and trends, such as the use MOOCs as a source of knowledge, as well as best practices in teaching and learning, including those that are technology-enabled. Another trainers’ training idea consists of setting up a pan-African doctoral program to train professors able to teach in the MENA region and who do not leave for Europe or the US after their graduation. New technological capabilities, including videoconferencing, would allow foreign professors to teach in such a program and enhance its content.

11. **Recognize that the types of entities that are delivering content are diversifying.** Education and learning are no longer the sole remit of schools and universities, but open to many different actors. This is the education ecosystem where companies, government and non-government organizations, and academic organizations have a vested interest in students’ learning outcomes and knowledge to share. For the non-traditional actors, their position, closer to the marketplace, often permits them to identify the needs and propose content in a much faster timeframe than the national education department or academic institutions. In rethinking the educational system in the MENA region, the important point is to be pragmatic and open to new partnerships that will be mutually beneficial to themselves and entrepreneurs.

12. **Ensure some continuity of educational policies while providing flexibility and local autonomy.** Frequent changes in university leadership and academic regulations often cause a discontinuity of direction and result in ambiguity and inefficiency among university staff. For example, in the case of Tunisia, the recently introduced authority layers and reporting levels between local university administrators and the MoHESR Ministry headquarters in Tunis caused more bureaucracy, and slower decision making.

13. **Encourage life-long learning by promoting among graduating students the use of technology for continuous education throughout their career(s) and lives.** Such continuous updating of knowledge is so crucial today, especially in technical fields where the amount of new information is doubling every two years. Thus, for students starting a four-year technical degree, this means that...
half of what they learn in their first year of study will be outdated by their third year of the program. So, the only way for them to stay up-to-date is self-learning through a life-long process.

We believe that the above mentioned thirteen recommendations are an essential component of a meaningful and relevant educational reform in the MENA countries that overcomes today’s shortcomings, including the misfit between graduate’s skills and recruiters’ needs, and meets market challenges by reducing the unemployment rate and fostering entrepreneurship. Given the political appetite for new initiatives in many post-Arab Spring MENA countries, the ideas proposed in this paper could be an opportunity to showcase what an entirely new educational system can be. Conditions in the MENA region, with its increased bandwidth, connectivity, and desire to make a fresh start, may be nearly perfect conditions to attempt a radically new change in education that could be an example to the world.
ANNEX 1: Self-oriented Learning Environments (SOLEs)

A n analysis by Mitra et al of why children were learning by themselves highlighted three important aspects:

1. Children play on the computers in an unsupervised fashion: they are not told to learn, but are free to let their curiosity lead them.

2. Children work in groups: the ‘Hole in the Wall’ experiment basically required that in front of the computer, children do not work alone but huddle in groups. Groups are free forming; meaning the group today may not be the same tomorrow, thus, encouraging information exchange. And in a group formation, children question and challenge each other, and end up teaching each other.

3. The role of the mediator, especially for younger kids (aged 10 and younger), is particularly important: the mediator is a person who is not trained in the subject matter, but is friendly with the children and supportive in their learning process. The mediator reinforces children in their learning and gently pushes them to do more.

Mitra has tested the SOLE in various settings around the world, and as a TED prize-winner, he has just developed a SOLE toolkit to help make this phenomenon go viral. The toolkit covers how to organize a SOLE, how to ask the big questions to get students engaged, and how to troubleshoot problems. During our telephone discussion,71, he also highlighted some additional hints and tips and volunteered to help set up a SOLE in the MENA region to demonstrate the feasibility of the SOLE concept and its contribution to education and skill development. This is what the authors of this paper would like to do next as a follow-up to this paper.

71 Phone-based interview conducted with Sugata Mitra in August 2013.
VIII. Bibliography


http://www.prweb.com/releases/2012/10/prweb9971057.htm

De Solo, Hernando. Research Project "l’économie informelle, comment y remédier ?," 2012.


Face-to-face interview conducted with Saïd Aïdi, Minister of Employment and Vocational Training in the 2011 Tunisian government in Tunis, February 2013.

Face-to-face interview conducted with Lamia Chaffai, Executive Director of Efe Tunisia in Tunis, February 2013.

Face-to-face interviews conducted with Tarek Cherif, President of CONECT (Confédération des Entreprises Citoyennes de Tunisie), and Slim Zeghal, CEO Altea Packaging in Tunis, February 2013.

Face-to-face interview conducted with Essma Ben Hamida, CEO of ENDA in Tunis, February 2013.

Face-to-face interview conducted with Maher Kallel, Founder and General Manager of Carthage Business Angels in Tunis, March 2013.

Face-to-face interview conducted with Mondher Khanfir, General Manager of Wiki Start-Up in Tunis, February 2013.

Face-to-face interview conducted in Tunis with Aziz Mebarek, co-founder and managing partner of Tuninvest and Africinvest in Tunis, February 2013.

Face-to face discussions held with Mustapha Kamel Nabli, Governor of the Central Bank of Tunisia in Tunis between February 2011 and July 2012.

Face-to-face interview conducted with Mahmoud Triki, Dean of the Mediterranean School of Business and the Mediterranean Institute of Technology, in Tunis, March 2013.

Face-to-face interview conducted with Badreddine Oualli, Chairman of TACT and Chairman of Vermeg Co., and Neila Ben Zina, Deputy Chairman of TACT and Managing Director of Business & Decision Co. in Tunis, March 2013.

Face-to-face interview conducted with Sarni Zaoui, partner at Ernest & Young in Tunis, February 2013.


Interview conducted with Mickaël Ohana in August 2013.


Phone-based interview conducted with Mickaël Ohana, CEO of the e-learning platform CrossKnowledge, August 2013.

Phone-based interview conducted qith Sugata Mitra August 2013


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