TRANSFORMING EDUCATION IN INSTITUTIONS OF HIGHER EDUCATION
CASE OF AUB

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Main Global Trends and Risks Associated with Them

- Rising urbanization
- Rising chronic diseases
- Growing middle class in emerging economies
- Ageing population
- Rising income and wealth disparity
- Shifting power
- Changing landscape of international governance
- Changing climate
- Degrading environment
- Extreme weather events
- Water crises
- Failure of climate-change mitigation and adaptation
- Critical information infrastructure breakdown
- Data fraud or theft
- State collapse or crisis
- Profound social instability
- Cyberattacks
- Failure of national governance
- Rise of cyber dependency
- Increasing national sentiment
- Increasing polarization of societies
Potential Impact of Global Trends on Arab Countries and Level of Concern of Private Sector about Risks Associated with Them
Top Ten Most Emerging and Declining Roles Between 2013-2017 as Observed in Hiring Trends

Source: LinkedIn.
### Drivers Of Change, Industries Overall

#### DEMOGRAPHIC AND SOCIO-ECONOMIC
- Changing nature of work, flexible work: 44%
- Middle class in emerging markets: 23%
- Climate change, natural resources: 23%
- Geopolitical/volatility: 21%
- Consumer ethics, privacy issues: 16%
- Longevity, ageing societies: 14%
- Young demographics in emerging markets: 13%
- Women’s economic power, aspirations: 12%
- Rapid urbanization: 0%

#### TECHNOLOGICAL
- Mobile internet, cloud technology: 34%
- Processing power, Big Data: 26%
- New energy supplies and technologies: 22%
- Internet of Things: 14%
- Sharing economy, crowdsourcing: 12%
- Robotics, autonomous transport: 9%
- Artificial intelligence: 7%
- Adv. manufacturing, 3D printing: 6%
- Adv. materials, biotechnology: 6%

Regional Profile

Middle East and North Africa

Factors determining job location decisions

<table>
<thead>
<tr>
<th>Industry</th>
<th>Primary</th>
<th>Secondary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive, Aerospace, Supply Chain &amp; Transport</td>
<td>Talent availability</td>
<td>Production cost</td>
<td>Labour cost</td>
</tr>
<tr>
<td>Aviation, Travel &amp; Tourism</td>
<td>Talent availability</td>
<td>Organization HQ</td>
<td>Ease of importing talent</td>
</tr>
<tr>
<td>Chemistry, Advanced Materials &amp; Biotechnology</td>
<td>Talent availability</td>
<td>Labour cost</td>
<td>Quality of the supply chain</td>
</tr>
<tr>
<td>Consumer</td>
<td>Labour cost</td>
<td>Talent availability</td>
<td>Quality of the supply chain</td>
</tr>
<tr>
<td>Energy Utilities &amp; Technologies</td>
<td>Labour cost</td>
<td>Talent availability</td>
<td>Production cost</td>
</tr>
<tr>
<td>Financial Services &amp; Investors</td>
<td>Talent availability</td>
<td>Organization HQ</td>
<td>Labour cost</td>
</tr>
<tr>
<td>Global Health &amp; Healthcare</td>
<td>Talent availability</td>
<td>Labour cost</td>
<td>Production cost</td>
</tr>
<tr>
<td>Information &amp; Communication Technologies</td>
<td>Talent availability</td>
<td>Production cost</td>
<td>Geographic concentration</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>Talent availability</td>
<td>Labour cost</td>
<td>Location of raw materials</td>
</tr>
<tr>
<td>Professional Services</td>
<td>Talent availability</td>
<td>Labour cost</td>
<td>Geographic concentration</td>
</tr>
</tbody>
</table>

Range of options: Flexibility of labour laws, Geographic spread, Quality of the supply chain, Ease of importing talent, Labour cost, Location of raw materials, Organization HQ, Production cost, Strong local education provision, Talent availability.

Technology adoption (share of companies surveyed)

- User and entity big data analytics: 91%
- Machine learning: 79%
- Internet of things: 77%
- App- and web-enabled markets: 76%
- Cloud computing: 73%
- Augmented and virtual reality: 68%
- Encryption: 62%
- New materials: 61%
- Digital trade: 59%
- Wearable electronics: 54%
- Autonomous transport: 54%
- 3D printing: 52%
- Distributed ledger (blockchain): 50%
- Stationary robots: 48%
- Non-humanoid land robots: 42%
- Quantum computing: 41%
- Biotechnology: 28%
- Humanoid robots: 27%
- Aerial and underwater robots: 26%

Emerging job roles

- Software and Applications Developers and Analysts
- Data Analysts and Scientists
- Sales and Marketing Professionals
- Managing Directors and Chief Executives
- General and Operations Managers
- Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
- Human Resources Specialists
- Financial Analysts
- Assembly and Factory Workers
- Financial and Investment Advisers
Regional Profile

Middle East and North Africa

Average reskilling needs (share of workforce)

- Less than 1 month: 12%
- 1 to 3 months: 13%
- 3 to 6 months: 9%
- 6 to 12 months: 9%
- Over 1 year: 9%
- No reskilling needed: 47%

Responses to shifting skills needs (share of companies surveyed)

- Look to automate the work: 89% (Likely)
- Hire new permanent staff with skills relevant to new technologies: 84% (Likely)
- Retain existing employees: 76% (Likely)
- Expect existing employees to pick up skills on the job: 73% (Likely)
- Hire new temporary staff with skills relevant to new technologies: 72% (Likely)
- Outsource some business functions to external contractors: 69% (Likely)
- Hire freelancers with skills relevant to new technologies: 56% (Likely)
- Strategic redundancies of staff who lack the skills to use new technologies: 53% (Likely)

Emerging skills

- Analytical thinking and innovation
- Active learning and learning strategies
- Creativity, originality and initiative
- Technology design and programming
- Complex problem-solving
- Leadership and social influence
- Critical thinking and analysis
- Reasoning, problem-solving and ideation
- Emotional intelligence
- Systems analysis and evaluation

Projected use of training providers (share of training)

- Internal department: 50%
- Private training providers: 28%
- Private educational institutions: 18%
- Public educational institutions: 16%
- Public training provider: 15%
Most **EDUCATIONAL SYSTEMS** today are based on models put in place over a century ago. Fragmented attempts at reform and modernization have proven, in most cases, insufficient in addressing the growing gap between conventional education systems, the demands of modern life and new labor markets.

These modern curricula may be best delivered through HE institutions, a well-regulated and thoughtfully incentivized private sector, or a combination of the two. There are two key components to getting this right: *first, what to teach; and, second, how to teach it.*
Forward looking curricula must focus on: the linguistic, mathematical and technological literacies all job roles will require in the future; ensuring the breadth and depth of subject knowledge and the ability to make inter-disciplinary connections; developing global citizenship values, including empathy and character; non-cognitive employability skills such as problem solving, critical thinking, project management and creativity.

Education curricula must be:

1) updated and adapted on a rolling basis, based on insights and forecasting regarding the evolution of local and global labor markets and trends in skill demands;
2) developed and revised collaboratively, with input from all relevant stakeholders, including businesses; and
3) subject to regular review, in order to avoid the disruption and implementation time-lag associated with major but infrequent curricular overhauls. It is also important to teach “how to learn” through experience-led approaches just as much as instruction-led ones, and by empowering students to be lifelong learners who take ownership of their upskilling throughout their lifetime.
Higher Education Institutions Can Change the World
Kellogg’s Funded Project

Create university graduates as leaders that serve society—students who live and work intentionally by positively affecting their environment, promoting peace and understanding, and respecting diversity.
Changing Paradigms of Education

1. University Mission – graduates with capacity to contribute to meeting world’s challenges

2. Emphasize Student Learning and not Teaching
   • Student Centered Learning
   • Experiential Participatory Learning Processes
   • Student led learning activities – entrepreneurial projects

3. Professor’s Role
   • Facilitator of Learning
   • Easily Accessible to students
   • Model for students
   • Students participate with faculty in learning activities, extension and community outreach and in research
Changing Paradigms of Education

4. Entrepreneurship
   • Key component of curriculum
   • Faculty members with entrepreneurial strengths and experience
   • Ethical leadership
   • Innovation

5. Educate for the future and not the past
EXPERIENTIAL LEARNING

Students construct their learning process and develop abilities through experience.

- Professors design and facilitate the experiences
- Students link experiences with critical analysis
- Professors encourage students to understand problems and to seek creative solutions

- Student: Learner
- Professor: Facilitator
- Autonomous learner
- Lifelong learner
- High levels of learning:
  - Creativity and innovation
  - Search for solutions
  - Critical thinking
  - Independence and responsibility
  - Focus on process
Graduate Profile: Agents of Change

- Exercise leadership
- Behaves in accordance with values and principles
- Practices social awareness and commitment
- Communicates effectively
- Works effectively in teams
- Commitment to lifelong learning
- Practices reasoning, analysis and synthesis to resolve problems
- A solid technical know-how
- Managerial and entrepreneurial capacity
On-going Activities at AUB Aligned With Project Objectives

Transformative Education & Learning:

• Service Learning:
  – FAFS-GDT Senior Capstone Experience
  – MSFEA Humanitarian Engineering Initiative/Course
  – FHS Community Health Nursing Course (Experiential Learning)
  – Center for Civic Engagement and Community Service (CCECS)
  – OSB Executive Education (Experiential)
  – AREC, Internships, FYPs and Tutorials

• Life-Long Learning
  – Extension Programs
  – Certificates and Diplomas
On-going Activities at AUB Aligned With Project Objectives

• Community Development
  – Center for Civic Engagement and Community Service (CCECS)
  – FHS Community Engagement Activities
  – FAFS Environment and Sustainable Development Unit (ESDU)
  – FAFS-GDT Senior Capstone Experience
  – MSFEA Humanitarian Engineering Initiative/Course
  – Neighborhood Initiative
  – Internships, FYPs and Tutorials

• Entrepreneurship/Leadership:
  – MSFEA Entrepreneurship Track
  – OSB Executive Education
  – OSB FYP Accelerator
  – CRInn
  – iPARK
Center for Civic Engagement and Community Service

AUB CCECS Key Performance Indicators 2015-2018

- 40,622 Volunteer Hours
- 6746 Student volunteers
- 703 Students engaged in leadership workshops
- 61 Faculty Members engaged in community projects, service-learning, and related research
- 535 Students enrolled in service learning
- 15,300 Community Service Internship Hours
- 300 Students leading Community Service Projects
Center for Research and Innovation

CRInn Serves as a platform for AUB’s community innovation and entrepreneurship activities.

In the last 3.5 years, the interest by students for entrepreneurship training and for starting their own businesses have greatly increased.

The center does not invest in startups. It only provides resources to get the startups ready for investment and/or incubation/acceleration.

<table>
<thead>
<tr>
<th></th>
<th>15-16</th>
<th>16-17</th>
<th>17-18</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td># Students Trained</td>
<td>183</td>
<td>755</td>
<td>420</td>
<td>1,358</td>
</tr>
<tr>
<td># Attendees in the events</td>
<td>386</td>
<td>1,220</td>
<td>1,125</td>
<td>2,731</td>
</tr>
<tr>
<td># Events Held</td>
<td>20</td>
<td>40</td>
<td>43</td>
<td>103</td>
</tr>
<tr>
<td># Startups Approved for Residency</td>
<td>7</td>
<td>24</td>
<td>40</td>
<td>71</td>
</tr>
</tbody>
</table>

# Startups that Took Residence in CRInn

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td># Women as founders or members of startups (24%)</td>
<td>50</td>
</tr>
<tr>
<td># Men as founders or members of startups (76%)</td>
<td>162</td>
</tr>
<tr>
<td># Startups Employees</td>
<td>~200</td>
</tr>
<tr>
<td># Interns within Startups</td>
<td>11</td>
</tr>
</tbody>
</table>
### Examples of Other Entrepreneurship Trainings and Teaching Programs at AUB

<table>
<thead>
<tr>
<th>Competition / Program</th>
<th>Started</th>
<th>Total number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBDAA (one semester across disciplines and faculties)</td>
<td>2007</td>
<td>~250 participants per year, with 8-10 winners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In 2018 it included 8 other Lebanese universities</td>
</tr>
<tr>
<td>The Samir and Claude Abillama competition</td>
<td>2014</td>
<td>10 teams/year coached and trained to improve their ideas or products with 1-2 winners</td>
</tr>
<tr>
<td>The Darwazah Competition</td>
<td>2012</td>
<td>~80 applicants coached and trained, 6 finalist teams and 1-2 winner teams every year</td>
</tr>
<tr>
<td>MSFEA Entrepreneurship Track (Academic)</td>
<td>2016</td>
<td>~50 Students/year. Track Includes a Hackathon, two 3-credit Engineering Entrepreneurship courses, summer internship at a startup, R&amp;D augmented with business development, Upon graduation continue to iPark, CRInn, BDD</td>
</tr>
<tr>
<td>Continuing Education Center - Entrepreneurs and Lean Startups Certificate</td>
<td></td>
<td></td>
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</tbody>
</table>
# Innovation and Technology Transfer

<table>
<thead>
<tr>
<th></th>
<th>FY 14-15</th>
<th>FY 15-16</th>
<th>FY 16-17</th>
<th>FY 17-18</th>
</tr>
</thead>
<tbody>
<tr>
<td># Invention Disclosures</td>
<td>6</td>
<td>10</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td># Patent Applications</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td># Licensing Agreements</td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
# Transforming Education Ecosystems

<table>
<thead>
<tr>
<th>Action Areas</th>
<th>Roles of Private Sector and EIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early childhood education</td>
<td>● Align micro-credentials with national standards and qualifications frameworks</td>
</tr>
<tr>
<td></td>
<td>● Broaden assessment beyond traditional test-based approaches</td>
</tr>
<tr>
<td></td>
<td>● Create framework for continuous curriculum review and updating</td>
</tr>
<tr>
<td>‘Future-ready’ curricula</td>
<td>● Educational institutions to ensure that curricula development is informed by market demand skills</td>
</tr>
<tr>
<td></td>
<td>● Design and deliver interventions that strengthen STEM skills, employability skills, and/or global citizenship skills</td>
</tr>
<tr>
<td>Professionalized teaching workforce</td>
<td>● Promote private sector participation in teacher training and upskilling</td>
</tr>
<tr>
<td></td>
<td>● Incentivize teachers to actively participate in their own lifelong learning</td>
</tr>
<tr>
<td></td>
<td>● Provide workplace exposure to educators (teacher externships)</td>
</tr>
<tr>
<td></td>
<td>● Develop skills-based employee volunteering programs</td>
</tr>
<tr>
<td></td>
<td>● Introduce tools and resources to educators to improve learner-centered pedagogy</td>
</tr>
<tr>
<td>Early exposure to the workplace and ongoing career guidance</td>
<td>● Include work-based learning as a graduation requirement for both higher education and vocational training programs</td>
</tr>
<tr>
<td></td>
<td>● Improve capacity and quality of public career advice service providers</td>
</tr>
<tr>
<td></td>
<td>● Partner with private sector on skills accreditation</td>
</tr>
<tr>
<td></td>
<td>● Link with private sector and provide mentorship and career coaching</td>
</tr>
<tr>
<td></td>
<td>● Organize work-based learning for current students (work exposure, internships, apprenticeship, career counselling)</td>
</tr>
<tr>
<td>Digital fluency</td>
<td>● Support ICT infrastructure and access in educational institutions; Mandate ICT and digital literacy in teacher training</td>
</tr>
<tr>
<td></td>
<td>● Develop digital literacy and ICT skills among current workforce through online learning platforms and boot camps</td>
</tr>
<tr>
<td></td>
<td>● Reinforce requisite technology skills in the workplace with students during work-based learning</td>
</tr>
<tr>
<td>Robust and respected technical and vocational education</td>
<td>● Promote TVET careers through public campaigns</td>
</tr>
<tr>
<td></td>
<td>● Introduce vocational tracks in upper secondary education</td>
</tr>
<tr>
<td></td>
<td>● Encourage private sector TVET infrastructure investment</td>
</tr>
<tr>
<td></td>
<td>● Address TVET stigma and promote TVET career pathways through parent-teacher associations</td>
</tr>
<tr>
<td>A new deal on lifelong learning</td>
<td>● Incentivize and support individuals to pursue lifelong learning opportunities</td>
</tr>
<tr>
<td></td>
<td>● Actively support staff to engage in learning for continual professional development through multiple channels</td>
</tr>
<tr>
<td></td>
<td>● Incentivize re-education and training among staff in the workplace</td>
</tr>
<tr>
<td>Openness to education innovation</td>
<td>● Experiment with greater autonomy for higher education and TVET institutions</td>
</tr>
<tr>
<td></td>
<td>● Support testing and scale-up of education innovations</td>
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<tr>
<td></td>
<td>● Partner with educational institutions to provide learning opportunities outside the classroom (e.g. challenge based learning/hackathons)</td>
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