Careers of the Future: Skills You Will Need and How to Get Them

Svetlana Barkanova, Professor, Physics, School of Science and the Environment
Where do you see yourself in 10 years' time? In 20 years? In 30?

Lots of jobs that will exist in 2030 haven’t been invented yet!

So how do we prepare for jobs that don’t yet exist?

SKILLS – we are only as good as the skills we possess.

But which skills are they?
Growing industries:
- advanced robotics
- autonomous transport
- artificial intelligence and machine learning
- advanced materials
- biotechnology and genomics

Based on:
- Science
- Math
Example: PHYSICS. Where do you think physicists work?
Top Skills from the World Economic Forum – how things change!

<table>
<thead>
<tr>
<th>in 2020</th>
<th>in 2015</th>
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<tbody>
<tr>
<td>1. Complex Problem Solving</td>
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<td>2. Critical Thinking</td>
<td>2. Coordinating with Others</td>
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<td>3. Creativity</td>
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<td>5. Coordinating with Others</td>
<td>5. Negotiation</td>
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<td>6. Emotional Intelligence</td>
<td>6. Quality Control</td>
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<td>7. Judgment and Decision Making</td>
<td>7. Service Orientation</td>
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Source: Future of Jobs Report, World Economic Forum
Example: Training in Subatomic Physics

• Types of projects
  • Theory – models, analysis
  • Computer programming, working with large data sets
  • Electronics and data acquisition systems
  • Vacuum systems
  • Chip design
  • Detector development
  • Motion systems (robotics and autonomous transport)

• Skills gained in a subatomic physics academic career
  • Soft – creativity, communication, presentation, collaboration
  • Hard – experience from projects listed above
Example: Skills You Get from **Physics**:  

From the World Economic Forum Report:

1. **Complex problem solving**
2. **Critical thinking**
3. **Creativity**
4. **People Management**
5. **Coordinating with others**
6. **Emotional Intelligence**
7. **Judgement and Decision Making**
8. **Service Orientation**
9. **Negotiation**
10. **Cognitive Flexibility**

**Growing industries:**
- advanced robotics
- autonomous transport
- artificial intelligence and machine learning
- advanced materials
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**Other skills, in addition or encompassing those from WEF**
- **Project management** – planning, resources, risk analysis, quality control
- **Technical writing and ethics**
THANK YOU!

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