

New Models for Lifelong Learning in the Global Digital Economy: The 60 Year Curriculum

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6 Decades of Work in the Era of the Global Digital Economy

Lifespan

- Children born now will typically live until age 90 or beyond, so must work until approximately 75 to cover retirement.
- Systemic disruptions: climate change, failure to attain sustainability, shifts in division of labor

Technology

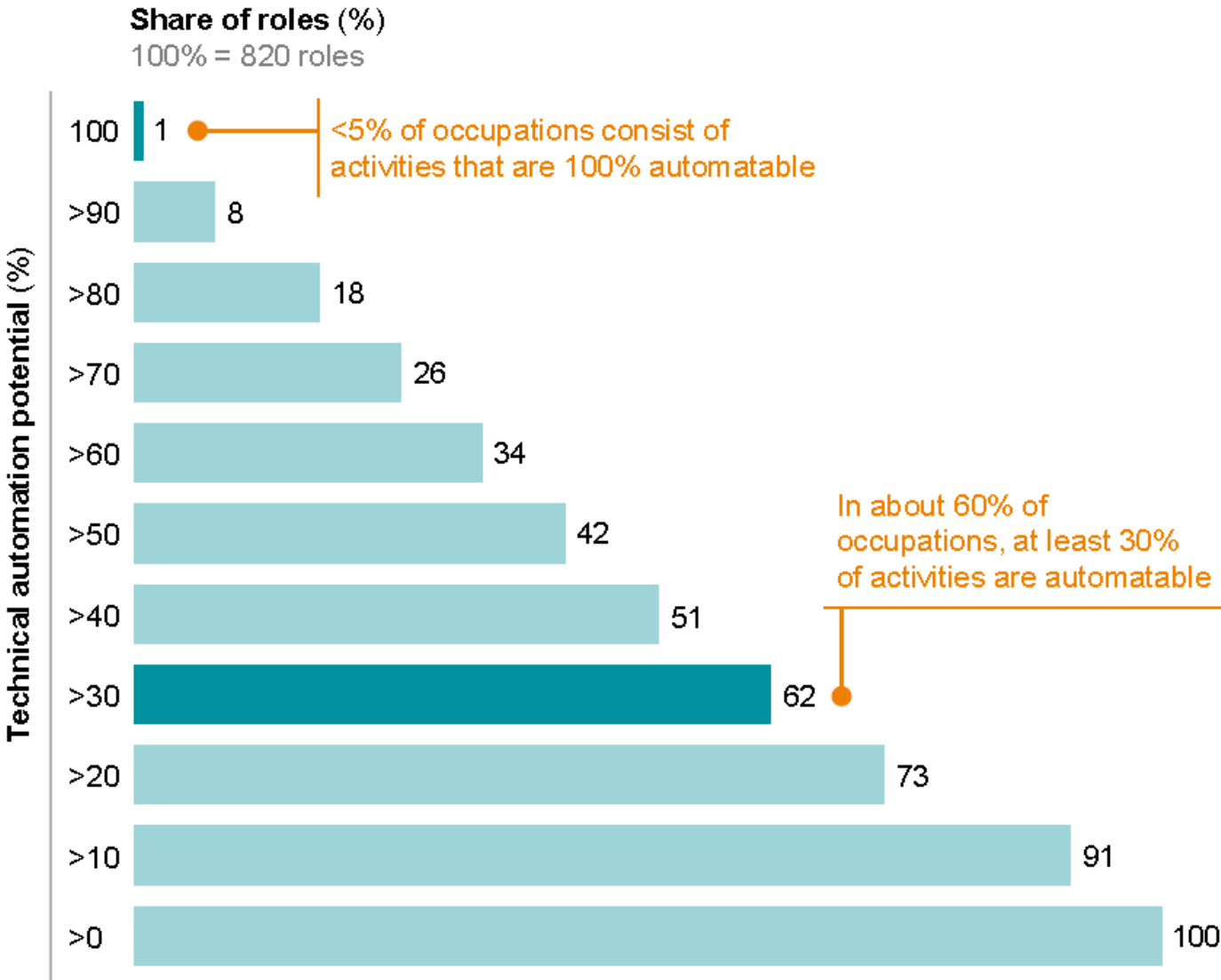
- Emerging breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, energy storage, and quantum computing.
- Billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge

These will change every aspect of work, citizenship, and life

Automation potential based on demonstrated technology of occupation titles in the United States (cumulative)¹

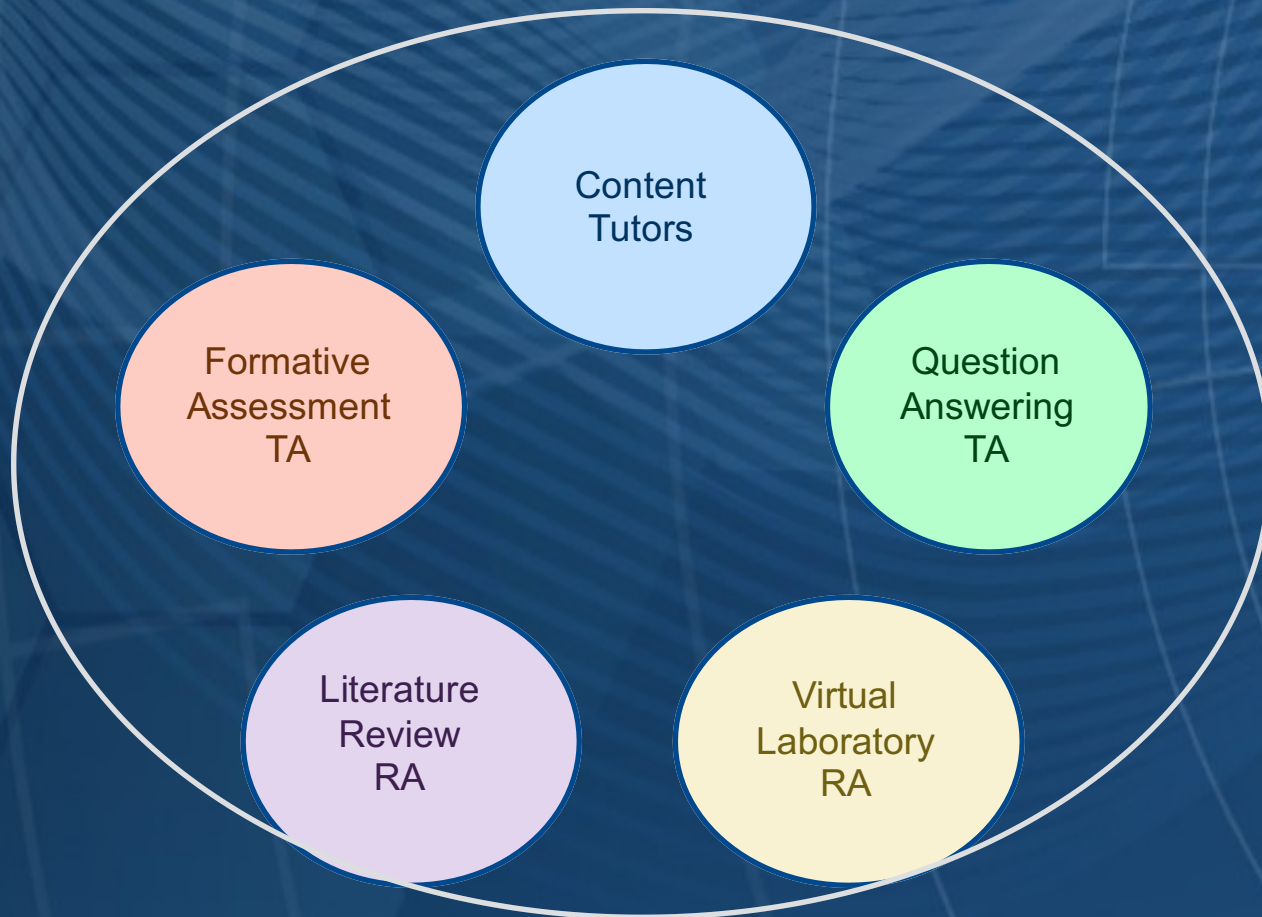
Example occupations

Sewing machine operators, graders and sorters of agricultural products
Stock clerks, travel agents, watch repairers
Chemical technicians, nursing assistants, Web developers
Fashion designers, chief executives, statisticians
Psychiatrists, legislators



¹ We define automation potential according to the work activities that can be automated by adapting currently demonstrated technology.

A Coordinated Suite of AI Technologies (based on functional roles of human teachers)



Ashok Goel, Georgia Tech

Learning WITH the Machines

Charles Fadel, CCR

Deep Learning (A.I.) + “Deeper Learning” (H.I.)
= Intelligence Augmentation (IA)



Questions to Ponder

- What trends and events are happening now you never thought would occur in your lifetime?
- Do you sometimes look at a prediction and think, “I’m glad I didn’t face that in my career.”
- Is there a coming disruption you feel will cascade into many other disruptions, making the world more turbulent and dangerous?

The 60 Year Curriculum (60YC)

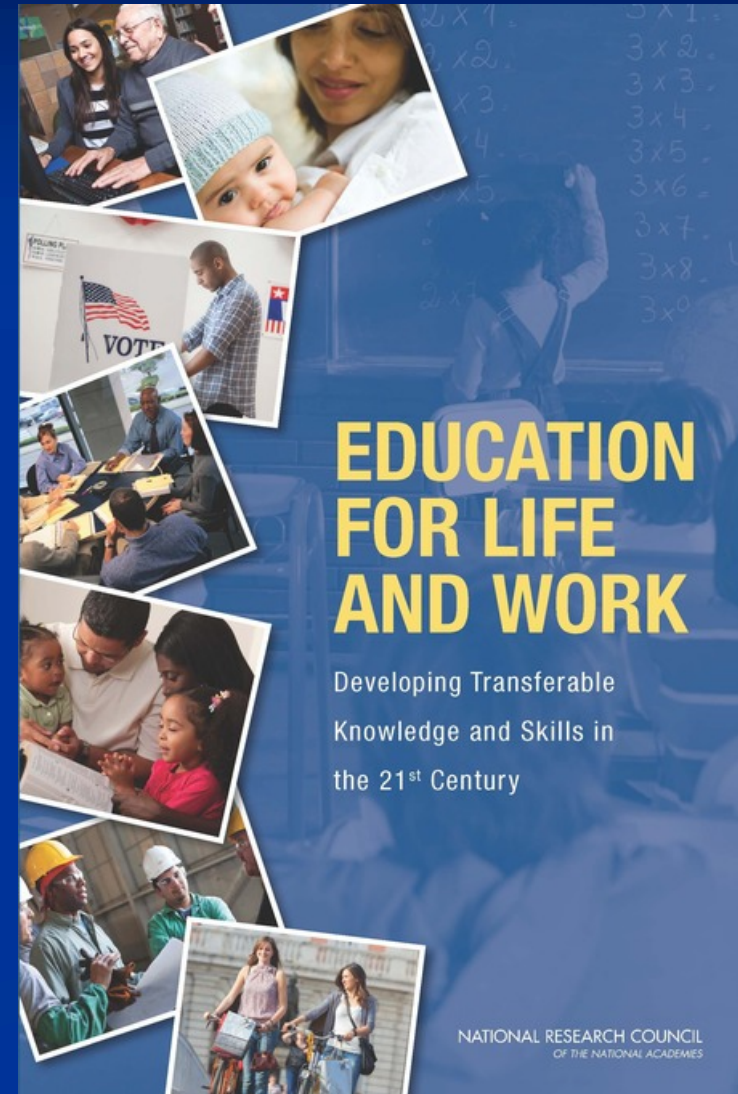
Services and experiences that encompass learning

- to prepare for a lifelong series of careers
- to excel in the roles that a succession of social, civic, and professional opportunities present
- to engage in post-career activities

flexibility, resilience, confidence, and initiative given social and occupational uncertainty, challenge, and opportunity

National Research Council (2012)

Today's children can meet future challenges if their schooling and informal learning activities prepare them for adult roles as citizens, employees, managers, parents, volunteers, and entrepreneurs.



Dimensions of Advanced Knowledge and Skills

<i>Cognitive Outcomes</i>	<i>Intrapersonal Outcomes</i>	<i>Interpersonal Outcomes</i>
Cognitive processes and strategies	Intellectual Openness	Teamwork and Collaboration
Knowledge	Work Ethic and Conscientiousness	Leadership
Creativity	Positive Core Self-Evaluation	Communication
Critical Thinking	Metacognition	Responsibility
Information Literacy	Flexibility	Conflict Resolution
Reasoning	Initiative	
Innovation	Appreciation of Diversity	

NESTA: The Future of Skills 2030

- Judgment and Decision Making
- Fluency of Ideas
- Active Learning
- Learning Strategies
- Originality Abilities
- Systems Evaluation
- Deductive Reasoning
- Complex Problem Solving

OECD 2030

■ Creating New Value

- Adaptability, creativity, curiosity, and open-mindedness

■ Reconciling tensions and dilemmas

- Thinking in a integrated way that recognizes interconnections; thinking systemically
- Understanding the needs and desires of others

■ Taking responsibility

- Acting ethically
- Self-control, self-efficacy, problem-solving

Questions to Ponder

- How do these knowledge, skills, and dispositions (KSDs) relate to the classic “liberal arts education”?
- Which educational experiences at your institution give students these KSDs?
- Are there disposition-related educational experiences you need to add for students in certain majors?

Overview of Stanford and GaTech

- Declaring a purpose r.t. a major or role: mastery with meaning.
- A focus on skill acquisition/competencies rather than disciplinary topics and academic field
- Personalized advising and learning based on AI
- Globalization at home with an emphasis on inter/intrapersonal.
- A distributed worldwide presence with Living Libraries
- A series of “loops” over the course of a lifetime, with mid-career refreshment for older students and work in the world for younger
- Microcredentials, minimester classes, and credit for accomplishment measured by demonstrated competencies.
- Personal-paced learning programs over six years distributed across time and space.

Potential Aspects of a 60YC Model

Engineering Learning

- *Learning Engineering* applies a principled set of evidence-based strategies to the continual re-design of educational experiences to optimize their effectiveness and efficiency.
- “...learning engineers would have several responsibilities. The most important is that, working in collaboration with members of the faculty whose interest they can excite, they design and redesign learning experiences in particular disciplines.” Herbert Simon, 1967

LEARNING ENGINEERING FOR ONLINE EDUCATION

THEORETICAL CONTEXTS AND DESIGN-BASED EXAMPLES

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ROUTLEDGE

Tools for Transformational Insights



Helping Adults Learn and *Unlearn*



Doing Better Things rather than Things Better

- Immersion in simulated authentic experiences
- Research about barriers to changes in behavior and identity: cognitive, affective, social
- *Unlearning* as a stage of learning

Transformation

Inducing people to volitionally change from a current set of behavioral practices historically buttressed by organizational supports, policies, and incentives to a markedly different, transformational set of practices *that requires an altered organizational context—shifts in assumptions, beliefs, and values at both the individual and institutional levels.*

Challenges in Unlearning: Individual

- A leader unlearning the practices that underlie one role to instead use a new set of practices for a new role (shifting from command-and-control to distributed leadership)
- A teacher/professor transforming instructional practices from presentation/assimilation to active, collaborative learning by students (using the case method of teaching, or using project-based learning)

Is what I am trying to shift a threat/challenge to my identity, to how I see myself, or how I see the world?

Challenges in Unlearning: Organizational

- An educational organization transforming from credentials certified by seat-time and standardized tests to credentials certified by proficiency on competency-based measures, irrespective of student time taken to accomplish this
- An educational organization that (perhaps unconsciously) discriminates against certain types of people transforming its individual and institutional behaviors to actively promote diversity and equity

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Questions to Ponder

- How did I / my organization unlearn / shift in a way that changed identity?

OR

- Why did an attempted shift in identity fail?
What could have made it succeed?

THE 60-YEAR CURRICULUM

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AND JOHN RICHARDS



ROUTLEDGE