



ADULT  
LEARNING  
SYMPOSIUM

**From Disruption to Design:  
Re-conceptualizing  
Lifelong Learning**

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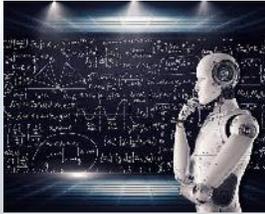
**IAL** AN INSTITUTE OF SKILLSfuture SG

The future of work depends on you.

However, the future of work cannot rely on education of the past.

**DISRUPTIONS**

There are lots of ways of being smart that aren't "smart like us."



**Artificial Intelligence**

- Solves problems but doesn't replicate the thinking process of humans
- Uses "brute force" computing enabled by massive processing power and memory
- Applications span all disciplines

- AI will contribute up to \$15.7 trillion to the world economy by 2030
- Global GDP may grow 14% as a result of AI
- By 2020 algorithms will positively alter the behavior of over 1 billion workers
- 6.2 billion hours of worker productivity recovered by 2021

Professional work is being reconfigured.



### Knowledge Processing

- Knowledge Integration Toolkit (KnIT) mines literature to formulate hypotheses that are most promising
- Automated hypothesis generation helps researchers solve problems by offering advice or making predictions
- KnIT read medical literature to understand functional properties of protein p53 then made predictions

- Knowledge processing may extricate us from information overload
- One new scientific paper published every 30 seconds
- Scientists read 1-5 per day
- Helps scientists deal with > 50 million papers in public databases

Occupations will evolve alongside increasingly capable machines.



### Jobs Changed

Jobs Gained, Changed and Lost by 2030

- One-third of the workforce may need to learn new skills or occupations
- 8-9% of labor demand will be in new types of occupations
- It will be a challenge to ensure professionals have the skills to support the transition to new positions

- New technologies have spurred the creation of more jobs than they have destroyed
- When tasks are automated, workers perform new tasks
- New technologies have raised productivity growth

There will be a new division of labor between “man” and machine.



### Learning New Skills

- The machine share of task hours will increase from 29% to 52% by 2025
- Workers will need the right skills to complement new technologies
- Workers will need “digital dexterity” and the ability to use information as a second language

- Workers will need 101 days of retraining and upskilling by 2022
- In Singapore, half of the training providers will be outside the organization
- Companies will rely on external contractors, temporary staff, and freelancers to address skills gaps

New ways of working will stimulate organizational changes and different labor models.

**Q: How will your organizational structure change as a result of adopting automation and AI technologies?**  
% of respondents, up to 2 responses

Change	% of respondents
More continuous learning	77
Create new business units	74
More cross-functional or flexible	68
More agile ways of working	71
More non-career roles	18

**New Ways of Work**

- Work will be un-bundled and re-bundled
- More cross-functional and team-based work; more agile ways of working; less hierarchy
- More workers will be freelancers and contractors
- Continuous learning and a culture of lifelong learning

**Agile Organizations**

- Business leaders expect to fundamentally change their companies' organizational structure
- Tasks will shift from high-skilled workers to lower-skilled ones
- Employees will make more lateral career moves to gain experience

As work changes, the need for upskilling will increase.

**Skill as Strategic Advantage**

Employees need:

- Time to learn
- New skills must be valued
- Skills aligned with career path

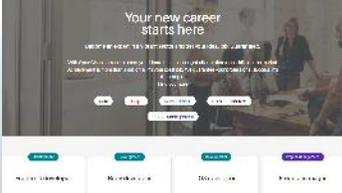
Active learners are more likely to receive high performance ratings and be promoted

Time for learning and skill development is a challenge

- Employees average 25 minutes/week for learning
- The majority of workers are “deskless”
- Personalized learning-on-the-go and on-your-schedule is becoming more common

**DESIGN: TIME**

Learning can be un-tethered from the classroom.



### Scaling Up Learning

In 2017 MOOCs encompassed 78 million students; 9,400 courses; 800+ colleges and universities

Most common topics include:

- Technology
- Business
- Social sciences
- Science
- Humanities

**OpenClassrooms**

- Skills-based program with clear paths to employment
- Learning is project-driven, designed to develop key skills
- Job guarantee: if not employed within 6 months, receive full refund of training
- 1 year of free access to courses after graduation
- 3 million students in 128 countries

You learn to do what you do.



### Experiential Learning

- Learner engagement higher
- Outcomes include greater ability to:
  - Innovate and take risks
  - Solve complex problems
  - Collaborate across differences
  - Think critically and reflect on learning

- Augmented, virtual and mixed reality embed students in their learning
- For AR/VR/Mixed reality:
  - Retention rates 50-75% compared to traditional instruction (10%)
  - Time in training can be reduced (40%)

Learning will come in all sizes.



### Micro-learning

- Microlearning: skill-based education using micro-content
- Activities can be integrated into the learner's daily routine
- Immediate application of learning increases participation and knowledge

**Google "Whisper" Courses**

- Microlearning is used to nudge managers to take action when they receive management survey results
- Managers who receive whisper lessons improve on the attribute by 22-40%
- 95% of participants recommend the course

DESIGN: PATHWAYS

Pathways lead to possibilities.

Cybersecurity Supply/Demand Heat Map

Raleigh, NC

CyberSeek

- Career pathways tool allows users to explore jobs, salaries, skillsets and education credentials
- Identifies in-demand certifications and “feeder roles”
- Data provides feedback to educators to design or modify curricula

### Labor Market Transparency

Greater transparency is needed between education and labor market to:

- Provide insight to learners and job seekers
- Allow educators to design industry-informed curricula

The future of work and the future of learning are converging.

Northeastern University  
College of Professional Studies

IBM Badges and Northeastern University

- IBM badge credentials can be used towards Northeastern University professional master's degrees:
  - Data analytics
  - Project management
  - Program and portfolio management

### Badges to Credentials

- Provides pathway from workplace learning to academic degrees
- IBM has issued more than 850,000 badges; more than half have been matched to NU's academic portfolio
- NU has other learning initiatives with other firms (e.g., General Electric)

Certificates, diplomas, and informal learning are being integrated into online identities.

Degreed

Skills framework creates data about what people can do and matches them to career opportunities

- Skill Review
- Individual Development Plan
- Career Pathing

Creates a personalized learning profile and dashboard with a point system, similar to a FICO score

### Continuous Learning

- Online, updatable framework to track and score learning
- Tools recommend, track, organize and validate online education (e.g., TED talks, MOOCs, Lynda.com, etc.)
- Integrates academic, professional, and informal learning activities

## DESIGN: EXPERIENCE

Learning should be in the flow of life.



SalesU

- Context-based content reduces unproductive time by 30% (less time seeking information)
- AI-powered role-play and feedback from coaches and mentors improves performance
- Just-in-time training offered within applications, such as CRM or sales tools

### Just-for-You Just-in-Time

- Integrating content, coaching and practice improves effectiveness
- Machine learning supports delivery of tailored content
- Relevance is critical to how learners assess the quality and value of education

Next generation assessments can discover talent.



HireVue

- Digital interviews, e.g., 3 questions and business case
- 25,000 data points from 15-minute video interview
- Game-based assessments, predictive of cognitive skill
- Side-by-side comparison of interviews by reviewers
- Unilever, for example, reduced time-to-hire from 6 months to 6 weeks with cost savings of over \$1M/year

### Data-Rich Assessments

- Predictive assessments can evaluate job aptitude (emotional intelligence, personality traits, cognitive ability) in < 30 minutes
- Video-based assessment
  - Game-based assessment
- Data generated on candidate characteristics

A good user experience requires more than shrinking a textbook.



**Accessible, Self-Paced**

Cell-Ed

- Anytime, anywhere access with any phone (without Internet or data charges)
- 3-minute, bite-sized lessons; text back to demonstrate understanding
- Automated and live or on-demand coaches
- Learner engagement and achievement are tracked

- Designed to reach, retain and upskill low-literate workers
- Micro-lessons fit the lifestyle of time-constrained adults
- 84% faster skill gains from 3-minute lessons
- Real-life scenarios for relevance

**DESIGN TO DISRUPT**

What is disrupting your learners?

How can you design a stronger learning experience?

Rethink, redesign and reset lifelong learning.

The future of work depends on the future of learning.

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