T&L CONVERSATION

Expert Series

New Models for Lifelong Learning: The 60 Year Curriculum

T&L Conversation Expert Series
10 Feb 2022, (Thu)
7 – 8.30 pm

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TEACHING & LEARNING CENTRE

T&L CONVERSATION

Expert Series

New Models for Lifelong Learning: The 60 Year Curriculum

Speaker

Professor Christopher Dede

Harvard Graduate School of Education

Professor Christopher Dede is the Timothy E. Wirth Professor in Learning Technologies at Harvard Graduate School of Education (HGSE). His fields in scholarship include emerging technologies, policy and leadership. In 2011, he was named a Fellow of the American Educational Research Association and was honored as an outstanding teacher by Harvard University in 2007. He was also the Chair of HGSE department of Teaching and Learning from 2001 – 2004. In 2020, Prof Dede co-founded the Silver Lining for Learning Initiative and is currently a Member of the OECD 2030 Scientific Committee.

Moderator

Professor Robbie Goh

Provost, SUSS

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

Chris Dede

Harvard University

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https://www.gse.harvard.edu/faculty/christopher-dede

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

Lifespan

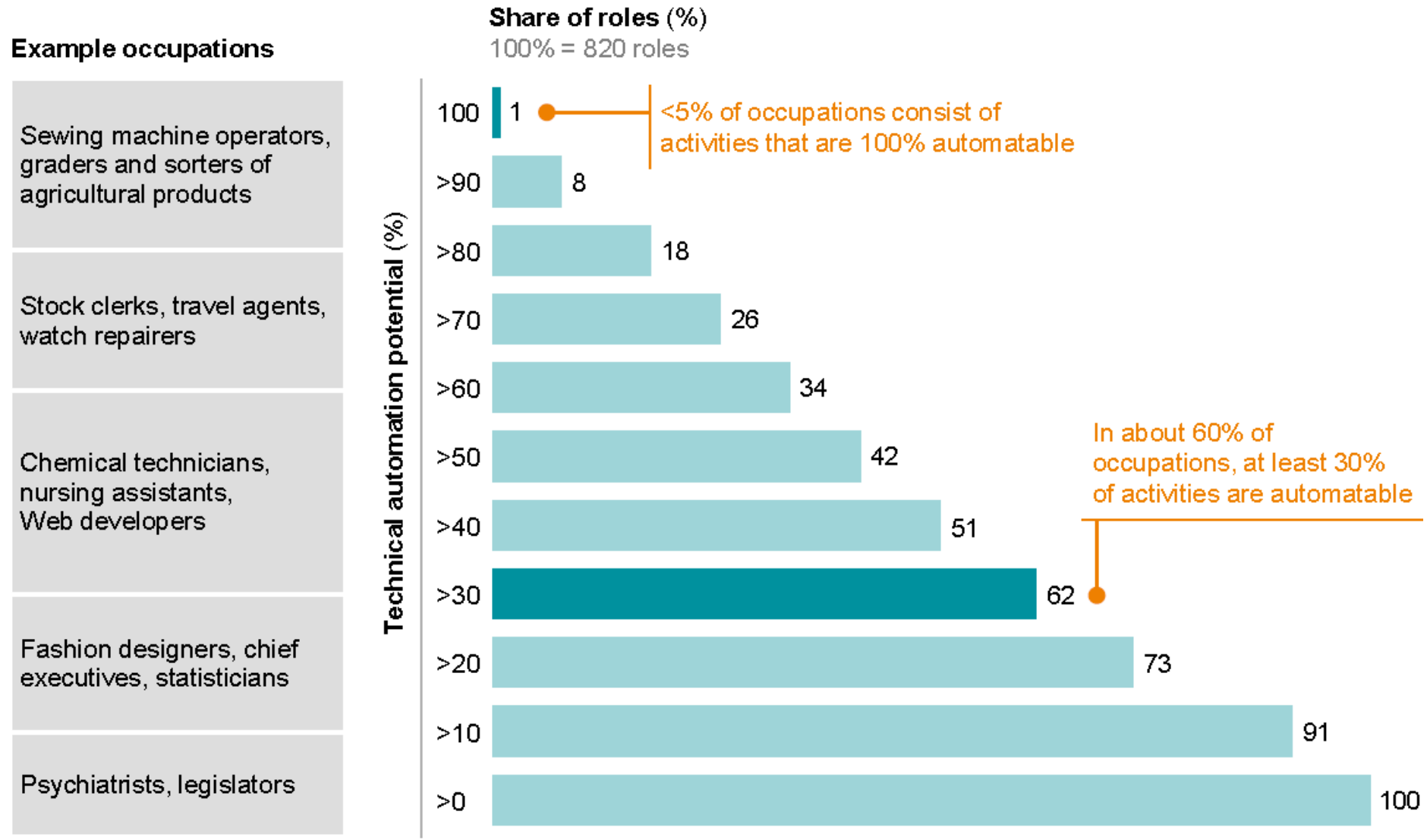
- Children born now will typically live until age 90 or beyond, so must work until approximately 75 to cover retirement.
- Systemic disruptions: climate change, failure to attain sustainability, shifts in division of labor

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

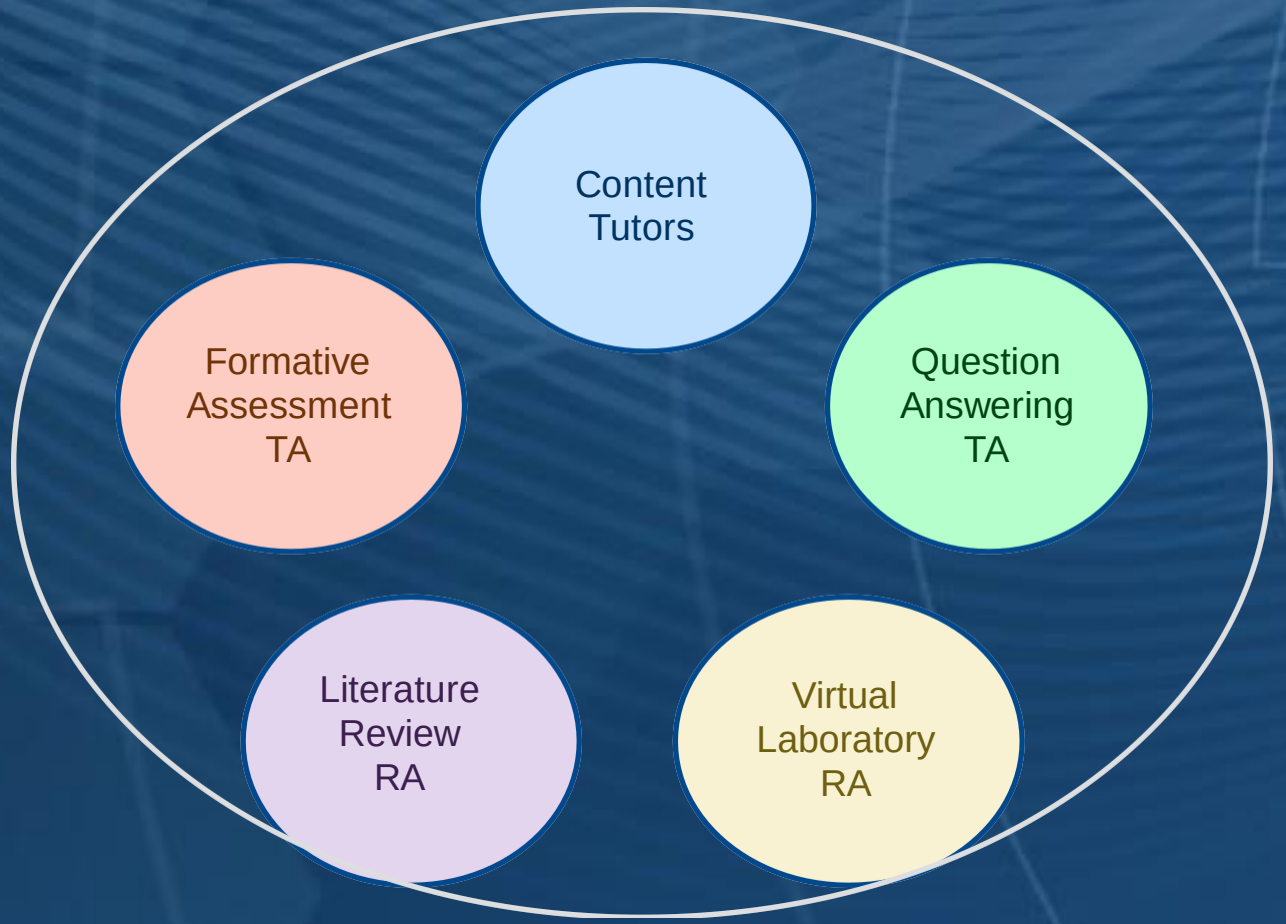
These will change every aspect of work, citizenship, and life

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



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

STAR TREK NEXT GENERATION: PICARD AND DATA

RECKONING VERSUS JUDGMENT

Reckoning is calculative prediction	Judgment is practical wisdom
Programs that can estimate the life expectancy of a particular person with cancer, given their characteristics, the specific disease, and available treatments	Healthcare workers counseling cancer patients can help them choose treatment options, factoring in quality of life versus life expectancy, tolerance for pain, personal and cultural beliefs about death, family circumstances, spiritual beliefs

Intelligence augmentation

- Advances in machine learning are changing the division of labor
- “Intelligence” involves complementary roles of “judgment” and “reckoning”
- Hybrid machine and human teams will have machines providing reckoning, freeing people to focus more on judgment and decision making
- This complementarity between humans and AI leads to “intelligence augmentation,” **but only if people upskill**

The 60 Year Curriculum (60YC)

Services and experiences that encompass learning

- to prepare for a lifelong series of careers in a turbulent world
- 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

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

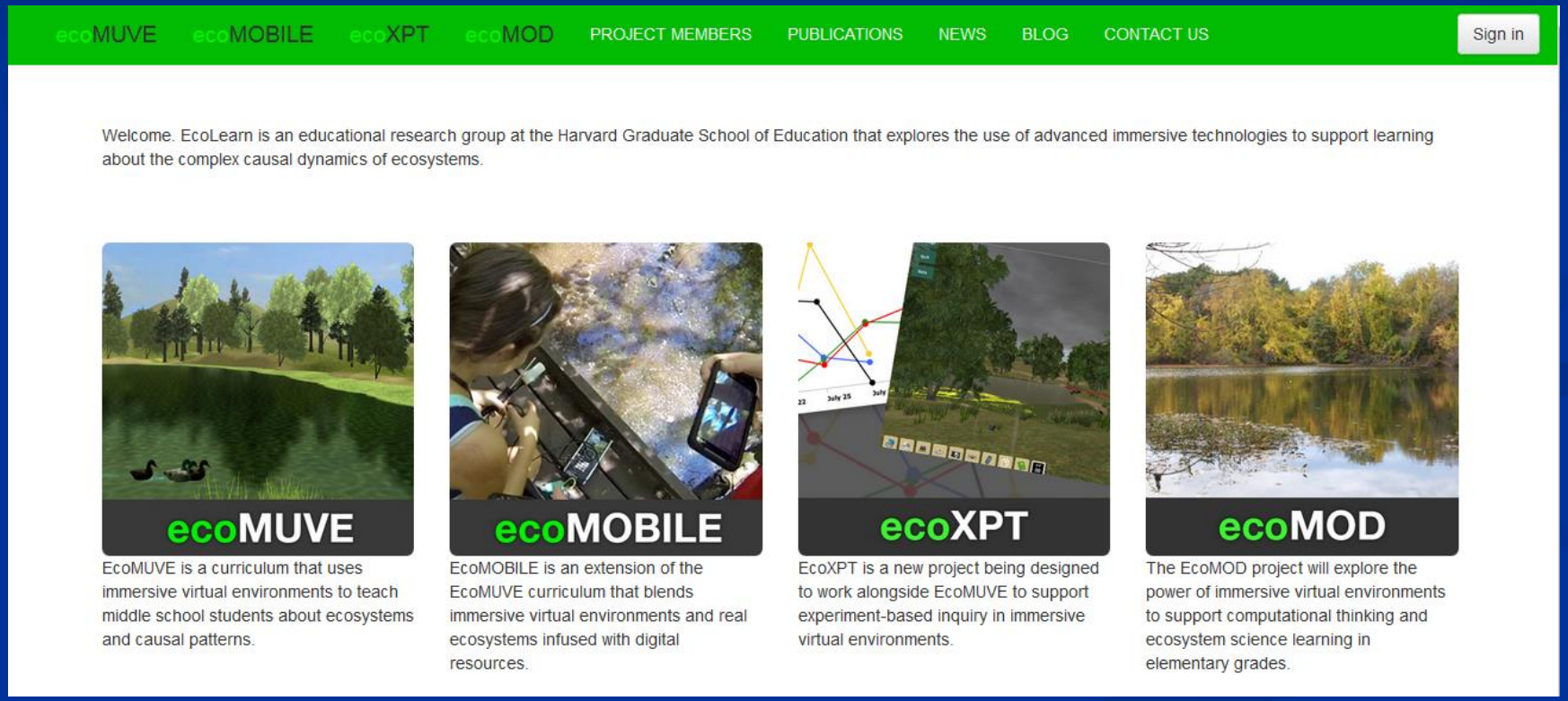
Top "Workforce Basic Skills"

- *Communication*: expression (speaking, writing) and interpretation (listening, reading)
- *Teamwork*: persuasion, social perceptiveness, and service orientation
- *Sales and Customer Service*: knowledge of how to evaluate clients' needs and meet their expectations
- *Leadership*: coordination, negotiation, management of time and personnel
- *Problem Solving and Complex Thinking*: interpretation, creativity, flexibility; identifying challenges, creating solutions, measuring results.

Transferability

https://diverseeducation.com/article/197018/

http://ecolearn.gse.harvard.edu

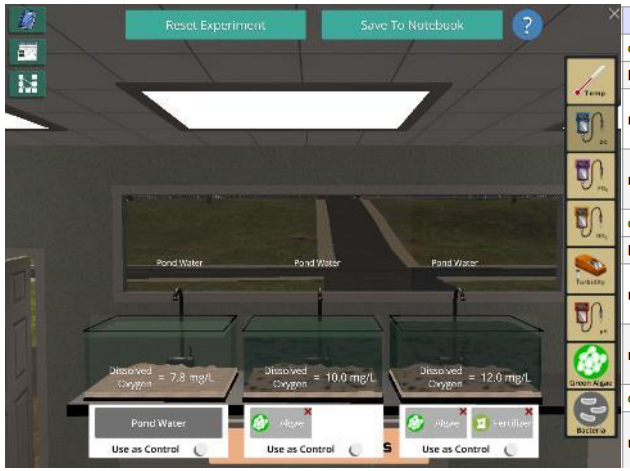


MUVE

- Engaged interaction with artifacts and their context to create and share meaning about a situation
- The greater the involvement of the senses and the more the participant can actively shape the situation, the greater the degree of embodiment

EcoXPT: Immersive Authentic Simulations

Automated Assessment and Scaffolding to Support Learners and Teachers in Guided Authentic Scientific Inquiry Settings



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measureWater	{ "tool Id":"pH" }	2017-10-27 14:12:
measureWater	{ "tool Id":"Turbidity" }	2017-10-27 14:12:
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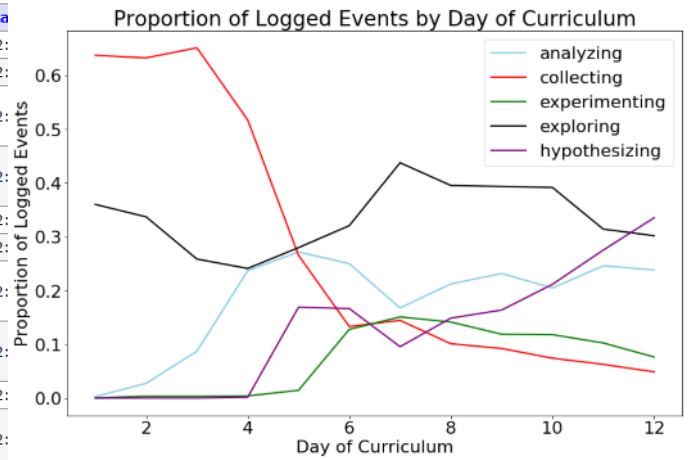
measureWater	{ "tool Id":"Phosphates" }	2017-10-27 14:12:
observationSavedToNotebook	*NULL*	2017-10-27 14:12:
measureWater	{ "tool Id":"Oxygen" }	2017-10-27 14:12:

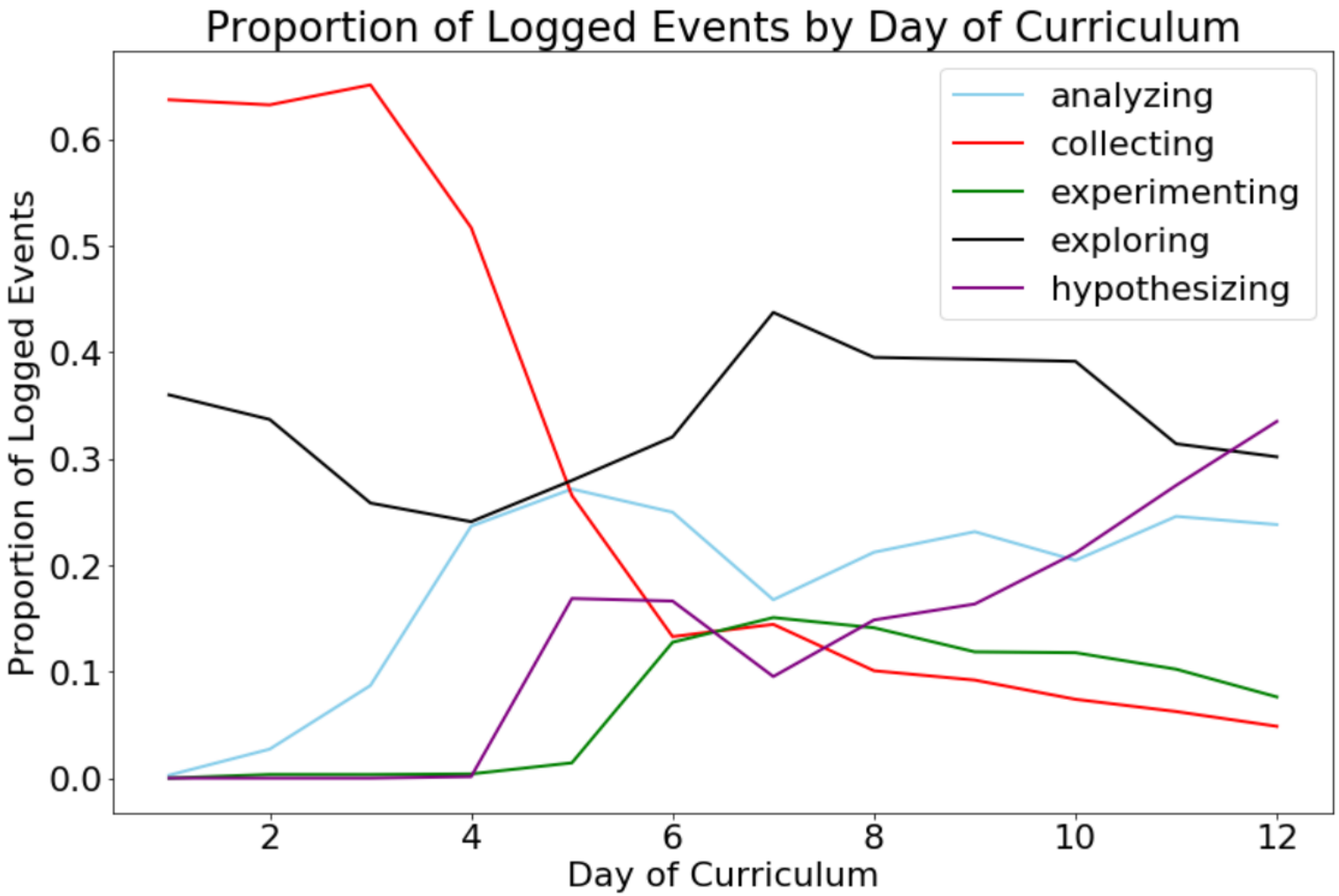


HARVARD
GRADUATE SCHOOL OF EDUCATION

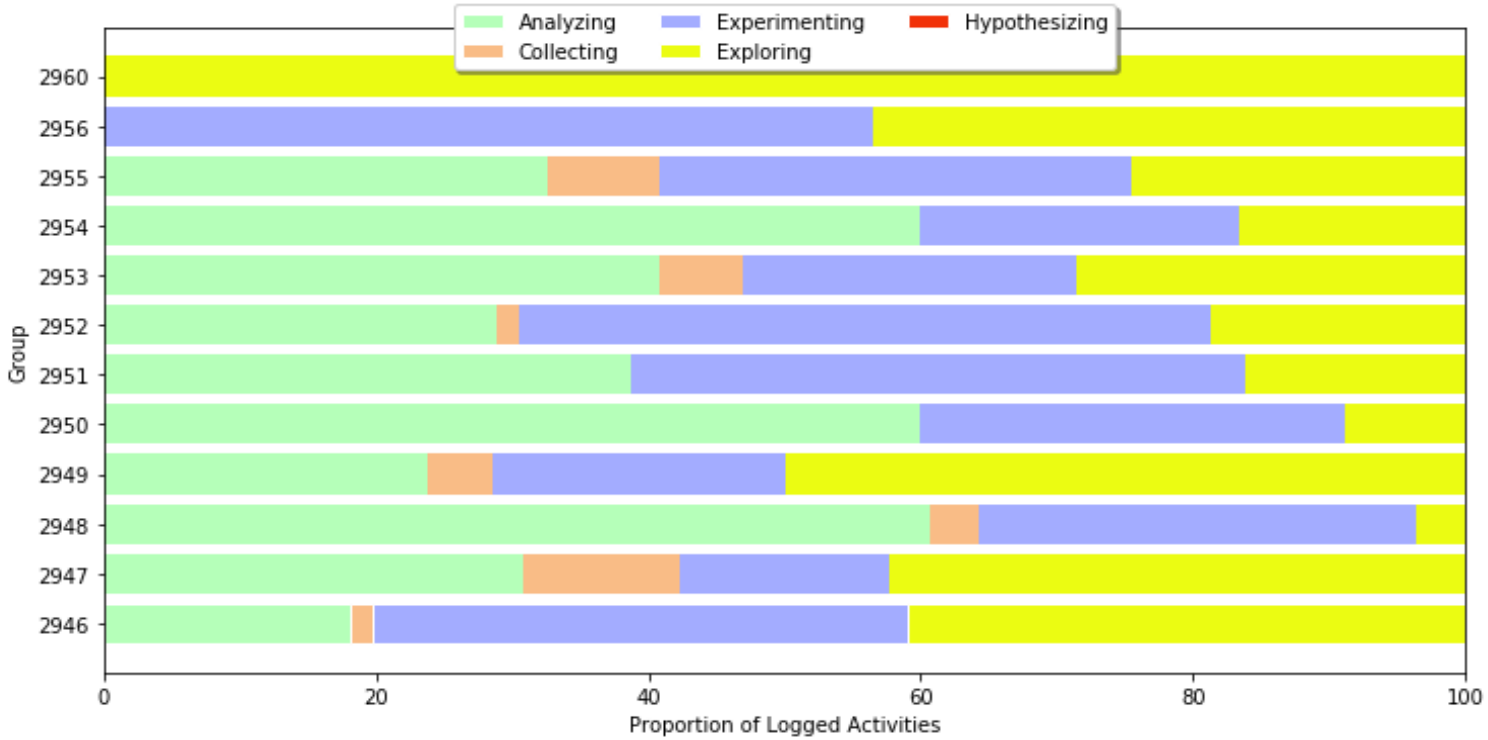
Joseph M. Reilly
Doctoral Candidate

Dissertation Defense | 4/2/2020

Logged Events Over Time

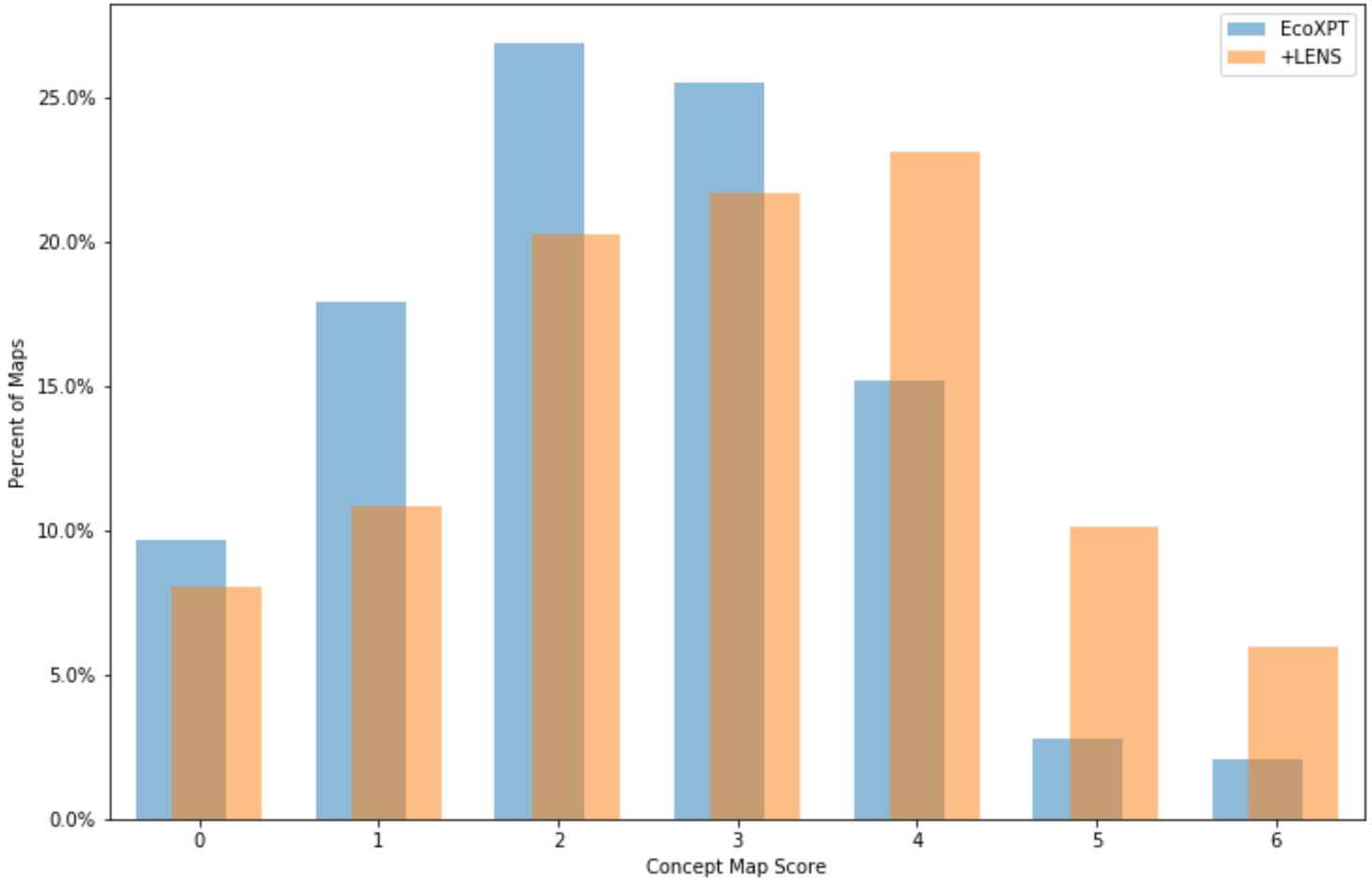


Support #6 (cont.)



Reilly et al. (2018). Learning Analytics in a Teacher Dashboard to Facilitate Inquiry-Based Instruction, CLS.

Concept Map Quality



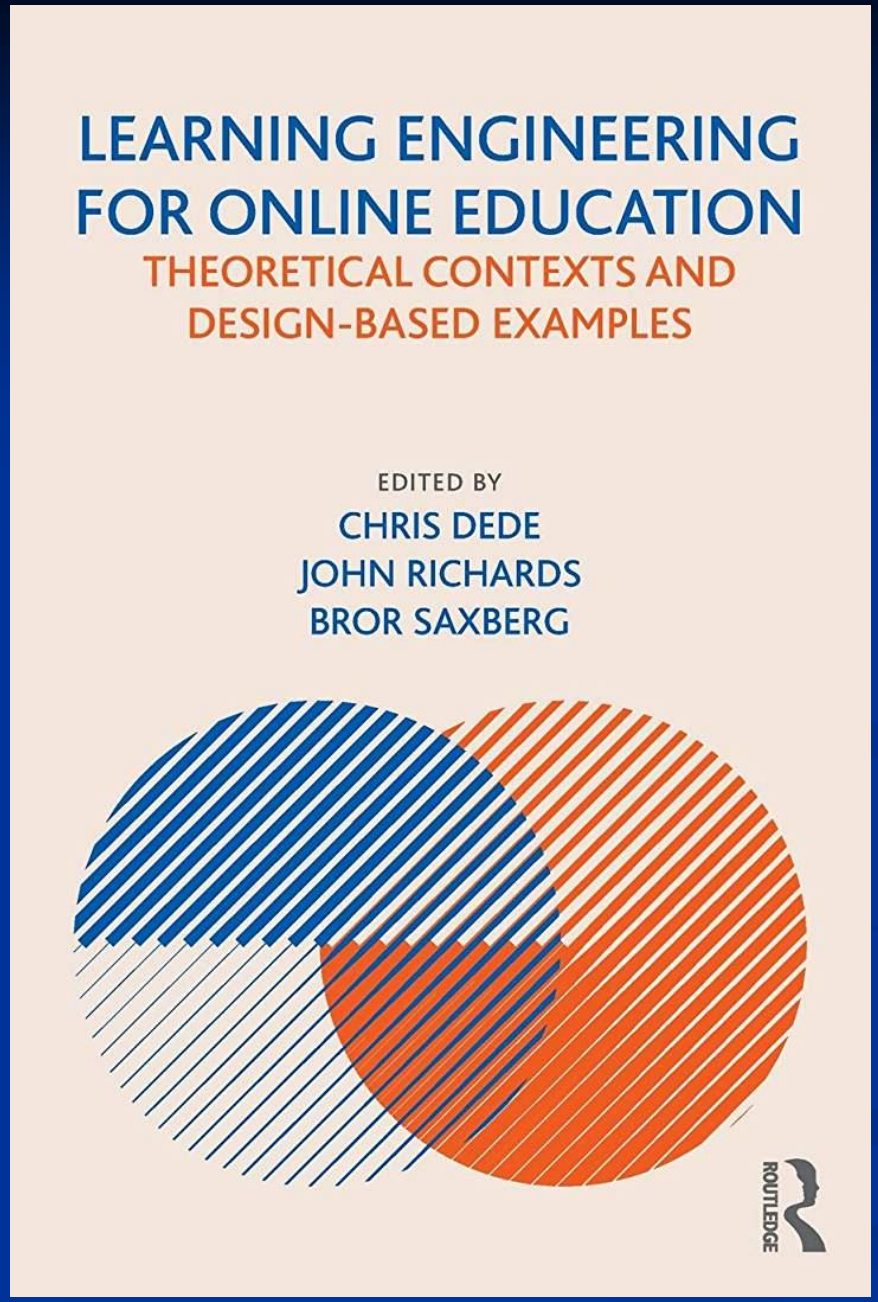
Engineering Learning

- *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

We can personalize along many dimensions

We need to observe, document, measure to create “standards”

- Time, place, path, pace
- Student choice over how to learn, choice over what to learn
- Student voice
- Learner connected, learner focused, learner demonstrated, learner led
- Social-emotional learning, cognitive domain, executive function, student background


LEARNING ENGINEERING
FOR ONLINE EDUCATION
THEORETICAL CONTEXTS AND
DESIGN-BASED EXAMPLES
EDITED BY
CHRIS DEDE
JOHN RICHARDS
BROR SAXBERG
ROUTLEDGE

Tools for Transformational Insights

The Advantage of Blended

Face-to-Face

- Non-verbal communication
- Social Presence
- Sustained intense interaction
- More options for instructor
- Closer to transfer setting

Online

- Asynchronous
  - Reflection
  - Shyness
  - English not primary language
- Synchronous
  - Higher density of interactions
  - Disinhibition
- Broader range of perspectives
- Scalable

HELIX

Video: HELIX HyFlex Portable Classroom

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
- Microcredentials, minimester classes, and credit for accomplishment measured by demonstrated competencies.
- Personal-paced learning programs over distributed across time and space.

Where Elite Universities Are Going

What Business are We In?

Continuous Capacity Building: flexibility, resilience, confidence, and initiative