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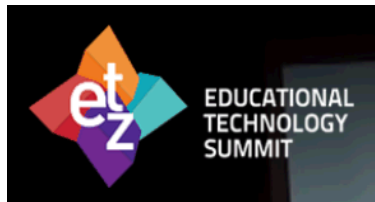
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The Future of Educational Media

Stephen Downes

March 5, 2016

Istanbul, Turkey



The Inflexible Law of Learning

It's when we do stuff that we learn, not when stuff does something for us.



The Future in 2016

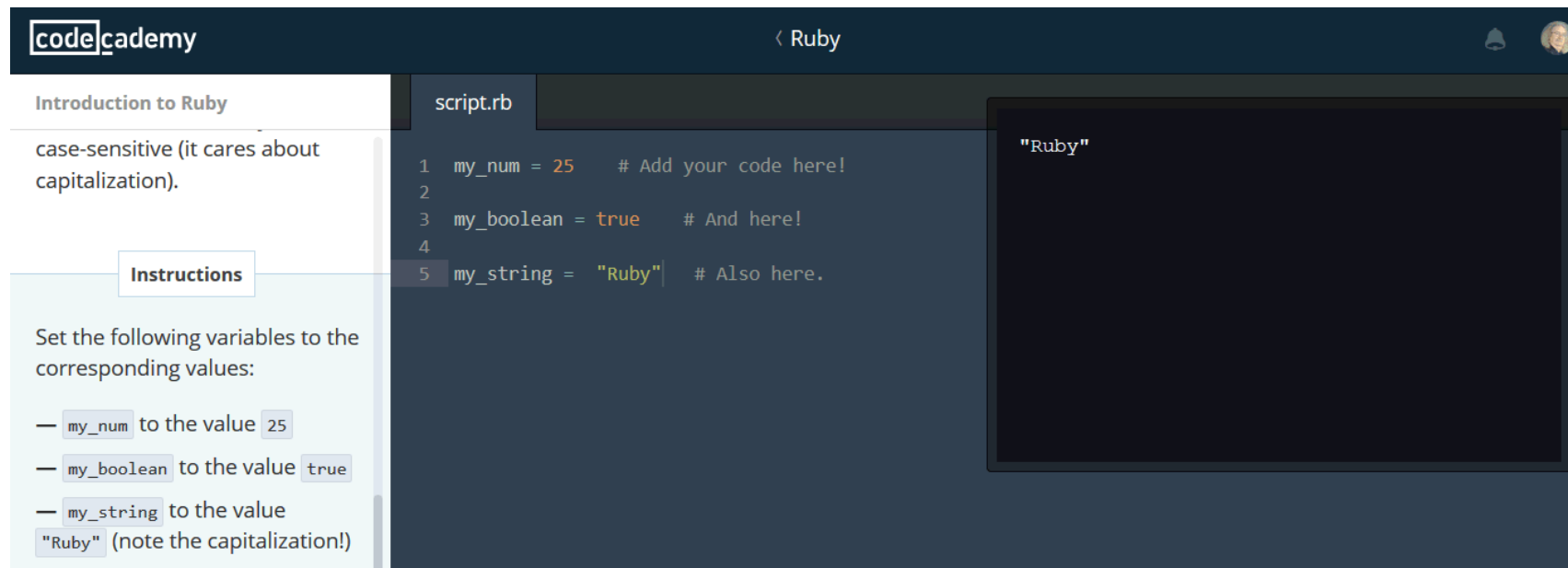
- Machine learning and artificial intelligence
- Handheld and Mobile Computing
- Learning Analytics
- Internet of Things
- Games, Sims and Virtual Reality
- Translation and Collaborative Technology

<http://teachonline.ca/tools-trends/exploring-future-education/2016-look-future-online-learning-part-1>

<http://halfanhour.blogspot.com.tr/2016/03/the-2016-look-at-future-of-online.html>

Machine learning and AI

- Not simply for adaptive learning
- The idea is to create an *environment*



The screenshot shows the Codecademy interface for a Ruby tutorial. The top navigation bar includes the Codecademy logo, a back arrow, the word "Ruby", and a user profile icon. The left sidebar contains the title "Introduction to Ruby" and a paragraph: "case-sensitive (it cares about capitalization)." Below this is an "Instructions" box with the text: "Set the following variables to the corresponding values:" followed by three instructions: "my_num to the value 25", "my_boolean to the value true", and "my_string to the value 'Ruby' (note the capitalization!)". The main area is a code editor for a file named "script.rb", containing five lines of Ruby code: 1. my_num = 25 # Add your code here!, 2. (empty line), 3. my_boolean = true # And here!, 4. (empty line), and 5. my_string = "Ruby" # Also here. To the right of the code editor is a terminal window showing the output "Ruby".

<https://www.codecademy.com/>

Three Types of AI

- decision engines - these are expert systems that are based on rule-driven strategies
- pattern recognition - perceptual systems that identify patterns from partial or disorganized data
- cluster detection - detecting nearest neighbours and categories of things

http://www.wtec.org/loyola/kb/c1_s1.htm

<http://research.microsoft.com/en-us/um/people/cmbishop/prml/>

Handheld and Mobile Computing

- The future of learning isn't the mobile phone
- It's in the *integrated* performance support system

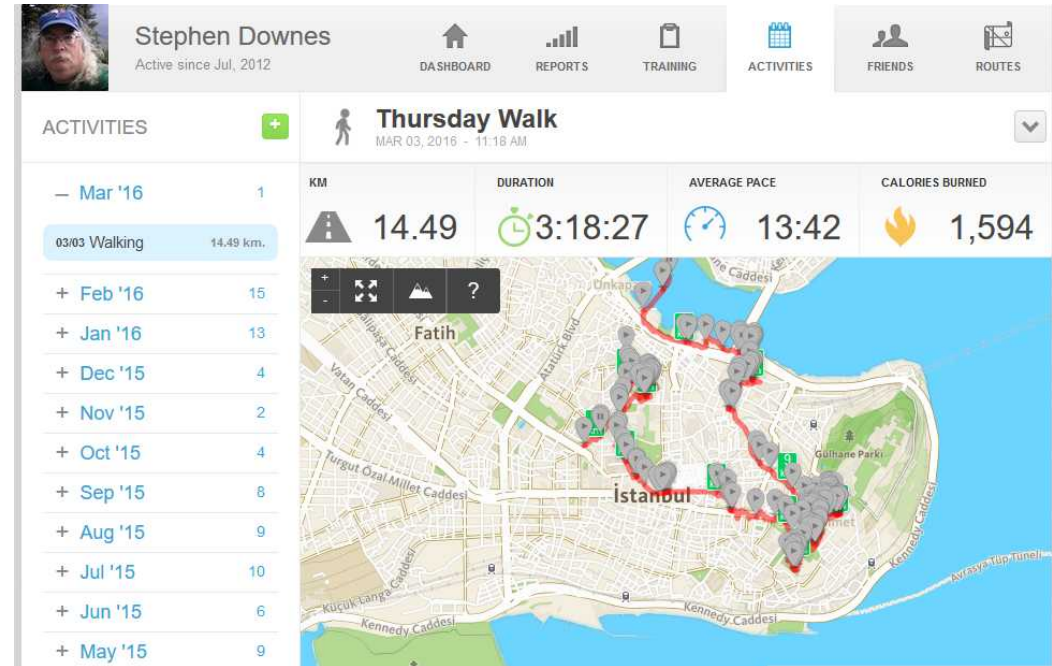


PHOTO COURTESY B

<http://fortune.com/2014/05/27/a-tennis-racquet-that-isnt-just-strung-but-wired/>

Learning Analytics

- We talk about predictive analytics as though finishing a course is the problem
- The real future is in the quantified self



Internet of Things



What happens when companies know the state of all your devices?

<http://www.cbc.ca/news/canada/car-tracking-devices-spark-privacy-concerns-1.1366687>

Games, Sims and Virtual Reality

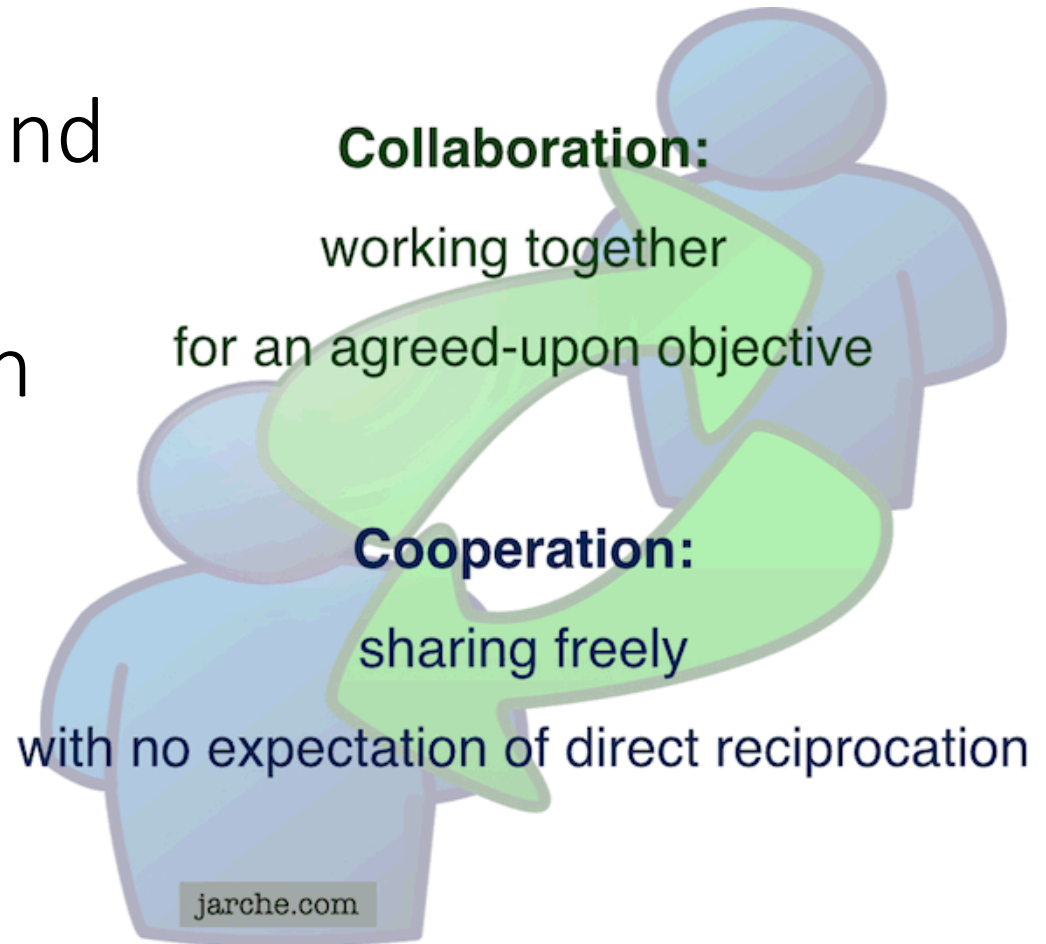
‘Gamification’ – adds game elements to learning

‘Serious Games’ – employs a game to facilitate learning



Translation and Collaborative Technology

- Communication is and will be everywhere
- But the future lies in cooperation, not collaboration



<https://cyber.law.harvard.edu/research/cooperation>

Image: <http://Jarche.com>

What Does Learning Become?

- Context-Sensitive
- Engaging
- Personal



Any Time / Any Place?



- It's all about context
- The airplane cockpit is no place for a two week course
- Learning will be like water or electricity – or text

Engaging = Immersive + Wanted

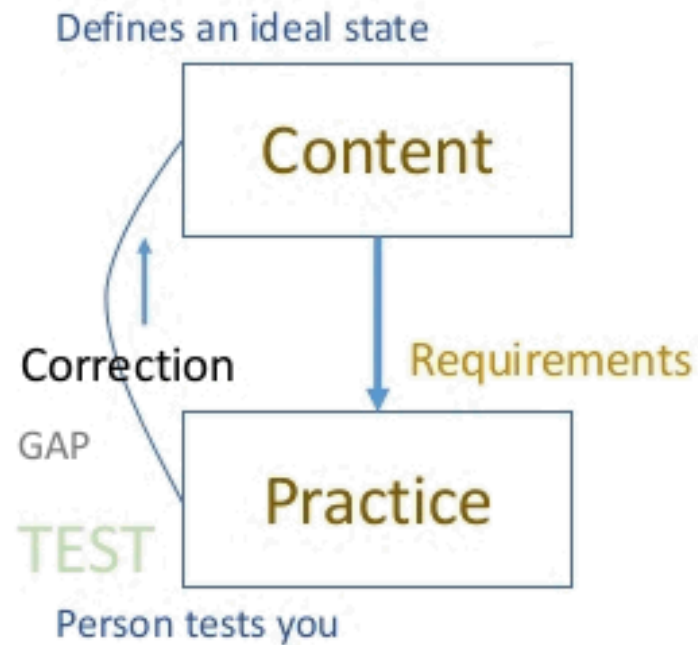
- Just because it's interactive doesn't make it engaging
- We have to *want* to be there
- And we have to *believe* that we're there

$$\begin{aligned} dA &= -PdV - SdT \rightarrow dA = (\partial A/\partial V)_T dV + (\partial A/\partial T)_V dT \text{ \& } \\ dG &= VdP - SdT \rightarrow dG = (\partial G/\partial P)_T dP + (\partial G/\partial T)_P dT \\ \text{\& } dH &= (\partial H/\partial S)_P dS + (\partial H/\partial P)_S dP \rightarrow V = (\partial H/\partial P)_S = (\partial G/\partial P)_T \\ -S &= (\partial A/\partial T)_V = (\partial G/\partial T)_P \text{ \& } (\partial P/\partial T)_V = (\partial S/\partial V)_T \end{aligned}$$

Learning is Personal

Personalized

We do for you

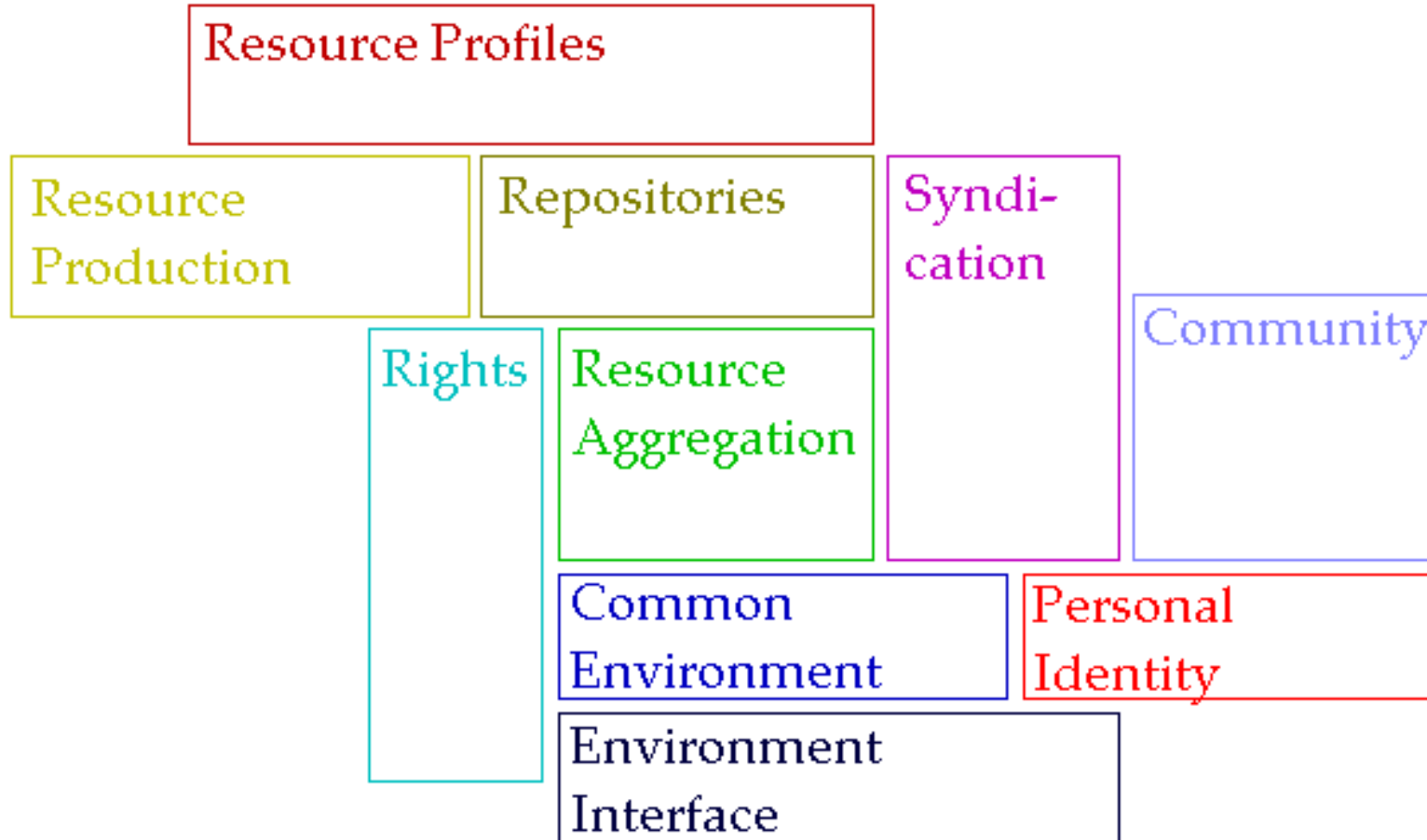


Personal

You do for yourself



A Personal Learning Architecture

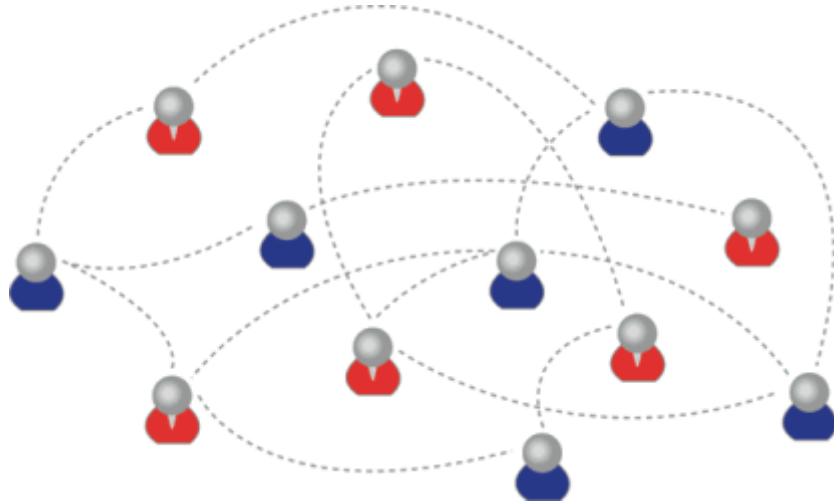


The New Institutional Perspective

From Management to Meaning

- Don't do things *to* people, do things *with* people, help people *do things*
- If we have to ask “how do we motivate people” then we're taking the wrong approach – Kohn
- “Knowledge sharing is your job” – Buckman
- Provide opportunities for autonomy, mastery, purpose – Pink

Learning Outcomes



We are using one of these

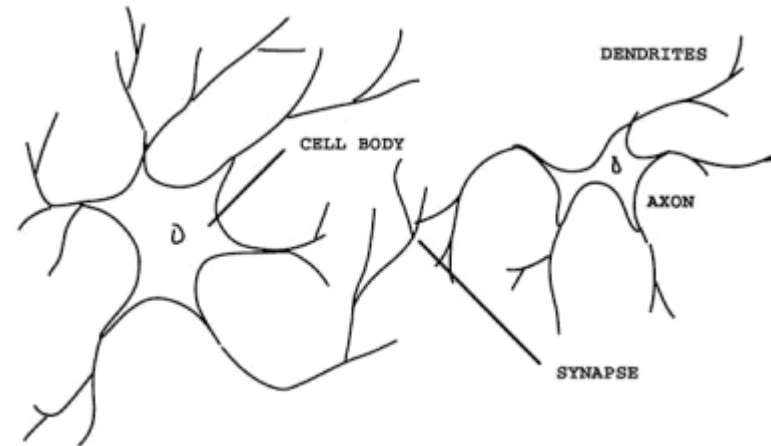


Figure 1. Biological Neuron

To create one of these

Personal knowledge consists of *neural* connections,
not facts and data

Learning Outcomes

- Learning a discipline is a *total state* and not a collection of specific states
- It is obtained through *immersion* in an environment rather than acquisition of particular entities
- It is expressed functionally (can you perform ‘as a geographer’ ?) rather than cognitively (can you state ‘geography facts’ or do ‘geography tasks’ ?)

Learning Outcomes

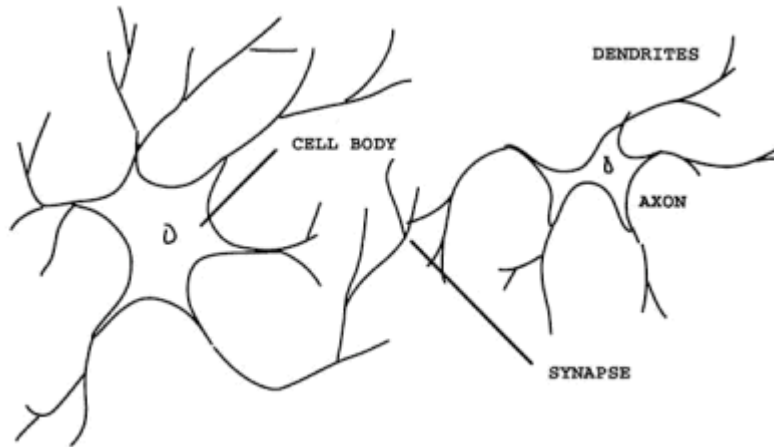
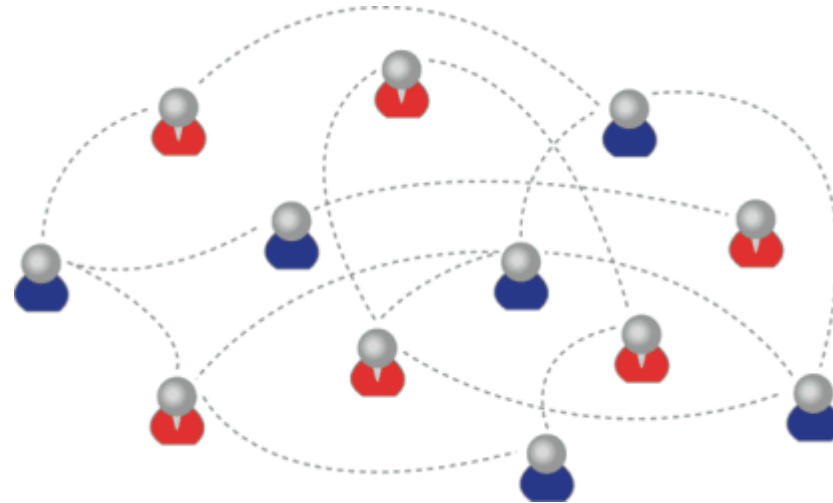


Figure 1. Biological Neuron

We recognize this



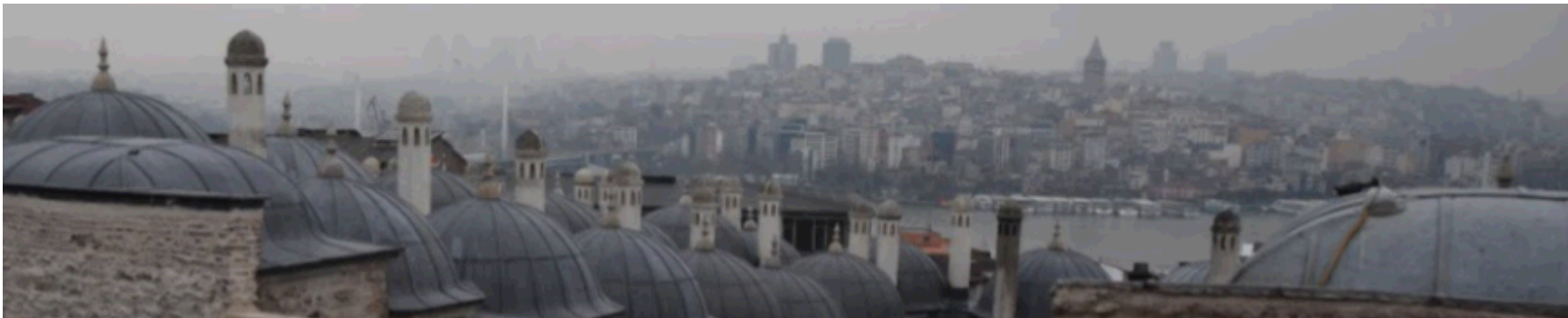
By performance in this

There are not specific bits of knowledge or competencies, but rather, personal capacities

The New Model of Work and Learning

- Sharing - create linked documents, data, and objects within a distributed network
- Contributing - employ social networking applications of the Web to facilitate group communication
- Co-creating - work through networks that facilitate cooperative group work toward common goals

(Dutton, p. 12)





<http://www.downes.ca>