

White Paper: Making Innovation a Learning Ethic.

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Why making innovation a learning ethic is a “Wicked Problem”:

Innovation in education is a wicked problem because the tangled issues of assessment, professional development, the complicated pedagogy of cross-curricular learning, encouraging an innovation mindset, redefining knowledge and content, and using technology cannot be solved. As one affects one issue, that action will reshape the wicked problem.

A Vision for Education:

What is an “innovation ethic”?

“Innovation springs from the freedom to connect ideas in new ways. Our schools and universities generally allow us to connect ideas only in prescribed ways — sometimes these lead to new insights, but more likely they lead to rote learning” (New Media Consortium, 2013).

Innovation requires more than mere novelty. We define an innovation ethic as:

An educational model that involves activities that require the learner to make something new. It is active work.

An innovation-based education system would:

- ☐ Recognize that education must be tailored to the individual learner
- ☐ Offer a broad curriculum that engages all learners
- ☐ Facilitate cross-curricular learning

- ❑ Recognize that students will teach themselves, when their curiosity is engaged
- ❑ Replace testing with inquiry and production-based mastery
- ❑ Attribute a high status to the teaching profession
- ❑ Invest in continual and relevant professional development for teachers

The education system of Finland provides many of these elements, and produces consistently high achievement in world education rankings (Faridi, 2014; Hancock, 2011).

Key Issues:

Redefining “knowledge”

“The [new] conception of knowledge ... is seen as something that does things, ...more like a verb than a noun. [It] involves creating and using new knowledge to solve problems...” (Bolstad & McDowell, 2012, p. 2)

Content

In a world where facts are available with an internet search, content in education has to move up Bloom’s Taxonomy into critical thinking and problem solving of hard problems:

“Hard problems are deep problems that are not centered in only one academic discipline...”

Hard problems require us to learn lots of “content”...to use to think with, solve problems with, and offer explanations with” (Gee, 2013, p. 206).

Teachers must teach innovation itself, in order to be innovative. Juliani (2014) offers ten guidelines for classroom practice. Gee (2013, p. 202) adds that innovation requires “grit,” or perseverance.

Pedagogy

Teachers will be supported in creating cross-curricular long-term inquiry based projects for students. Teachers will be supported to form cross-curricular teaching groups (Gee, 2013, p. 174-177).

Technology

Technology will be used to support learning, and will not drive learning. Teachers will have regular opportunities to explore new technologies and network their learning about technologies (Mishra and Koehler, 2009).

Assessment

In line with a redefinition of knowledge as creation and problem solving, assessment will move from testing to assessment of the quality of creations and problem solutions. Assessment will be based on higher level of Bloom's Taxonomy (Gee, 2013, p.174; Bloom's Taxonomy 2015)

Retraining teachers

Retraining teachers is an enormous task that will require changes at the policy and administration levels. Teachers will be selected for and trained in a mindset of innovation. In particular, they will be conversant in [Technological Pedagogical Content Knowledge](#) (TPACK) (Mishra & Koehler, 2006), [Universal Design for Learning](#) (UDL) (Rose & Gravel, 2011), and other models of holistic and inclusive lesson design. They will understand the value of the [maker movement](#) to the task of solving problems (Juliani, 2014). Teachers will also be trained in facilitation.

Recommendations:

Policy level:

- ☐ Scrap standardized testing.
- ☐ Join the ongoing dialogue between business and Universities on what America needs in its 21st century graduates.
- ☐ Work with Universities to design new, innovation-based, selection criteria.

Administrator level:

"The real role of leadership in Education is not command and control. It is climate control" (Robinson, 2013).

- ☐ Encourage the fun-based, "Whatever it takes" attitude of Finland's schools and teachers (Hancock, 2011).
- ☐ Invest in meaningful professional development in innovation and technology
- ☐ Facilitate sharing of technology and innovation ideas by **providing time**.

Teacher level:

- ❑ Engage an innovation and maker mindset
- ❑ Use TPACK, UDL, and the Juliani (2014) guidelines to develop cross-curricular lessons
- ❑ Work with colleagues to develop lessons, and share technologies and innovations
- ❑ Do “Whatever it takes” (Hancock, 2011)

Conclusion:

21st century businesses and life demand innovation. Universities can push down the innovation imperative to schools through their selection criteria. Policy needs to move from the mechanistic testing model to the innovative creation and problem solving model. Administrators must provide the climate for innovation, and teachers must deliver, thorough every classroom activity.

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