Pedagogy in the Information Age: Learning and Teaching in Digital Environments: Israel

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I know little about education in Israel

- 1979: Sephardic – Ashkenazi achievement gap.
- Since then – conversation with friends
- OECD paper, Wikipedia, various news,Tech Plan
- TIMSS, PISA: Israel very low scores. Increase 2006 to 09 on PISA language – still low but why increase? PISA important/language important.
- Lacking knowledge about Israel – I will depend on knowledge of US.

Outline

- Orientation: 12 years sr fed policy positions: 21 years HU, UW, Stanford. Foundation official. Policy pragmatist. Think about systems.
- Take core purpose today to improve education system and problems by asking can technology help?
- Start with simple vision of effective contemporary education system structure:
- Guidelines for using technology in schools. Demand (pull) as well as supply, add value etc.
- Identify key problems and opportunities. Consider technology solutions. Examples.
- Limits of technology --
- Core belief: barely tapping the power of technology and have very little idea what education will look like in 15-20 years.

Basic structure for effective education system

- Challenging but realistic goals for system, schools and students.
- Coherent challenging standards, aligned, engaging curricula, aligned benchmark assessments that support and model good practice.
- System provides support with aligned resources for schools and teachers. Aligned training, materials, tools.
- Accountability mainly through transparency.
- Focus in schools on instruction and learning -- using adaptive strategies (formative assessment etc.)
- Equitable financing and teacher allocation systems tilted to most needy.

Necessary other conditions for successful school systems

- Professionally run system – little political or other short-term interference.
- Long-term (7-12 years) commitment of system to support implementation and smart transparent improvement and innovation strategy.
- *Continuous improvement* (CI) of classroom and management processes and goals – this is a magic sauce if combined with above two points. Ex: Long Beach, MA., Singapore, Finland..
- Students ready for school – it is all about language!!!! Must have strong handle on some (any) language to be ready.

Guidelines for using technology

- Don’t start with technology. Use technology to help solve problems.
- Adds value -- nature of value important. Pull impt!
- Simple to use
- Reduces cost.
- Reliable
- Sustainable
- Generalizable -- externally valid -- adaptable
- Low risk of unexpected negative consequences

Tech Plan --Adapting the Educational System to the 21st Century”

- Read summary of impressive “Tech Plan”
- Agree core premise of plan that technology should “add value” though I am not clear what exactly is valued and how it would be measured.
- Twenty (20) pilot schools should generate interest.
- Systematic building of some tech capacity important.
- Focus on improving classroom based teaching (using adaptive techniques) important.
- Not enough information to comment in any detail. Not clear about system goals.

System examples: Tech Plan

- Administration - Cloud! HR, payroll, email, data, LMS ..
- Professional development -- Videos of best practice, lesson plans, and networks (for teachers and principals).
- Improve instruction -- more adaptive (personalized).
  - School based: 20 Tech Plan schools
  - Multiple charter networks, other schools in US (Rocketship, Hi-Tech High, School of One, New Tech High.)
- Strengthen connections school to home. Use free OER.
  - Provide open materials for curricula for students and parents (Khan Academy videos -over 160 million viewings -see KA and YouTube sites)
  - Adopt “flip” model -- e.g. Khan Academy videos as homework, in classroom teacher coaches and uses problem based instruction etc.

Other System examples -- mostly open and free (OER)!

- Digitized open materials
  - open textbooks -- adaptive, multi-media, continuously improved:
  - science simulations [PHET.Colorado.edu, Carl Weiman, over 50 millions downloads],
  - “serious games” (military, medical, business, etc)
- Create new choices (Open courses, secondary or post- sec schools): Almost all new courses have adaptive algorithms.
  - oli.web.cmu.edu/openlearning/, Carnegie Mellon cognitive tutors
  - hippocampus.org. Multi-media high school courses. New Algebra course. (Many others being created).
  - Some reasonably serious effect data -- blended use appears most effective. Indications that students could accelerate learning.
- Resources for the needs of special education children.

The near future: Many roads to personalization of learning

- Smart, easy to use platforms: Designed for teacher use.
  - Plug and play to support mixing and adaptation of open materials
  - Showevidence.com to support development of performance based assessments: hands on, cooperative, problem based learning.
  - Simple platforms for creating cognitive tutors.
- Strategies (games, animated talking and listening books etc.) improving language (oral, vocabulary etc) for young children. Multiple settings (phones, pads, computers). All personalized.
- Second language learning.
- Tutors of future: DARPA -- powerful adaptive learning environments.
- Using social media for learning -- eg. Study groups on Facebook.
- Credit for performance.

The Challenges for evaluation of technology interventions: little and big effects

- Evaluate management interventions with appropriate indicators.
- Typical Classroom interventions (video, simulations etc.)-- rarely will show effects on end of year student achievement assessments. Dosage too small -- often not aligned -- if "significant" will not travel. Does not mean it is a bad idea.
- Extra time, (e.g. home based) interventions require careful implementation and large dosage for modest robust effects.
- For technology only compared to teacher only treatments no difference indicates technology is as effective as teacher. This is a big effect.
- That said, more evaluation is needed. Consider using Developmental Evaluation initially.

Potential Limitations of Technology

- For now technology can't directly teach ethical behavior, cooperation, the importance of service to society, or the subtle dangers of prejudice.
- The most effective education systems in the world do not rely on technology.
- Israel does not need technology to create a far more effective (in the contemporary sense) education system.
- If the culture of a mature system does not support continuous improvement it is extremely difficult to smoothly make major change.
- Careful implementation and openness to change by the teachers is absolutely critical.