

# ICT and Teacher Professional Development: Global Trends and Possibilities

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# My Background

- Director, Teacher Leadership Program (PSU)
- LeTendre, G. & Wiseman, A. (Eds.) (2015). *Promoting and Sustaining a Quality Teaching Workforce: Conflict, Convergence and Consensus*
- Akiba, M., & LeTendre, G. (2009). *Improving teacher quality: The U.S. teacher workforce in a global context*. New York: Teachers College Press.
- Fulbright Research: The Role Of ICT In Self-initiated Teacher Professional Development Activities.

# Goals for Today's Talk

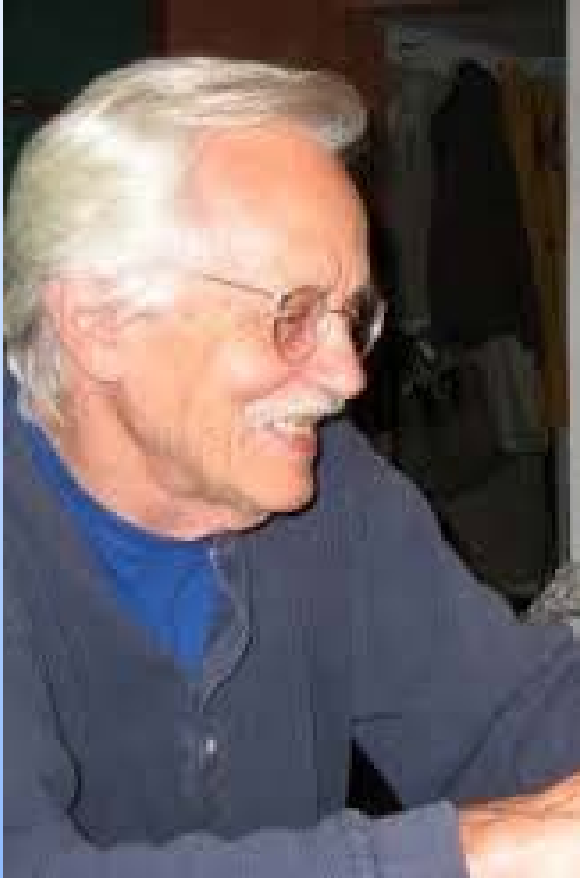
- Describe how the project originated.
- Overview the range and complexity of the core issues involved in effectively integrating ICT in mass education and teacher professional development.
- Introduce a theoretical framework for understanding how educational policy around ICT is affected by distinct “policy spheres.”
- Discuss innovations that may benefit teachers and what role universities can have in supporting effective ICT integration, particularly in low-income countries.

# Current Project

## Stimulating Teachers' Professional Self-Development through the Use of Innovative Technologies

- *Assess whether or not the use of innovative technologies, such as low-cost, mobile local area network (LAN) devices, can effectively support teachers' professional self-development and engagement with online professional development.*
- *Identify policies and practices that can promote effective use of ICT in supporting teacher self-initiated professional development.*

# Origins of the Project



- ペンシルベニア州立大学は、遠隔教育研究のリーダーであります。多くの教員は、遠隔教育やオンライン学習に強い関心を持っています。教授J. Maddox（美術教育）は、1995年に第一のオンラインを教えました。
- Penn State has a long history of innovation in online and distance education. Dr. Jerrold Maddox offered the first fully on-line distance education course in 1995.

# Rachel-Pi

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# Terms

- **ICT** – both hardware (devices) and software (digital textbooks)
- **Teacher-initiated Professional Development** – PD created by and managed by teachers for other teachers
- **Teacher Autonomous Professional Development** – Self-directed PD
- **Device Centric** – Focus on physical technology
- **Knowledge Legitimation** – Control over what information is recognized as authentic or accurate
- **Tech Millenarianism** – Inherent belief that technology in and of itself will solve human social problems
- **Policy Spheres** – areas of interest and perceived expertise in which stakeholders attempt to exert influence.

# Core Issues

- Initiatives like the One Laptop Per Child exemplify the allure, and difficulties of relying on technological breakthroughs to improve education.
- Researchers, policy makers and practitioners agree that teachers are the key factor in the success of educational systems. Unresolved: What should they know?
- ICT use in educational accountability schemes has seen rapid growth, innovation, and controversy.
- Identifying effective, scalable and sustainable programs that support long-term teacher development appears key.



# ICT and Teacher Training

- InfoDev (2005) and Jung (2005) showed that the goals of the program and the level of resources sharply affect how well the training can be carried out.
- ICT has promise, but implementation record is varied; filled with costly failures.
- Previous studies do not account for the way that educational policy is sectioned into distinct spheres, leading to difficulty in promoting effective research and achieving integrated policy objectives.

# Range and Complexities of Issues

- Basic technology provision
  - Devices
  - Infrastructure
  - Support
- Knowledge legitimation and information distribution
  - ICT vs. subject
  - Academic, practitioner and policy "legitimate" knowledge
- Level of data collection and use of data
  - "Big data" vs. "micro data" Accountability vs. personalized collection and analysis
- ICT, e-networks and long-term teacher professional development
  - Online communities of practice and cultures of professional development

# 1 to 1 Computing

- This includes the one child, one computer
- Device centric – movement away from networks to individual computing
- Emphasis on device and programming skills
- Self-determined
- Tech Millenarianism – device as solution

# One Laptop

about the laptop
hardware

**about the laptop**


hardware

features

specifications

software

activities



The image shows the XO Laptop Touch, a rugged laptop with a green frame and a screen displaying colorful icons. It is shown with a green keyboard and mouse.

A real world laptop for real world change. The XO laptop was designed collaboratively by experts from academia and industry to combine innovations in technology and learning. We considered the need to weather extreme environmental conditions such as high heat and humidity, and to support easy field repair by children and local language

support. As a result, the XO laptop is durable, functional, energy-efficient, responsive, and fun.

The latest model is the XO Laptop Touch, which entered mass production in 2013. Key differences from the original XO-1: the new model comes with 1GB or 2 GB of RAM and up to 8GB of internal solid-state storage standard (larger sizes negotiable upon request). It has a more responsive keyboard and touchpad, and offers the option of membrane or traditional keyboards. And like many tablet computers, the XO Laptop Touch uses an ARM processor to significantly reduce power consumption.

Unique to the XO Laptop Touch is an easy-to-repair touchscreen that does not compromise the readability of the XO's sunlight-readable display. 5 GHz Wifi support as well as Bluetooth also have been added.

**about the project**

mission

education

countries

people

faq

job opportunities

contact us

**about the tablet**

information

faq

# Tech Millenarianism

## One Laptop per Child mission and principles

We aim to provide each child with a rugged, low-cost, low-power, connected laptop. To this end, we have designed hardware, content and software for collaborative, joyful, and self-empowered learning. With access to this type of tool, children are engaged in their own education, and learn, share, and create together. They become connected to each other, to the world and to a brighter future.

# Knowledge Legitimation

- What Works (<http://ies.ed.gov/ncee/Wwc/>)
- Commonwealth of Learning  
(<http://www.col.org/programmes/open-schooling>)
- EdTech Leaders (<http://www.edtechleaders.org/>)
- Uganda Connect (<http://www.uconnect.org/>)



# Level and Use of Data Collection

- TIMSS, PISA and TALIS
- SACMEQ

“Education Development Center is presently developing a program in Zambia in which teachers use mobile phones to make weekly progress reports to mentors on their use of new science kits. Questions and comments sent by the teachers will be recorded for broadcast in a 15-minute segment for a weekly teacher radio program.” (Gaible, 2005: 71)

# ICT eNetworks and PD Provision

- ICT Training in Nigeria – Poverty Reduction (Rislana, et al)
- Mobile-Phone Based Training in Bangladesh (Walsh et al.)
- iSchools in Africa
- Open University
- WIDE (Harvard) inactive?
- eTwinning

# Theoretical Model: Four Separate Spheres of Policy-Practice Interaction

- Basic Technology Provision
- Knowledge Legitimation
- Level of Data Collection and Goals
- ICT, E-networks And Cultures Of Professional Development

# Basic Technology Provision: Inherent Problems

- Typically assumes or portrays device as inherently educative (e.g. interacting with the device IS learning).
- Ignores device breakdown, user fatigue, upgrade and maintenance costs.
- Fails to adequately address illegal and/or dangerous uses of devices, especially in use with school children
- Among teachers, fails to account for time needed to work with device
- **Shift in Focus to Perfecting the Device**

# Knowledge Legitimation

- “What Works” – why it didn’t
- National standards for teacher education
- Practitioner knowledge, academic knowledge, policy-maker knowledge
- **Shift in Focus to ICT Skills and/or Programming**

# Level of Data Collection and Goals: Accountability for Whom?

- TIMSS, PISA and TALIS
- Evolution of SACMEQ
- VAM -- U.S. Controversies
- **Shift in Focus to Accountability and Monitoring**



# Level of Data Collection and Goals

- How does a teacher get better? How does she collect and analyze data from her classroom in order to identify effective teaching practices, or use data to identify an individual child's learning needs more effectively?
- Can ICT help?
- Cloud based analytics is often touted
- What about a much simpler strategy of cell phone input on a part with excel?
- **Shift Toward "Big Data" vs. "Micro Data" Personalized Collection and Analysis**

# ICT, E-networks, Cultures Of Professional Development.

- De-emphasizes specific device and focuses on establishing networks and infrastructure.
- Typically flexible in terms of types of devices, innovative in terms of delivery mechanism.
- Requires established cultures of professional communication and development.
- Much innovation going on outside of traditional centers of technology innovation.
- **Shift -- To Online Communities of Practice?**

# Teachers as Networked Professionals

- Beginning to transition to communicative power
- Models for the Future:
- eTwinning

# Summary: The Future of ICT and Education

- The improvement of educational systems and increased educational attainment are seen as primary ways that countries can prepare for these global, technology-based changes (OECD, 1999, 2001a, 2004b; World Bank, 2002b, 2003).
- And within education, ICT is seen as a way to promote educational change, improve the skills of learners, and prepare them for the global economy and the information society (Haddad & Draxler, 2002; Kozma & Wagner, in press; McNamara, 2003; UNESCO, 2002; Wagner & Kozma, 2005).

Source: Kozma 118

# What Role can Universities Play?

- Universities have typically positioned themselves as discoverers and conveyors of knowledge: Research Grants vs. Lectures and Outreach.
- More rarely they position themselves as consultants
- Could universities become network supporters? Supporting information accumulation, analysis and exchange?
- What would be the incentives, how would this work?
- Governments, less capable because of their regulatory role, but might achieve via units like eTwinning
- Regional centers for training and alumni networking

# Bridging Policy Spheres

- Literature reveals multiple examples of innovative use of ICT to up teacher skills or bring teacher education to under-served populations.
- These are good and can be supportive, but are limited in addressing what teachers need.
- Teachers need, ways to get feedback on their teaching, access to information that is specific to their condition, connections with papers that can lead to self-sustaining knowledge communities.
- Universities as communication networks.
- Individual schools need to have their own ICT integration plan (Valcke et al.)



# What Could ICT Do?

- Enable teachers to study and chart their own professional development
- Facilitate distribution of educational material to children
- Allow teachers to share locally derived innovations
- Enable nations to upload and disseminate local innovations
- Facilitate teacher communication and strengthen cultures of PD
- Enable teachers to collect and analyze individual or classroom data

**Thank You**

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