TIC en Education Afrique Forum

ICT in Education Africa Forum

The African Digital School Initiative: STEM, ICTs and the Teaching Profession

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Overview

- Part 1: STEM and the Teaching Profession
- Part 2: How ADSI contributes to STEM TPD
- Part 3: Main lessons

PART 1: STEM AND THE TEACHING PROFESSION

Some Good and Sobering News

Global Monitoring Reports 2012 - 2015

- Significant **progress** in EFA goals.
- **34 million children** attended school as a result of faster progress since Dakar
- Greatest progress achieved in **gender parity**, particularly in primary education
- Governments increased efforts **to measure learning outcomes** through national and international assessments
- **'Silently excluded':** many young people leave schools lacking foundational skills

TIMSS 2002 - 2011

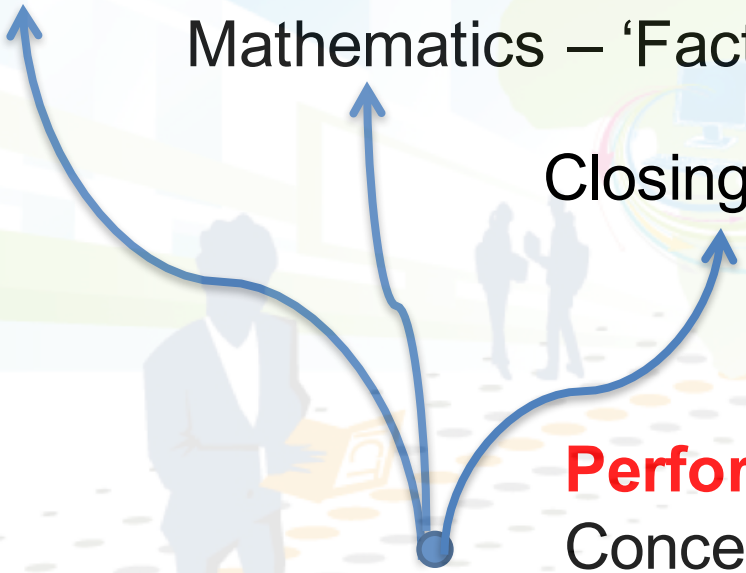
International Association for the Evaluation of Educational Achievement

WHERE STUDENTS PERFORM WELL

Science – 'Factual Knowledge'

Mathematics – 'Facts & Procedures'

Closing Equity Gap - Learning MS Basics



Performance gaps?

Conceptual & Transformative Skills

- 'Understanding & using concepts'
- 'Solving routine & complex problems'
- 'Reasoning and analysis'

MSE Contribution to SDGs 4 & 8

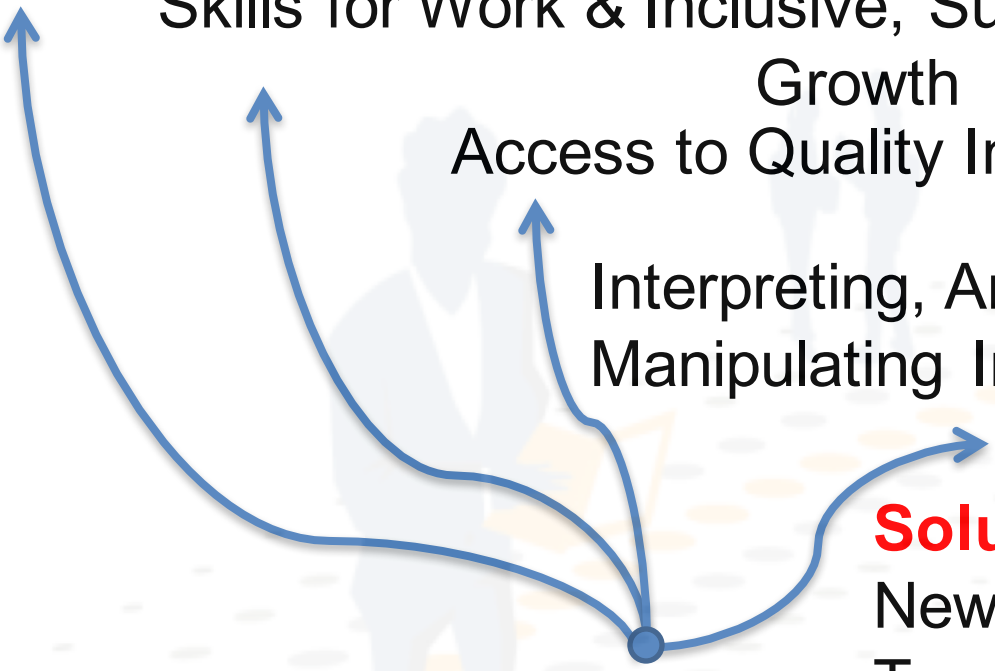
International Association for the Evaluation of Educational Achievement

Transferable Skills for Life Long Learning

Skills for Work & Inclusive, Sustainable Economic Growth

Access to Quality Instruction in M&S

Interpreting, Analyzing, Manipulating Information or Data for SD



Solution?

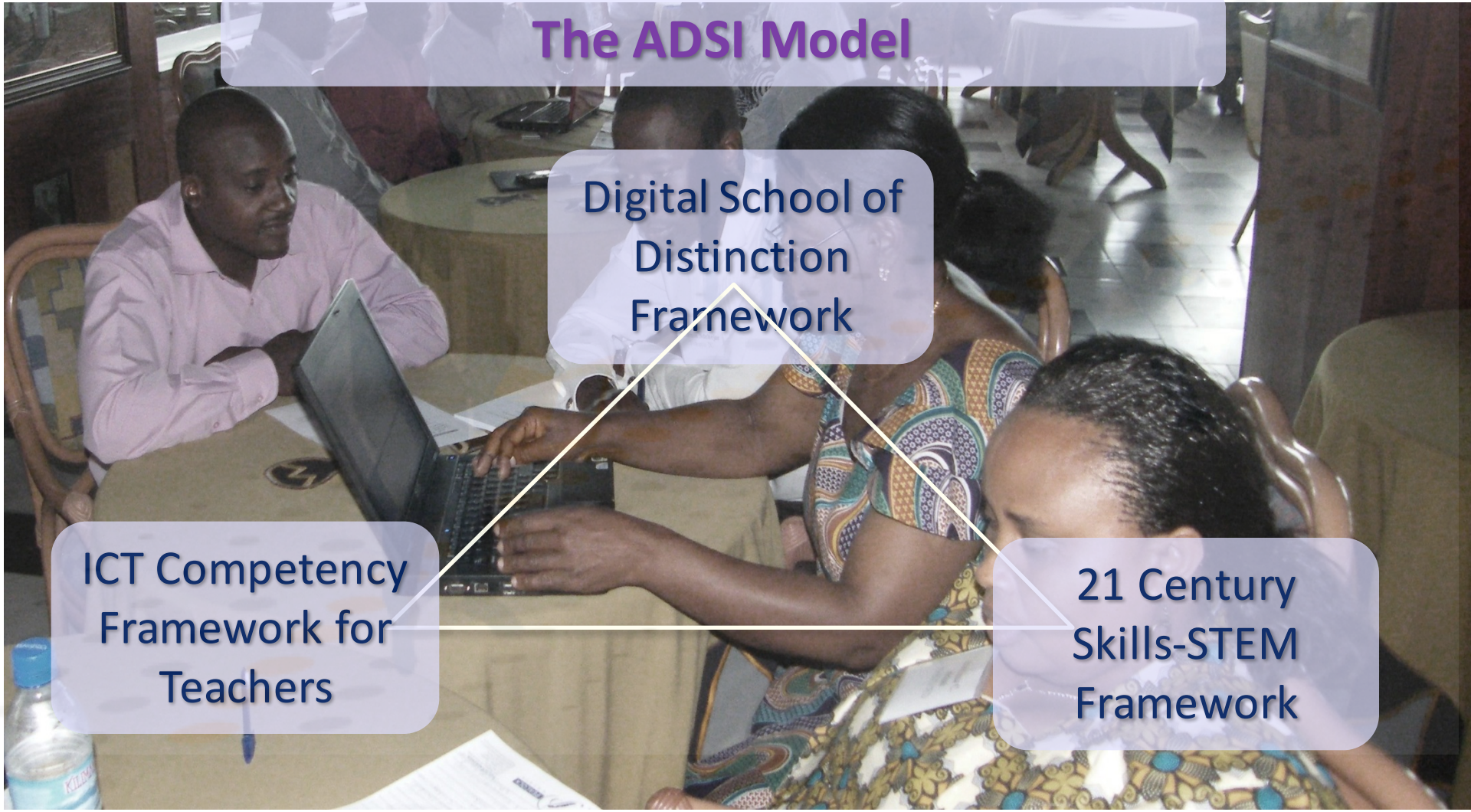
New Conceptualization of Teacher Education

- Experience in 21CTL
- Problem Solving
- ICT-STEM-Skills

PART 2: THE AFRICAN DIGITAL SCHOOL INITIATIVE (ADSI)

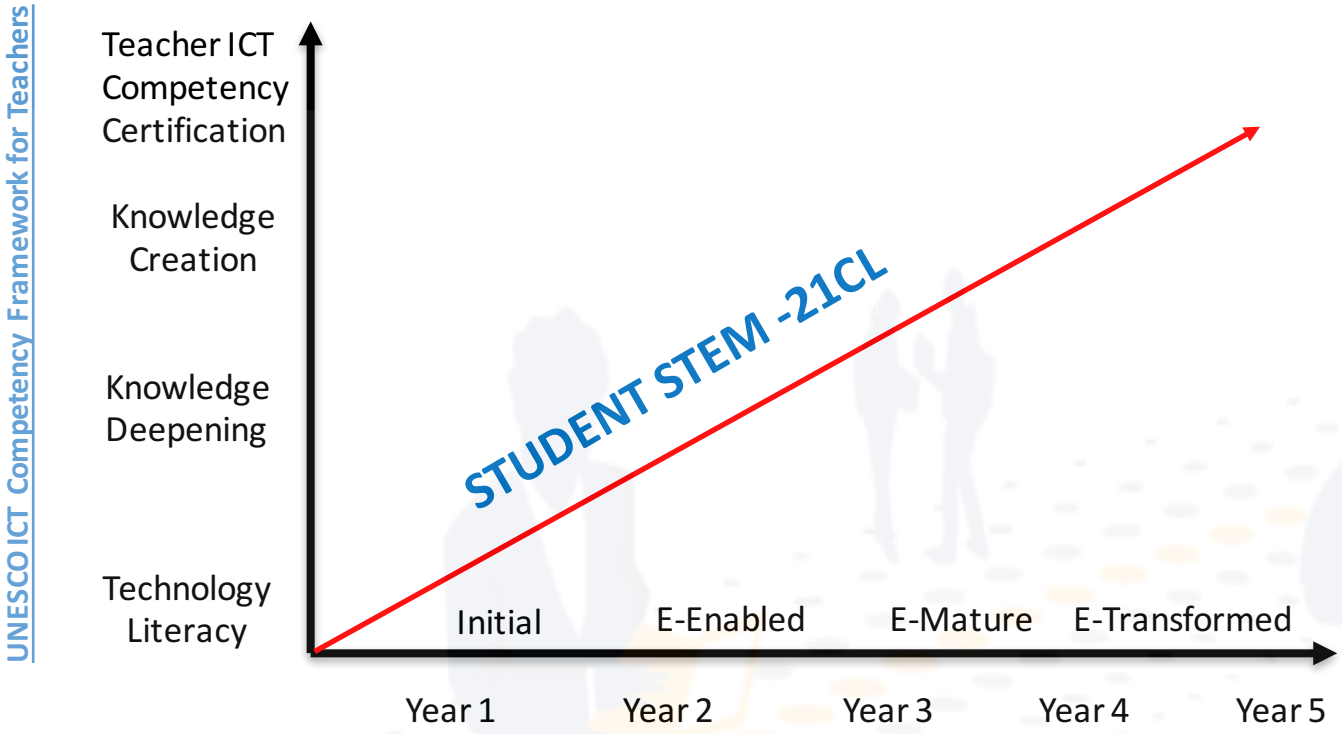
A model for strengthening innovative practice in Science, Technology, English and Mathematics (STEM)

Leveling the playing field…



SIPSE Pilot 2013-2015; 20 Schools; 20 School Heads; 120 Teachers; 5,000 Students

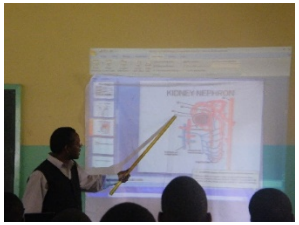
The African Digital Schools Initiative: 2016-2020



ADSI Digital Schools of Distinction Framework

Phased Approach: 140 schools, 140 school heads; 1,400 STEM teachers, 70,000 students.

ADSI Model Innovation Package



Current Practice
Exploring ICT use to support didactic teaching

Active Teaching & Learning
Whole class dialogue
Questioning techniques
Collaborative group work

Peer-to-peer Learning
Teacher try outs observation
Reflective practice
Self-assessment

Blended Learning Resources

- E-learning, m-learning & teacher portal platforms/ OERs/ Exemplary ICT-STEM materials
- Tutor support online and school based coordinators
- Teacher Technology, Pedagogy & Content Knowledge (TPACK-in-practice)

Supporting Innovative Practice in STEM with and through ICT

Teacher Design Teams
Multi-disciplinary community of practice

New Pedagogy
Problem & project based learning

ICT use to build STEM concept understanding & use

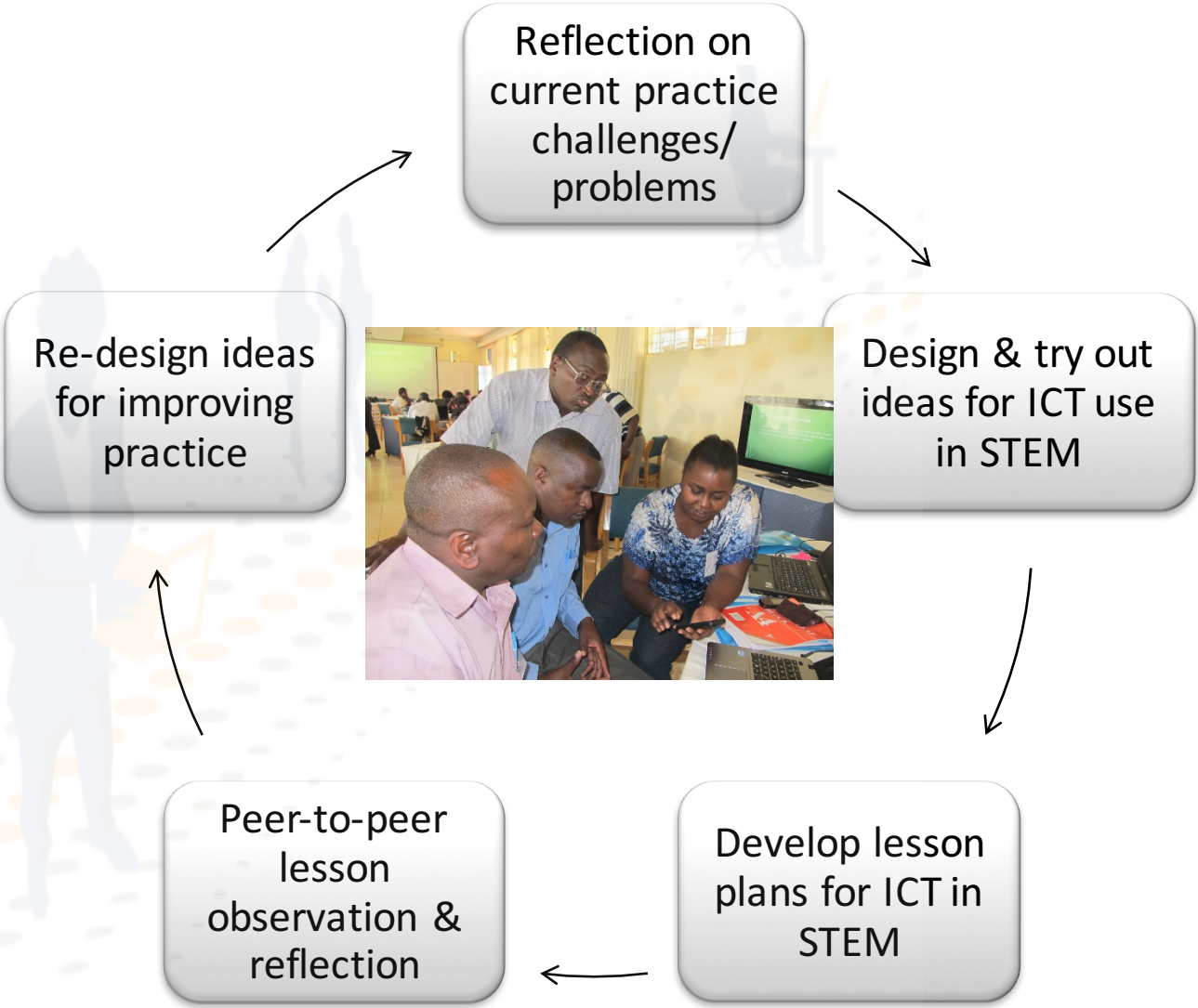
TEACHER Design Teams
To tackle 'wicked problem' of ICT integration

Build teachers' 21CT capacity

for problem solving and collaborative professional learning

to **challenge existing tacit knowledge** about STEM T&L

to design new 'frames' for innovative use of ICT in STEM/ 21CL



Koehler & Mishra (2008); Koh, Chai, Wong & Hong, 2015

SCHOOLS
As Learning Organization

Build schools' 21CLcapacity

for e-learning strategies and planning

to challenge **existing tacit practice** about ICT in T&L

to design, monitor and evaluate enabling environments for integrating ICT In STEM

Infrastructure & resources

Leadership and Planning

ICT in the STEM Curriculum

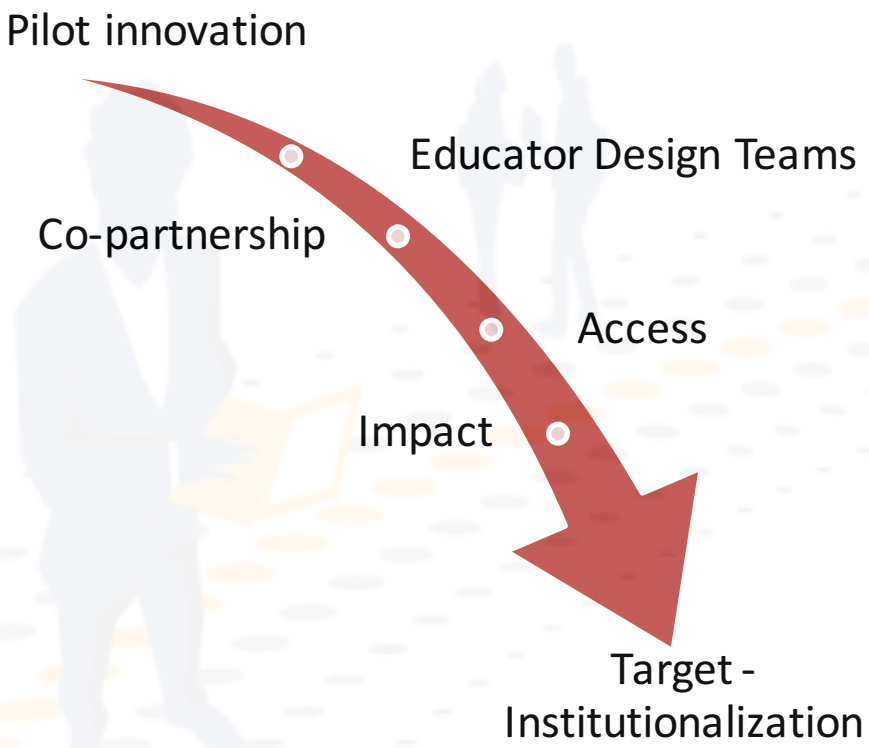
E-Learning Culture

Professional Development

PART 3: MAIN LESSONS

Innovation to institutionalization… knowledge management… change as complex… research co-design…

PARDIGM SHIFT
From ‘pilots’ to ‘institutionalization’



REFORM & INNOVATION
Knowledge flow - 'multiple conversations' – vision and action planning

Groups	Members	Role
National Planning Partners Expert Working Groups	Ministries & Departments, Universities, TEIs, TVEs, Schools, Subject experts, TSCs, etc.	**Prioritization curriculum mapping, module development…**
Project coordinator regional, district & county support teams	Champions, subject technical support district / county directorates	Online facilitation; school visits programme
School level 1: Management	Heads, BoMs, PTAs, Community	School Strategy and Planning; DSDF
School level 2: School based support teams	School based coordiantors	School based support –focus on practice & reflection;
School level 3: Teacher Design teams	STEM and other subject teachers	Lesson planning & resources; peer-to peer observations; workshops - Video – individual & collective review ICT-ATL
Strategic partnerships	UNESCO, ADEA, AUC, MS, INTEL, Ministerial Forums,	Sharing of lessons learned; informing policy and strategy on emerging good practice

Hannay, Ben Jaafar and Earl, 2013

RESEARCH, POLICY & PRACTICE TRIAD

Develop rigorous frameworks for measuring ICT impact on STEM 21CL & Skills

involve full value chain of **researchers-practitioners-policy makers**

learning & utilization driven policy making

from national to school levels

Policy-practice-research triangle

Rigorous evaluation research

Co-design research - school and academic communities

Recognize 'local school proof' contribution

Use learnings to inform ICT policy dialogue – national to local

Butler, Leahy, Shiels & Cosgrove, 2013

Thank You

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