A systems approach to the use of ICT in school education

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Introduction

In-Progress Report (ARC project)

Children, online learning and authentic teaching skills in primary education.

- Partners: Department of Education, Catholic Education Office & Telstra
- Classes with Grade 3 and/or 5 students
- Case Studies: 27 classes in 16 schools
- Observations: 2 or more days per class

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Context

About Tasmanian (primary) schools:

- Major ICT initiative began 4 years ago (30y ICT history)
- Substantial annual grants to all schools
- Schools manage purchasing & developments
- $ → hardware, software (inc MS), networking
- System support
  - Network management (outsourced)
  - Professional learning (eMagine & CEO teams)
  - Online materials development (eMagine + local companies)
- Classrooms: 2-4 PCs; networked, internet + peripherals
- Major curriculum initiative: Essential Learnings

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Progress

- The issue of reliability
- The nature of working knowledge
- ICT & learning structures
- About students and ICT
- A systems view
- Three levels of consideration

Other aspects of the project

- Class Computer Climate Index (CCCI)
- Pilots: learning objects, professional learning

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Reliability of 'ICT'

- Teacher: "*I have to plan every lesson on the basis that the technology will fail.*"
- Reliable = can **rely on being able** to use the technology within the window of opportunity
- Many sources of difficulty:
  - Access & availability
  - Working knowledge of user
  - Configuration of hardware & software
  - Development is disruptive

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Recommendations

To improve reliability consider …

- Consistent configuration of machines
- Coordinated development
- Explicit & reliable user routines
- Homogeneity of provision

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Working knowledge

- A combination of knowledge & experience:
  - Able to operate technology
  - Able to troubleshoot problems
- Specific to local arrangements
  - Do PD locally
- Also depends on the
  - Homogeneity of the infrastructure
  - 'Reliability' of the infrastructure
  - Availability of support: teamwork important

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Common learning structures

- Major factors
  - Notions of computer user (single/shared)
  - Collaboration: groups or teams
  - Number of computers available
  - Student (teacher?) working knowledge
  - Capacity of students to work independently
  - Scheduling access
  - Major issue = maintaining quality of experience

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Common learning structures

PCs	Learning Structure	Working Knowledge	Student Independence
1-3	Withdrawal from class	Low - Med	Medium
4-6	Rotation of groups (individual tasks), eg, webquests	Medium task specific	Medium
4-8	Rotation of team tasks, eg, group projects	Medium to high	Medium +
3 or more	Collaborative class projects with dynamic groupings	Medium to high	High

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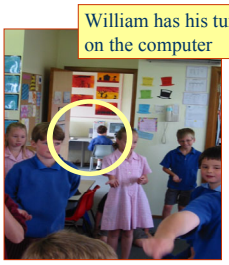
Managing withdrawal

Withdrawal: **single users of ICT with limited provision (2 PCs) can place children 'outside the class'**

While the class does aerobics

William has his turn on the computer



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Students & ICT

- Typical student computer use
  - 2-4% of class time
  - Out of class use is 2X to 10X in-class
- Students outside access ICT (90%)
  - Various: friends, family, work, neighbours, public
- Students learn from
  - Older family members (70% Grade 3)
- Motivation: similar to adults
  - Not significant for many
  - Shorter duration?

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A systems overview

- Bringing together
  - Purposes, policies and practices
- Resulting in
  - Products
  - Experiences
  - Knowledge
- Contributions from new technology
  - Changing the boundaries of activities (practices)

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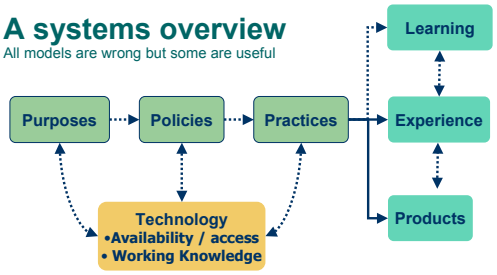
A systems overview

All models are wrong but some are useful



Nb. Children have purposes, policies & practices too!!!

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Three Levels of Consideration

1. **School level**
   - Consensus re purposes
   - Ways of utilizing ICT: user knowledge
   - Means: reliable infrastructure
   - Official application often ambiguous, elsewhere !!
2. **Class level**
   - Notions of teaching & learning
   - Culture → collaboration
3. **Activity**
   - Valuing & utilizing products and experiences too

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Likely future developments

- Balancing the educational agenda?
  - Technology & education
  - Cuban: 'Oversold & Under-used'
- Scaffolding may be a key concept:
  - Scaffolding the use of ICT in class programs
  - Using ICT to scaffold learning activities

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Contacts

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