

- **Working Knowledge** inadequate; unable to operate and/or troubleshoot the equipment successfully
- **User routines** not followed to prevent difficulties

Compounding difficulties

It is common for two or more of the above difficulties to occur simultaneously. This makes trouble shooting more difficult and hence increases the working knowledge required. Our 'Law of working knowledge' is that *'The working knowledge required is inversely proportional to the homogeneity and reliability of the systems in use.'*

So what to attend to?

In most schools it appears that equipment gets less attention the further it is located from the servers. This means that problems with classroom PCs must be reported before being addressed. The problem is more significant for peripherals.

Recommendations: It would appear that the answers are in

1. Thoughtful and consistent configuration of devices
2. Thoughtful coordinated development
3. Establishing explicit and reliable user routines
4. Achieving increased homogeneity of provision,

This is a complex task but it needs to begin somewhere, initially within a class, but extending across the school. Such an approach would be key strategy to increase the 'reliability of the technology' for teachers and students.

The complexity of the task means that it should be considered as

- Background design and
- Project management

And not simply a matter of providing better equipment - that might even make things worse!! Development is disruptive!!

Teacher comfort with ICT

Teacher comfort with ICT is greatly effected by their confidence in the device they intend to use. While teachers are not comfortable with the technology they will focus on managing the technology. Only when they are comfortable with the technology will they feel free to consider the pedagogical implications of using ICT.



UNIVERSITY OF TASMANIA

Children, Online Learning and Authentic Teaching Skills

Reliability

- A complex issue -

*Findings from inschool observations
2003*

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Early in the study (2002) the issue of reliability arose with many teachers reporting that:

- *'The computers are unreliable' or*
- *'You can't rely on IT' or*
- *'I have to plan each lesson on the basis that the technology will fail !!'*

Further investigations in 2003, especially in interviews with class teachers, have revealed that this is a complex issue concerning much more than correct functioning of the technology.

What 'reliable' usually means

In a general sense most teachers use the term reliability to mean that they

- Can **rely on being able to use the technology** as intended
- Within in the **window of opportunity**, that is, times & places within available attention

Windows of opportunity

Classroom learning is managed as a sequence of cumulative, often quite short, tasks. Thus any loss of opportunity can be disruptive and difficult to manage in the short-term and difficult to retrieve in the longer term. Students need to be purposefully engaged with their learning tasks almost continuously and thus classes tend to operate on the basis of very narrow windows of opportunity. Student engagement with learning tasks can be 'fragile' and particularly vulnerable to disruption. The time required to overcome a typical reliability problem tends to be greater than the duration of the window of opportunity involved.

Many Sources of Difficulty

There are many sources of difficulty in relation to the teacher being able to rely on effective use of the ICT (in alphabetical order):

- **Access & permissions:** denied, unknown, lost or forgotten passwords, authority not available...
- **Auto-correct:** over-riding user hopes and intentions
- **Availability:** number of devices inadequate to undertake the tasks in a coherent fashion
- **Compatibility:** none, partial, at a cost (eg, in importing graphics files)

- **Configurations:** class machines look & feel different from each other (screen configuration, software installed...) making it more difficult to identify things needing attention
- **Connections:** slow, dropping out, cables missing...
- **Development is disruptive:** new OS, new server set-ups, new versions of software installed...
- **Equipment:** not connected, consumables exhausted (printer cartridges, out of paper...), components missing (laptop with floppy OR CDrom drives) ...
- **Equipment differences:** most classes have a mixed bag of PCs leading to student preferences for certain machines well above others and a strong preference for using only the better ones
- **Files** damaged, lost, deleted or not saved
- **Inappropriate file names:** misnamed files (a child's story about Eric the Purple Dinosaur gets saved by Word as *'Once upon a time in a land far away there was a young boy who had a dream.doc'* (and no-one notices!!)
- **Memory failure** (the human kind): a the child was writing a story last Tuesday but can't remember which machine he/she was using nor what the file was saved as, nor where it was saved...
- **Not maintained:** insufficient disk space, fragmented files, lost shortcuts ...
- **Operational knowledge:** don't know how to use ...
- **Software:** computer not powerful enough to run latest versions of software (slow, freezes...)
- **Software versions:** trying to use templates with previous or incompatible versions
- **Software configurations:** saving to My Documents rather than class share; incorrect language (US English by default?)
- **Technology not available:** eg, equipment taken by another class, being repaired, securely locked away (and key not available) ...
- **Technology doesn't work:** freezes, drivers missing or not installed, globe blown, not plugged in, component not switched on, power supply needs to be reset, battery flat ...
- **Troubleshooting:** can't identify problem, don't know how to solve it, necessary assistance not readily available, uncertain about whether one should fix it ...