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DEPARTMENT OF EDUCATIONAL RESEARCH

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Digital technologies - enhancing learning or shifting learning behaviours?

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My focus for this seminar

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- What evidence suggests that using technologies might enhance learning?
- What evidence suggests that using technologies might actually not enhance learning?
- Why do teachers and learners continue to feel that there are enhancements occurring?
- Is wide evidence not identified or available?
- Do we need to reconceptualise our understanding and perception of the term – technology enhanced learning?

Evidence of impact

- A range of studies have identified statistically significant effects when technologies are used for learning (for example, Wenglinsky, 1998; Wood, 1998; Schachter and Fargnano, 1999; Harrison et al., 2002; The Metiri Group, 2006; Somekh et al., 2007)
- But average effect sizes from a second-order meta-analysis and from a validation study, both accounting for fixed effects and random effects, were low (or moderate at best); calculated effect sizes ranged only from 0.30 to 0.35 (Tamim, Bernard, Borokhovsi, Abrami, & Schmid, 2011)
- Reasons why this form of evidence is difficult to gather have been clearly discussed (Higgins, Xiao & Katsipataki, 2012; Passey, 2014)

Evidence of no (or negative) impact

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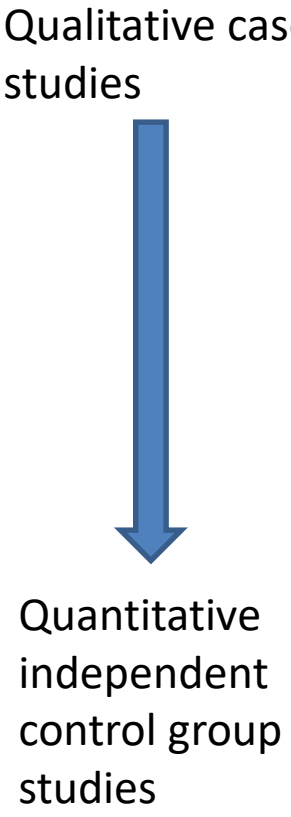
- Very, very few published studies identify negative outcomes that are learning-focused
- Reported negative findings are concerned more with technology reliability, technology application, pedagogical appropriateness, or applicability to learner activity - indicating a relationship between learning impact and additional factors
- “aspects of the goals of instruction, pedagogy, teacher effectiveness, subject matter, age level, fidelity of technology implementation, and possibly other factors … may represent more powerful influences on effect sizes than the nature of the technology intervention” (Tamim, Bernard, Borokhovsi, Abrami, & Schmid, 2011, p. 17)

The four origins of evidence

- Affordances
  - Of technologies
- Uses
  - Through pedagogies and activities
- Outcomes
  - From activities, for teachers and for learners
- Impact
  - On learning, for learners



Source: Passey (2014)

The state-of-play of the four origins of evidence

- **Affordances**
  - **Of technologies**
- **Uses**
  - **Through pedagogies and activities**
- **Outcomes**
  - **From activities, for teachers and for learners**
- Impact
  - On learning, for learners

What is happening at the important evidence interface?

- Affordances of technologies

Perceptions of use

- Uses through pedagogies and activities

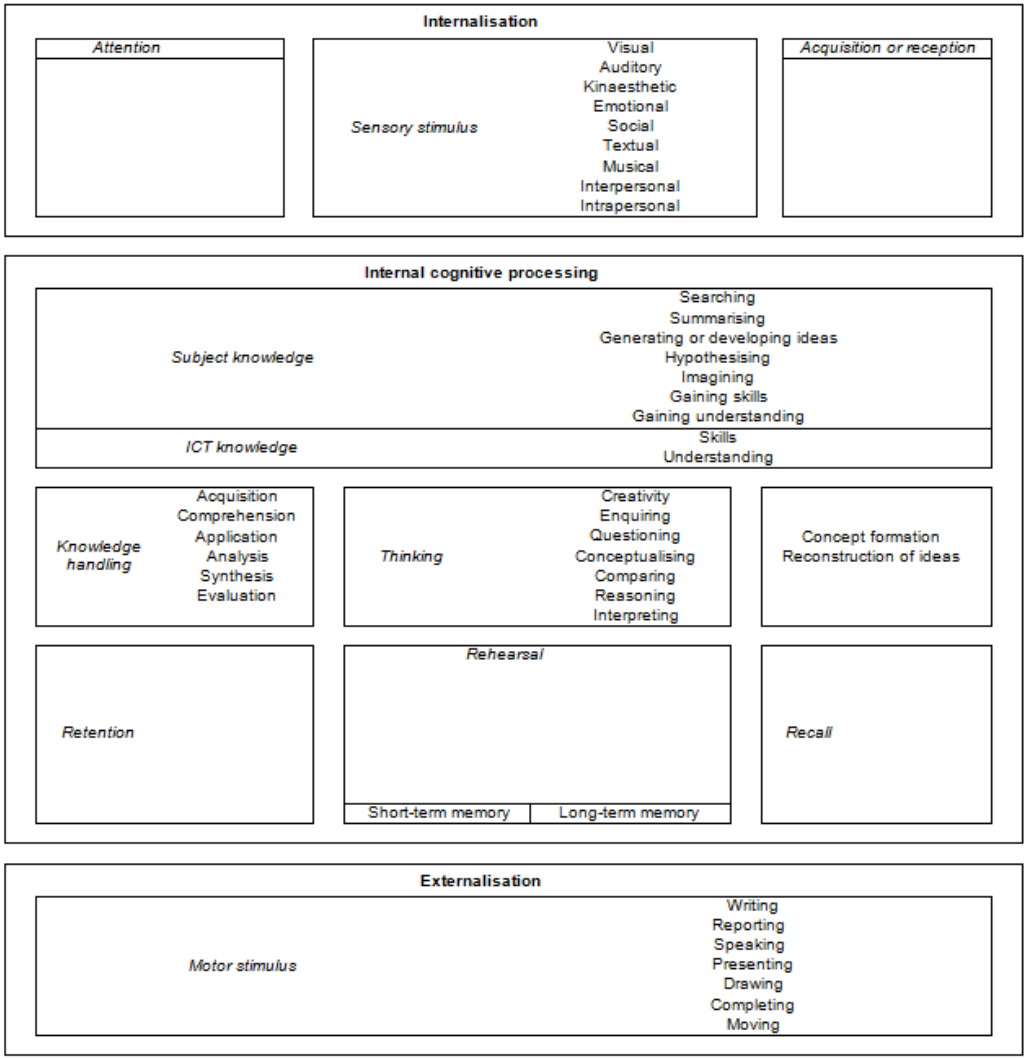
Learning behaviours

- Outcomes from activities, for teachers and for learners

What is happening to the learning behaviour? (or learning?)

- Internet research – can easily apply search words or terms, add to or amend these, save links, save notes, search on demand, whenever and wherever there is internet connectivity
- Video capture – can easily view whenever and wherever there is access or connectivity, review, replay, save notes, highlight questions as and when applicable [ALT forum today]
- Clickers – can be asked questions at any point, can see how others respond, can have points discussed
- Learning by questions – can answer questions, can gain feedback, can re-try, can be monitored and supported by the teacher

What elements of learning are affected - and to what extent?



Source: Passey (2014)

How are teachers involved in this?

- Internet research – suggesting search words or terms, adding to these, checking links, feedback on notes, feedback on sources and outcomes or findings
- Video capture – checking use
- Clickers – checking answers at any point, seeing how students respond, discussing points arising
- Learning by questions – checking answers and numbers of answers, giving individual feedback, constantly monitoring and intervening

Where is the impact of digital technologies?

- Is it on?
  - Education (TEE)
  - Management of education (TEME)
  - Teaching (TET)
  - Management of teaching (TEMT)
  - Learning (TEL)
  - Management of learning (TEML)

- So what range of questions should/must we ask in the future, and how do we/should we conceive 'technology enhanced learning'?

For ‘TEL’, what evidence we tend to lack currently

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- Impacts on long-term memorisation, social and societal aspects of learning
- Uses, outcomes and impacts of project-based activities
- Megacognitive (‘expert’ learner) and metacognitive outcomes and impacts of online learning support
- Outcomes and impacts for specific groups of learners
- How lifelong learning is being supported
- How intergenerational learning is being supported

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Thank you for listening!

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