londonknowledgelab

exploring the future of learning with digital technologies

Visions and challenges for technology-enhanced research

Richard Noss

An interdisciplinary collaboration within the University of London

IOE LONDON
Leading education and social research
Institute of Education
University of London
Birkbeck
UNIVERSITY OF LONDON

Technology Enhanced Learning

Teaching and Learning Research Programme

Richard Noss
Director: Teaching & Learning Research Programme -TEL

www.tlrp.org/tel

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EPSRC Engineering and Physical Sciences Research Council

TLRP-TEL

- core phases (ESRC) 2000-9
- TEL phase (ESRC/EPSRC) 2007-12
- 7 development projects (2007)
- 8 large-scale projects (2007-12)
- partners

JISC

Becta leading next generation learning

The Higher Education Academy

Association for Learning Technology ALT

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TEL aims

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TEL aims

- building a cumulative body of TEL research

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TEL aims

- building a cumulative body of TEL research
- enhance research capacity

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- c. 21 pedagogy + c.21 technology (including TE-Intelligence)

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- domain-specific evidence to inform practice and theory

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- generalising findings

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TEL grand challenges?

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Personalisation

- Transforming the quality of learning and teaching by exploiting the responsive and adaptive capabilities of advanced digital technologies to achieve a better match with learners' needs, dispositions and identities.

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Inclusion

- Improving the reach of education and lifelong learning to groups and individuals who are not best served by mainstream methods.
- Epistemological inclusion
- Web discussion group
  http://www.tlrp.org/tel/digital_inclusion/

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Flexibility

- Enabling the provision of education and skills to be deployed in more open, variable, and accessible ways, so that learning opportunities are available in a more seamless environment that can link classroom, home, workplace, and community.

Productivity

- Achieving higher quality and more effective learning in affordable and acceptable ways

TEL portfolio 2008

- Semantic Technologies: for the Enhancement of Case-Based Learning
- Inter-Life: interoperability and transition
- Migen: Intelligent support for mathematical generalisation.
- Learning Design Support Environment for Teachers and Lecturers
- Echoes: Improving Children's Social Interaction through Exploratory Learning in a Multimodal Environment
- Phantom: Personalised learning with Haptics when Teaching with Online Media
- Personal Inquiry: Designing for Evidence-based Inquiry Learning across Formal and Informal Settings
- SynergyNet: Supporting Collaborative Learning in an Immersive Environment.
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a missing challenge?

- personalisation
- flexibility
- productivity
- inclusion

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a missing challenge?

- personalisation
- flexibility
- productivity
- inclusion
- re-vision

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Methodological challenges

Methodological challenges

- interdisciplinarity

Methodological challenges

- interdisciplinarity
- digital literacies, multi-modality

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Methodological challenges

- interdisciplinarity
- digital literacies, multi-modality
- TE-research: evolution/revolution
  - research methodology
  - data acquisition
  - data analysis
  - archiving, data logs, data mining etc.
  - new ed environments for studying teaching & learning (e.g. SL)
  - publication and dissemination
  - ethical issues

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Semantic Technologies

- Creating a ‘momentum of reuse’ by combining semantic web technologies, grid technologies, social software and digital repositories to support case-based learning in advanced education settings.

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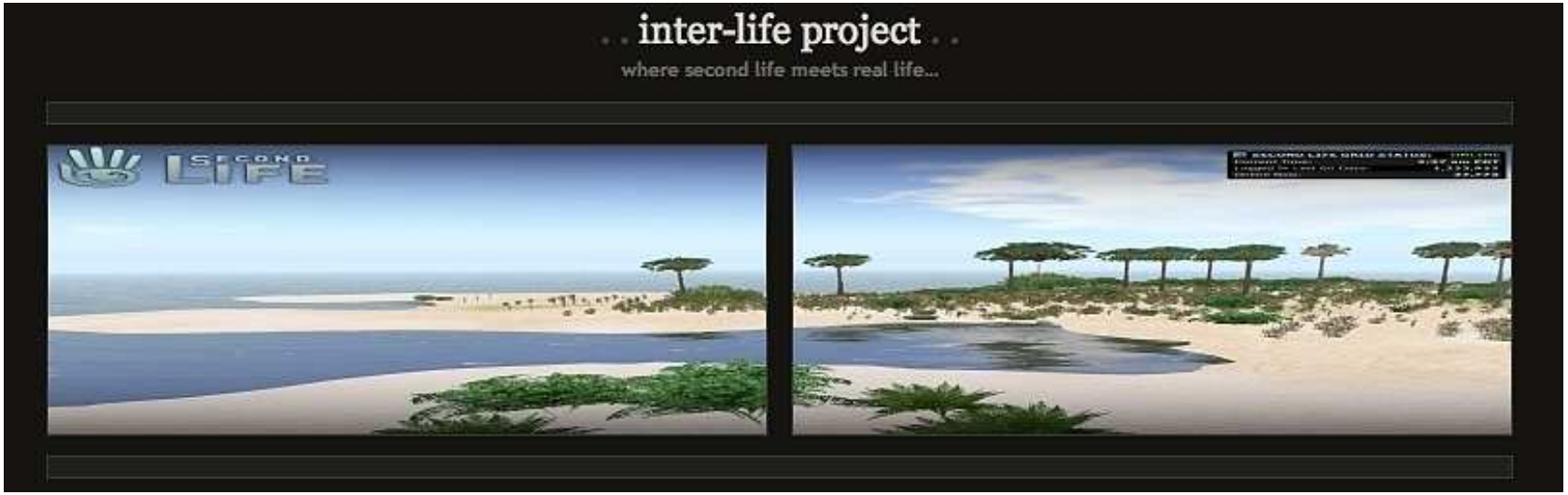
research challenge

- "… the 'Educational Semantic Web' is at a stage in its development comparable to the Internet prior to the Mosaic Web Browser in 1993, when the Internet too was conceptualised primarily as accessing or disseminating information, rather than as a learning environment or means of collaboratively constructing knowledge".



- an educational environment of web-based and mobile technologies to support the development of a virtual space for young people and their teachers engaged in activities to develop transition skills

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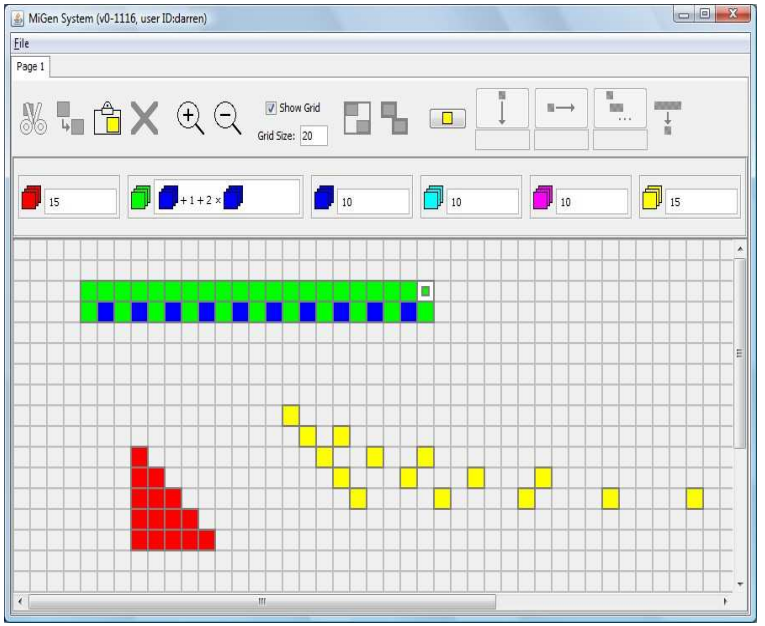
research challenge

- how can learning be assessed in this kind of environment?

MiGen

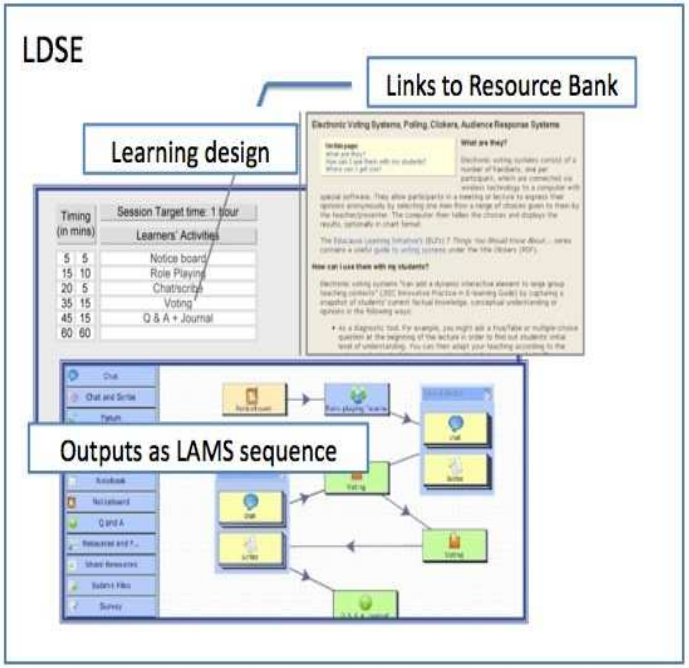
- assist students in analysing and expressing the structure of patterns
- provide intelligent support for students and their teachers



research challenge

- how to develop personalised support within an exploratory system?

Learning Design Support



- develop an interactive environment to enable teachers to lead the discovery of innovative pedagogical designs that exploit the potential of TEL

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research challenge

- change the way:
  - software engineers think about TEL architecture
  - educators think about expressing learning theory

Echoes

- support development of social skills in children with Asberger's (aged 5-7)
- by combining interactive whiteboards, gesture and gaze tracking, intelligent agent-based context-sensitive interfaces

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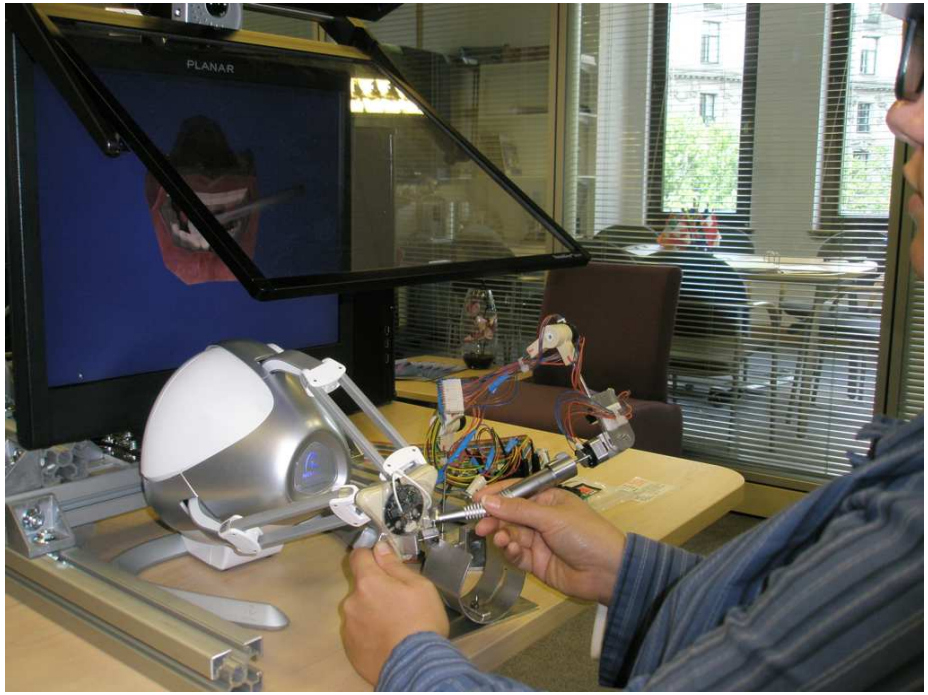
research challenge

- an explicit focus on inclusion as a window on learning (generally)

PHANTOM

- to develop and evaluate haptic and synthetic online devices used by a range of dental students and professionals to transform learning

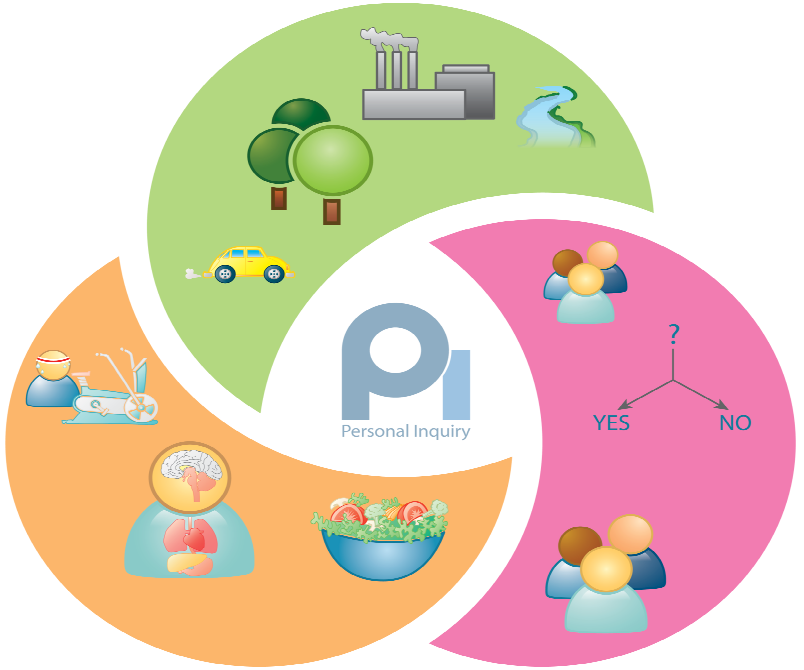


research challenge

- how can findings generalise to other settings and haptic devices in general?

Personal Inquiry

- using mobile and desktop computers, children engage in scientific processes of gathering and assessing evidence, conducting experiments and engaging in informed debate



Myself
My environment
My community

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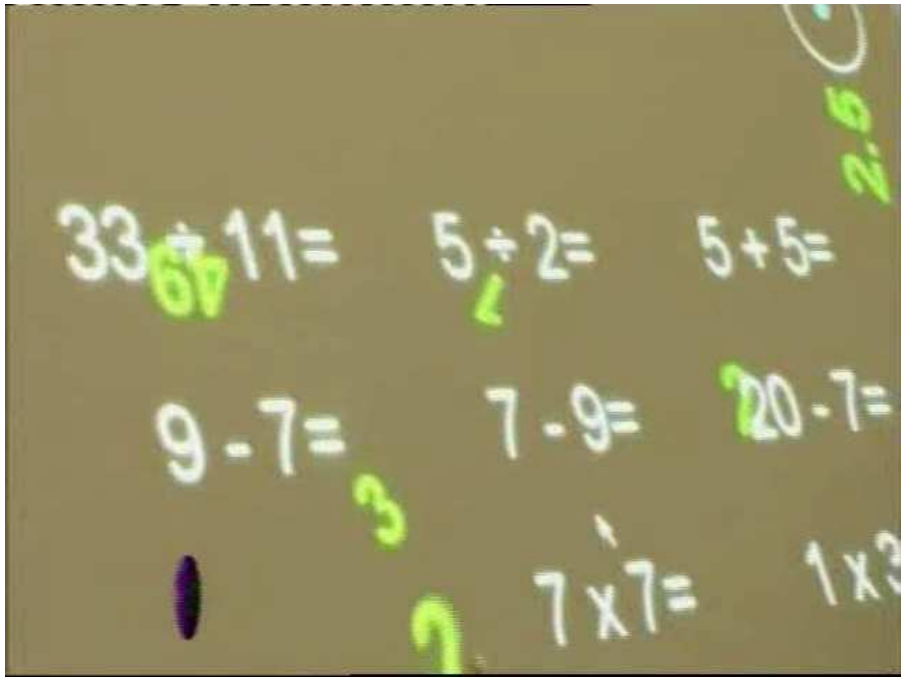
research challenge

- develop dynamic lesson plans (scripts) that exploit the technology, are exploratory, yet foster real learning

SynergyNet

- study depth of engagement with learning, and the degree of individual responsibility in collaborative tasks



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research challenge

- how does the mediation of the multi-touch change the balance of individual and collaborative learning?