

Technology enhanced learning research as a site for interdisciplinary working

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Life-changing Learning
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Plan of Talk

- Interdisciplinary working
- Experiences in teaching
- Experiences in TEL research projects
- Reflections

Why interdisciplinary working?

- People become firmly attached to their disciplines and associated disciplinary mindsets.
- Tunnel vision ?
- Researchers may overlook the effects of their work on other disciplines
- How to attack knotty real world problems.

So what's my discipline?

- First degree in maths and physics (but with geology and modern european history courses too!)
- PCGE (maths and science) and Dip Ed in Education
- M.Ed. In Educational Psychology
- Ph D in Educational Technology
- Title *Computer models of physics problem solving*
- Fellow of Academy of Social Sciences

What is my teaching experience?

- Interdisciplinary Science at S1 and S2, Maths, Physics and Statistics in schools to A level.
- Science, Physics, Education, Educational Computing, Teacher Education, Software Engineering to undergraduate and postgraduate level.

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What is my experience as a learner of interdisciplinary teaching?

- Interdisciplinary Science at S1 and S2 in school
- M.Ed. (Education, Psychology, Educational Psychology, History)
- Ph.D (Computer Science, Artificial Intelligence, Educational Evaluation, Physics Education)
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- MOOCs eg Chicken behaviour and welfare

Two teaching examples

- **Science a foundation course**
- Huge course team
- Avowedly multidisciplinary
- Course worked through disciplinary settings with an introduction and concluding
- Extremely ambitious objectives including
 - Understanding general news media on science
 - Detect errors and critique experimental method

M.Sc.in Science Studies



SH 804 *Communicating Science*

Module team includes representatives from:

Physics, Biology, Chemistry, Sociology,
Educational Technology and many consultants

Helpful that the orientation of the course was
broadening to Science concerns

Themes of the course not disciplinary silos

Each disciplinary representative was a novice in
other disciplines



Reflections

- Hugely satisfying to work on
- Good humour helps
- Importance of mediating artefacts and the push towards an output
- Compare with research projects to follow

TEL Research

Is TEL research an interdisciplinary endeavour?

*Technology enhanced learning **requires interdisciplinary collaboration** across the disciplines of learning, cognition, information and communication technologies in education and broader social sciences. To achieve the highest ambitions for education and lifelong learning, we need to exploit fully the opportunities new technology offers – for personalised learning and improving outcomes... For creating more flexible learning opportunities for improving the productivity of learning and knowledge building processes... But to do this, we need a more explicit understanding of the nature of learning itself, both formal and informal, and the way it is responding to changes in society of the opportunities created by new technologies...(This) will support innovation from both research areas, each challenging the other, to rethink ways of making learning more effective and develop new technology solutions to make that possible. **Such interdisciplinary research** is intended to help build newf understandings of how technology can enhance learning.*

Interdisciplinary research

Findings from the Technology Enhanced Learning Research Programme

T·L·R·P
Technology
Enhanced
Learning



EPSRC

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Interview study

<http://www.tlrp.org/docs/TELInterdisciplinarity.pdf>

- Literature review
- Two online fora discussions
- An interview study of TEL researchers
 - 18 interviews
 - diverse discipline backgrounds
 - experience of interdisciplinary research
 - involvement in TEL research either as a researcher or at policy level
 - interviewees from across the HE sector with a mix of old and new universities and different subject disciplines

Interdisciplinarity

- Report available at:
- <http://oro.open.ac.uk/35300>



Personal Inquiry

Designing for evidence-based inquiry learning





nQuire-it Missions

Join missions to explore your world...



Winter Wildlife Watch

Spot-it

This mission is about exploring and protecting winter wildlife!

A mission created by [traciemfarrell](#).

6 ↑ 5 📖 A Spot-it mission



Sunsets!!!!

Spot-it

Weather-it mission: All of us have seen beautiful sunsets! But how many know how these sunsets' colours are created? Upload a picture of a sunset and give your explanation!

A mission created by [Nelly](#).

25 ↑ 23 📖 A Spot-it mission



Who's in your garden?

Spot-it

In this mission, you should investigate your own back garden. Who is living there? What kinds of habits do they have? What do they eat? How do they live?

A mission created by [traciemfarrell](#).

7 ↑ 4 📖 A Spot-it mission



Noise map



Fastest lift



Deserts



View the video to get started!

You can see missions and read comments without registering. An easy [sign-in](#) lets you add pictures and data, and create new missions for other people to explore.

NOTE: To see all the missions click *All* below.

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[garden](#)

[spot it](#)

[Greek schools](#)

Mission type

[Any type](#)

[Sense-it missions](#)

[Spot-it missions](#)

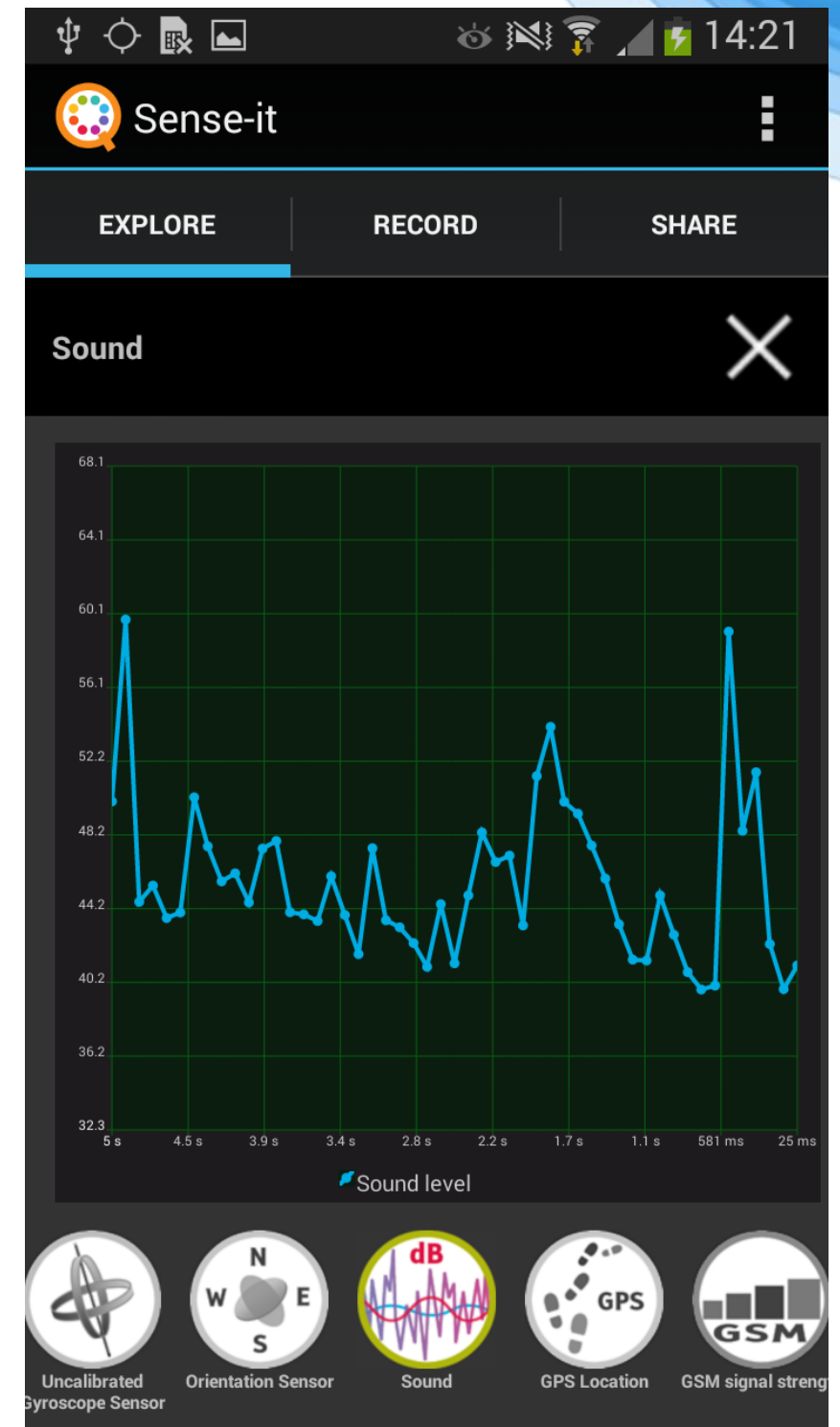
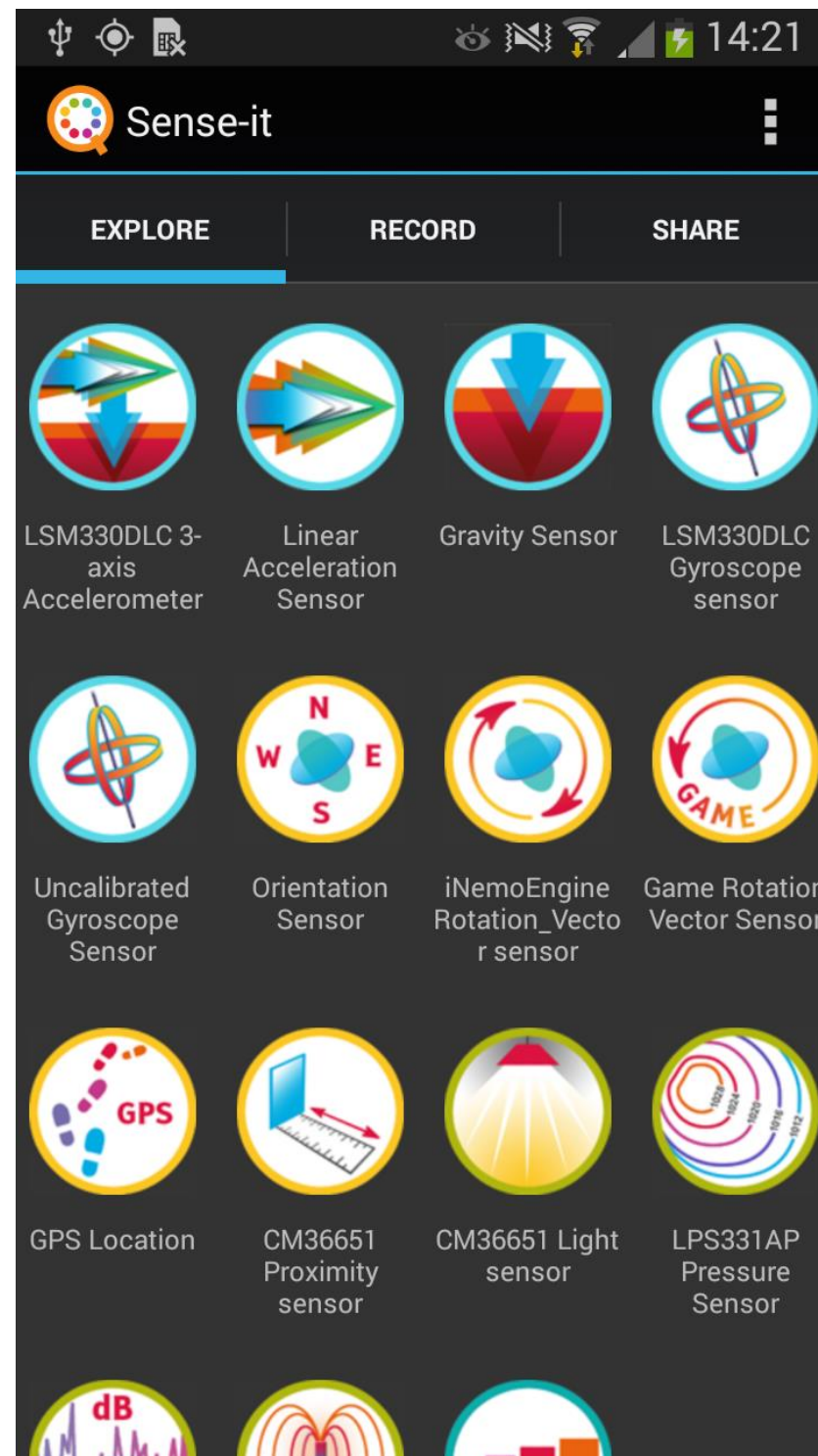
[Win-it missions](#)

Status

[All missions](#)


The Sense-it app

- Android app
- Download from **Google play**
- Search for **Sense-it**
- Linked to the nQuire-it platform (Sense-it missions)



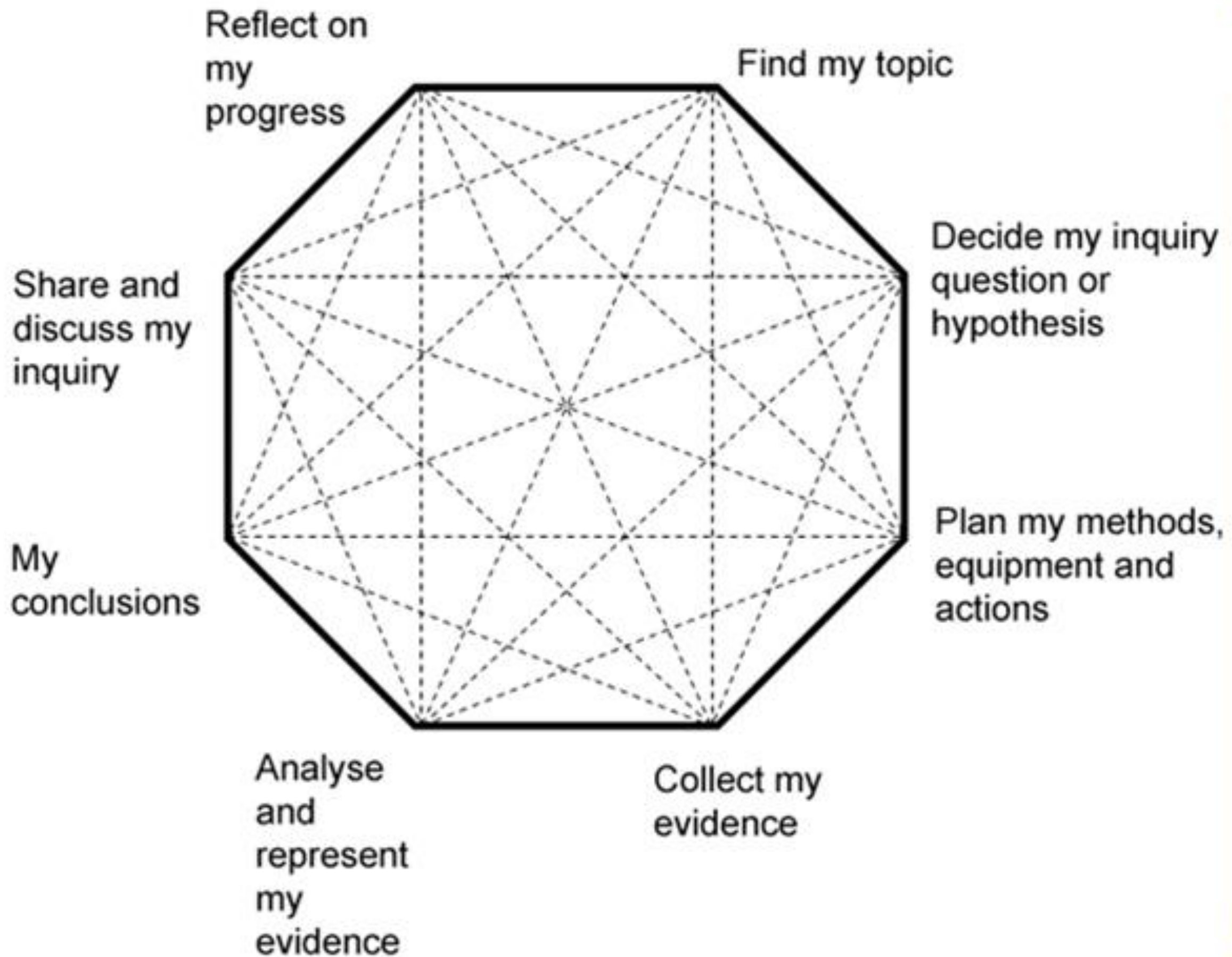
Experiences from PI project



- Language issues
 - Trigger artefacts - terms such as scenario, task
 - 'Stages', 'phases', does it determine workflow?
 - Trigger events - workshop and wiki used to produce a project glossary
 - Inquiry learning cycle issues
 - School issues
 - curriculum, ethics
 - Stakeholder engagement
 - 'buy in', relevance, different perspectives on issues
 - Participatory design
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Inquiry Cycle

- Inquiry Learning Cycle developed from literature as part of working paper
- Discussion influenced curriculum planning
- Representation issues emerged when using it to guide design of (implemented) activity guide



‘Mediating artefacts’

- As mechanism for making issues explicit
- Shared mediating artefact coupled with timed targeted discussion
- Diversification – the area starts to mature and different schools of thought emerge
- Evolving understanding - vocabulary, representation, concepts
- Distinction between operation, technical and educational uses

Reflections

- Interdisciplinary working is hard, but rewarding and necessary
- Last word to one of my interviewees
- *There's this notion of an artefact that you can focus on and I think that's a very significant part. I mean there are two things, you can't do a TEL project without: lots of multi and inter-disciplinary expertise and a product. You produce something that then needs quite a complicated approach to investigate.*