



**SUPPORTING TEACHERS' DEVELOPMENT
OF TECHNOLOGICAL PEDAGOGICAL AND
CONTENT KNOWLEDGE: A WHOLE
SCHOOL INTERVENTION**

Context

- Small-scale practitioner research project
- To explore the impact of supporting teachers' development of Technological Pedagogical and Content Knowledge (TPACK).
- I intend to explore the **initial reactions** of teachers to educational technology,
- Document the **process of implementation** and **development** of blended learning technologies in the school environment
- Discover the **final effects** of such implementation.
- The way teachers relate to digital technology, and how educators' perspectives change, may also have a significant impact, either by facilitating or confounding the implementation of the VLE.

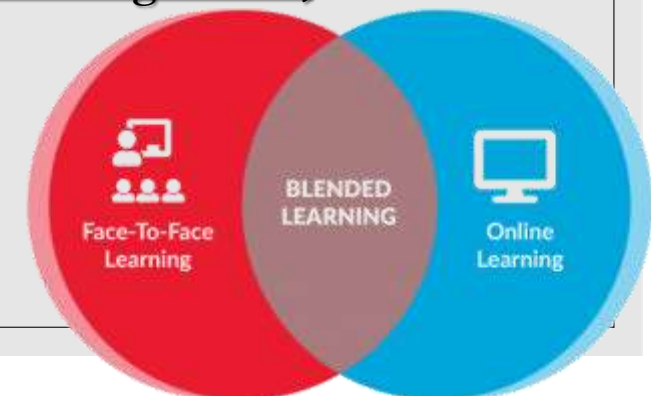


Main challenges that teachers face regarding technology

- The perception that the technology involved in the VLE is **costly** and mastering its use is a **time-consuming** process.
- **Lack of competence.**
- **Lack of resources.**
- **Lack of a supportive culture**, that may foster further resistance to change, as teachers may feel less poised than students, and thus undermined, when managing technology.
- A perception that there is a **lack of senior management or technological support.**
- **Training based on technological tips**, rather than connecting with the pedagogy and the teaching style of the teacher.

Opportunities and challenges of using Blended Learning

- Collaborative learning by using the tools offered by online learning provides great flexibility (Paulsen, 2008, pp. 2-3) .
- Learning online allows students to coordinate their various activities more successfully as a result of the flexibility of the system and permits them to increase their interaction with others (Aspden & Helm, 2004, pp. 246, 251).
- Blended Learning is beneficial for students' learning, whilst allowing teachers to target higher-order skills (Cox & Webb, 2004, p. 256).
- This kind of learning transforms students from receivers of content into thinkers and producers of knowledge, enabling them to build fundamental skills such as digital literacy, self-regulation, independence, collaboration and communication (Nolan, et al., 2012).



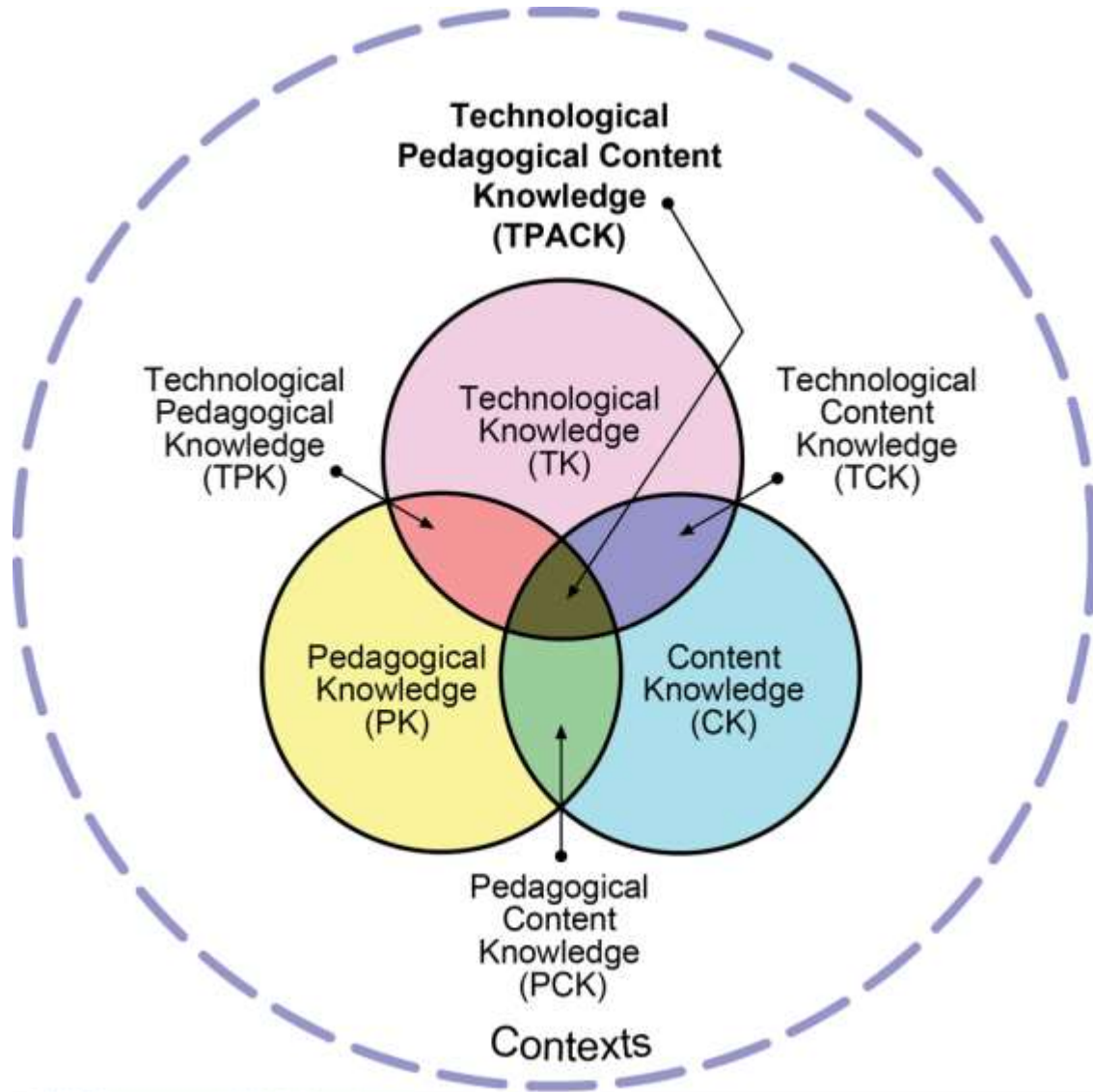
VLE in different subjects

- Empirical studies have shown that critical differences in the way that subjects have incorporated ICT are particularly noticeable in secondary schools
- Subjects such as ICT, Science and Maths (the latter in a more instructivist than a constructivist way) exhibiting a greater use of technology
- English offering limited implementation (mainly with the use of word processors)
- Very low use of any digital technology in humanities (Cox & Webb, 2004, pp. 253-263)
- Research in other secondary school subjects is limited, and those existing studies suggest a very low use of technology in subjects such as RE and PE (Cox & Webb, 2004, pp. 263-264)



Pedagogical approach

- Associationist/empirist: *structuring* of the knowledge where experimentation, problematisation and discovery take place to form a new 'theory' (conceptualisation).
- Cognitive perspective: *Accretion* or addition of new knowledge (testing/construction).
- Situative perspective: *adaptation*, where this theory develops as a result of the new knowledge added to it (dialogue/reconceptualisation).



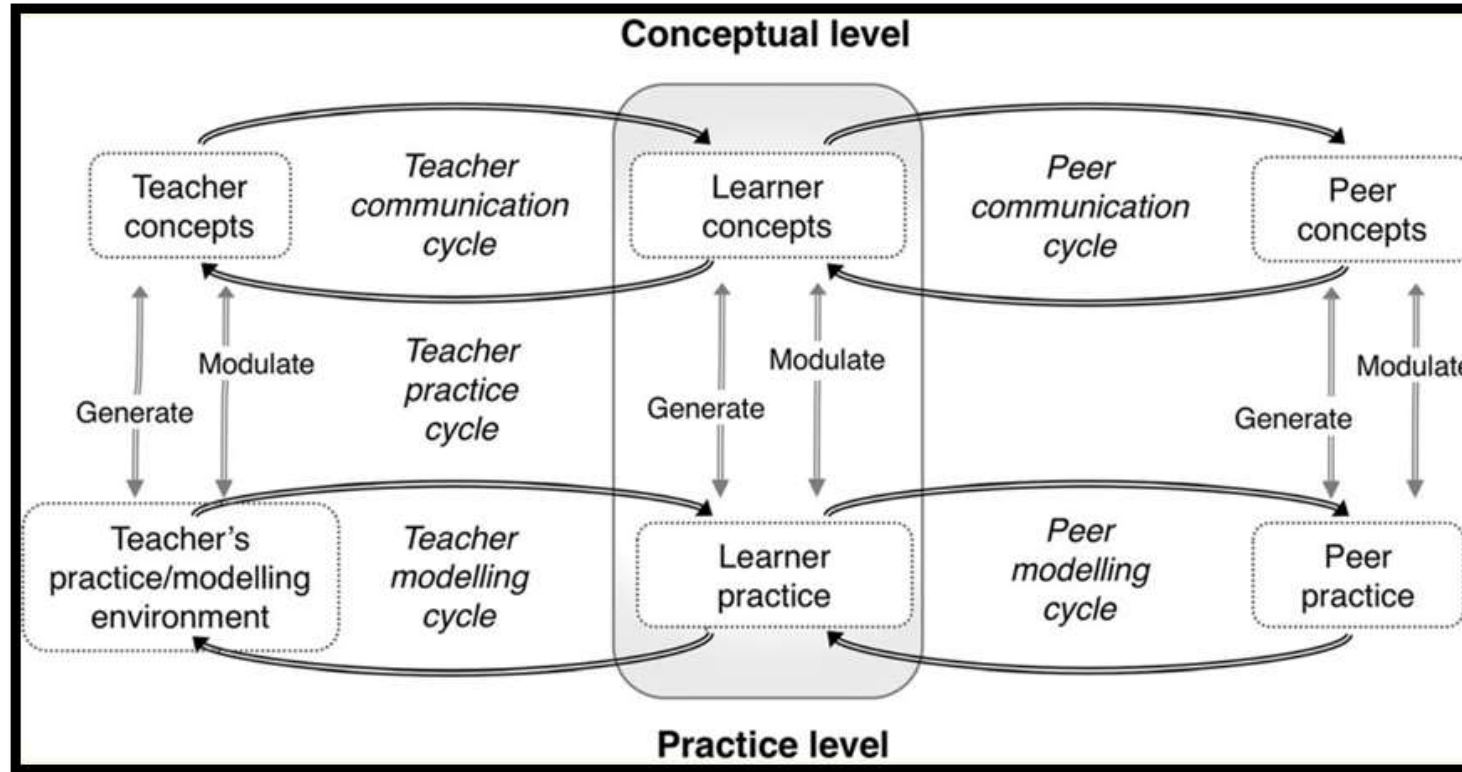
TPACK framework: <http://tpack.org>.

PEDAGOGICAL APPROACH

TPACK

Pedagogical approach

- Laurillard's Conversational Framework



The conversational framework (Laurillard, 2012, p. 92)

RESEARCH DESIGN

Research Questions

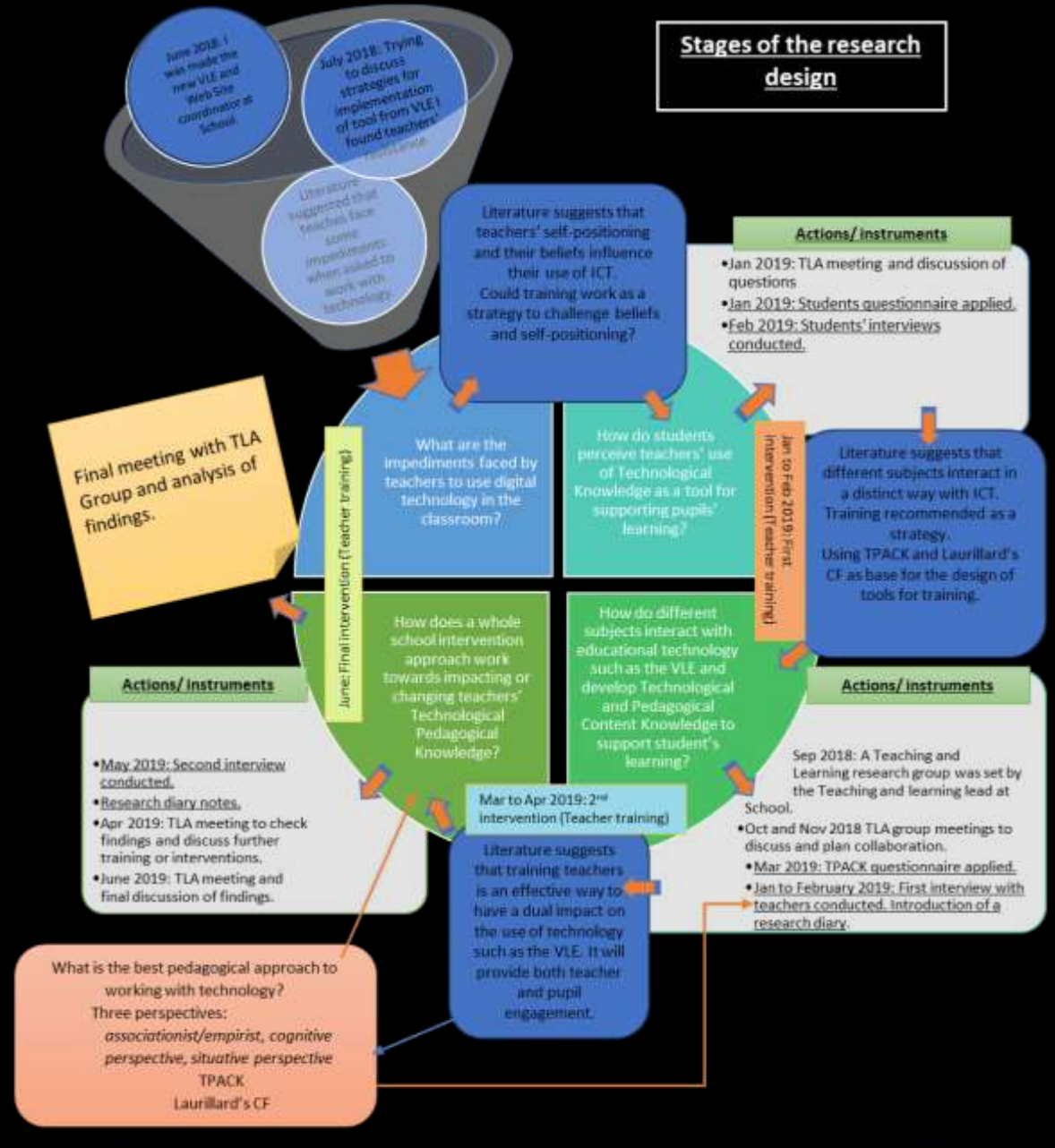
What are the impediments faced by teachers to the use of digital technology in the classroom?

How do students perceive teachers' use of Technological Knowledge as a tool for supporting pupils' learning?

How do different subjects interact with educational technology such as the VLE and develop Technological Pedagogical and Content Knowledge to support student's learning?

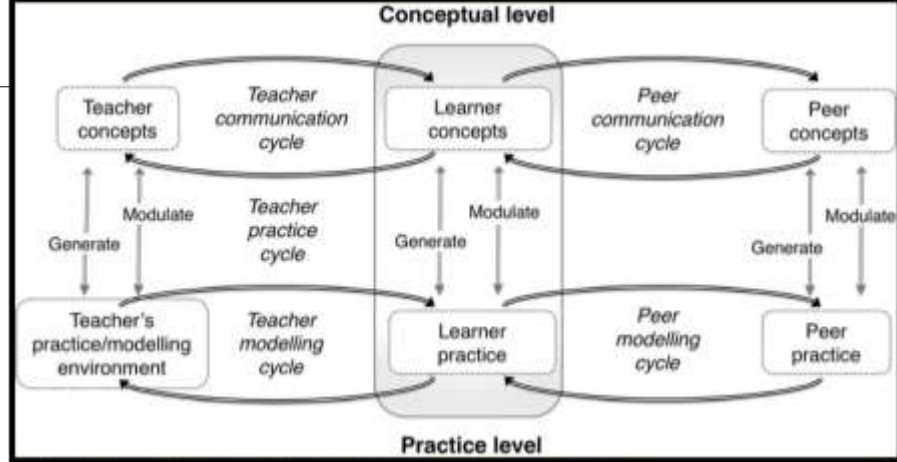
How does a whole school intervention approach work towards impacting or changing teachers' Technological Pedagogical Knowledge?

Stages of the research design

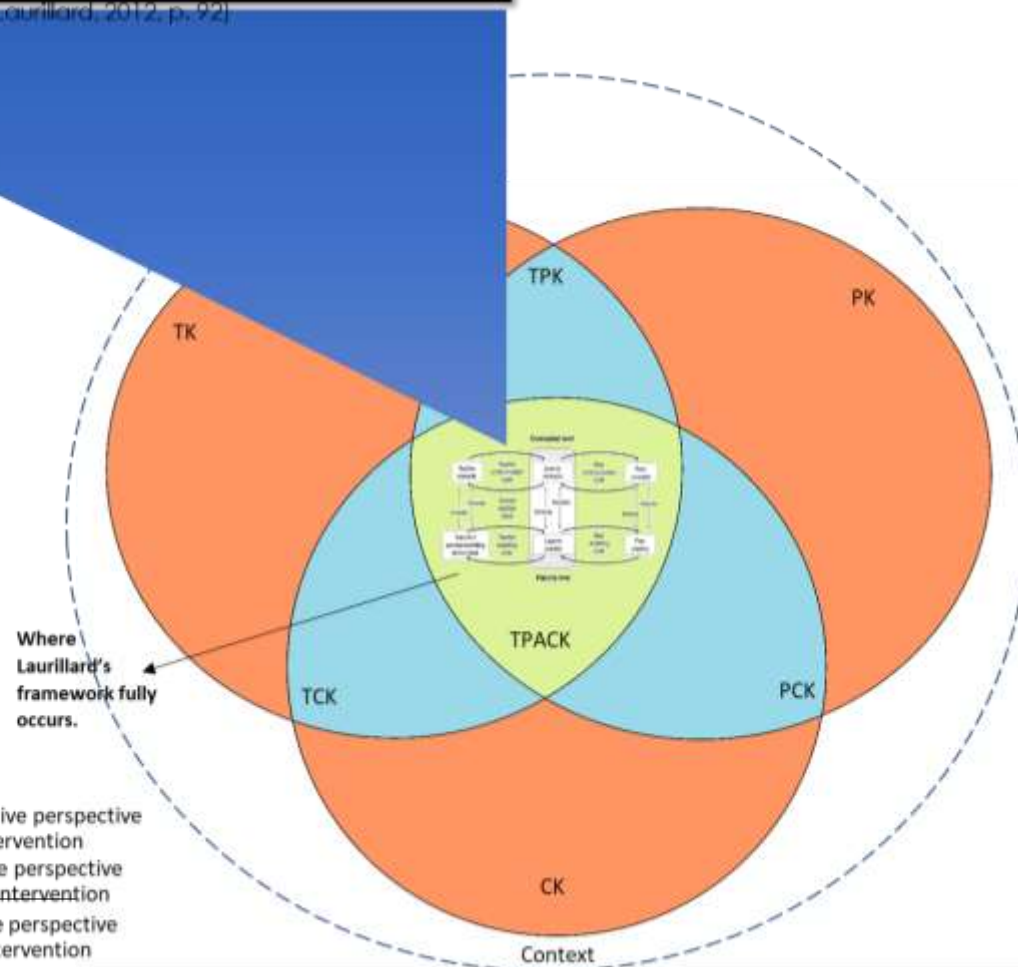


What is the best pedagogical approach to working with technology?
 Three perspectives:
associationist/empirist, cognitive perspective, situative perspective
 TPACK
 Laurillard's CF

How does supporting teachers' development of Technological Pedagogical Content Knowledge work a whole school intervention?



the conversational framework (Laurillard, 2012, p. 92)



FRAMEWORK DESIGNED FOR INTERVENTION

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<u>Stage</u>	First intervention	Second intervention	Third intervention
<u>Assumption</u>	Associative perspective	Cognitive perspective	Situative perspective
<u>Tasks designed according to TPACK</u>	<p>-TK: Setting homework on the VLE</p> <p>-TK: Creating self-marking quizzes</p>	<p>-TCK: Creating Task Lists on the VLE</p> <p>-TPK: Considering what things, specific to the subject, can be implemented using the VLE.</p>	<p>-PK: Using rubrics to plan task lists.</p> <p>-TK: Using forums to discuss topics with students.</p> <p>-TPACK: Creating their own tasks lists using rubrics and the VLE affordances.</p>
<u>Media affordances used according to the CF</u>	Videos, forums, self-marking quizzes.	Videos, forums, self-marking quizzes.	Videos, forums, self-marking quizzes, homework.

Data Analysis

Qualitative

Instrument(s)	Primary Codes	Secondary Codes
•First teachers' interview	Impediments faced by teachers to the use of digital technology in the classroom	<ul style="list-style-type: none"> •Teachers' TPK •Beliefs •Training •Affordances •Time/Workload •Other impediments
•Students' interview	Students' perception of teachers' use of Technological Knowledge as a tool for supporting their learning	<ul style="list-style-type: none"> •Teachers' ability •Technical problems •Teachers' use of the VLE •Tasks replicate similar assignments offline •Other impediments
•Second teachers' interview	Interaction of different subject with educational technology such as the VLE to support students' learning	<ul style="list-style-type: none"> •Teachers' TPK in each subject •Beliefs held by teachers in each subject •Affordances, actual or perceived, for each subject •Experience
•Second teachers' interview •Researcher's diary	Effectiveness of a whole school intervention in impacting or changing teachers' TPK	<ul style="list-style-type: none"> •Impressions of training •Experience/Usefulness •Subject based approach/Framework •VLE as a way of training teachers •Suggestions

Triangulation

Quantitative

Instrument(s)	Primary Codes
•Teachers' questionnaire based on official TPACK questionnaire	Impediments faced by teachers to the use of digital technology in the classroom
•Students' questionnaire	Students' perception of teachers' use of Technological Knowledge as a tool for supporting their learning

Initial findings

- Teachers' beliefs appear to affect their perceptions on the use of technology, having an influence on any training provided.
- Students have mixed views on teachers' use of technology and the VLE. They recognise the limitations teachers face in terms of time and hardware.
- Different subjects have distinct ways of approaching technology according to the tools they have readily available and the pedagogical approach used.
- The subject based approach to training (visiting each department separately rather than training all teachers at once) is regarded as valuable by teachers.

Initial findings

- The use of the VLE for training teachers on the use of the platform is regarded as valuable.
- Although there are many teachers who feel inclined to work with technology and who would like to use the affordances offered by the platform, the lack of adequate hardware and of students' engagement holds them back.
- Increasing teachers' Technological Knowledge does not necessarily translate into greater students' engagement.
- The role of those in leadership positions has a greater impact than expected on the implementation of the VLE.