

# Teacher Design Knowledge for Technology Enhanced Learning: A framework for investigating assets and needs

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# Teacher Design Knowledge for Technology Enhanced Learning: An ecological framework for investigating assets and needs

**Purpose:** To support the work of teachers as designers of technology enhanced learning (TaD of TEL)

**Approach:** Synthesis of research on in classical design fields, instructional design, and teachers' design

**Conclusion:** A framework that can be used: (a) by researchers to study teacher design knowledge and work across projects; and/or (b) by developers and facilitators identifying key areas to encourage/support in teacher professional development programs that involve teacher-designers in specific settings

Synthesis	Technical	Phenomenological	Realist
Description	Models and frameworks to guide design	Designers' reflections on and responses to the environment, and their related experiences	What designers actually do, how they do it and why they do it
Inter-disciplinary example	Design thinking (Brown & Wyatt, 2010)	Reflective practitioner (Schön, 1987)	Design cognition (Cross, 2001)
General education example	4C/ID model (van Merriënboer & Kirschner, 2012)	Educational connoisseurship (Eisner, 1976)	Expert-novice differences (Kirschner et al, 2002)
TaD of TEL example	Learning activity types (Harris & Hofer, 2009)	HEART methodology (Donald et al, 2009)	Developing TPACK through design (Koehler & Mishra, 2005)

Framework	Powerful design heuristics	Teacher-designer consciousness and situated experience	Realistic understanding of design practices
<b>Know-what</b> (fundamental knowledge base)	What do teachers <i>know</i> about design thinking and which design models are likely to be most useful for them in a given situation?	What intuitive <i>knowledge</i> , awareness and experiences do teachers bring with them to design technology enhanced learning?	What <i>knowledge</i> do teachers really use when designing technology enhanced learning and what issues do they typically overlook?
<b>Know-why</b> (productive beliefs)	In what ways do teachers <i>know why</i> careful attention to shaping design processes (before and during enactment) is critical for successful outcomes?	In reflecting on their own design decision-making, to what extent do teachers <i>know why</i> they make specific choices in certain situations?	What productive beliefs ( <i>know-why</i> ) underpin design decisions that teachers really make and how do they change with experience?
<b>Know-how</b> (repertoire for action)	What do teachers <i>know</i> about <i>how</i> healthy design processes proceed? (and how similar or different they are from the natural design inclinations of teachers)	What do teachers <i>know</i> about <i>how</i> their own design schemas develop? (and how this relates to their own intuitive knowledge)	What TPACK ( <i>know-how</i> ) do teachers really have and use during design? (and how does this influence their overall pedagogical design capacity)
<b>Know-when</b> (judgment in various contexts)	How well do teachers <i>know when</i> they should choose, re-assess or change a particular approach to guide the design process?	How well do teachers <i>know when</i> to improvise and when are one's own ideas put to use, given the setting and goals?	What are realistic decisions teachers make in various contexts ( <i>know-when</i> ) and to what extent are these decisions based on tacit (rather than reflective) knowledge, or some other design expertise?
<b>Know-who</b> (awareness for consulting relevant expertise)	How well do teachers <i>know who</i> they should consult for guidance on design processes and/or the products of design in certain contexts?	How well do teachers <i>know who</i> might enrich and inspire their awareness or educational connoisseurship?	How well do teachers really <i>know who</i> they can consult with during different stages of design work and for which main purposes?
<b>Know-where</b> (understanding design work in context)	How well do teachers <i>know where</i> locally relevant policies, models and frameworks to inform design are already present in their own environments?	How well do teachers <i>know where</i> influences of colleagues, leaders and policies can be found in their own ideas, values and goals that shape design?	How well do teachers really <i>know where</i> - in the curriculum, the classroom or the school - design work tends to thrive or struggle?