

## Learning Design as a Guiding Principle for Technology, Pedagogy and Content

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### Introduction

On February 21st, 2020 I presented, along with colleagues from Wiley Education Services a session on learning design at EURIE 2020 (figure 1). This short paper will include some of the ideas presented in the session and along with elaborated reflections on design technology, pedagogy and disciplinary bodies of knowledge to guide the design of learning experiences which are embedded in complex networks of the digital, social, cognitive and physical. This session in February 2020 was just 4 weeks before my own University campus in Birmingham, UK was closed due to COVID-19 and all teaching moved online. The ideas and approaches explored in the session and this paper are all the more important as we move to a future whereby international travel and physically situated experiences may not always be possible.



Figure 1: David Rowson (Wiley), Adam Matthews, (University of Birmingham), Mark Davis (University of West Alabama)

In this short paper I will reconceptualise a teacher development theory (TPACK) to identify the bodies of knowledge required for contemporary learning design and build upon these bodies of knowledge with a guiding concept of design to achieve positive learning experiences for students in a complex networked environment. Readers are encouraged to adopt a design mindset in curriculum development for all teaching and learning practice as well as to consider working with professional learning designers and technologists to develop programmes and modules in a collaborative partnership working approach.

### Technology, Pedagogy, Content Knowledge (TPACK)

Kohler and Mishra (2013) describe the three bodies of knowledge that make up the TPACK model – technology, pedagogy and content. Written from a teacher development perspective the TPACK model (see figure 2) is grounded in teaching practice and the complexity of teaching while attempting to integrate all three of these bodies of knowledge and their intersections. Content Knowledge (CK) is the knowledge of one’s own discipline, a vital foundation for any teacher in any context. Pedagogical Knowledge (PK) is the practice of teaching – the theories of cognitive, social and developmental theories along with practical experience of how students learn. Taking CK and PK and we can see a picture building of the academic – an expert in their field (CK), disseminating knowledge to students in lectures, seminars, labs etc (PK). The final body of knowledge, Technology Knowledge (TK) is constantly in flux with new technologies emerging rapidly. Key to higher education is the affordances and uses of new and existing technologies in relation to CK and PK.

It is hard to think of an education environment whereby some form of technology is not adopted by student or teacher. This is clearly vital in distance learning environments whereby digital technologies are the primary communication medium. Consider what one might call ‘face to face’ campus education, technology will mediate the teaching and learning experience in some way, be that PowerPoint slides used and shared, e-mail communications, virtual learning environments, students searching the internet for key terms in the curriculum and lots more. When describing both of these scenarios we are building up a picture of a network of students, teachers, digital resources and computer hardware. These complex networks include all elements of TPACK and their intersections.

In this complex, networked environment it is difficult to distinguish between the ‘online’ and ‘offline’ when looking at learning from a student’s perspective and making such distinctions can result in the essentialising properties of technology (Fawns 2019) which may narrow ways of thinking creatively about adopting technology into a curriculum design.

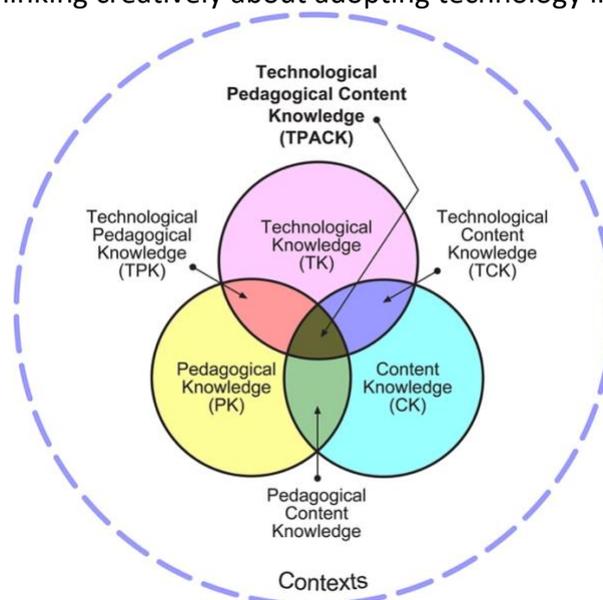


Figure 2: TPACK image - Reproduced by permission of the publisher, © 2012 by tpack.org

These networks in practice are described by the broader field of Networked Learning. Networked learning focuses on three sets of phenomena – human and interpersonal relationships, technology and collaborative engagement (Networked Learning Editorial Collective (NLEC) 2020). Siemens (2004) adopts the concept of the network in the learning theory of Connectivism which embraces the idea of access knowledge growing exponentially in the 21st century and that as teachers and learners we are connected to each other but also with internet technologies such as social media and online materials as part of the curriculum but also huge amounts of online information.

## **Design**

TPACK, Networked Learning and Connectivism provide us with conceptual tools to understand the complexity of learning in the 21st century. To try and make sense of such complexity and provide students with a sense of structure and guidance we can look to the field of design. Design thinking has gained popularity beyond traditional design disciplines (such as graphic and product design and architecture) and ways of working and thinking have been adopted by others, such as business, social policy and health care. The concept of design thinking is a way of thinking and approaching a project to move from the existing situation to the desired one:

Design thinking and the designers who say they practice it are associated with having a human-centered approach to problem solving, in contrast to being technology- or organization-centered. They are seen as using an iterative process that moves from generating insights about end users, to idea generation and testing, to implementation. Their visual artifacts and prototypes help multidisciplinary teams work together. They ask, “what if?” questions to imagine future scenarios rather than accepting the way things are done now. (Kimbell, 2011, p.287)

An associated field which has emerged in the last decade is UX (User Experience) and Experience Design (Hassenzahl, 2013) which looks at purposeful and deliberate design of experiences, often using technology. By thinking and working like a designer and thinking of formal education as the design of experiences offers us the conceptual tools to take into account technology, pedagogy and content but also the context of the student and many other factors which can influence ‘the student experience’. Take for example an 8-week distance learning module, considering the outcomes for each week and how to sequence and scaffold activities (Focht-New, 2019) is both an educational and user experience design challenge.

Adopting the approaches of design thinking and user experience design has emerged in the field of learning design (or instructional design) in both education and industry learning and development. Learning designers working with faculty and multimedia production teams can ask those ‘what if’ questions and work with faculty as a collaborator, experienced in online learning environments offering new perspectives to educational ‘design problems’ (Wiley Education Services. (2019).

Influential educational and pragmatist philosopher, John Dewey described education as 'experience' (Dewey, 1938) in that education should not be the transmission of knowledge but experience, experiment, purposeful learning, freedom of thought, all situated with students' prior experience, both in education but socially and potentially professionally. A risk in combining education and UX is that students can be conceptualised as receivers of knowledge, using passive transmission of online information, something in which Dewey warned against as is Ramiel (2019) when contrasting the idea of 'user' or 'student' in the context of educational technology. We can see here that the term 'content' may be problematic in that we see learning as the transmission of content from teacher to student. Dewey, along with many learning designers would advocate a much more student active approach to education whereby students are engaged in purposeful activities which are relevant to their previous experiences both educationally, socially and professionally.

### **Design as an overarching principle for technology, pedagogy and content knowledge**

The modern, technologically mediated world is a network of digital technologies in which access to knowledge is being widened continually. Pedagogy knowledge and content knowledge are described as traditional teacher bodies of knowledge with technology knowledge now embedded as a third aspect of knowledge in education (TPACK). The intersections of these bodies of knowledge are complex and networked with many nodes both technologically and socially. I have suggested that an overarching principle of design is required to bring all of these bodies of knowledge together, to think like a designer to imagine what could be and how to achieve a desired end. More and more common is the role of the learning designer to facilitate and work with faculty to develop experiences which are purposefully and deliberately designed with the student at the centre incorporating TK, PK and CK to achieve desired educational outcomes.

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