Beyond the Pedagogic models of Technology Enhanced Learning: An inquiry into the conditions into the construction of educational theories

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In a passage in Diana Laurillard's book on "Learning as a Design Science", she states:

> *"The promise of learning technologies is that they appear to provide what the theorists are calling for. Because they are interactive, communicative, user-controlled technologies, they fit well with the requirement for social-constructivist, active learning. They have had little critique from educational design theorists. On the other hand, the empirical work on what is actually happening in education now that technology is widespread has shown that the reality falls far short of the promise." (Laurillard 2012, p83)*

Laurillard goes on to restate her theory of conversational learning, first presented in 1999 (Laurillard, 1999), using this as the foundation for an approach to designing online learning. However, in addressing the challenge of "reality falling far short of the promise" there is an absence of critique of theory. Instead, there are new recommendations for practice. I will argue that the phenomenon of a lack of theoretical development needs explaining as urgently as the failure of existing theory to explain events.

Most interventions in educational technology, from VLEs (Britain and Liber, 2002) to the Hole-in-the-wall (Mitra, 2010) to MOOCs (Siemens & Downes, 2009), are situated against a background of theory. Researchers coordinate their arguments with their interventions in the hope that transformative results in the classroom will validate their theoretical perspective and endorse their technical intervention. However problems of empirical verification and falsifiability in education (as in most of the social sciences) mean that the value-freedom of evaluations is challenged: the gap between theory and practice persists as emphasis shifts away from a drive for better theoretical description towards practical prescription.

Behind this issue remain questions about the relationship between theories, researchers, practitioners and the academic community in educational research. That the personal identity of researchers becomes associated with the validation of a particular analytical perspective or a theoretical proposition means that to critique theory is not just an intellectual demand to articulate new theory (which is difficult enough), but it is also to question the theoretical assumptions that often forms the basis for professional and personal identities of the researcher. On top of this, critique of school or college structures (which are often blamed for implementation failures) provides a more ready-to-hand target for critique rather than theoretical deficiency.

At the root of the question lie methodological and ontological questions concerning the apprehension of cause and effect in education. For Hume (1748), whose thinking was so fundamental in the establishment of scientific method, there was no possible direct access to real causation: causation was a mental construct created by scientists in the light of regular successions of observed events. The models of education present an interesting case of Humean causal theory because there are no regular successions of observed events: events are (at most) partially regular (see Lawson, 1999). Given that merely partial regularities are observable, what are the conditions for the construction of educational theories?

The Kantian Foundations of Modelling Learning

The basic concept of "modelling learning" which Laurillard builds her theory on is a methodological approach which addresses the problem of demi-regularities in education by exhibiting isomorphism between real practice and modelled practice whilst at the same time providing a guide for intervention design. However, whilst models present features of practice like "teach-back", the substance of what is modelled is the human subject – whether a teacher or a learner. In this way, the tradition of educational modelling can be seen to be a direct descendent of Kant's idealising of human subjectivity (the transcendental subject), where instead of categories of understanding, there are mechanisms of interaction. Laurillard reveals her debt to cybernetic thinking whilst at the same time awareness of the Kantian connection opens up a potentially useful critique.

Laurillard's conversational model represents an attempt to subsume existing models (those of Dewey, Vygotsky, Piaget, Kolb, etc.) within a framework of 'conversation' which she derived from the Conversation Theory of Gordon Pask (1976). She defends the fact that these models of learning haven't changed by arguing that learning doesn't change. In examining this, there are three principal problems with Laurillard's position regarding learner modelling. These will be explored in turn:

1. The problem of 'actualism' (Bhaskar, 1977) and correlationism (Meillasoux, 2012) in the postulation of determinate causal effects in teaching and learning

2. The problem of human agency and ethics

3. The problem of modelling "real" people

Conclusions: Moving beyond the theoretical difficulties: new currents in the conception of information

Drawing on recent work by Terrence Deacon on information (2011), the attachment theory of Bowlby (1969) and the realist methodology of Bhaskar (1979), I highlight the opportunities for rethinking educational processes in the light of evidence of the predictive failure of theory, together with the broader social dynamic that tends to avoid developing theory. This approach involves thinking about absences as well as presences in events in online engagement, ethical concerns and concerns about values – not just values of learners, but values of teachers. Armed with a deeper conception of human value, the problem of idealised human beings in cybernetic models can be addressed. Processes of attachment, personal value and social status can be used to generate narratives of educational engagement and researcher practice which appear richer in their characterisation of lived experience, anticipate patterns of engagement and disengagement with online learning, and thus avoid the pathologies of subjective idealism.

Recent interventions in educational technology such as MOOCs highlight the deficiencies of current theory. I refer to examples of technologically-mediated learning experiences including the use of YouTube videos by artists, and open-source software development on platforms like GitHub to both the deficiencies of existing theory and the promise of new theoretical approaches. Fundamentally, the challenge of such approaches is to steer new interventions in ways where the gap between theory and practice can be reduced.

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