

Learner Experience Variables

Activity	Level I	Level II	Level III	Level IV	Level V
Level I	Level I				
Level II		Level II			
Level III			Level III		
Level IV				Level IV	
Level V					Level V

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This post discusses an idea I’m working on as part of further implications arising from the PhD. The idea is the potential to develop learner experience variables data values that could be used to help machines see more complex kinds of learning experience present in digital interactions and learner generated content within emerging technology mediated smart learning contexts. In turn this could potentially help to provide smarter knowledge and interaction delivery to each learner on a stage by stage basis of any learning activity in an emerging technologies supported context.

Following the development of the table for ‘understanding experience complexity’ (see below), and then thinking about the learner generated content that needs to be analysed *in some way*, I came upon the idea that I could grade it somehow using this table of variations, with added Bloom’s scores. I’d already developed a table of ‘pedagogical’ equivalences – in fact I’ve done this several times – between Bloom’s Revised and SOLO taxonomies and various factors relevant to the study. But I needed to develop the idea further. This post contributes to that thinking.

Background thinking

Early in the project I matched equivalences of Bloom’s Revised and SOLO to what I was calling ‘pedagogical aspects of interest’ (PAI), which were knowledge construction, role and identity, digital and information literacy and overall engagement. In the absence of any data or even any adequate understanding of the project, I placed simple description assumptions of levels of experience of these PAI in a table and matched these to Bloom’s and SOLO levels. Though this was only useful to illustrate very early concepts of ‘pedagogical experience variation’ for smart learning journeys, the idea stuck and I ran with it a bit as even though it was pointless of itself it seemed to represent something important.

Much more recently (early 2019) I made a complex table that had these same PAI in relation to multiple other related equivalences:

- Beetham’s (2012) notional networked learning activity types, as this simple framework had provided a solid starting point for the whole project.
- The most popular pedagogical topics of relevant discourse that my brief overview meta analysis of literature had thrown up – participatory, community, interactive, identity and collaborative, (which luckily were very relevant to ‘connectivist’ style learning).
- Some ‘Learning 4.0’ factors from a book chapter by Peter Henning (2018) that has extremely relevant thinking, though (in my view) loses itself in overly complex technical scheming. (As an aside, that chapter is in a Knowledge Management book, not a technical or educational book. Another sign of the convergence and approaching singularity of all disciplines perhaps!).
- The Digital Competences Framework factors, as I had by now realised my work situates very closely to that framework and supports the DigComp2.1 aims.

However, this table in the end didn’t tell me much, beyond the fact that many things concurred, confirmed and supported each other in this post connectivist style learning.

Breakthroughs in experience variation categories

In the past three months I have made several recent breakthroughs which are key to the entire project being a success. Firstly, the understanding of what the experience variation categories for the journey as a whole are that were staring me in the face from the data, and being confident enough, and able to justify making decisions to use them; then the inclusivity in these categories, and the levels of depth of experience within them; finally developing the table of understanding experience complexity that provides an overall framework of clarity for all levels and all categories for this system of analysis and thinking. This shows clearly the possible relationships: the horizontal, vertical and diagonal inclusivity and progression that is possible or evidently happening in the experiencing of a smart learning journey. (Of note is that this understanding and related breakthroughs happened because I wrote papers about the stages of findings, which I believe helped to focus thinking in tighter ways.)

The four categories and levels with their simplest descriptions are shown below:

Measuring a learning activity experience Levels of experience complexity, in a context of a geo-spatial learning activity - a "smart learning journey". <small>"Understanding experience complexity in a smart learning journey", Linder, 2018, in press</small>	Category A: Doing the tasks	Category B: Discussing	Category C: Being there	Category D: Knowledge and place as value	
	Level 4	Research tasks and begin to understand, take time doing and reflecting on tasks	Share tasks and content, do additional learning, discuss related experience and knowledge	Use it, being in the places, use the atmosphere, take more time, seeing the whole and related parts	Knowing and seeing knowledge and place as valuable, personal experience, deeper engagement and possibilities
	Level 3	Tasks indirectly related to assessment or assessment	Discuss tasks and topics in relation to time and place	Experiences in the place relating to other people, aspects and memories. Make connections between places and knowledge	Engage further with knowledge in topics, create optimal content for tasks and all locations
	Level 2	Do the tasks of interest, already related to assessment or assessment	Discuss the tasks, help each other with tasks and tech	Locations are of some interest, potential for learning, creativity or inspiration	Click a few content links, save links for later, make screenshots of suggestions of tasks
	Level 1	Do the tasks, go home	Discuss who does the tasks, how technology works	Go to locations, do tasks, go home	No engagement with content or knowledge, often create or casual content

Categories of experience variation for the smart learning journey as a whole

Now that I have much firmer ground from which to go forward, it has become clear I no longer need the 'notional' PAI, as these are now replaced with those present in the categories of experience variation themselves, having been derived from the work itself (tasks, discussion/collaboration, being there and knowledge and place as value). The earlier table of pedagogical interpretive equivalencies is still relevant, I will just remove the PAI that I myself conceptualised early on in the study.

Grading learner generated content with an experience complexity rubric

Thinking about how to grade the LGC, I made an equivalency table between the surface to deep learning of the four categories of experience variation for the smart learning journey. The table shows a summary of these categories and levels of experience complexity with the relative Bloom's Revised 'score'. Also included is a summary description of the surface to deep learning concept (from Marton & Säljö, 1976), and I make use of descriptor terms taken from Hounsell's work about types of essay writing (2005), of arrangement, viewpoint and argument.

This then clearly shows how Bloom's Revised and/or SOLO can be matched to equivalent levels of experience complexity for the four categories, and I think works quite well. This becomes the rubric of variables by which I 'assess' the LGC that has been uploaded to Edmodo class areas in my study. I think this is fairly tidy and makes total sense.

Measuring a learning activity experience

Possible interpretation of experience as measurement of learning, and potential data points. These might be generated from a mixture of:

- Machine saving of content interactions:
 - AR info triggers at coords;
 - LGC uploads at coords;
 - LGC machine interpretation
- Participation interactions
- Machine or human generated assessment quality

	Cat A	Cat B	Cat C	Cat D	Surface to deep learning relationships	Bloom's Revised	SOLO
Level 4	4A	4B	4C	4D	DEEP APPROACH shows intentionality to links, logic, knowledge and locations to contribute to argument, to understand further potential negotiation-possibilities, ideas, application	5/6	5
Level 3	3A	3B	3C	3D	SURFACE TO DEEP #2 moving towards argument concepts, facts and journey begin to be seen as inherently relevant to value settings, more related to imagination, creativity, motivation, inspiration	4	4
Level 2	2A	2B	2C	2D	SURFACE TO DEEP #1 some engagement with 'viewport', building elements of meaning and connection resulting from the journey participation	3	3
Level 1	1A	1B	1C	1D	SURFACE APPROACH shows intentionality of being seen as fact, judgement only. The bare minimum required.	1/2	1/2

Experience Complexity surface to deep learning, with Bloom's & SOLO

	Cat A	Cat B	Cat C	Cat D	Bloom's Revised
Level 4	4A	4B	4C	4D	5/6
Level 3	3A	3B	3C	3D	4
Level 2	2A	2B	2C	2D	3
Level 1	1A	1B	1C	1D	1/2

Experience Complexity Rubric

Experience Variables Data

So how can this work? What is needed is a clear rubric and representative experience complexity variables to assign to each piece of content or textual comment. The two images below show how we might convert a human grading of learner generated content using this rubric to then appreciating what it could achieve at machine learned interpretive scale.

Measuring a learning activity experience

This grid of scores could track *learner participation experience variables* in relation to *learning quality values*:

- Human assessment might grade in a way consisting of 1A2; 2B3; 2C3; 3C3; 2A3; 3D4; 4D5; 4C6; along a set of micro activities.
- Machine learning could somewhat mimic and learn this for interpreting learner content and interactions to generate data

	Cat A	Cat B	Cat C	Cat D	Bloom's Revised
Level 4	4A	4B	4C	4D	5/6
Level 3	3A	3B	3C	3D	4
Level 2	2A	2B	2C	2D	3
Level 1	1A	1B	1C	1D	1/2

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