*This article serves as an exercise in how to consolidate argument for methodological process in a context of developmental phenomenography. It is a work in progress, being edited currently. It's based on 13k words of draft 'thinking', most of which will not be included in the thesis final version. That might, if it's lucky, form some basis for papers that discuss these kinds of challenges. But this summary is vital for my understanding of how to write about this stuff in a coherent non-flabby way.*

**Background**

I have been challenged recently by complex issues regarding the nature of the project and the requirements of the procedure necessitated by it. The problem has been whether or not I'm 'going against' received wisdom of usual methods/process for phenomenographic studies, or proceeding as the project best benefits from. I've attempted to create a clear perspective by writing – to teach myself what the literature says and to try to find a way through the maze of phenomenographic precedent. I needed to argue out what I'm doing (investigating) and why I'm doing it that way (methods and procedure). 13k words later on phenomenographic context of responsive conversational partnership interviews, bracketing, delimiting explicit aspects of the interview, iterating analysis perspective lenses and interpretations, and things did not feel much clearer. To make it worse, I'm still negotiating the stress of only having half my data at this late stage, so these theoretical framework issues for the core methodology are therefore feeling very acute.

Last week I think I finally made a small mental breakthrough which I *hope* might help to clear my mind. After continual reflection and re-reading what I'd written several times, I realised I needed to fully establish what it is I'm investigating.

## What is being examined?

The fundamental question to ask is:

> Am I examining learners conceptions of a smart learning activity, or am I examining learners experiences of aspects of a smart learning activity?

By acknowledging I'm setting out to do a lot of the latter and somewhat of the former as a consequence of the latter, I may be able to forge a good position.

- *My 'delimited elements' of the smart learning activity interview are interpreted in a first iteration of analysis by taking all utterances – from all four delimited elements (these being place, knowledge, collaboration and technology) – as a whole, examining structure of awareness variation, to form overall categories of conception of a smart learning activity, at collective level. A system for doing this is being developed (after Edwards, 2005, and Cope, 2004)*
- As a second iteration, each delimited element can *potentially* be analysed in some way[1] *within itself* to see how variation and commonality of experience is formed at collective level for each element. This would ideally take the first iteration findings and 'reshuffle' into the delimited areas, if this is possible.
- Thirdly, analysis looks at 'pedagogical aspects of interest' using a level of presence and complexity 'score', again after Edwards, 2005. Other phenomenographers (*Bruce, 1994? Not referenced*) who use a level of complexity scale need to be investigated. This can derive possible categories of variation for pedagogical aspects of interest. This  iteration also benefits from a triangulation with a Bloom's/SOLO measurement for any digital content generated by learners in the learning activity event (see current thesis chapter 3 tables.)
- A final iteration can then 'scoop up' each small cohort group and their specific smart learning

activity event, to look at a 'micro-pool' of meaning that might be found in that context.

*I am examining experiences of an actual event and the parts of it, and in consequence potentially discovering overarching 'conceptions' in both general and 'hypothetical' contexts, after Åkerlind, 2005b, p. 66, or S̲ä̲ljö's (1979) example questions.  From this position I may be able to establish clarity and evidenced reasoning – the justification – for how I am going about it.*

## Summary of relevant issues

Key thoughts in summary, that will permit much more concise argument to be formulated, are:

1. It's an actual event that learners are recalling – the smart learning journey they participated in (or not).
   - To examine a past actual event (rather than overarching 'conceptions'), aspects of a method known as the 'elicitation interview technique' (EIT) have been employed.
   - EIT has been combined with phenomenographic analysis before (Jarrett & Light, 2018).
   - EIT is used in HCI and usability in recent years (Hogan et al., 2016), attempting to gather more useful user data, what they 'experience' rather than just what they 'do'.
2. I'm using *some* of that technique in relation to aspects of the *past event*, probing these aspects for their experiential reflections. But, I'm *not* using the specific form of elicitation interview technique. *(EIT is basically creating an illusion of a think aloud 'present tense reflection' from an interviewee, of a specific past event they experienced.)*
   - Jarrett et al (2014), argue that maintaining the present tense is difficult: "discussion within interviews was more 'activity description' than 'activity reliving'"(p. 301) in EIT. Perhaps this chimes with the  phenomenographic 'EIT influenced' responsive technique I feel I have employed. This permits the 'how' (the structural *act* of learning) to then be followed up by the 'what' or 'why' (the referential direct or indirect object of learning) probing questions. *Both of these (may) have a further structural and referential aspect. See also #3 and #7.*
3. Im using flexible responsive interview technique, within some of this EIT context. *Combining EIT with responsive flexible interviewing may not be able to be justified (tbc).* Carrying out the interview in a strongly empathetic way, moving at the pace of the interviewee to mutually uncover reflections about their experience. These can manifest in a completely emergent way, or be gently prompted by the interviewer, for broad delimited aspects of the activity (this being based on a pragmatic systems thinking approach to a smart learning activity). These aspect reflections are both 'structural aspects' ('how' and 'what', activity descriptions) and the 'referential aspect' (the 'what' and 'why' of learning and experience).
   - Ashworth & Lucas (2000) especially stress the importance of empathy to support bracketing.
   - I can support bracketing in responsive interviews using Rubin & Rubin (2012).
4. Delimiting elements of the phenomenon of investigation – the smart learning activity – may now be more able to be argued, because I'm examining experience of an actual event with these (delimited) aspects in it, with conceptions of the phenomenon *in general* appearing *as a consequence of having participated in this past event.* I then probe the variation of experience in these 'hypothetical' conceptions of aspects of the smart learning activity, in addition to the delimited aspects of the event itself.
   - Are the delimited elements structural delimitations only, not referential? Would this adversely affect structure of awareness interpretations? *No, they are not only structural:* a participant may regard some aspects of their experience as 'technological' (for example) when no direct relationship to technology seems 'obvious'. Likewise,

interpretations about 'place' (again, for example) may involve access to technologies, or interactions with peers or other persons. The lines between delimited elements and how they might 'work' in experience awareness are blurred and involve meaning as well as structure.

- A (key) basis for these delimitations of the phenomenon is my own background as a researcher and practitioner within user experience, usability and website evaluation projects. I, as the researcher, have an "assumed knowledge of the phenomenon" to attempt to "identify critical aspects of the phenomenon" (Edwards, 2005, p. 100). *Edwards uses introductory questionnaires and probed interview techniques.*
- Trigwell (2000, and 1994) is a basis for precedent of interview 'sections' in phenomenography.
- Other phenomenographers who argue in favour of specifics of interview topic or researcher 'input', e.g. Roisko, 2007, pp 121-123, Ashworth & Lucas, 2000, p. 299, Berglund, 2005, p. 35, Koole, 2011.
- Use EIT as part of the justification for 'drilling down' aspects of the past event. This may be appropriate as part of the developmental nature of the phenomenography, in this case, for learning design 'requirements'.
- The 'system' of a smart learning activity implicit in work such as Spector's (2014) as a basis for how interview is structured and then analysed iteratively at collective level.
- May also use Dron, J. (2018) to back up a smart learning environment's "constituent parts, including those of its human inhabitants and the artefacts and structures they wittingly or unwittingly create".

5. Correlating Bloom's and Solo in relation to phenomenography is also a consideration (for any learner generated content in the smart learning activity). This has been done previously in phenomenography, by Newton & Martin (2013).

6. Hitchcock (2006) can be used to justify combining methodologies and to build justification for the idea of different data analysis, highlighting Åkerlind (2005a) especially, from Hitchcock's perspective.

7. After reading Harris (2011), I realise that clarification of how I interpret the *internal and external horizon* in relation to *theme, thematic field and margin* of Marton (2000), after Gurwitsch (2010) is key. Harris (2011) lists 36 studies showing variations of this. Interestingly, she lists Sylvia Edwards (2005), on whose study I have built my own, as challenging Cope's 2004 interpretation. My own assertion will be that these concur, Edwards only acknowledging the blurred line between internal/external horizon and theme, thematic field to margin.

- I will use S. Edwards' (2005) and Cope (2004) to create scales after Cope's table model.
- I need to clarify how I will code – using open in vivo coding as much as possible for first layer, moving to an open axial style second layer? etc. Cosham (2017) and A Edwards (2011) may help with this.

8. An aspect fundamental to the study is to clarify *what 'effective' learning is.* I have considered this in a variety of ways. I believe, as pragmatism is at the heart of any pedagogical guide to smart learning I may formulate, that the way I need to interpret effectiveness of learning is in relation to smart learning literature, not any notion of assessment or graded measurement. Rather, to use Liu et al's (2017) benchmark statement about "learning to learning, learning to do and learning to self realisation" for how smart learning aims to embrace a holistic concept of learning, for the learning city and lifelong learning in all forms.

- In other words, effective smart learning environments may be considered as:
  ***"enhancing independent learning in an environment of discovery and collaboration, building knowledge for skills, techniques and problem solving in an engaged connected participation."*** *This statement could be said to be the aim of the outcome of the thesis.* This meets Beetham's model of networked learning activities head on, bringing it up to date for hybrid places and spaces enhanced both by

technology and activity design. This is an aim of the thesis, to find empirical evidence for this statement, and is the essence of question 3.

- Work relating to this view of effective learning found in:
    - Dron, J. (2018).
    - Gros, B. (2016).
    - Hwang, J-G. (2014).
    - Spector, J. (2014).

9. *To posit: "by situating the learner in places and challenges that create scenarios of natural engagement and discovery (physical, imaginative, creative, sensory), learning can occur on multiple levels. The immersive context that the learner is placed in can elicit the smart learning principles of learning to learn, learning to do and learning to self realisation muted by Liu et al (2017)."* This is **social constructivist, social constructionist and connectivist** in nature. Learning design therefore is addressed in these participatory pedagogies, to a greater or lesser degree, for differing purposes and types of learning and learner. **This is the essence of question 1, and leads into question 2:** Aim to look for and attempt to evidence this stance, using:
    - data found in prior literature (the meta analysis, for predominant discourse relating to faceted search employed)
    - the experience of the learners ranging from
        - overall structure of awareness conceptions variation
        - pedagogical aspects of interest level of presence and complexity
            - triangulating with LGC using Bloom's and SOLO scores
        - delimited system elements
        - micro-pool activity meaning variation

**A 'Table of Justification'**

Another way to see this justification is to use a table, to sort out who is justifying what in my whole process. This table is helping me to organise the ideas and argument, a work in progress.

[Google Doc table of justification](#)

*Key texts I have found that might be able to help me atm: Roisko (2007) thesis, that has clear and fairly indicative argument for the kind of position Im taking, though it's not 'the same'. Jarett and Light do some (I think) very relevant work combining (past tense) EIT and phenomenographic analysis.*

## Connections between methodology, method, process and research questions

It is imperative to clearly indicate the relationship(s) between chosen methodologies, methods and process and the research questions. The audit of the process must show why and how it relates to the questions, and how the questions have defined the process, within a context of theory and existing practice precedent.

1. Can we formulate an effective pedagogy for smart learning using Connectivism as a foundation?
2. How does this pedagogical framework inform the design of smart learning?
3. How can we measure the effectiveness of smart learning involving both assessment of learning (content) and assessment for learning (process)?

Question three in a sense defines the project and is in a sense the first question, as without resolving this, the other two questions cannot be resolved. It's essence is noted in #8 above. As a consequence of #8, we can then attempt to define the parameters of a pedagogical framework, or some semblance of it, in #9. By then looking at and defining (evidencing) #9, we are able to answer question one. Question two follows closely after, being aligned to how question one is resolved.

## Footnotes

1. Some type of analysis is needed to delimit element structure of awareness. Perhaps use level of presence and complexity, as would be used in pedagogical aspects of interest iteration. First iteration anticipated to be a structure of awareness derived from meaning found in *any* aspect of interviewee transcripts, this could be 'creativity', 'weather', 'friends' etc (i.e. *not (only) derived from delimited elements).* This meaning then analysed according to Edwards/Cope interpetations of internal and external horizon. This is all ongoing work.

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