



The Challenges of Transformational Learning at a Distance: a year in the life of an Open University learning unit on the environment

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Understanding the environment

The teaching of systems at the Open University has extensive experience of enabling transformative learning and provides a long history of challenging the predominantly reductionist and mechanistic teaching provision. The Open University has been providing courses in systems thinking and practice since its inception and the course *Understanding Systems: making sense of complexity* (T214) is the latest offering for level 2 students. This course was presented for the first time in 2008 and is taught from February to October (eight months of part-time study at a distance).

This case study focuses on the second study unit (Block 2) of T214 – titled *Understanding the Environment: natural systems* – which involves eight weeks of study and the submission of two tutor marked assignments (TMAs). The primary aim of this unit is to encourage the shift away from reductionist anthropocentrism towards a

holistic and eco-centric worldview. The transformational learning that is sought is primarily about expanding students' values and consciousness beyond role specialisation, short-termism, the confines of socio-economic systems and the perception of a limitless capacity for economic growth.

The learning experience

T214 Block 2 is entirely based on students' own engagement in personal explorations. Students have to discover the relevance of systems concepts based on their experience through personal activities. More significantly, all assessment in the unit is based on the outcomes of these activities.

This is how one student experienced the learning design of the unit:

Block 2 is unlike any other block, on any OU course I have ever done... [The learning unit] tailored each of the TMA questions around the specific activities completed throughout the

block. Although this meant that the work load increased considerably ... it also gave a feel that each of the individual block components had a relevant purpose. In addition it created an environment where I felt much more involved and become absorbed in the materials, rather than trying to extract relevant parts that were beneficial to the TMA. This was more suited to my particular learning style, as I find it very difficult reading and ingesting mass quantities of information.

T214 Block 2 moves away from an exclusive emphasis on traditional analytical-logical reasoning, verbal communication and supposedly 'value-neutral'

teaching. For example, initial activities strongly emphasise the use of intuition, visual communication and surfacing values as key skills required in the initial exploration of complex situations.

One of the very first activities students engage in is an exploration of their personal cognitive style (Allinson & Hayes, 1996) and multiple intelligences (Gardner, 2006) (Figure 1); however, the aim here is to clearly establish the distinctive blend of skills development that this learning unit requires. These initial exercises are explicit in preparing students to go beyond a logical approach to modelling (and beyond a verbal approach to communicating) complex situations.

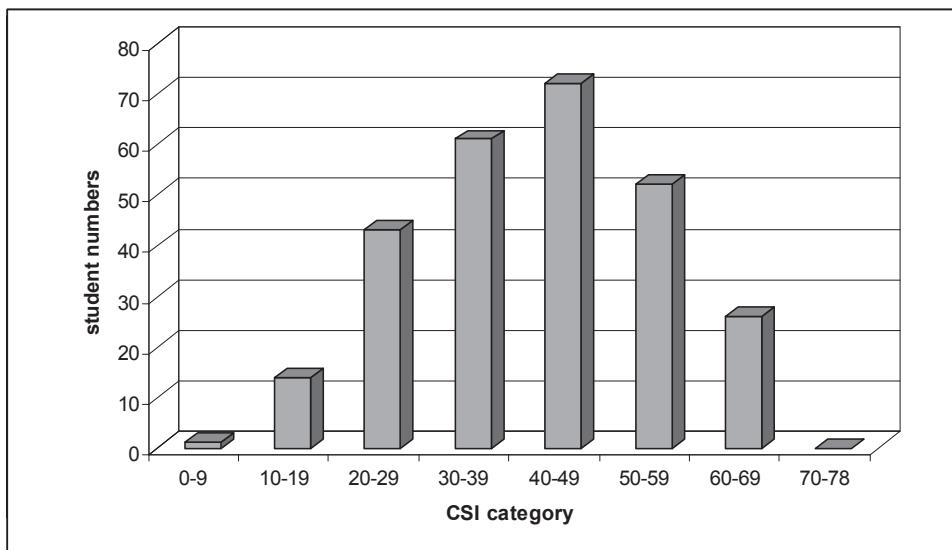


Figure 1: Distribution of Cognitive Style Index results amongst the 2009 student population (the 0-9 category represents an extreme intuitive cognitive style, while category 70-78 represents an extreme analytical cognitive style).

In subsequent activities, students are purposefully asked to engage with significant amounts of factual information present in third-party materials (in 2009, the item selected for critical engagement was Colin Mason's 'A Short History of the Future: surviving the 2030 spike'). Students are encouraged to allow intuitive faculties to reveal relational patterns and explore these through discussions with fellow students. A subsequent activity explores how value judgements play a significant role in the development of mental models. Students are asked to vote on four 'probable' and 'hoped-for'

visions of the future as described in Costanza (2000) (Figure 2). Each of these four visions can be associated with particular worldviews that are aligned with fatalist (Mad Max), hierarchical (Big Government), individualistic (Star Trek) and egalitarian (Ecotopia) modes of social organisation (Thompson *et al.*, 1990). The differences between 'probable' and 'hoped-for' visions of the future also revealed a sense of powerlessness that some students feel (with the gradient from Mad Max to Ecotopia representing increasing confidence in personal control over the future).

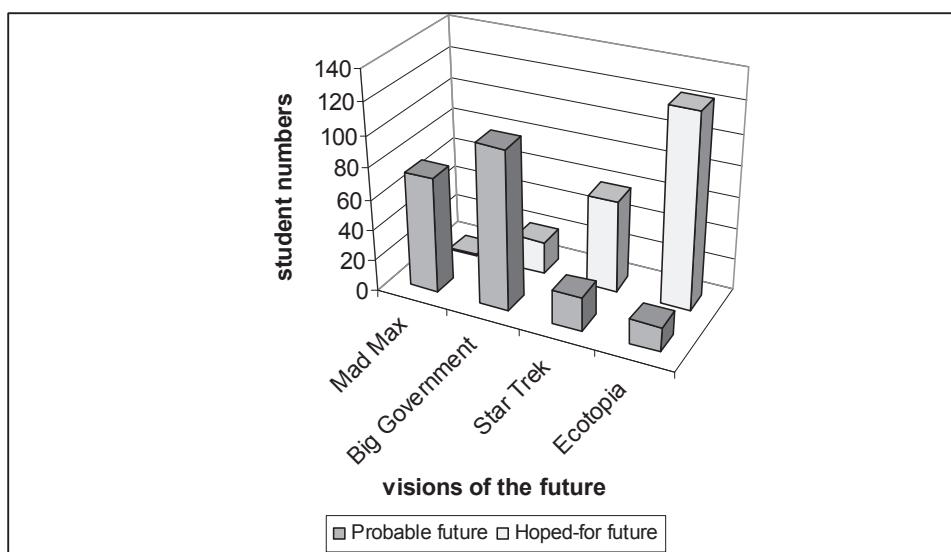


Figure 2: Distribution of votes for probable and hoped-for visions of the future amongst the 2009 student cohort (based on Costanza (2000)'s four visions: Mad Max; Big Government; Star Trek; Ecotopia).

Later activities converge on more rational, mathematical and analytical skills in order to support (or question) intuitive

insights. Students are specifically asked to become familiar with quantitative information gathering and analysis, and the

development and exploration of computer simulations. A key activity is an estimation of personal ecological footprints (Best Foot Forward Ecological Footprint Calculator Version 1.6). A majority of students report an ecological footprint above the 2.1 global hectares per person deemed to be sustainable (Figure 3) (WWF, 2008). The 2.1 gha figure, calculated in 2005, is now certainly out of date as the global population has grown and biocapacity has continued to degrade. A subsequent activity is devised to allow students to simulate the system dynamics of global population growth with respect to the availability of global biocapacity. Here, students experience exponential growth, overshoot and collapse in population numbers.

Students have the option to be directly involved with the model building process through programming the actual mathematical algorithms and relationships amongst model components – a marked shift from black box to glass box simulation so crucial in developing quantitative and integrative thinking skills (Sheldon, 2006). Some find the mathematics and model building an extremely challenging experience; however, maintaining an appropriate balance between the qualitative, intuitive sense making and quantitative data analysis and validation is still seen by some as an essential prerequisite of systems thinking and practice (Sterman, 2002).

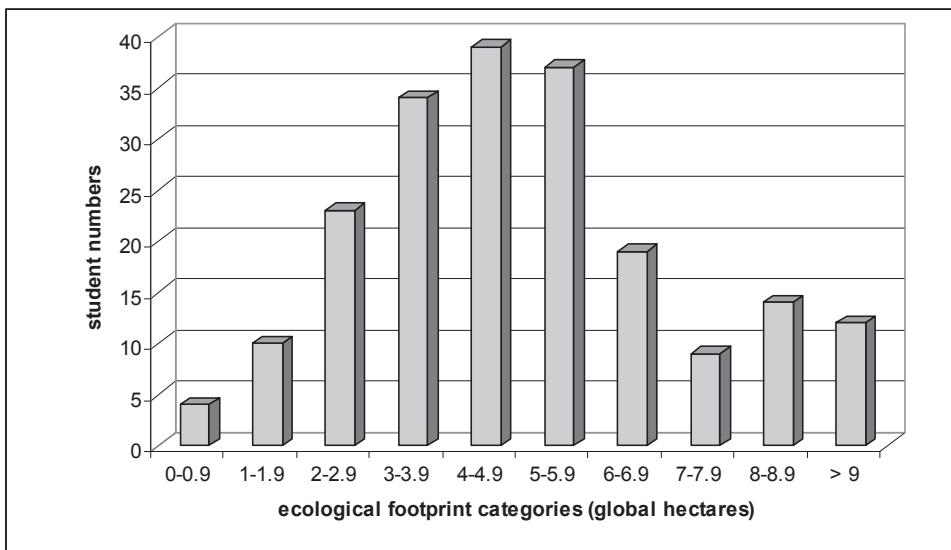


Figure 3: Distribution of ecological footprint results amongst the 2009 student population.

The final activity asks the whole student population to contribute

towards an 'Earth Wiki' using the conceptual knowledge,

practical techniques and systemic skills developed throughout the learning unit. The Earth Wiki was first developed by the 2008 student cohort when they were challenged to address the following question:

Is it possible for humanity to define, arrive at and sustain an ecological footprint that is within the Earth's carrying capacity and simultaneously improve people's quality of life in a way which is fair?

In an effort to help convince some academic colleagues to support the continuation of this activity, one colleague expressed the following:

...Block 2 uses a different metaphor of learning to the normal OU one – it's not an academic telling students the things they need to know to pass an exam or write a TMA. It's much more building a community of learners who learn through participation and collaboration. It makes total pedagogic sense, for me, therefore, that each cohort of students builds upon the previous student cohort's efforts.

Throughout, students are encouraged to engage in intensive online dialogue in order to help clarify the concepts and skills required of them, develop a shared understanding of complex experiences, and finally devise a collaborative course of action.

Transformational experiences and reactionary experiences

As a result of the learning unit's design, there is clear evidence of deep transformational learning experiences for some students:

I have learnt more in this Section than in almost all of my other OU courses put together. I'm not talking about the techniques and tools. I mean something more fundamental – I feel I've started a road that might lead me to challenge areas of my thinking that have become formulaic and stale over the years.

However, this is almost always associated with what I can only describe as the 'disorienting dilemma' as predicted by Mezirow's transformation theory (Mezirow, 2000):

As I can now see, pushing us to our limits was a designed part of the learning process. Unfortunately for myself and I'm sure others, my push took me over the edge somewhat as I found emotional and psychological effects of the course too much alongside the pressures I am going through in life at the moment. The result was that I came very close to leaving the course to get a bit of time out.... Despite my near nervous breakdown :), I have learnt so much from this block and truly

hope other OU courses will be presented in this way.

Many students cannot go beyond the catalysing crisis:

I feel the author is so centred on how wonderful their research into this area is they have forgotten that the OU is supposed to teach not break its students. I got no kick from any of this and feel if the author gets a kick out of giving me a mental breakdown they are in the wrong profession.

The challenges ahead

Students come to Block 2 with a wide range of personal backgrounds, partially as a result of the Open University's laudable mission of enabling open access to higher education (i.e. requiring no prior certification). This means that the course attracts a wide range of capacities, which complicates the learning experience in that some students are expected to rapidly develop the required cognitive and transferable skills needed for level 2 study; however, prior learning experiences may not necessarily be helpful if students then become used to the more traditional 'spoon feeding' approach of many Open University courses. In the words of one student:

I am getting a bit fed up with the 'student go and teach yourself' aspects of this course..

The majority of students are already juggling with severe time constraints, including those arising from family, social and work commitments. So it is often a challenge to sustain the expected 16 hours of study time per week, especially when you have a study unit that is based on self-directed, student-centred learning. For the students, the close integration between activities and assignments does not allow for any shortcuts.

Some students are disengaged right from the start:

This stuff doesn't interest me in the slightest, and other than the oil running out in 32 years, it has no relevance to me (I work in the oil & gas industry).

There are therefore significant pressures to simplify and reduce the number of student-centred activities, to limit online dialogue, to limit the scope of assignments, and reduce the environmental emphasis.

What next?

The issues outlined above can sometimes contribute to a wider academic culture of 'playing it safe', where few risks are taken and teaching material is produced that is rarely challenging. This usually results in traditional text-based teaching, where the focus is very much on 'banking education' (Freire, 1972). In

the current climate of retracting financial resources for higher education and increasing pressures to demonstrate the immediate economic benefits of teaching, one wonders about the viability of such a learning unit.

How much can be cut and/or modified from the learning unit before the transformational learning objectives are so diluted that no, or limited, transformation occurs? Is transformational learning personally and institutionally sustainable within the current market-driven climate? The often traumatic experience of transformational learning requires significant emotional support for many students – something which is extremely difficult to provide at a distance. Although I may be able to sustain the personal pressures, it is especially unfair to expect this extra burden to fall on the shoulders of tutors, especially when the contractual arrangements are so limited.

In the current circumstances, the outlook may seem bleak; however, there may be a small glimmer of hope! Our new vice chancellor has acknowledged the need for an urgent collective transition to sustainability and is keen for The Open University to champion this area (Bean, 2009). He also recognises the need to move away from traditional teaching approaches and, crucially, acknowledges that this shift towards both sustainability and innovative teaching can be

painful to students and faculty alike.

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Biography

Andrea Berardi is Lecturer in Environmental Information Systems at The Open University, UK. His research and teaching encompass ecocentric human ecology with a particular emphasis in supporting local communities in participatory action research. The goals that drive his activities are social justice and ecological sustainability.