

BRIDGE THE GAP: SPANNING THE DISTANCE BETWEEN TEACHING, LEARNING AND APPLICATION OF SYSTEMS THINKING IN THE WORKPLACE

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ABSTRACT

This paper reports on a study looking at teaching, learning and application of systems thinking ideas for the workplace. It provides suggestions for designing learning systems to enhance the application of systems thinking in the workplace.

Drawing upon a qualitative interview process, the research looked at experiences of mature part-time students on a distance learning postgraduate programme in systems thinking in practice at the Open University, UK. The study also investigated the experiences of alumni (from the same programme) from the point of view as employees seeking to apply the learning from their studies in the workplace. Interviews were also conducted with employers of the alumni. Finally, a range of stakeholder including those who took part in the interviews were invited to a workshop to explore the design questions to enhance application of systems thinking.

The paper briefly describes three phases of the research. A review of the outcomes of this study prompts some key recommendations for future design of part-time postgraduate courses in systems thinking for professional practitioners. Two broad areas of insight emerge: changes in the way learners are supported during study and attempting to influence the landscape of practice by creating demand for systems thinking skills.

Keywords: Systems thinking, education, design, application

INTRODUCTION AND BACKGROUND

This paper reports on a study looking at teaching, learning and application of systems thinking ideas in the workplace.

The study is based upon based upon the students of a part time Masters programme in Systems Thinking in Practice taught at a distance by the Open University, UK. The programme has been running since 2010 during which time several hundred students have taken one of two taught modules in systems thinking. The Open University has been teaching systems thinking for over 40 years and has shared systems ideas with more than 30,000 people during this time. However, the Masters is the first postgraduate level programme offered.

The study seeks to understand the effects of the learning of students in terms of their ability to systems thinking in the workplace and explore challenges that may be met in that context such that design questions can be addressed that would enhance demand for systems thinking.

The paper briefly describes three phases of the research: firstly, exploring experiences of learning systems thinking through part-time study; secondly, exploring the experience of applying systems thinking ideas in the workplace; and thirdly, beginning a collaborative process of examining better learning design models in the application of systems thinking. A review of the outcomes of this study prompts some key recommendations for future design of part-time postgraduate courses in systems thinking for professional practitioners.

APPROACH

The research was undertaken by a team of 5 systems practitioners involved with the design and delivery of the postgraduate programme in systems thinking in practice. There were three phases to the research. Broadly speaking, the first phase focused upon experiences of learning systems, the second phase focused upon the experience of applying systems ideas in the workplace, whilst the third phase looked ahead to examine better design in the application of systems thinking.

In the first phase, semi-structured interviews were conducted by two research team members with 10 students who were enrolled on one of the two core taught modules. Each researcher interviewed 5 participants for between 45 mins to an hour. In the second phase, the two researchers undertook a series of paired interviews; interviewing an alumnus from the programme and then separately conducting an interview with the direct line manager or employer of that alumnus. In total, 8 pairs of interviewees agreed to participate. Finally, a third phase one-day workshop involved bringing together interviewees from the first two phases along with all 5 research team members and other stakeholders including educationalists, systems practitioners, and other employers, to examine initial findings.

FINDINGS

The following section reports results from the study. Firstly, we present findings about the barriers and enablers to learning for students during their study. Then we summarise some of the challenges experienced by those seeking to apply their learning in the work place.

Experience of learning during study

The results of the study in relation to the experience of learning about systems thinking suggested that whilst most students valued their study, there were four significant barriers to learning that we identified.

One of the challenges that students experienced was around making time and commitment for study and contact with tutors and other students. There are several elements to the modules, including module text books, a module website with core and additional study materials, online discussion forums and online tutorials. On their own these would be significant study resources to engage with but most students are also working full time and the combined pressure of study and work can be overwhelming. As one student commented:

“Yes, it has been a struggle. As I say, not because of the course content, I enjoy the subject and am very keen to learn about it to be honest but I have just found it too pressurised in dealing with the work situation and trying to deal with study at the same time.” (JB1)

Some students also expressed difficulties with engaging in some of the more philosophical elements of module material. The difficulties of the philosophical inquiry seemed to have been affected by the way in which some students tend to manage their part time study. One student noted that

“in a sense I do find it a bit philosophical. In a sense it is because it is like something that is totally new to me...because it is not a full time thing you have to do it in windows of maybe

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one hour two hours, you know...it is broken up into many small small windows...it takes time to see the overall picture” (ZZ1)

Some students enjoyed the specific systems terminology that was used in the module materials, others were more troubled by this language. One student mentioned that

I think I was in shock when I first started doing the... reading it, reading it because the first around that, as I remember was all the stuff about, I can't remember specifically, the terms about feedback, reinforcing loops and I just thought 'that is another language'. I just thought I had completely and utterly bitten off more than I could chew, so that was a surprise. (AS1)

A final challenge was found in terms of the student's experience of engaging effectively with the case study material presented in the modules. Some students suggested that the case study materials were not adequate for them. Students on the modules come from a whole range of different backgrounds, including but not limited to engineering, environment and ecology, IT, health, education, international development, business, accounting, performance art and more. As a post-graduate module focused upon professional development, most students were aiming to translate and apply the ideas being introduced in the study to their context of work. The module materials included case studies, with many of the examples in one of the modules focused upon the domain of sustainable development and environment. The range and scope of case study materials did not cover the range of domains from which students come.

There were also some specific factors that supported learning that participants identified. These enablers included the

- high quality of study materials,
- the richness and variety of voices on the programme (including those of fellow students on online forums) and
- the integration within module activities to work on applying ideas in practice.

Experience of applying in the workplace

When the application of systems ideas in practice was discussed, we found that explicit use of systems thinking in the workplace was somewhat limited. Most of the participants who were attempting to apply the ideas in practice were doing so in something of an under-the-radar or behind-the-scenes manner. Participants tended to work with systems thinking for individual sense making – trying to understand a situation that they were dealing. For example students cited using system dynamics and soft systems methodology to help understand how to tackle certain situations. The students were also using the ideas from the module to conduct off-line design work.

The issues for students were confidence in application and sharing the approaches in public fora where they might not be well received.

For some of the practitioners, such a 'behind the scenes' approach seemed to be experienced as a problematic constraint on the scope of their practice, whilst for others it was a more accepted part of organisational circumstance.

SENSE MAKING

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Students experiences on any learning experience will be different. Whilst some of the barriers and enablers of learning were shared by students on the module, we also found that not all students encountered these challenges and enablers in the same way or in equal measure. In trying to make sense of the variety in experiences of students, we developed some outline sketches or archetypes of systems learners that provided an interesting account for the researchers of the variety in which study on the module was encountered. These archetypes were not seen as typical or even ideal types of learners; rather they were developed by two of the researchers – who also were tutors on the programme –in the context of thinking about the kind of support that could be offered to students to make the most of the enablers and help them meet the barriers to learning. The archetypes are presented in appendix A.

In terms of the finding that most application of systems thinking in the workplace tended to be under the radar or behind the scenes, we initially sought to explain what might be affecting the ability of students to apply the ideas. We found many factors that seemed to contribute to this approach to using systems thinking such as employees understanding and sense of agency, the practitioners confidence in overt application, pressure for action that is 'practical' and within current 'frames' of reference and of course the employees learning from module material. We also found that employers had differing attitudes or modes of engaging with the employees skills in systems thinking which had some influence upon how systems thinking could be used by the learners.

Factors influencing qualities in application of systems thinking

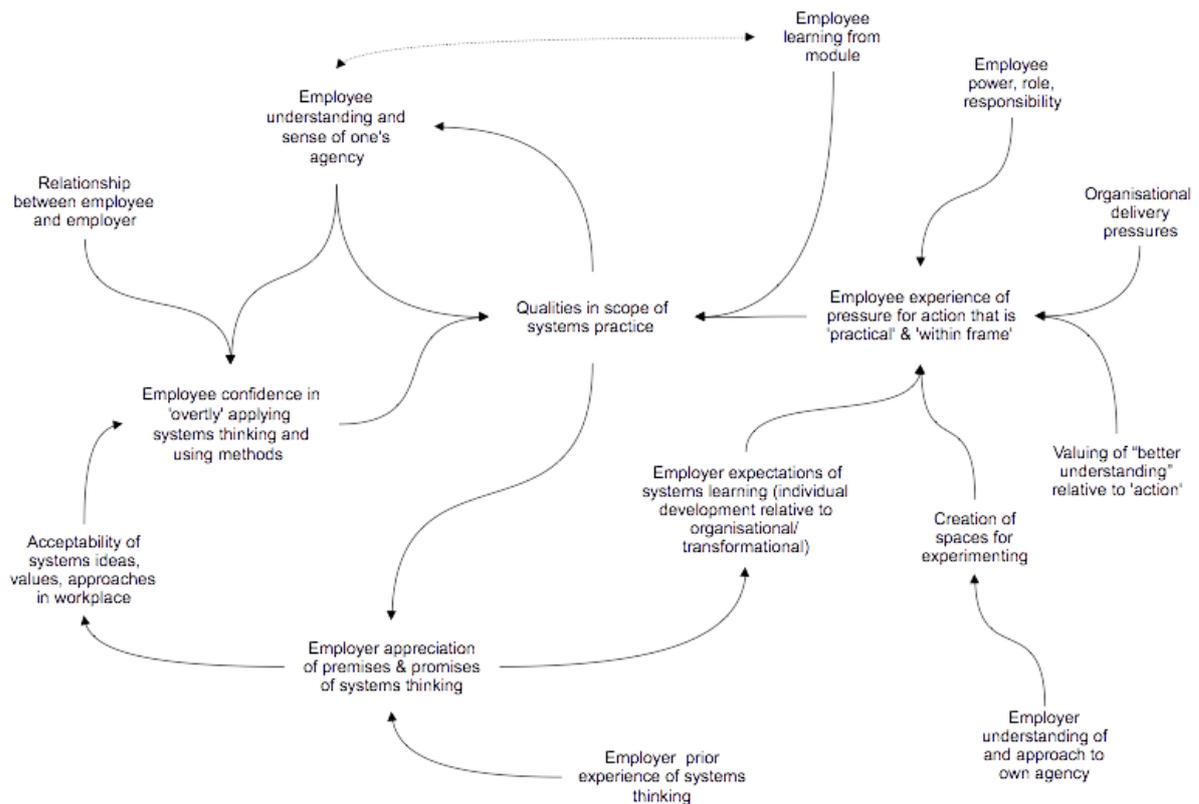


Figure 1 below presents some of these factors in the form of an influence diagram.

Figure 1: Factors influencing qualities in application of systems thinking

RECOMMENDATIONS FOR SYSTEMIC DESIGN

The synthesis of this inquiry is emerging, including proposals for better systemic design in bridging the gap between teaching, learning and application of systems thinking in the workplace; for example, through promotion of action learning amongst alumni and coaching to employers of systems practitioners.

During study through improved learner support

1. Enhancing appreciation of student learning journey's amongst module teams. During the research one of the sense making devices developed by the team were a series of archetypes of systems learners. These archetypes attempt to explain some of the variety in learning experiences that we heard about in our interviews through the mode of a series of archetypal systems learners. By looking at the use of systems archetypes by tutors such that it is possible to develop more targeted support for developing practice both during and upon exit.
2. Challenge 'turf wars' and methodological 'purism' amongst advocates of systems thinking in favour of more adaptive sense of systems practice as 'bricolage', which may include using non-systems methodologies to achieve systemic outcomes.

Outside study by shaping the landscape for practice

3. Promote varied forms of action learning amongst alumni. An online alumni group has been set up by several of the alumni. The group, based on a LinkedIn platform, has a large number of members (over 1000). However, many of these members are not graduates of the study programme. According to some of the alumni the quality of discussion in the online group is more limited than experienced in the online forums that are part of the learning experience whilst studying. Given that one of the challenges for alumni has been to develop and extend their agency and the potential role that collaborative inquiry might be able to play we see that facilitated action learning may contribute to the development of qualities of systems practice. This support would need to be tailored to the varying qualities and purposes that alumni have upon leaving the programme.
4. Improve workplace appreciation of contribution/offer from systems thinking skills and systems practitioners. One of the issues for those seeking to encourage greater application by learners of systems thinking in their workplace is the significant role that sponsors, line-managers and employees have to play in the application of ideas. One possible direction for enhancing this appreciation would be to conduct coaching with employers of systems alumnus as they seek to apply systems thinking. An employer who, for example, simply sees systems learning as an example of personal development and growth may not necessarily see the potential role that a systems practitioner has to offer in terms of supporting the alumnus to develop their practice in a way that can facilitate 'out of frame' transformation and systemic change. A tension within this will be the extent to which interaction with employer can be designed to help them see the possibilities of systems thinking....
5. Growing a repository of cases through which to appreciate insights about practice and impact. The challenge for developing systems practitioner to make their practice overt might be met in some way by being able to have better access to data and accounts of about the effect of systems practice in a range of domains, both within their own fields and outside. However, there is also another question here as to whether there is any need to make systems practice more overt; does the notion of covert or hidden practice have particular disadvantages or problems?
6. Developing professional recognition and actively shaping the image of a successful systems practitioner. One framing for these various activities is to generate demand for competence in systems thinking. An idea that is emerging along these lines is the development of a competency framework for systems thinking in practice. A challenge in the development of such frameworks is balancing breadth of coverage against applicability across a wide range of roles and functions, and allowing adaptability of praxis rather than prescribing best practice. This tension is perhaps further exacerbated by the way in which systems thinking can function as a meta-discipline within any number of professional areas of practice.

APPENDIX A: SOME BROAD ARCHETYPES OF SYSTEMS LEARNERS AND ASSOCIATED INSIGHTS ABOUT LEARNING EXPERIENCES AND NEEDS

1. Teach me tell me

- Person who doesn't have agency
- lower grade/level in organisation
- limited authority in organisation to apply openly
- not having responsibility for shaping the direction
- limited responsibility and autonomy for managing their own time and activity
- less discretion in creating innovation project/activity
- Someone with less confidence in themselves

Learning Experiences and Needs

- Needs case studies to work on, because lack of situations
- Tends to blame upwards ... look at managers not doing things, rather than seeing messes as being created by multiple factors, intended consequences
- Quite new to masters level or other study, experience of undergraduate teaching where they are used to experience knowledge coming from the top down.
- Can be intimidated by the forum – in terms of speaking out and checking understanding
- Challenged by assumed 'knowledge' that exists in the module
- Has come across the word system, not done any formal education about system and may not
- When given responsibility can tend towards trying to show agency
- Struggles with learning contract, can't quite make it their own and they see its for someone else to tell them what they need to learn.
- Values the course books

2. People who have the management role/experience - 'MBA ready'

- Newish to systems, might be engineers and business types.
- Has had some responsibility
- Aspiring towards taking on more responsibility
- Has encountered messes
- Has used perspective and interactions and been 'successful', or has been in situations where perspectives were not used and later on could see possible value and role of perspective, etc.

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- Early on begin to see that there would have been some value in systems thinking in previous experiences
- Thinking more about management and strategy rather than systems
- Learning to value feedback
- Wants the tools rather too much more than the theory and the philosophy. Though for some they can get a sudden aha with the design turn and the social learning aspects of 812.
- Can be projectified., a bit instrumental
- working towards increasing their own power
- quite thoughtful about their work

Learning Experiences and Needs

- Sees learning contract in 812 as useful and has perhaps even thought about their learning before and so can see value.
- May look back at learning contract reflectively at EMA stage.
- Experience their participation on the programme in terms of a journey towards... find themselves on a journey
- Can be quite an emotional experience – reflect on 'changes the way they think'
- Used to juggling lots of things and so appreciates the different formats
- Quite comfortable choosing elements esp, ref part 3 of 812. Happily drop attention to specific aspects
- Instrumental with trying to get more strategic influence.
- Could end up on 802 and 847 though perhaps not simply for systems thinking but systems thinking in practice.
- May be keen to network within their 'sector' or area, not necessarily around systems.

3. Get the diploma and make hay.

- Has been out in the world, and done a lot of work
- Has come across systems thinking in other situations as a 'field' and then purposefully pursued further learning in systems.
- May have been on other courses and very enthused.
- May be consultancy type work, tend to be in that facilitating type role...comfortable in applying methodologies facilitatively
- Presenting themselves with an inquiry....are willing or able to open up conversations on the forum, not necessarily looking for answers from 'the top'
- Feel ok with letting go of power in situations, not needing to demonstrate personal power but able to see how personal confidence matters.

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Learning Experiences and Needs

- Set off purposefully on the learning journey, can be a little less excited about the reflective and learning journey than 2, because not such a surprise, not such an emotional experience
- Sees that systems could help them gain more influence and power.
- Very comfortable choosing elements esp, ref part 3 of 812. Will happily drop attention to specific aspects, know which elements they want to concentrate upon.
- Came across the tools before (esp SSM and Senge usually) and some knowledge of other tools.
- Get the diploma and run. May not be really interested in the 802/847
- Really wants the networking from the module.

4. 'Geoffrey Vickers lite'

- People who are more senior, perhaps coming to retirement.
- Used to having the dominant perspective, used to being in authority and having power
- Can't relinquish control, perhaps lacking a sense of humility
- Struggle to take feedback
- Tend to be business, maybe engineering
- Motivation unclear? Looking for feather or qualification....or perhaps just want to study for personal achievement of masters.
- Have come across systems or thinking as a 'something I should learn' or could learn
- Not really thinking about their learning to gain more direct power

Learning Experiences and Needs

- Don't spend a lot of time on the forum talking about systems, but can be found talking about their experiences and 'presenting' to others (rather than inquiring with others)
- Not really sure about the learning contract
- Wants the tools – not for their own use perhaps, but to share with others
- Tend to be looking back – draw on lots of previous experience but tend not to have a lot of current issues that they wish to work on or that elicit their emotional engagement
- Perhaps in the process of losing power, and want to go back and tell people what to do.

5. Naked systems thinkers

- Maybe natural systems thinker ...already see perspectives and messiness. They think that people will listen better and to them about systems if it is validated by the course'

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- In situations where systems thinking is prevalent already –
- Often from the development and environment backgrounds.
- 812 feels quite a natural language
- Comfortable with the academic language (esp re No.2).
- Similar to 2 but context is quite different, its more open for it to be applied
- Wants the terms for what they may be doing and already know to add weight.
- Instrumental with learning about how to use systems.
- A bit in touch with their own position and emotions.