

FINAL REPORT

Project title: **Enhancing Systems Thinking in Practice at the Workplace** (original title: Building a Community of Practice and Employer Engagement to Enhance Systems Thinking in Practice)

Project lead: Martin Reynolds (Senior Lecturer)

Report submission date: August 2016

Names of any key staff associated with the project:

Rupesh Shah (Associate Lecturer)

Elaine Wedlock (Associate Lecturer)

Ray Ison (Professor)

Christine Blackmore (Senior Lecturer)

Contact point: Martin Reynolds: Applied Systems Thinking in Practice ([ASTiP](#)) Group
School of Engineering and Innovation, The Open University , Walton Hall, Milton Keynes MK7 6AA.
Tel: +44 (0)1908 654894 (work). Email: martin.reynolds@open.ac.uk

Executive Summary

The eSTEEem project was an 18-month systemic inquiry beginning January 2014 initiated by a core team of 5 academics associated with the production and presentation of the postgraduate programme in Systems Thinking in Practice (STiP). The inquiry comprised a series of online interviews over two phases, and a workshop held in London Regional Office in May 2015. There were 33 interviews in total, including interviews with 10 postgraduate students undertaking core modules associated with the STiP programme, 8 STiP alumni, 8 employers of STiP alumni, and 7 Associate Lecturers teaching on the STiP programme. The one-day workshop involved 41 participants including members of the core eSTEEem team, all interviewees from both initial phases, along with other special guests invited on the basis of their involvement, support and interest for the STiP programme.

The project aimed to design a learning system for transforming the 'threats' of a gap between postgraduate study experiences and post-study work experiences into 'opportunities' for radical pedagogic adaptation and (re)design. One such course where the gap is evident is with the postgraduate suite of qualifications in Systems Thinking in Practice (STiP) launched at the OU in 2010.

The primary aim of the inquiry was to seek ways of bridging the gap between the largely 'conceptual' world of distance teaching and learning at postgraduate level, and the more 'practical' world of applying learning experiences in the workplace. There is perhaps an assumption in postgraduate provision that PG qualified students have the capabilities of applying their PG skills to their workplace. The assumption might be reinforced at the OU where PG students tend to be mature-age and part-time. From the standpoint of many PG students who are professionally work-based whilst studying, the divide between the two worlds can often be experienced as an 'either/or' dualism - *either* they are studying *or* they are working - with there being a clear perceived boundary between the two worlds. For others, the two worlds might more helpfully be experienced as an interactive duality. Here, the learning activities are in continual interaction with workplace activities, where changes emerging in one world inform changes to the other world through a virtuous feedback pathway. Such interactive processes might be regarded as constituting praxis (theory-informed-action, or thinking-in-practice).

Arguably though, our pedagogic models of design and delivery of learning reinforces a dualism rather than promoting the duality of praxis. Since the first presentation of core modules in 2010, the STiP programme has endeavoured to address this pedagogic dilemma through enabling students to practice their learning through workplace-oriented activities and assessments, and through reflective conversations amongst students sharing experiences of using module materials in their activities and assessments through vibrant student forums. The STiP programme has registered significant success in achieving praxis during core module presentations, but there remain challenges at a higher level in bridging the divide between STiP study experiences, and post-study workplace experiences.

The eSTEEem inquiry provided an opportunity of, firstly, taking stock of claims towards bridging the gap between systems ideas and (work) practice, and secondly, exploring opportunities for engaging students, alumni, employers, and educators, for (re) designing more innovative models for pedagogic praxis. Such praxis invokes the need for promoting 'conversation' - engaging dualities rather than reinforcing dualisms - at different levels; individuals, communities of practice, and institutional workplaces. Whilst focusing on one PG programme, the overall rationale is based on the need for the Open University to become more responsive to changes in the environment, and adaptive to postgraduate needs more generally, and particularly in making learning more relevant to the workplace.

Aims and scope of the project

The project aimed to capture the pedagogic challenges of supporting postgraduates in their study of systems thinking in practice coupled with enacting systems thinking in practice in the workplace. The workplace might be that of educators, part-time students, alumni, and employers of postgraduate students. Firstly, the aim was to capture the experience of students when they begin

studying their first core postgraduate Systems Thinking in Practice (STiP) modules [Thinking strategically: system tools for managing change \(TU811\)](#) and [Managing systemic change: inquiry, action, and interaction \(TU812\)](#). Besides seeking out the generic difficulties encountered in starting postgraduate study, the project aimed to see how encountering systems thinking for the first time may require particular forms of support. We sought to gauge the differences between those who appear to flourish and those who struggle and/or withdraw in order to tailor/adapt the support given to STiP students. Secondly, the project aimed towards initiating ideas for mobilising support amongst part-time postgraduate students, alumni, and workplace employers in co-creating alternative models of postgraduate pedagogy for distance learning.

More precise project objectives comprise the following:

1. to reveal challenges for studying at PG level in general and STiP qualifications in particular
2. (alumni support) to explore possible mechanisms for alumni to support new students;
3. (employer support) to begin to articulate some of the conditions that employers might adopt to support their OU students during and post-OU study
4. (educator support) to elicit opportunities for meaningful feedback from employers mediated by our STiP alumni regarding particular challenges and opportunities of integrating systems thinking in work practice.
5. to explore possibilities of making a wider research bid to funding bodies like HEFCE and/or EPSRC to explore relevance of findings to other areas of PG offerings

Activities

The overall approach was to evaluate experiences of students, alumni, tutors, and employers, all associated with the [STiP programme](#) in order to support systems thinking in practice at the workplace (Figure 1)

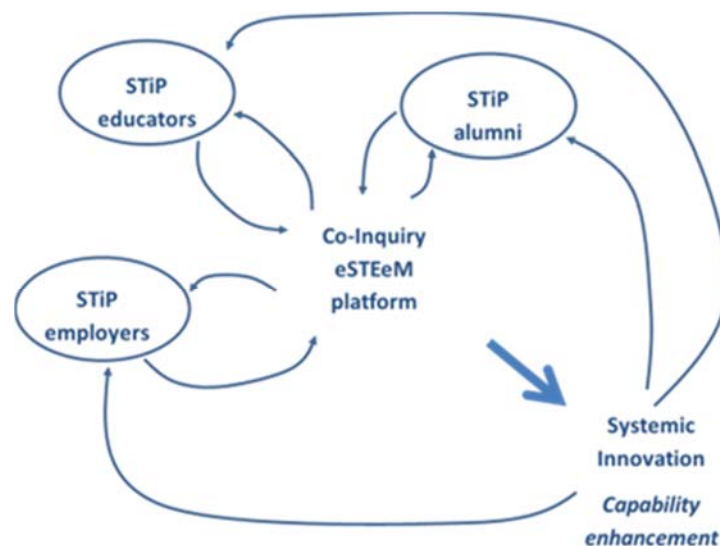


Fig. 1 eSTeEM Project approach to enhance capacity for Systems Thinking in Practice (STiP) in the workplace

The research was carried out using the principle of a co-inquiry platform – researching *with* people rather than *on* people - through a series of structured conversations including interviews, follow-up

online discussion, and a workshop event. The semi-structured interviews were mediated through either phone or skype, depending on preferences and convenience negotiable between interview partners. Appendix A lists all participants involved with the project in all three phases. Appendix B provides a copy of the eSTEEem flyer developed along with copy of invitation sent to participants in each of three phases

Meetings were held involving various members of the eSTEEem team at strategic stages of the research. The project lead, Martin Reynolds, made presentations on progress of the research at the two eSTEEem conferences at Walton Hall held in 2014 and 2015, and one further conference at Walton Hall in 2016 – presented by eSTEEem team member, Ray Ison, covering for Reynolds (Appendix C). Three other project-related presentations at international conferences were made during the period of the research (Appendices D, E and F):

- (i) (Appendix D) “Thinking differently about sustainability: experiences from the UK Open University.” Paper presentations from Martin Reynolds at Manchester Metropolitan University, September 2014 conference on World Sustainability and Tertiary Education
- (ii) (Appendix E) “Embedding sustainability through systems thinking in practice: some experiences from the Open University.” Paper presentation from Chris Blackmore at Plymouth University January, 2015 conference on Education for Sustainability
- (iii) (Appendix F) “Bridging the Gap: spanning the distance between teaching, learning and application of systems thinking in the workplace”. Paper presentation from Rupesh Shah in Berlin at the International Society for Systems Science (ISSS) conference on Governance in the Anthropocene in August 2015

The research was done in three phases involving the appointment of two experienced ALs from the STiP programme (Rupesh Shah and Elaine Wedlock). A total of 24 days consultancy work was commissioned for the ALs over the research period.

Phase 1 semi-structured interviews (by phone or skype) with (i) existing STiP students and (ii) ALs associated with core modules of the STiP programme.

- (i) 10 interviews were conducted by the two AL consultants using a standard qualitative research approach (Appendix G for interview structure). Each AL was assigned 5 students to interview, chosen from the current cohorts of TU811 and TU812, with the assistance of the STiP Curriculum Manager. Care was taken to ensure that the two ALs were not assigned students from their respective current tutor groups.
- (ii) Interviews were conducted with the eight ALs associated with STiP core module presentations to learn about their experiences and interpretations of student withdrawal (Appendix I for interview structure and invitation, and Appendix J for issues arising). These interviews were undertaken by Professor Ray Ison from the eSTEEem team, drawing on data regarding retention levels provided by IET. (The data and findings produced by the eSTEEem project extend and complement data that are recorded by IET and the new Module Management teams. Relevant staff from these areas were considered as stakeholders in the research.)

The ALs provided feedback to the 10 student interviewees in the form of a short report. This summarised the key ‘barriers/ issues’ and ‘enablers’ associated with experiencing of learning in the core modules. The two ALs also provided an opportunity to discuss the findings and give further feedback and clarification of issues arising through a scheduled OU Live event.

The results of this first phase were documented with an initial overview of particular student 'archetypes' designed by the two ALs. The results were used to inform the second phase.

Phase 2 semi-structured interviews (by phone or skype): 16 interviews conducted by the two AL consultants with STiP alumni active in the [OU alumni LinkedIn site](#) and an employer and/or manager they nominated (i.e. 8 interviews with alumni and 8 interviews with employer-partners of alumni). The questions here informed objectives (ii) to (iv) above. (Appendix K for interview structure)

Both phases 1 and 2 involved transcription of interview data using in-house OU resources, and summary report writing from both phases in order to (a) feed-back to interviewees and elicit further conversation and stakeholding engagement, and (b) provide basis for a working paper, to be developed further as a refereed journal article.

Phase 3 seminar and workshop events: Central to this phase was the preparation and delivery of a 1-day workshop in London, Camden OU Regional Office on 8th May 2015. It was planned for and delivered by the whole eSTeEM team, as well one other STiP AL, Jitse van Ameijde, who was commissioned to compile a report on the event. The workshop involved representatives from all stakeholder groups including all interviewees from phases 1 and 2, other employer representatives and specially invited alumni. The workshop brought together STiP alumni, educators and employers to engage in a short collaborative inquiry designed as a system of collaborative inquiry around the dynamic of 'post-study systems thinking in the workplace' (Figure 2)

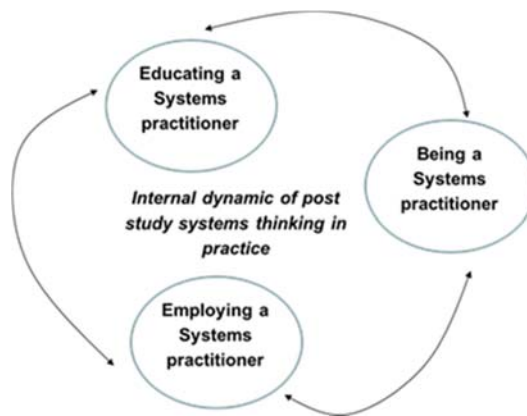


Fig. 2 Systems thinking in the workplace dynamics

(May 2015 workshop collaborative inquiry framed around three sets of conversations)

After an initial cycle of inquiry around the general experience of a being a systems practitioner, the inquiry was structured around a further 3 cycles each focusing on the experience from a particular perspective (doing systems practice, educating systems practice, and employing systems practice).

This workshop event was followed by an in-house workshop presentation by Martin Reynolds, as part of a wider 1-day workshop organised by the STiP Qualifications Team (Blackmore, Ison and Reynolds) on the future development of the STiP programme for specially invited guests (including external examiners and assessors) at Walton Hall in June 2015. An ensuing Seminar presentation at OU Walton Hall campus through ASTiP research group in DEI (Department of Engineering and Innovation) is to be scheduled as a follow-up to this final report.

Changes to planned schedules

One significant change in our planning occurred with Phase 2 and our need to settle for 8 paired interviews (alumnus and employer-partner) rather than the 10 pairs that we originally aspired towards. Despite an enthusiastic response from STiP alumni on the STiP LinkedIn alumni site to engage with this phase, it proved very difficult gaining commitment and time for employer-partners to engage with the research. The project was though very fortunate to elicit the support of 8 pairs of alumnus-employer partners not just for the interviews but also for attendance at the workshop in London. For two partners, the interviewed employers were unable to attend. However, representatives of both employers were identified at similar levels of employment relationship and took up invitations to attend the workshop on behalf of their work colleagues.

Another change was necessitated in response to an employment opportunity taken up by one of our team member interviewers, Elaine Wedlock, during the project. Elaine's new posting did not impact on phases 1 and 2 interviews, but did require some renegotiation on workload commitments for phase 2 and phase 3 reporting. Elaine's project colleague, Rupesh Shah, agreed to take more of a lead on reporting back during the latter stages of the project. Contractual alterations involving both Elaine and Rupesh were agreed and made in consultation with the eSTeEM budget holder - Mahruk Bailey.

Data sets gathered

All interviews from both phases were captured through recordings and transcriptions organised through Faculty staff. A dropbox area was set up to collate data, including transcriptions, minutes from team meetings, reports, conference presentations, and other documentation relevant to the project (both in planning and outcomes).

The next two sections – 'findings' and 'impacts' - are associated with the research objectives listed above. The notes below on findings are focused on research objective (i). The notes on 'impacts' are focused on objectives (ii) to (v).

Findings

The 'findings' are drawn from reconfigured reports authored originally by colleagues Rupesh Shah and Elaine Wedlock on phase one (Appendix H) and phase two (Appendix L), as well as elements from a report on the phase 3 workshop event commissioned to Jitse van Ameijde (Appendix M), and a conference paper lead-authored by Rupesh Shah at the ISSS conference in Berlin (Appendix F).

Objective 1: Challenges for studying at PG level in general and STiP qualifications in particular

Five significant barriers to learning were identified principally from phase 1:

(a) Making time and commitment for study and contact with tutors and other student. 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)

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

(c) systems terminology and language. 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)

(d) Limited range and scope of case study materials not covering the range of domains from which students come. 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.

(e) Setting up students to fail in the workplace. One of the issues raised by Ray Ison at the eSTEEeM workshop was the dilemma: “...historically we have tended to equip people poorly for using systems ideas back in the workplace, [...] an ethical issue where students were set up to fail when they try to apply their learning in a work-context.” (eSTEEeM Workshop report, 2015). This had resonance in several items of feedback from the workshop; e.g.

“I believe this is probably true and a way forward might be for the course to potentially include additional material regarding how to make change, without it being through a large scale change management programme, agreed by senior managers. i.e. behaviour change through “infecting” others, leading by example etc. [...] I find incorporating our [systems thinking] ways into everything I do makes the way I work unique and I very often get asked how I do it. In my opinion, you MUST demonstrate the value of systems thinking, not just talk about it.” (Pauline Roberts, STiP alumnus, pers comm, May 2015)

Helen Wilding – another STiP alumnus - reported at the May 2015 workshop that apart from being coached as a systems practitioner she was also becoming a change agent as a result, but wasn't sure whether she was adequately equipped to take on this additional role.

Retention of students and the role of academic teams

AL interviews with Ray Ison and subsequent correspondence with the STiP Staff Tutor (ST) raised a number of issues regarding student retention including ALs being informed of reasons for students' withdrawal (Box 1).

Box 1 Issues of postgraduate student retention (Notes from Ray Ison)

1. Who has actually withdrawn or failed to complete? Available sets of data do not deal with students who failed to complete who did not advise the University. For example one AL in a presentation of TU812 had 6 students fail to complete – and none of them are on the data base. At this stage I imagine the number and % of those starting and completing can be found – but is there an easy way to do it?
2. Students who withdrew but came back later and did well were not tagged. This is part of a general systemic failure to have a feedback loop for ALs on their student achievement/performance/status (and through them – to us)

Comment from Staff Tutor (ST) “We do have a faculty 'data wrangler' so I would hope we can get some useful figures. I would also expect Circe could be interrogated to extract the information about returners - someone just needs to write the query”

3. I found that I and almost all the ALs had very little understanding of the timelines and money issues associated with withdrawal, with and without penalty etc. I would dearly like to see a timeline that explains this in simple terms. I found there was confusion about TMA banking – from those who thought it was not applicable to those who had recommended it.

Comment from ST: “Timelines for withdrawal and letting ALs know them - hot potato. Because of complexities around different rules for UG student loans / funding and withdrawals there is a reluctance on the part of student support to let ALs ever give any advice to students on anything impacting finance. ALs have, at times, given out of date information with serious consequences. We have been talking about this in that context and STs certainly think that up to date information should be more visible to students and ALs so that ALs don't give advice but just point students to the information.”

4. There is an issue about module initial starting conditions – what does and does not happen in the 2 weeks that materials are available to students but the AL contract has not begun – this may be worse when ALs do TU811 followed by TU812 – associated with workload etc.

Comment from ST: “...last registration date is so close to module start and processes are delayed because we can't finalise anything”

5. There was certainly a theme in the data that students were arriving in the course not having spoken with folk who knew anything about the courses – thus arriving with false expectations. New OU procedures were not, thus far, seen very positively.

Opportunities: enabling features of STiP programme

Most students reported valuing the experience of studying the STiP module(s) and found value in the programme, its content, resources, activities and tutorials. Most students also reported a sense of 'having changed' somehow - a new way of thinking and seeing things that can't be switched off. However, the duration and engagement with ideas can be problematic where the 'aha' moment might be delayed till after the six months period of the course, as often systems ideas take time to germinate and become fully internalised.

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.

Whilst some of these experiences of learning were shared, 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, Rupesh and Elaine 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.

Box 2 Systems Learning Archetypes (further details of each archetype can be found in Appendix H)

1. **Teach me tell me...** Person who doesn't have much agency - lower grade/level in organisation
2. **People who have the management role/experience** - 'MBA ready'; Newish to systems, might be engineers and business types.
3. **Get the diploma and make hay.** ...Has been out in the world, and done a lot of work and come across systems thinking in other situations as a 'field' and then purposefully pursued further learning in systems.
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
5. **Naked systems thinkers** ...Maybe natural systems thinker ...already see perspectives and messiness.

Applying STiP to the workplace

Phase 2 interviews, firstly with STiP alumni (referred to as STiPers), and secondly, followed separately with their employer-partners, raised a number of themes in relation to the application of systems thinking in practice at the workplace (see Appendix L for more detailed summaries from interviewees, RS and EW).

When the application of systems ideas in practice was discussed, the eSTeEM team found that 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. We found that explicit use of systems thinking in the workplace was somewhat limited, with many participants tending to work with systems thinking for individual sense making or off-line design work. For some of the practitioners, such an 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.

We found seven significant factors that influence employee STiPers' capacity to apply systems thinking in practice at the workplace (Figure 3):

- (i) Employees learning and understanding from module material. Two of the alumni were content in using systems to help their own understanding of situations on their workplace. Most of the STiPers are using ideas to inform and develop their own thinking. Often this happens 'under the radar' or out of public view. This raises the question: How does a STiPer decide when to make STiP learning more observable? For example, one respondent had not previously used systems thinking in her consultancy facilitation practice directly, but clearly feels more confident to apply her understanding of STiP for improving her practice, whilst not overtly referring to STiP.

- (ii) Employees confidence in overt application. Part of the STIPers work in applying systems thinking comes in the need to negotiate a political position with respect to how to engage with and use the ideas. The quality and terms of this negotiation are influenced by the 'action logics' (see item (vi) below) of both the STIPer and their employer partner/internal sponsor. Where a more explicit use of systems thinking is made, often there is a role played by external expertise and external champions that seems to influence the dynamics or way in which the explicit use of the ideas are taken.
- (iii) Employee-employer relationship and sense of trust. A major factor in the relationship between employer and employee is the quality of trust and willingness to be lead to do things and get the results. The confidence or strategic orientation of the line manager may make a significant difference. For example, the permission to try things out. (One employer was not aware of the students' knowledge beyond the understanding that he had taken a course at the OU. However he praised the students approach to work and had a lot of trust in his ability and gave him autonomy to complete tasks in whatever way he wanted to. This employer was less interested in method and more interested in results.)
- (iv) Employer appreciation of STiP competence – 'knowing when a difference makes a difference' . "In my work situations I think people would appreciate systems thinking if they knew what it could do for them. One manager said to me "I would love to ask you to use systems thinking but I have no idea what for because I don't know the scale of what it is able to deal with." Many managers I have worked with understand: bringing a positive approach to the team, managing change and leading but they don't associate these with systems thinking." (Pauline Roberts, pers comm, May 2015). The appreciation of what STiP is and what it has to offer will vary considerably amongst different individual employers.
- (v) Workplace culture of acceptability Different and contrasting sets of ideas, values, approaches will only be acceptable depending on the pressure for action that is 'practical' and within current 'frames' of reference. The operating context within which STIPer operates can make a difference to the ability to apply ideas. Some obvious relevant dimensions are sector (business, NGO etc) and geography. However, also important in affecting the STIP practices are previous organisational experience of systems (cf experience of NHS and Lean). It seems also that language within the context of application is a relevant issue to the acceptability of ideas, something about not seeming too.... Challenge of working with and using non-verbal communications in cultures where verbal knowing has a hegemony (cf ...compared with engineering contexts where diagrams are more the 'norm'). "I think that practitioners working within the workplace (not as consultants) need to: lead by example, show not tell, choose their moments carefully, act wisely and "infect" others. Remember the power of systems thinking and that it can be overwhelming. We need to remember that exposing things that are obvious to us but haven't been obvious to others can elicit a negative response (this is where the acting wisely comes into it). Be mindful of the fine line between being helpful & revealing and being overwhelming and scary. We also need to be mindful that other motivations will be at play in our situations."

"I think we need to help practitioners build resilience. I feel almost like I have discovered a new medical condition: systems thinking bipolar because I find using systems thinking is: uplifting, yet disheartening if you can't get people on board; exhilarating, yet frustrating and very exposing but you must proceed with caution. Resilience is key to survival. I find that a gentle, mindful approach is useful." (Pauline Roberts, pers comm, May 2015)

- (vi) 'Action logic' of employers: Employers have 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. 'Logics of action' relate to the enabling space provided by employers for allowing employees to use their learning in the workplace. Some identifiable 'logics of action' were surfaced and made explicit. The logics vary "from 'covert and personal', to 'overt and external, but still personal', towards a more conducive 'group and collaborative' logic.

At least one employer from the Camden workshop made the point that the employee's STiP knowledge was valued but no more nor less than other employees knowledge that fell in different traditions of practice. The employer recognised the enthusiasm and so felt there must be something in it but hadn't elevated it to being any more promising than other experience. So the employer in some sense wasn't showing a particular interest in STiP, but more in their employee irrespective of the particular practice being advocated. Might this affect the extent to which STiP can be applied? For instance one might imagine a group of work colleagues approaching an issue at work, and the STiPer saying....STiP has something to offer here...and everyone else saying X, Y or Z has something to offer. The action-logic culture might be that instead of a group working together to approach something systemically in a purposeful way, each individual just continues to plough their own furrow. The employer might register interest and allow overt, externalised expressions of concern to prevail, thus being systemic in valuing all perspectives. But this could be quite a limitation as the workplace could get stuck in a relativist or pluralist epistemology rather than moving to the next level of collaborative learning (based on contextualised relativism)

The move between these phases of action logic is influenced by the employer/sponsor particularly when Systems Thinking is not fully understood or grasped by the employer. For example, some action logic of employers/sponsors seem to allow the STiPer to explore and experiment with trying out ideas and moving from 'covert and personal' towards more 'external' and 'group uses' of systems thinking.

- (vii) Workplace pressures: Time and availability of other resources, including finance, provide pressure on space for experimenting on new ideas and practices. Respondents mentioned lack of funding in the workplace leads to more pressure to complete work and heavier workloads. There seems to be a trend to revert back to business-as-usual methods when there is a lot to do. There is a perception that systems thinking takes time.

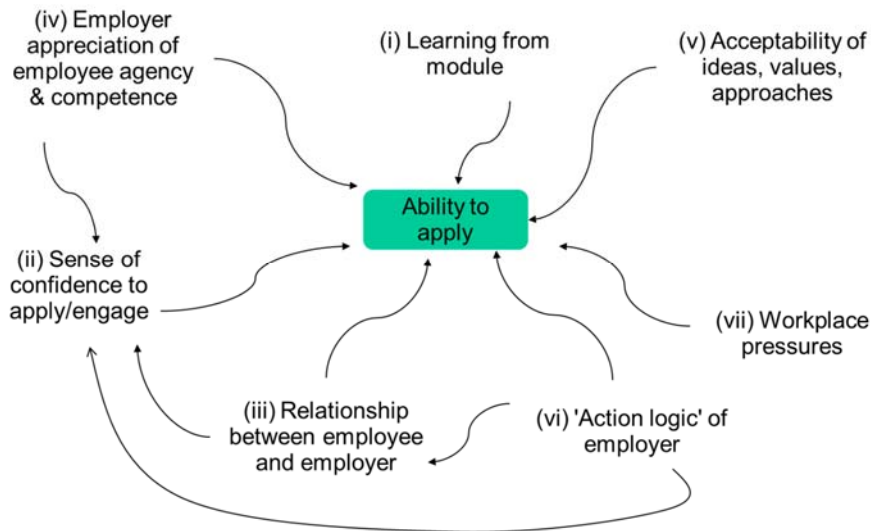


Fig.3 Factors affecting application of systems thinking in practice at the workplace
 (adapted from Rupesh Shah presentation to ISSS Berlin, August 2015)

Significant successes of the project

The findings of this research will inform the future development of the STiP programme. One significant measure of success in the process of undertaking the research is the unique opportunity to engage with meaningful conversation around pedagogic development at postgraduate level amongst three sets of stakeholders:

- STiP students outside of their OU module environment
- STiPers – alumni of STiP – with their benefit of in-work post-study experience
- STiPer – employers

Each set of respondents demonstrated a keenness to continue with the conversation around clear mutually beneficial initiatives.

In addition, the eSTEEeM project generated further mutually beneficial conversations with an important UK based grouping – Systems and Cybernetics in Organisations (SCiO) – one opportunity surfaced in possibly working together in order to generate a systems thinking competency framework. A further small contract has been drawn up for Rupesh Shah to explore the possibilities of engaging with SCiO and other interested parties in promoting the OU as a lead agency for developing a competency framework for systems thinking in practice

Impact

Whilst the above section on ‘Findings’ are closely associated with **Objective 1: Challenges for studying at PG level in general and STiP qualifications in particular**, the ‘Impacts’ of the research can be associated with **objectives 2 to 5** and particularly the sources of potential support offered to enhancing the student experience through alumni, employers, in concert with educators (see Table below)

Template for eSTEEeM report on Impacts	Project Objectives 2 to 5
a) <u>Student experience</u> • In what ways has your project impacted on student learning?	Objective 2 (alumni support): to explore possible mechanisms for alumni to support new students

<ul style="list-style-type: none"> • How is your project contributing to increasing student success (i.e. retention, employability, etc.)? • Have there been or will there be any benefits to students not directly involved in your project? 	<p>Objective 3 (employer support): to begin to articulate some of the conditions that employers might adopt to support their OU students during and post-OU study</p>
<p>b) <u>Teaching</u></p> <ul style="list-style-type: none"> • How have you affected the practice of both yourself and others within the OU? • What has been the impact of your project outside the OU? 	<p>Objective 4 (educator support): to elicit opportunities for meaningful feedback from employers mediated by our STiP alumni regarding particular challenges and opportunities of integrating systems thinking in work practice.</p>
<p>c) <u>Strategic change and learning design</u></p> <ul style="list-style-type: none"> • What impact has your work had on your Unit's or the University's policies and practices? 	<p>Objective 5: to explore possibilities of making a wider research bid to funding bodies like HEFCE and/or EPSRC to explore relevance of findings to other areas of PG offerings</p>

The key substantive impact of the research was to trigger ongoing conversations with relevant stakeholders including postgraduate alumni, employer representatives, professional institutions, ALs, and central academics associated with postgraduate pedagogic development at the OU. This has in turn contributed to relationship and community building for the purpose of developing the STiP programme; an impact that crosses several objectives of the eSTeEM project.

The conversations were further triggered through the full-day workshop event held at the Camden Regional Office in London on 8th May 2015.

The following notes are aligned with research objectives 2 to 5, incorporating the potential impacts on student experience, teaching strategies, and wider strategic design at the OU and beyond.

Objective 2 (alumni support): mechanisms for alumni to support new students

Helen Wilding, a STiP alumna from the first cohort of the STiP programme, at the London workshop in 2015 presented some of her reflections on her experience around learning and applying systems ideas following the STiP programme. Helen spoke about being quite worried that she would lose the contact with other students after completing the STiP programme, which would provide fewer opportunities to talk "systems jargon" which she would miss. To address this, Helen, with the help of alumni colleagues, set up the LinkedIn group around STiP. The OU STiP Alumni group now has over 1000 members.

Helen was also worried about the lack of "structure" to guide further learning, and how it would be possible to use the alumni group to progress and provide each other structure for continued learning.

The STiP alumni site provides an actual and potentially helpful source for informing students about the core modules of the programme. This would address one of the issues raised by ALs and the Staff Tutor: "Students don't talk to anyone who knows what a module is about before they sign up. Of course the institution doesn't want the expense of doing this anyway. Ironically we have a lot of good, module related, content on Open Learn - which would be useful for students to explore, but we can't point students to it as it's not badged with module codes anymore." (Staff Tutor, pers. Comm., June 2014)

One alumna STiPer commented on feedback from the workshop:

“I feel a little sad that, ‘Trying to measure the success of the STiP programme in terms of practical changes was seen as an unrealistic expectation for an academic institution.’ It’s a shame that we can’t find a way to capture the full benefits of the STiP programme more. i.e. how it has developed us as people, rather than just the work success we have/ have not had. For me the STiP programme literally did change my life, and continues to do so on a daily basis. In my opinion, nothing is more powerful than that.” (Pauline Roberts, Pers. Comm., May 2015)

It was also reported in the workshop that although the LinkedIn group was a great place for people to swap interesting material they had read, due to its size it was no longer a place where everyone knows one another which allows for more sensitive discussions about issues people are facing and how to resolve these.

From the workshop, a question was asked surrounding the motivation of people who enrol in systems modules, and what opportunities might be available to give prospective students a better idea of what they can get out of STiP. It was suggested that there might be room for a competency framework for systems practice (referred to again under Objective 3).

Objective 3 (employer support): to begin to articulate some of the conditions that employers might adopt to support their OU students during and post-OU study

After a brief overview from Elaine and Rupesh on insights from Phase 2 employers’ perspectives, the final session in the workshop involved a plenary conversation around the employer perspective on systems practice. Employers were found to value the employees with the STiP qualification, particularly in relation to the energy that they bring to their organisations and their capacity for facilitating events and eliciting multiple perspectives.

One key barrier was noted in terms of allocating time and space to systemic activity, as it was found to be quite difficult to allocate time and space to do things differently when there isn’t much time and money to go around.

It was suggested that employers don’t necessarily need to understand what systems practice is, but that their role should lie in providing a platform on which systems practice can emerge and flourish. Some of the employers present noted that in their view their employees’ engagement with the STiP programme was mostly about the development of the individual and they had no expectations in terms of this development translating into organisation-wide changes or wider adoption of systems practice.

The STiP programme’s ambitions were seen by the employer representatives as quite lofty but perhaps less realistic. The value of the STiP programme was seen to lie primarily in the academic domain and the practice dimension of systems practice was seen as lying outside the scope of an academic qualification in systems thinking and practice. Trying to measure the success of the STiP programme in terms of practical changes was seen as an unrealistic expectation for an academic institution.

In relation to taking purposeful action to implement learning from systems practice, Helen Wilding at the workshop reported being able to go only so far without introducing ‘it’ to others. The initial part of her journey involved mostly covert use of systems thinking under the radar, but there comes a point where it is no longer possible to be effective without being more explicit about using systems thinking. This moment of having to introduce it to others appeared to be a recurring theme on the STiP alumni LinkedIn group.

Some key Phase 2 findings: applying systems thinking and practice in the workplace involved lots of alumni reportedly having to practice systems covertly, as the terminology and language was found to be potentially off-putting and overly academic. Another obstacle involved workload pressures, where there was not sufficient time and money available to apply systems ideas, resulting in reverting back to normal patterns of behaviour.

A number of issues surfaced during the small group work sessions in the London workshop which were shared in the plenary session, both in terms of stakeholders' experience of the systems thinking in the workplace dynamic and in terms of how this dynamic could be improved.

Some key issues raised:

- The context of the institution where systems practice is tried out has a big influence on its likely success, with some industries being more receptive than others
- The need for pragmatic arguments for systems practice to satisfy pragmatists who are mostly interested in pragmatic tools and less in visionary attempts at large-scale change
- The importance of pre-engagement contracting - as lots of organisations ask for change but actually prefer the status quo once changes start to be delivered
- Organisations perceiving STiP to be mostly about individual development and do not have expectations that this individual development will lead to organisation level changes
- The language used in systems thinking and practice can create resistance due to it being perceived as overly academic
- The difficulty in trying to explain what systems thinking is and how it can help improve an organisation. This requires a certain level of confidence on the side of the practitioner.
- The issue of visibility and whether people are more interested in the outcomes of what STiP delivers rather than the journey that leads to these outcomes

A number of improvements were also identified which could enhance the effectiveness of the systems thinking in the workplace dynamic. These included:

- Professional recognition / accreditation of systems practitioners - leading to an understanding out there where organisations can adopt the tools and principles
- Systems practitioners applying their own thinking to their own situations rather than merely being evangelical about systems practice without demonstrating its value
- Being more mindful of the power that systems tools and ideas wield and how this might affect existing power relationships within an organisation - thus the need for mindful application
- The need for a good relationship between the employer and a STiP student due to the importance of workplace support and the isolation of having to practice without support from management
- The image of the iceberg - to show improvement you only have to show the tip of the iceberg to begin with and over time you can show more
- The importance for the employer to give permission to fail when students are just setting out trying to make improvements using systems ideas in the workplace
- The need to push for the notion that a greater understanding of a situation is a useful outcome of systems thinking in itself

Objective 4 (educators support): to elicit opportunities for meaningful feedback from employers mediated by our STiP alumni regarding particular challenges and opportunities of integrating systems thinking in work practice.

The deliberations in phase 3 of the project drew upon some initial potential ideas of impact generated in conversations with the alumni STiPers and employer-partners in phase 2.

Respondents of Elaine Wedlock in Phase 2 mentioned the following issues in the teaching of systems that might impact future development of the STiP programme:

- refresher courses,
- professionalization of systems,
- alumni meetings and support,
- face to face tutorial and peer group meetings, and
- further case studies to demonstrate how other people have applied it successfully.

Phase 2 conversations in particular raised a number of questions-sets that could also impact on future student learning and teaching strategies (cf. reflections from Rupesh Shah):

1. How does a STiPer decide when to come out of the radar? What tests, trials and information do they use? What feedback or information suggests pushing things further?
2. How can the STiPer use external champions effectively in creating space for developing their own practice?
3. How can non-verbal aspects of systems practice be validated for contexts of application that privilege verbal knowing?
4. How can the relational dynamic between STiPer and employee be used to support application of systems thinking ideas?
5. How might employers and employees be supported to jointly develop different action logics through and with the attempts to apply systems thinking ideas ?
6. How can those with wider appreciation of potential but more constraining contexts be supported in applying Systems Thinking ideas? Similarly, how can those with potentially more enabling contexts be encouraged to develop their ambition for using Systems ideas?

Several viewpoints expressed the idea that Systems thinking ought to be embedded a lot more in subject areas which link to systems thinking, such as geography, arts and languages. A few issues were noted in relation to this idea around the need for (and constraints in) interdisciplinary working and the institutional arrangements which produce a competitive dynamic in which faculties compete for students.

At the workshop, Martin Reynolds presented three of the key challenges around teaching systems thinking in practice. These challenges were articulated as:

- Course design and all associated institutional processes and practices are inherently systematic. The first challenge here involves translating a systemic subject matter into a pedagogy which is largely and necessarily systematic (with formal linear progression through materials, cut-of-dates for assessments, within a fixed time period of 6 months per module). Metaphors of bricolage (for TU811) and juggling (for TU812) are helpful devices for capturing the praxis tension between being systemic and systematic.
- The second challenge for STiP modules involves using the workplace as a resource for developing systemic practice. TU812 does this in part by using the notions of social learning, landscapes of practice, and communities of practice, whereas TU811 emphasises the notion of reflective practice in relation to learning from the application of systems ideas in a work context. Learning from the work experience may have unintended consequences on work relations.
- The third challenge constitutes the evaluation of learning in relation to the design turn. This requires some form of formative evaluation in a way which benefits the students as well as their

employers. This raises some issues in relation to the institutional validity (at the University and in other workplaces) of formative evaluation compared with mainstream demands for summative evaluation (e.g. performance indicators).

Ray Ison later invoked the design turn and reframed the conversation from one which focuses on how the OU could improve its offering to students to focus instead on the question of how the OU can support alumni and employers to develop systems practice in their own context and how we can build a self-sustaining community of practice.

Some initial recommendations for systemic redesign can be summarised (adapted from Shah et al., 2015).

During study through improved learner support

1. Enhancing appreciation of student learning journeys amongst module teams. During the research one of the sense making devices developed by the team was 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 use of systems archetypes by tutors it might be 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 using the online alumni group. Many of these members are not graduates of the postgraduate study programme. According to some of the alumni the quality of mutually supportive inquiry that the online group is more limited compared to that experienced in the online forums which 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 quality of application. One possible direction for enhancing this appreciation would be to conduct coaching with employers of systems alumni 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 alumni to develop their practice in way that can facilitate 'out of frame' transformation and systemic change. A tension within this will be the extent to which interaction with employers 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 a systems practitioner is in order to make their practice overt might be met in some way by being able to have better access to data and accounts of the effects 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.

Chris Blackmore introduced the PFMS (practitioner, frameworks, methods, situation) model (Fig. 3 (a)) to draw out some dimensions of practice as a way of framing inquiry for the London workshop. The model itself may be helpful in delineating some initial types of 'conversation' required to bridge the gap in pedagogic innovation. Key questions posed in relation to the interconnections within the PFMS model can be summarised:

1. P/F: What change in thinking and *understanding* might enable better appreciation of systems practice (amongst those in the situation)?
2. P/M: What change in *practices* (use of tools, techniques, methods amongst 'practitioners') might enable better appreciation of systems practice?
3. S/P: What *institutional arrangements* might be experienced as enabling by a systems practitioner?

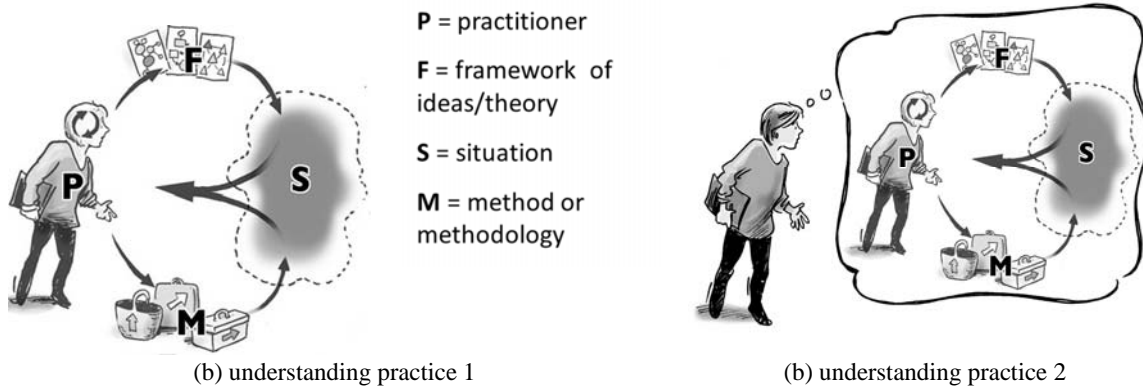


Figure 3 Two Iterations of the PFMA Model
(adapted from Ison, 2010)

Two types of ‘conversation’ around understanding practice appear manifest in the PFMA model:

1. Reflective conversation between a practitioner and the situation - item (a) in Fig.3 - whereby a practitioner framing an understanding of the situation
2. Reflexive conversation between a practitioner and the situation – item (b) in Fig.3 - whereby a practitioner is not only framing an understanding of the situation but also framing an understanding of his/her effects on a situation through the ‘conversation’ of the inquiry process

These two conversations might be regarded as constituting a first-order level of conversation – with a focus on *understanding* practice. Two other levels of ‘conversation’ might also be expressed as part of praxis (cf. Reynolds, 2014). A second-order level of conversation amongst practitioners has a focus on *practice*; that is, conversations that actually engage multiple perspectives of differing stakeholders, for example, students, alumni, employers, and educators. A third-order level of conversation requires reflection on boundaries (or framings) used to make first-order and second-order conversations more meaningful and ethically transformative (see Reynolds, 2014 for further discussion on three orders of conversation in systems thinking in practice).

The institutional boundaries affecting STiP were addressed in a complementary workshop held in 2015. During the eSTeEM inquiry the STiP team (Blackmore, Ison, and Reynolds) organised a one-day workshop (June, 2015) to explore different scenarios of future STiP development. The workshop involved three ALs, the External Examiner (Stephen Sterling), and the External Assessor (Ron Summers). Six scenarios (Appendix N) representing different sets of boundaries were explored:

1. Investing and expansion
2. Internal manoeuvring (using available OU resources etc.)
3. Developing demand-pull (alternative marketing etc.)
4. Quality improvement (online, assessment etc.)
5. Curriculum partnerships (face-to-face/ coaching/ employer engagement etc.)
6. STiP II initiatives (ASTiP¹ group third mission and research activities)

¹ Applied Systems Thinking in Practice group situated as a research grouping within the School of Engineering and Innovation

Scenarios 1-4 focus more on the internal boundaries of the OU, whilst scenario 6 relates more to external boundaries. The eSTeEM project relates primarily to Scenario 5 but invites attention to all five of the other scenarios.

Since this workshop, STiP core team have had to make decisions on whether to extend or refresh the programme since the last scheduled presentation of STiP core modules is in 2017. Given the findings and experience of eSTeEM project, the ideal situation would be to extend the core modules for up to four years, but with the proviso of having appropriate time, personnel, finance and other resources provided for investment and expansion (Scenario 1). Other scenarios also relate to eSTeEM findings including: making use of existing OU resources such as the expertise and experiences of STiP tutors and alumni (Scenario 2); engaging more purposefully with employers and alumni to generate more demand-pull as against conventional use of 'supply-driven' marketing resources (Scenario 3); improving the quality and effectiveness of collaborative work and peer-group assessment including use of online resources for tutorials and forum conversations (Scenario 4). Since finishing the project one of our eSTeEM researchers – Dr Rupesh Shah – has been provided a modest tutor-consultancy contract to explore the possibilities of OU leading on the development of a competency framework for systems thinking in practice, which might again serve to generate a demand-pull (Scenario 3) as part of a wider ASTiP initiative (Scenario 6).

Scenario 6 also dovetails with objective 5 of the eSTeEM project.

Objective 5: to explore possibilities of making a wider research bid to funding bodies like HEFCE and/or EPSRC to explore relevance of findings to other areas of PG offerings

Another iteration of the systemic inquiry model underpinning this eSTeEM research (Fig. 1) can be adapted for making a wider research bid exploring the implications of findings from an eSTeEM inquiry into the STiP programme of study, to a wider postgraduate pedagogy suitable for distance learning, part-time, mature-age students more generally (see Fig. 4)

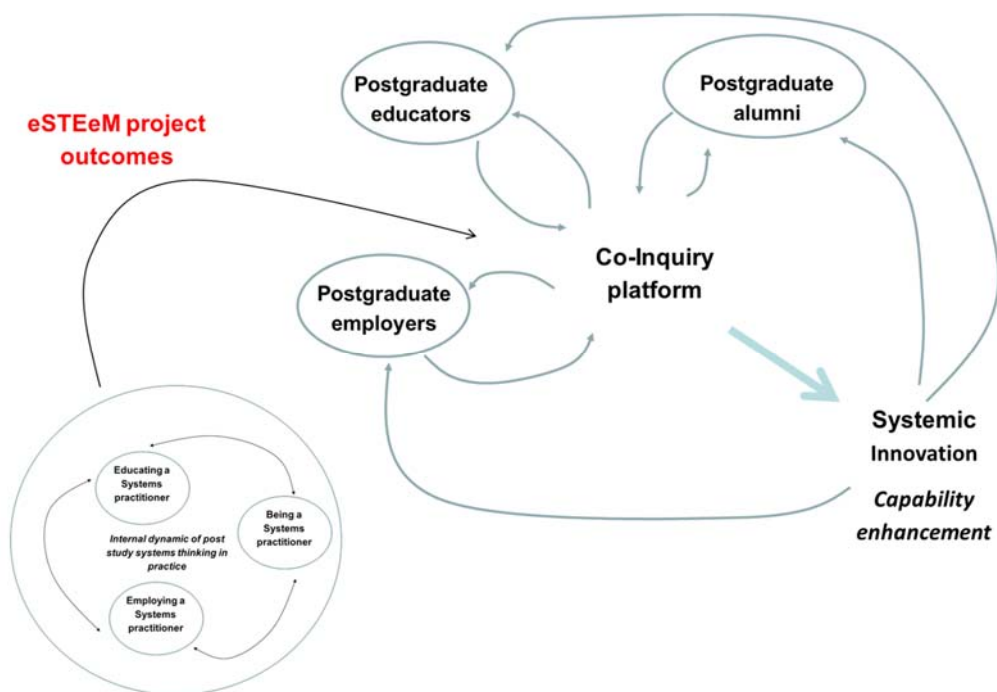


Figure 4 Research inquiry to enhance capacity for systemic innovation
in the workplace for postgraduate students

The model used for guiding systemic inquiry for phase 3 might be used also for guiding pedagogic development of postgraduate delivery more generally, and might also be adapted for describing a wider research endeavour.

Three initiatives are being taken forward arising from this eSTeEM project. First, the eSTeEM team are planning to convert the findings from this report alongside the initial paper drafted by Shah et al (2015) and publications already linked with the project, into a formal paper for a refereed journal. Second, members of the team are exploring possibilities of joining the REF group on Education as a platform of developing the findings into research proposals. Third, an ongoing consultancy involving two of the eSTeEM team (Shah and Reynolds) is working alongside other interested external parties on developing a further research initiative around involving The Open University as a lead academic initiator for some form of innovative competency framework around systems thinking in practice.

List of deliverables

Applied Systems Thinking in Practice ([ASTiP](#)) Group. _School of Engineering & Innovation, Faculty of Science, Technology, Engineering & Mathematics (STEM)

Systems Thinking in Practice [Alumni Group](#)

Blackmore, Chris; Reynolds, Martin; Ison, Raymond and Lane, Andrew (2015). [Embedding sustainability through systems thinking in practice: some experiences from the Open University](#). In: Wyness, Lynne ed. *Education for Sustainable Development Pedagogy: Criticality, Creativity, and Collaboration*. PedRIO occasional papers (8). Plymouth University: Pedagogic Research Institute and Observatory (PedRIO), pp. 32–35

Blackmore, Chris; Ison, Raymond and Reynolds, Martin (2014). [Thinking differently about sustainability: experiences from the UK Open University](#). In: Filho, Walter Leal; Azeiteiro, Ulisses; Alves, Fátima and Caeiro, Sandra eds. *Integrating Sustainability Thinking in Science and Engineering Curricula*. World Sustainability Series. Cham: Springer, pp. 613–630

Ison, Ray and Blackmore, Chris (2014). [Designing and developing a reflexive learning system for managing systemic change](#). *Systems*, 2(2) pp. 119–136.

Figures and tables

List of figures and tables provided in the report.

	Title	Page
Figure 1	eSTEEem Project approach to enhance capacity for Systems Thinking in Practice (STiP) in the workplace	
Figure 2	Systems thinking in the workplace dynamics (May 2015 workshop collaborative inquiry framed around three sets of conversations)	
Figure 3	Two Iterations of the PFMA Model (adapted from Ison, 2010)	
Figure 4	Research inquiry to enhance capacity for systemic innovation in the workplace for postgraduate students	

References

Shah, R., Reynolds, M. and Wedlock, E. (2015) "Bridging the Gap: spanning the distance between teaching, learning and application of systems thinking in the workplace". Paper presentation from Rupesh Shah in Berlin at the International Society for Systems Science (ISSS) conference on Governance in the Anthropocene in August 2015

Appendices

- A Participants contacts: all phases*
- B eSTEEem Flyer and invitations to participate phases 1, 2 and 3*
- C eSTEEem (3rd – 5th) Annual Conference presentations 2014-2016
- D International Conference presentation 1: "Thinking differently about sustainability: experiences from the UK Open University." Paper presentations from Martin Reynolds at Manchester Metropolitan University, September 2014 conference on World Sustainability and Tertiary Education
- E International Conference presentation 2: "Embedding sustainability through systems thinking in practice: some experiences from the Open University." Paper presentation from Chris Blackmore at Plymouth University January, 2015 conference on Education for Sustainability
- F International Conference presentation 3: "Bridging the Gap: spanning the distance between teaching, learning and application of systems thinking in the workplace". Paper presentation from Rupesh Shah in Berlin at the International Society for Systems Science (ISSS) conference on Governance in the Anthropocene in August 2015
- G Phase 1 semi-structured interview questions*
- H Phase one report: Rupesh Shah and Elaine Wedlock (May 2014)*
- I AL interviews: Questions and invitation letter*
- J AL interviews: Issues arising regarding student withdrawal/completion (Ray Ison) (June 2014)*
- K Phase 2 semi-structured interview questions*
- L Phase two report: Rupesh Shah and Elaine Wedlock (April 2015)*
- M Phase 3 workshop event report (commissioned to Jitse van Ameijde) (May 2015)*
- N STiP meeting June 2015: x6 Scenarios of ongoing STiP development*
- O STiP Alumni Report gathering in London June 2015*
- P eSTEEem project budget*
- Q ASTiP meeting April 2015: future engagement with REF*
- R 2015 ISSS conference draft paper

* Please note that these documents are unavailable for external display as they contain sensitive/confidential information and data. Please contact martin.reynolds@open.ac.uk if you would like further details about these documents.