

ULTIMATE: conceptual framework of a technology-enabled collaborative problem solving and improvement process
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CONSTRUCTING AND IDENTIFYING ISSUES (shown as a worked example for design and delivery challenges in UK Open University Level 2 Chemistry)

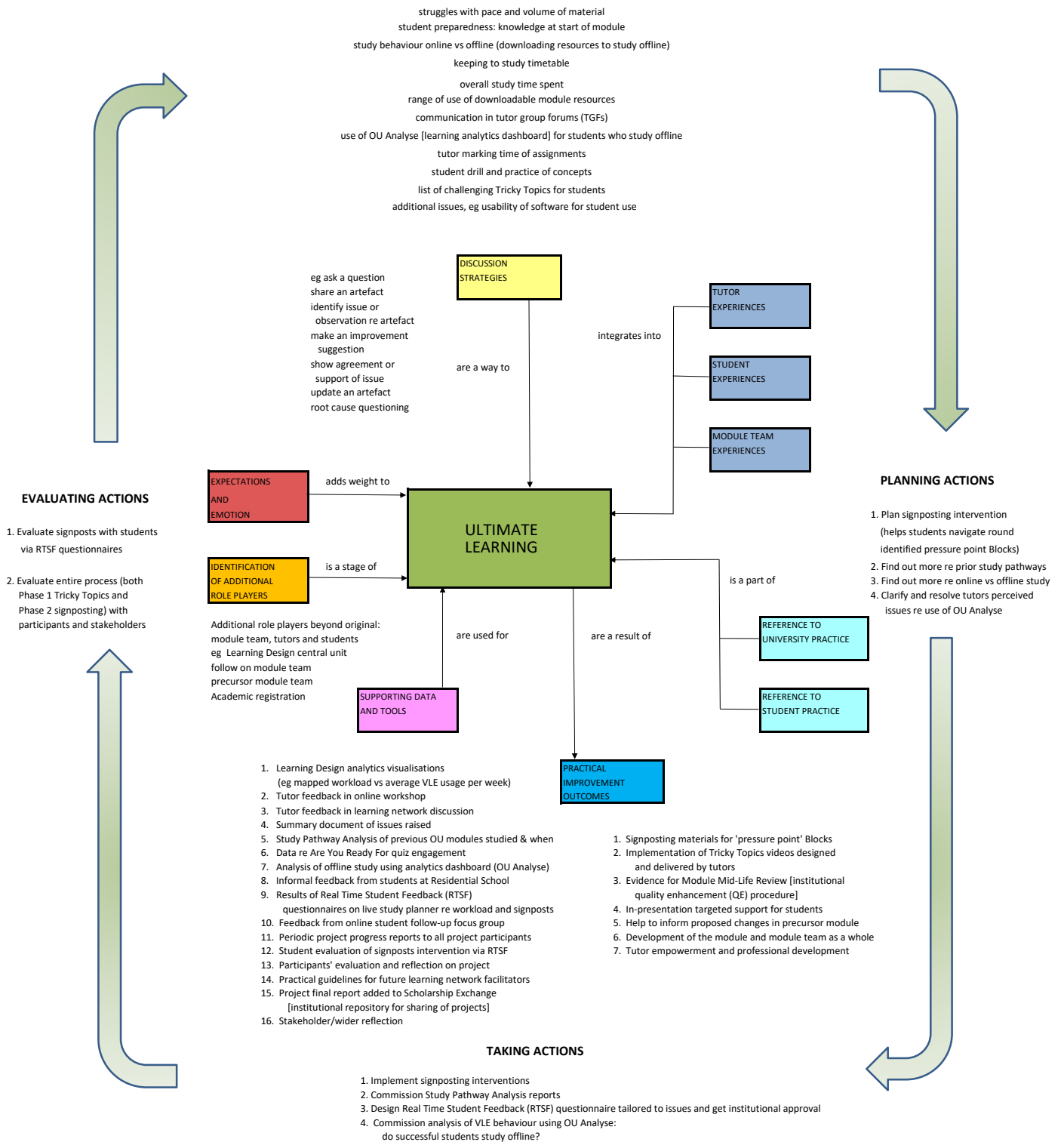


Figure 1. ULTIMATE - Using Learning Technology in Making Action-based Transformative Enhancements



ULTIMATE learning is a high level concept for a type of technology-enabled action-based organisational learning process that engages disparate and geographically separated practitioners in continuously unfolding and exploratory problem solving and improvement. The framework consists of analytical categories, shown in coloured boxes. These are related to the core category, shown in green, via theoretical relationships. Categories consist of open codes, which are conceptual labels attached to segments of qualitative data. A list of initial open codes for the example above is shown in Table 1. These can be adapted and applied to different contexts using grounded theory building techniques (Urquhart, 2013; Chun Tie, Birks and Francis, 2019). Figure adapted from Boyd (2022, p.246).

The framework diagram should be used in conjunction with the 'storyline' narrative and the initial guidance in the following four pages. It is intended for use in a collaborative and equitable grounded theory building approach. Original research (Boyd, 2022) available from: <https://oro.open.ac.uk/84495/>. See reference list.

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'High level storyline' for ULTIMATE framework (Boyd, 2022, pp. 247-248)

The ULTIMATE framework has been represented both *diagrammatically* and also as a series of written *propositions*, which relate the core category to its sub-categories via theoretical coding.

A technology-enabled learning network in a distance learning Higher Education context can connect together disparate and geographically separated practitioners and students to learn how to address a challenging learning design or delivery situation by:

- following a **structured but flexible collaborative action research process**, including progressive cycles of co-construction of issues and the planning, taking and evaluation of action
- deploying a **range of discussion strategies**, including asking questions, sharing artefacts, making improvement suggestions, and questioning root causes
- **integrating feedback from tutor, module team and student experiences**, including tutor professional teaching experience, historical experience of institutional practice, student feedback questionnaires and online follow-ups
- **reflectively referring to both university and student practice**
- **using supporting data**, such as learning design analytics
- **using supporting tools**, such as Real Time Student Feedback questionnaires
- **identifying additional relevant role-players**, such as precursor or follow-on module teams, and centralised good practice units
- **being able to express expectations and emotion** in their experiences to add weight to issues under construction and to the planning and evaluation of action
- **and therefore achieving practical improvement outcomes**, or enhancements to the student learning experience.

The collaborative and equitable action research process, which may unfold over multiple cycles spanning several years, can be made visible and explicit by capturing it in a learning technology infrastructure, such as a VLE website. This may enhance engagement between participants and transferability to other modules or different contexts. Participants can be invited based on their problem-solving role or interest.

Background and introduction to the ULTIMATE framework

This framework is aimed at groups of practitioners involved in a complex or fragmented situation that cannot be solved by normal or habitual ways of working – the answer is emergent. Today's collaborative learning technology affords disparate and geographically separated practitioners the ability to grapple together with a problem area requiring improvement. They can together follow a path of organisational learning, defined as a 'process of individual and shared thought and action' (Rashman et al., 2009, p.470). This unfolding process requires mutual and reflective learning for each participant to bring to bear their professional viewpoint, experience and insights to the problem at hand. By embracing an insider action research (Coghlan, 2019) and theory building combined approach, this PhD research has both enacted and conceptualised such a collaborative and equitable process, and successfully demonstrated measurable impact in its original bounded context at the UK Open University (Boyd, 2022).

ULTIMATE provides an enacting framework which can be understood by non-specialists in theory-building research, and also be systematically and rigorously extended to other contexts. The ULTIMATE approach can unite together practitioners who may not necessarily know each other or have a routine working relationship (Boyd, 2022). The learning is exploratory and experimental, and is not predictable beforehand. It represents a 'continuous and emergent weaving together of social selves and social situations' (Elkjaer and Simpson, 2011, p.79).

Table 1 lists the initial theoretical categories and their open codes from the original context. The framework can be applied or adapted to different contexts in HE and beyond, using recognised grounded theory building techniques (Urquhart, 2013; Chun Tie, Birks and Francis, 2019). If you wish to use or adapt the framework, you are welcome contact Dr Lesley Boyd on lesley.boyd@open.ac.uk for additional support and guidance. Lesley is working on plans for a detailed and accessible OER, to provide practical guidance in supporting the delivery of technology-enabled collaborative improvement projects using the ULTIMATE framework.

Key references and bibliography

Boyd, L. (2022) Using technology-enabled learning networks to achieve practical improvement outcomes in the UK Open University. The Open University. doi: 10.21954/ou.ro.00014a0f.

Chun Tie, Y., Birks, M. and Francis, K. (2019) 'Grounded theory research: A design framework for novice researchers', SAGE Open Medicine, 7. doi: 10.1177/2050312118822927.

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Elkjaer, B. and Simpson, B. (2011) 'Pragmatism: A lived and living philosophy. What can it offer to contemporary organization theory?', *Research in the Sociology of Organizations*, 32(July), pp. 55–84. doi: 10.1108/S0733-558X(2011)0000032005.

Lorino, P. (2018) *Pragmatism and Organization Studies*. Oxford: Oxford University Press. doi: 10.1093/oso/9780198753216.001.0001.

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Urquhart, C. (2013) *Grounded Theory for Qualitative Research: A Practical Guide*. London: SAGE Publications.

| Initial categories for issue identification and their open codes in the ULTIMATE framework | | |
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| | Category | Open codes |
| 1. | Discussion strategy making any type of initiation or response within a discussion thread, which builds the discussion or contributes towards constructing issues | Constructing: ask a question Constructing: share an artefact Constructing: make an improvement suggestion Tutor agreement / support of issue Tutor root cause questioning Identify issue or observation re artefact Update an artefact |
| 2. | Tutor experiences a tutor referring to or using their professional experience of learning and teaching | Tutor general experience of chemistry teaching Tutor historical experience Tutor relay of student experience Tutor individual action Tutor barrier to individual action |
| 3. | Expectations and emotion a participant expressing an expectation or emotion regarding students or the study material | Tutor expectation of student knowledge Tutor emotion / concern Acknowledging / reassuring tutor concern |
| 4. | Reference to university practice a participant referring to the way that things are currently or historically carried out or dealt with at the university | Tutor reflection on current practice Reference to current prerequisite modules Reference to historical prerequisite modules Reference to existing module intervention Reference to follow-on modules Reference to prerequisite concepts Comparison with other universities |
| 5. | Identification of issues an analysed result of the discussion that represents a collaboratively constructed issue or challenge confronting the module | Issue: student knowledge at start of module Issue: pace and volume of material Issue: study time Issue: student drill and practice of concepts Issue: software for student use List of conceptual Tricky Topics Issue: study behaviour online vs offline Issue: keeping to study timetable Issue: track download of module resources Issue: communication in tutor group forums Issue: use of OU Analyse Issue: tutor marking time of assignments |
| 6. | Identification of role players a reference to additional role players within the discussion, or implicated in the identified issue | Role player: Learning Design Role player: follow on module Role player: Academic Services (registration) Role player: recommended prerequisite modules in the qualification pathway |

Table 1. Initial categories for issue identification and their open codes in the ULTIMATE framework, for Open University distance learning context. Adapted from Boyd (2022).

Frequently Asked Questions

These FAQs may help to understand whether the ULTIMATE framework and approach could be useful, to assist in a complex or fragmented challenging situation that you may be involved in.

1. Who is ULTIMATE aimed at: who is the target group or audience?

ULTIMATE is a non-traditional approach aimed at practitioners and stakeholders who don't necessarily know each other, have a routine working relationship, or strongly identify in a cohesive community of practice. It uses a dynamic *learning network* approach in which disparate and possibly geographically separated participants can grapple together with a problem area requiring improvement. Together they follow a collaborative, equitable and emergent action research process, connected and enabled by a learning technology infrastructure (Boyd, 2022, pp.39-46).

2. What problems or challenging situations could it be used for?

ULTIMATE can be used for any complex or fragmented situations that cannot be solved by normal or habitual ways of working. Any resolution or improvement, and the route towards it, is experimental, collaboratively learned and emergent. Participants each bring their professional viewpoints, experience and insights to the problem at hand, and together they learn about issues involved and possible courses of action. The initial bounded context is a previously intractable distance learning design and delivery scenario, embracing challenges with student completion and retention.

3. How much research experience and expertise would ULTIMATE facilitators need to have?

Some experience of action research and working with groups of practitioners collaboratively would be very beneficial. A grasp of qualitative research and coding to rigorously verify and extend the open codes will help. An interest in grounded theory building and a collaborative respect for the open but theoretically rigorous use and extension of the ULTIMATE framework will definitely assist.

4. What's the methodology used in the ULTIMATE approach?

The methodology is technology-enabled collaborative action research underpinned by grounded theory method (GTM). GTM was used to conceptualise the unfolding action research process, after comparing and critiquing three other frameworks concerning collaborative action in the literature (Boyd, 2022, pp.51-81). This OER takes the first steps towards a proposed OER innovation called 'Open Theory Building', which makes ULTIMATE openly available for re-use, extension and adaption. GTM procedures of *theoretical sampling* and *constant comparison* (Urquhart, 2013; Chun Tie, Birks and Francis, 2019) will be used, with guidance if necessary, to verify and extend the framework in different contexts.

5. What's the philosophical positioning behind this action research approach?

The action research takes an underlying Pragmatist philosophical position. It does not seek to *explain* (positivist), or to retrospectively *understand* a process or *study action* by a specialist or relatively separated researcher (interpretivist). It *enacts* a process as a Pragmatist Inquiry, and to *take action* and *evaluate* to improve a situation (Elkjaer and Simpson, 2011; Lorino, 2018; Boyd, 2022, pp.20-26).

6. What would be the first steps to move forward?

Firstly reflect and assess whether you have a sufficient 'felt need for change' in the challenging situation, and are able to justify the exploratory time required by participants. Identify an initial list of key stakeholders and participants. You do not need to analyse the problem, as that is part of the process. It may simply be a joint feeling that something is wrong and that it cannot be solved by normal or habitual ways of working (Boyd, 2022, pp.293-294). You are welcome to contact me, Dr Lesley Boyd on lesley.boyd@open.ac.uk for initial support and guidance in the first instance.

7. What have participants said about this approach so far - in a distance learning context?

'I felt ALs [Associate Lecturers], the face of tuition for students, were listened to and involved in the problem-identification and problem-solving process'. 'I was pleased to be involved and felt part of the 'course team' even though that is not strictly true! The approach taken was inclusive and 'open minded' - Tutor

'I found the workshop and discussion a helpful reflective process and an insight into [the module] as a whole (from the Module Team, combined AL and analytics perspective), I also found the process collaborative and felt supported in terms of being listened to as an individual and part of the AL team and with the AL suggestions being actioned' - Tutor

'Overall I think that it will have helped in the development of [the module] and the forward planning for the course' - Tutor

'The opportunity to work closely and in a structured way with both students and tutors – occasionally posed an organisational challenge, but ultimately was one of the most rewarding parts of the work'. 'I feel the project has had a positive impact on [the module] in presentation and the forthcoming re-write' - Module Chair

'It was good to see an approach that engages students and tutors to understand the issues facing the module, and then to act on this information on a short timescale' - Faculty senior stakeholder