

ORIGINAL RESEARCH ARTICLE

A study of the role of a technology-enhanced learning implementation group in mediating an institutional VLE minimum standards policy

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Recent years have seen a focus on responding to student expectations in higher education. As a result, a number of technology-enhanced learning (TEL) policies have stipulated a requirement for a minimum virtual learning environment (VLE) standard to provide a consistent student experience. This paper offers insight into an under-researched area of such a VLE standard policy development using a case study of one university. With reference to the implementation staircase model, this study takes cue from the view that an institutional VLE template can affect lower levels directly, sidestepping the chain in the implementation staircase. The Group's activity whose remit is to design and develop a VLE template, therefore, becomes significant. The study, drawing on activity theory, explores the mediating role of such a Group. Factors of success and sources of tension are analysed to understand the interaction between the individuals and the collective agency of Group members. The paper identifies implications to practice for similar TEL development projects. Success factors identified demonstrated the importance of good project management principles, establishing clear rules and division of labour for TEL development groups. One key finding is that Group members are needed to draw on both different and shared mediating artefacts, supporting the conclusion that the nature of the group's composition and the situated expertise of its members are crucial for project success. The paper's theoretical contribution is an enhanced representation of a TEL policy implementation staircase.

Keywords: technology-enhanced learning; policy; virtual learning environment; implementation staircase; activity theory

Introduction

For today's higher education students, employability is one major concern, partly explained by the introduction of substantial student fees, up to £9000 per year in England and Wales, and the global employment market. This is turning students' and employers' increasing attention to the quality of the learning and teaching experience at universities. League tables and student surveys are already, albeit a disputable, part of this educational landscape. The National Student Survey, one of such surveys, does not directly ask for information on the *digital* learning experience of students, but indirect links are evident in its questions, for example, library and IT resources, assessment and feedback practices, and course communication. This can explain the increased focus of students, and in turn universities, on the consistency and quality of their digital infrastructure (access to Wi-Fi/technology) and curricular provision.

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Learning environment is also identified as one contributing factor to teaching quality (Department for Business, Information and Skills 2016, p. 11); student perceptions of their virtual learning environment (VLE) as a key part of this experience are likely to remain central.

Recent national studies examined students' expectations (Kandiko-Howson and Mewer 2013) or digital expectations (Beetham and White 2013). Both found that technological infrastructure and access to resources had strong links with student satisfaction. If students did not have ready access to learning resources or Wi-Fi/internet services, they were more likely to be dissatisfied than if they had been missing out on innovative uses of technology for learning. Beetham and White (2013) concluded that institutions need to meet these baseline expectations if they want satisfied students. These expectations concern the consistent use of the VLE for course administration and content. To meet such demands, a number of UK universities have introduced either standards or guidance for consistent VLE provision (Varga-Atkins and Roberts 2016). Such VLE policies typically stipulate to staff the required or recommended course information and content to be provided for students.

This paper offers insight into the first stages for the implementation of such a VLE standard policy using a UK university as a case study. Combining activity theory and the implementation staircase model (Reynolds and Saunders 1987), it explores the mediating role of the collective activity of the Group whose remit was to design and develop an institutional VLE template and guidance. This VLE template and guidance (hereafter using 'VLE template' for brevity) acts as a visible artefact that mediates and interprets policy through appearing to teaching staff directly in each teaching module space of the VLE – see an example template in Figure 2. 'Module' as a term is akin to the US term 'course'. In this sense, the Group's development work of the VLE template is the first stage of a policy implementation. The implementation staircase model by Reynolds and Saunders (1987) conceptualises policy implementation as it gets interpreted from the level above and communicated to the next level below. In a VLE, it is possible to create and disseminate an institutional VLE template to appear in each VLE module space to be customised by academics, with or without the mediation of policy gatekeepers and middle managers. This paper argues that an institutional VLE template can potentially affect lower levels directly, sidestepping the chain in the implementation staircase.

The nature of the work of the institutional Group who agrees and develops this template is, therefore, important. The literature review below demonstrates that this is an under-researched area. Exploring the nature of this work is suited to using activity theory as its guiding framework and needs to be considered within a wider theoretical framework of policy implementation, the implementation staircase. This paper will begin by introducing these two frameworks, followed by details of case study methodology, data collection and analysis. Through an activity systems analysis, the discussion section identifies sources of success and tension relating to the Group's work. Although this paper focuses on a particular university's VLE development, insights into the Group's individual and collective agency offer implications for other similar technology-enhanced learning (TEL) policy developments.

Literature review

VLE use and adoption have been the focus of research over 10 years now (Browne, Jenkins, and Walker 2006, Flavin 2012, Fry et al. 2014). More recently, VLE

standards, which are institutional policy stipulating what staff need to provide to all students in the VLE, have received major attention by learning technology professionals in UK higher education. This constant interest is evidenced by dedicated conference sessions (Association for Learning Technology, hereafter, ALT 2013) and vibrant, recurring ALT mailing list discussions (e.g. Buckley 2016). A recent desktop study by Roberts (in Varga-Atkins and Roberts 2016) found that out of 24 Russell-Group universities, 6 have an institutional requirement, 5 have guidance in terms of VLE provision and 13 have neither; whereas out of 23 pre-1992 universities, 8 have a requirement, 2 guidance and 13 have neither. The relatively scarce body of published research on VLE policy implementations is surprising. Reasons for this could be because of the internal nature of evaluations, or that VLE requirements tend to be content-oriented, and perhaps less appealing to researchers of educational technology.

A number of published articles explore academics' VLE adoption, practice or their perceptions of implementation (Ahmed & Morley 2010; Reed 2014). One case study by Glover *et al.* (2012, p. 29) reports on how establishing a minimum standard motivated staff to 'explore and interact with technology'. There are two studies who focus explicitly on the design work of institutional VLE course templates (Fresen, Hill, and Geng 2014; Hill, Fresen and Geng 2012). This research team's interest is in arguing that partially structured and populated VLE module sites can influence academics' adoption of technologies through embedded instructional design. Hill, Fresen, and Geng (2012, p. 1) concluded that 'the initial state for a course site, embodied in a template, remains useful and should be developed not according to a formula but with careful attention to the context and existing pedagogical practice'.

Fresen, Hill, and Geng (2014) approached the role of VLE templates from a pedagogical perspective. They focus on the potential of the template acting as a mediator of learning design. They argue that the template embodies and re-interprets TEL policy, without its designers being present. By way of promoting certain pedagogical models, the template-design team has an important and direct mediating role between institutional TEL policy and academics' implementation of this policy. It is for this reason that the work of the VLE minimum standards template-design team becomes important.

This paper, therefore, turns to the nature of the work of such a Group. This study's overarching research question was: 'What is the nature of the Group's collective and individual activity in developing a VLE minimum standard?' And more specifically:

- (1) What were the success factors of this development project?
- (2) What were the sources of tension, and so, likely sources of learning?

To enable the understanding of the nature of this systemic work, the two guiding frameworks, the policy implementation staircase and activity theory, are described in the next section.

Theoretical frameworks

Policy implementation staircase

The implementation staircase (Reynolds and Saunders 1987) is one useful conceptualisation employed by policy implementation studies (Trowler 2008).

The staircase expresses the stages of mediation that policy implementation goes through (Figure 1). Each level receives and re-interprets policy from actors in the level above, and communicates these adapted ideas to the level below. As mentioned above, studies on minimum VLE standards tend to explore academics' VLE practice, or their perceptions of it (Ahmed and Morley 2010; Reed 2014), which means a focus on the lower levels of the implementation staircase. However, little has been written about the work occurring at the top, institutional level of the implementation staircase. One exception is the aforementioned work of Fresen, Hill, and Geng (2014) who focus on the mediating role of the development team whose remit was to design and develop a VLE template that embodied and communicated the institutional VLE standard policy to further levels in the staircase.

AVLE template is a virtual artefact, a set of webpages that appear automatically in each VLE module as an empty shell ready for customisation by the teaching staff. Figure 2 shows such a template from a module in music in a Blackboard VLE. At the case study university and at the time of this paper's publication (2016/17), the stipulated minimum requirement for each VLE module was six core elements. They are (1) module staff details, (2) module overview, (3) learning resources, (4) assessment, (5) exam resources, and (6) coursework & exam feedback at the cohort level. As Figure 2 shows, the default module menu structure on the left prompts staff to include these core elements. The provision of 'streamed lectures' was optional at this time. Each module menu is either a link to a content area or a tool within Blackboard (e.g. staff contacts).

Academics can choose to customise this blank module space. They can amend or add to the module structure, add other tools or branding/visual elements to customise their module, and also copy course content over from previous years. In other words, they re-interpret this central policy requirement to their own teaching context. Some contents are automatically pre-populated from other university systems (e.g. the Module Overview page). As Fresen, Hill, and Gang (2014) posited, such a template guides staff towards providing the identified set of elements. Different middle-level managers (Departments or Schools) may decide to implement their own version of the VLE template. Academics can choose to ignore the template, too.

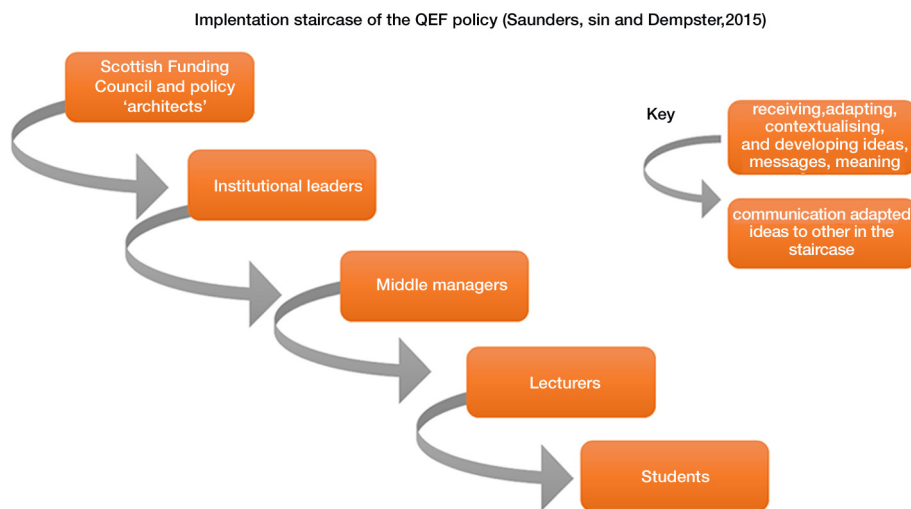


Figure 1. Implementation of the QEF policy.

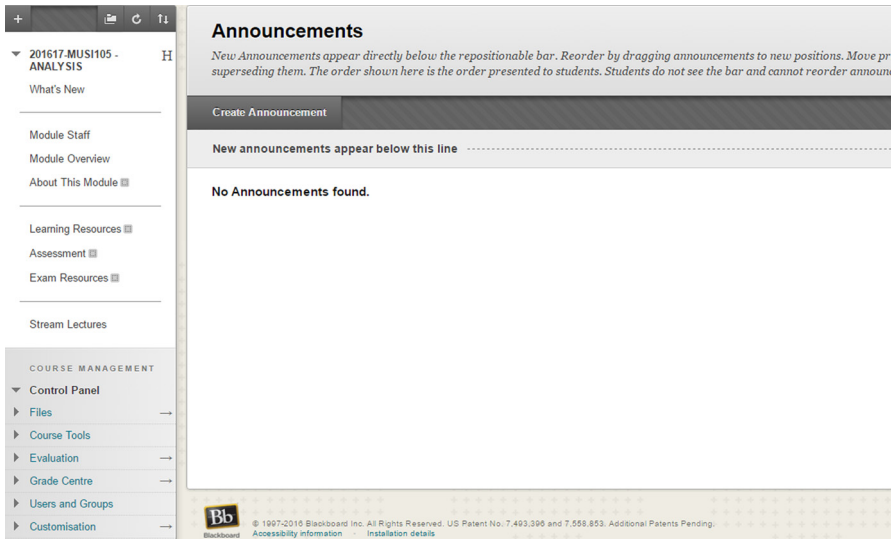


Figure 2. A sample VLE template – as it appears blank, ready for customisation.

What the above scenarios suggest is that the template can directly impact on both higher and lower levels in the chain; the latter by reaching academics directly. This direct link between VLE Baseline Group and Staff is depicted with blue arrows (Figure 3). The Group’s collective human activity is, therefore, a tangible artefact of institutional vision (Gunn 2010). As opposed to traditional educational policy implementations, this feature seems particular to TEL. In the latter, each level’s understanding of policy is mediated via a higher level (Saunders, Dim, and Dempster 2015). Since it is likely that there will be teams with a similar mediating role in charge of developing artefacts that encapsulate institutional TEL policy, the nature of their work is worthy of exploration.

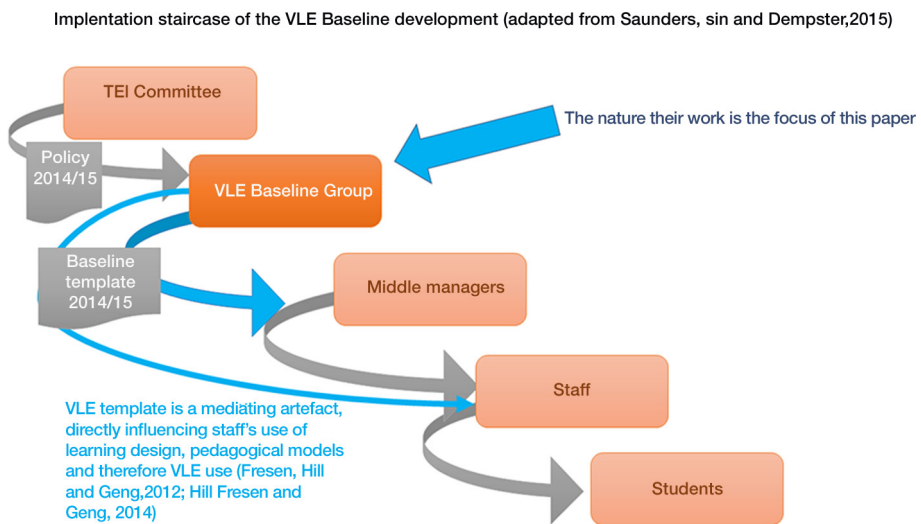


Figure 3. Implementation staircase of the VLE Baseline development.

Activity theory

Activity theory was chosen to explore the nature of this work, because it focuses on human agency as they act with technology in a socio-historical/cultural context (Engeström 1987), unfolding over time (Kaptelinin and Nardi 2006). Its derived methodology, activity system analysis (Yamagata-Lynch 2010), has informed various evaluation studies of educational technology interventions (Abdullah 2014; Bligh and Coyle 2013; Kaptelinin and Nardi 2006).

An activity system is characterised by specific division of labour, tools, rules and community (Bligh and Coyle 2013; Engeström 1987). Activity theory enables understanding systemic tensions (Yamagata-Lynch 2010). By focusing on such systemic contradictions, transformation or development can be encouraged (Engeström 1999). This is useful for universities who want to gain insights into their TEL practices at a systemic level.

Both the implementation staircase and the activity system analysis have mediation as a central concept. In an activity system, there are mediating artefacts that enable people as subjects in the world ‘constructing and instantiating their intentions and desires as objects’ (Bennett 2010, p. 10). Accordingly, Figure 4 represents the chain in which each object of the previous level’s activity system can become the mediating artefact of the system in the next level below it. The conclusion will discuss the strengths and weaknesses of both frameworks, and why their combination worked well for this study.

Methodology

Case study

The VLE Baseline Group was an example of a small, unique and bounded population at the UK study university. These features made case study methodology a natural choice (Cohen, Manion, and Morrison 2007; Denzin and Lincoln 2011). A strength of this methodology is that it could help understand an in-depth situation

The implementation staircase of the VLE Baseline with Activity Systems: the mediating role of the VLE template (adapted from Saunders, Sin and Dempster, 2015)

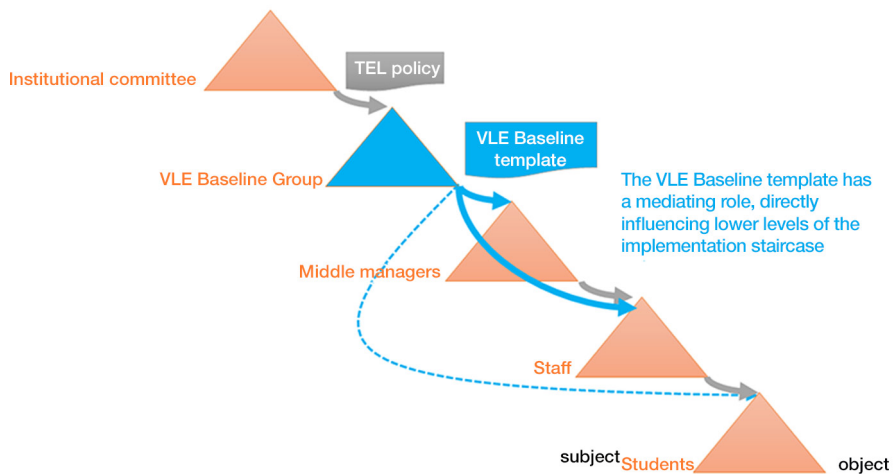


Figure 4. The implementation staircase of activity systems.

in detail (Yin 2009) which suited the qualitatively oriented research question (Prescott 2013 quoting Tellis 1997) aimed at exploring the nature of the work of the Baseline Group.

The five components of case study research design are: the study questions, its propositions, the unit of analysis, logic linking data to propositions and criteria for interpreting findings (Yin 2009). The unit of analysis of this study is the nature of the work of the Baseline Group. The research questions have been discussed above, premised on the proposition that the impact of the Group's work, because of its importance in the implementation staircase will have influence on policy implementation. The logic that links data to this proposition is drawn on from an activity system analysis as discussed above, which is the theoretical underpinning for this exploratory case study (Yin 2009). Another feature of case study methodology is its in-depth data collection using multiple sources of data (Creswell 2013), which are discussed next.

Data collection

The author was part of the wider TEL Strategy Group: attended the meetings where the Baseline Group's work was reported, and collected observational data via team meetings, consult documents and reports produced by the Group. The theoretical framework and the chosen methodology aligned themselves well to qualitative semi-structured interviews. Five one-to-one interviews were conducted to ensure representation of the perspective of each professional role: learning technologist, programmer, academic and two senior managers. Ethical approval was granted by Lancaster University. The 50- to 70-minute interviews were transcribed and sent to participants for approval. Two paragraphs were removed in one transcript.

Data analysis

Data analysis was carried out via activity system analysis. Transcripts were coded for each activity system element in ATLAS.ti: the *Subjects*, the *Object*, the *Outcome*, and the environment: the *Rules*, *Community* and *Division of labour* (Engeström 1999). Different kinds of mediating artefacts were also identified, including language, policies, technology systems and expertise. As activity system analysis pays particular attention to *contradictions* and *transformations* (Abdullah 2014; Bligh and Coyle 2013), these were also coded.

Limitations

Potential bias arising from being an insider researcher (Ludvigsen and Digernes 2009; Mercer 2007) need to be acknowledged. Critiques of case study methodology (see Yin 2009), and of activity theory (see Yamagata-Lynch 2010), comment on their lack of generalisability. The author would concur with Bligh and Coyle (2013) who do not view the study's contextual nature as a limitation.

Findings: developing the VLE Baseline

This section describes the activity system (Mwanza's eight steps, 2002) of the Group who developed the institutional VLE minimum standards template (Figure 5). Data

The Activity System of the institutional VLE Baseline (minimum standard) development

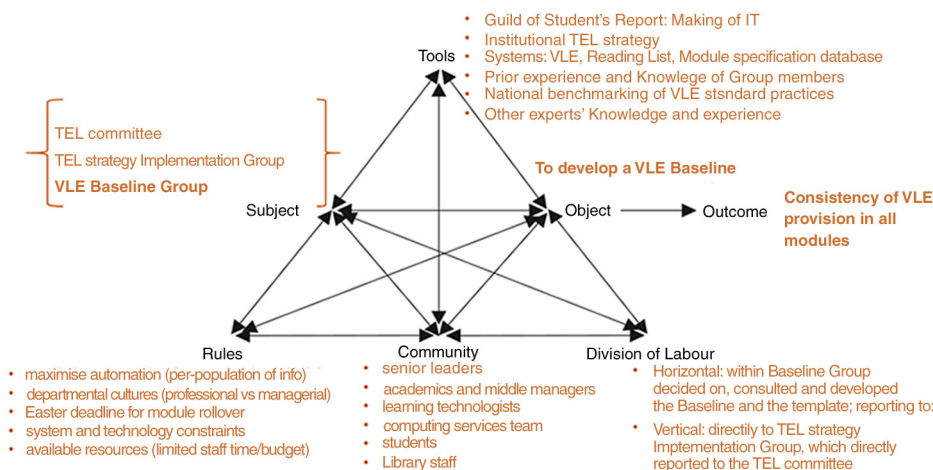


Figure 5. The activity system of the institutional VLE Baseline development.

were contributed via researcher observation, project documentation and interviews with the team.

In 2013, a student campaign resulted in an influential report, 'Making Most of IT'. This called for consistent VLE provision and made recommendations accordingly. This work led to VLE standards becoming a priority in next year's institutional TEL strategy. The VLE Baseline Group was then formed to support this development.

The *subjects* of the VLE Baseline Group comprised a learning technologist, a programmer, a librarian, and academic and student representatives. Their common *objective* (Yamagata-Lynch 2010) was to develop an institutional VLE template. This included agreeing the minimum core elements that staff should provide in each module, that is, the structure of the template that would appear in each VLE module to staff (Figure 2).

The Group used a range of *mediating tools and artefacts*, systems and technologies, for example, the VLE, the reading list and the module specification system to achieve their object. Other mediating tools included the student report; Group members' pedagogical and technological expertise and prior knowledge (Yamagata-Lynch 2010).

Guiding principles, or *rules*, of the Group were to automatically pre-populate the core elements in the Baseline template as much as possible to make it easier for academics to adhere to the Baseline. The Group had to work within the current technological infrastructure within the time frame dictated by the institutional roll-over date of modules. Its members consulted with the *community* of academics, senior managers and students, and worked with other programmers and learning technologists to achieve their goal.

Division of labour were characterised by both vertical and horizontal arrangements. Although the work was led by a learning technologist and a programmer, the division of labour was horizontal, with members contributing their shared expertise within the Group. The Baseline Group reported directly to the TEL Strategy Implementation Group, which in turn, reported to a formal university TEL Committee.

Discussion

As mentioned above, six core elements of the Baseline were identified (1) module staff details, (2) module overview, (3) TALIS reading list tool, (4) learning resources, (5) exam resources and (6) general coursework and exam feedback. Table 1 provides a brief detail on these elements (see Figure 2 for a screenshot of a blank VLE template).

This study was interested in understanding the nature of the contribution of Baseline Group members’ to develop an institutional VLE standard. One concern of the Group was that the introduction of a functional VLE minimum standard would stifle further creative and innovative VLE uses amongst staff. The Group, therefore, paid careful attention to naming the policy. The term ‘VLE Baseline’ was chosen to communicate a sense of creative autonomy in opposition to the more prescriptive-sounding ‘VLE minimum standard’ phrase. Owing to brevity, two themes of success and points of contradiction as sources of transformation and learning (Engeström 1999) will be selected from the activity system analysis. This latter discusses how Group members worked to lead staff considering pedagogical perspectives when implementing a content-focused VLE minimum requirement.

Success factors

Rules and division of labour

The two key tasks of the group were to agree what elements would be required in the VLE Baseline and what could be automated. Group members considered the activity successful in implementing an institutional template for customisation by staff,

Table 1. VLE baseline overview.

1. Module staff details	All staff teaching on the module including their name, contact email, office location and office hours (where appropriate), preferably with an image
2. Module overview page	Every module menu includes by default a link to the new, automated Module Overview page. This draws information from the system that includes the Module specifications
3. Reading list	Modules should include link to the module’s TALIS online reading list tool
4. Learning resources	Modules should include resources for lectures and teaching where appropriate and which exist in an electronic format, such as lecture PowerPoints, in a suitable, easily-navigable structure
5. Exam resources	Modules should contain appropriate resources, preparation and advice for students on any exam element of the module. Every module has by default a section called ‘Exam Resources’ which can be used for this purpose and can include but is not restricted to: past exam papers, samples of MCQs, types of question that can be expected, sample answers, marking criteria. (It should NOT contain any exam timetabling information or other exam information that is held by the university’s timetabling system.)
6. General coursework and exam feedback	An overall perspective of the cohort’s performance in exams and in coursework should be offered through the relevant VLE module

VLE, virtual learning environment.

although also reported frustrations with technological limitations that prevented some elements to be automated.

As members reflected, rules and division of labour (Figure 6), the clarity of the task to be completed within a given timeframe contributed to this achievement, which was the Easter VLE module roll-over date. Another success factor, which hints at the community aspect (Engeström 1987), was given, concerned the nature of the project:

[The VLE Baseline] is relatively easy to sell to people. It is self-evident that we should be giving all students the same. Most people aren't going to argue with that. So there wasn't a big hearts and minds ... it was quite a logical project. (I3)

Despite the fact that the institutional environment had undergone significant changes as the project progressed, the project was 'this wonderfully calm piece of work going on, when there was this storm: anything that could change, has changed around it (I3)'. Clarity of project remit and schedule seem to overcome even major environmental changes.

Mediating artefacts

Mediating artefacts contributed to the effective working of the Baseline Group in two ways.

First, the Group's collective activity benefited from each member drawing from their own *different mediating artefacts* in achieving their collective objective (Figure 7). The Group comprised a range of professionals, which meant that every member contributed their own different area of expertise. The way their different areas of expertise contributed to the VLE template can be illustrated by the design of the module overview page. This was an automated page displaying selected module information to students from the module specification system. The Group had decided on what information would be useful for students to see within the given technological possibilities and constraints. It was clear that such decisions were possible because some Group members had access to their own different mediating artefacts and tools. Naturally, the programmer had technical expertise and a deep

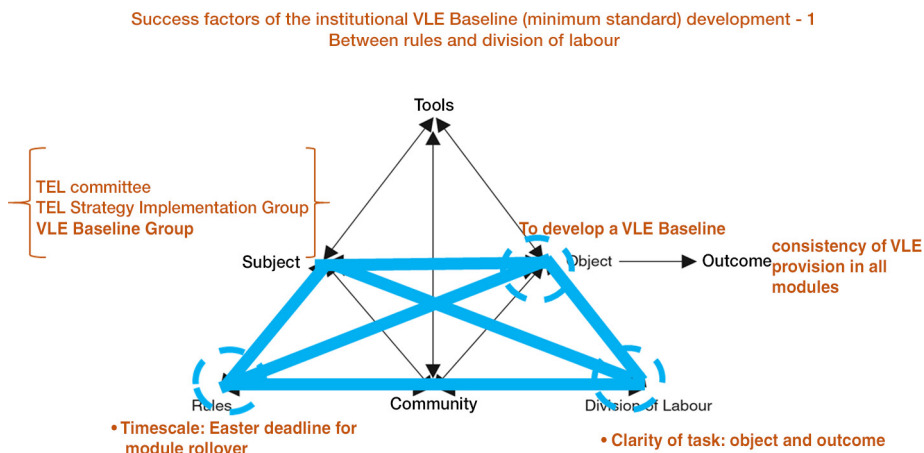


Figure 6. Success factor 1.

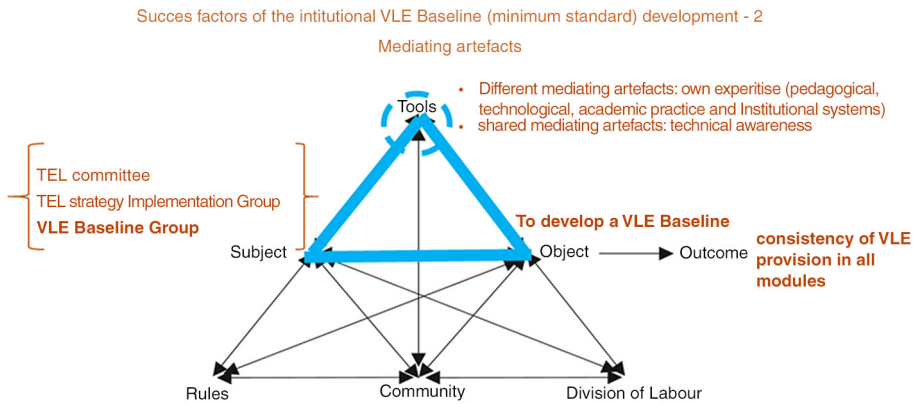


Figure 7. Success factor 2.

knowledge of the institutional systems, which was necessary to see what was and what was not possible to achieve, and what could be automated and what could not. Whilst knowledge of ‘common’ academic practice by academics and the learning technologist helped differentiating useful and less useful areas of information to include:

I might think, ‘that particular field is probably not necessary’; whereas [Academic1] might say, actually, I’d quite like to see that in there. (I2)

Second, the Group members drew on *shared mediating artefacts* in their discussions and decisions. The Group’s objective was to develop a VLE Baseline specifying the core elements to be present in each VLE module space, for example, module information and staff contacts. The approach of the Group was to make it as easy as possible for staff to provide the required information by automatically pre-populating as many of these core elements as possible. In the case of the module overview page, all members needed to be aware of, or understand, explanations of VLE and other systems interoperated, and what module information was stored in the module specification system. This shared mediating tool was needed for *all* members of the Group. The learning technologist had a special role in translating so that all Group members understood both the pedagogic and the technological implications. Technological understanding of the academic representative was important so that the requirements represented on behalf of the academic community remained within technologically feasible bounds. This technical awareness also acted as a smoothing conduit between the wider academic community and computing services. It helped the academics translate to colleagues what was possible to achieve and what was not. It showed to other academics that computing services could be just as frustrated by the technological limitations as they were:

If [academics] can ask for the right kind of sensible things that we can do technically. And also understand where and why we can’t do certain things. Then that would be great. Because they can feed back our frustrations to their department to people who aren’t necessarily as technical. (I2)

In summary, the collective agency of the Group was effective when it comprised both individual expertise in one or more of these areas (depth) and shared

expertise in others (breadth), in a way that all of the identified knowledge areas were covered:

- *Technology*, including a knowledge of institutional systems.
- *Pedagogy*, a knowledge of learning and teaching.
- *Academic Practice*, forms of research and scholarship, teaching and academic administration and management within a university context.

Programmers needed an in-depth knowledge of *Technology*, including the VLE and other institutional systems. Academics contributed knowledge of *Academic Practice*, that is, specifically, how they and colleagues used the VLE for student learning. Their technological know-how was key in successfully engaging programmers in requiring features of the VLE template that were feasible to implement and were able to communicate limitations in accessible language to their own colleagues. Both academics and learning technologists had the required knowledge of *Pedagogy* to influence technological decisions in the right direction. They were also users of some of the other institutional systems concerned (reading list and module specification). The more localised knowledge of VLE practice of academics was complemented by the breadth of knowledge of learning technologists of existing *institutional VLE Practice*. Learning technologists had an in-depth knowledge of the pedagogical uses of the VLE, pedagogy, technology and other institutions' Baseline requirements as a result of national benchmarking. They also acted in a bridging role between the academics and the programmers through the mediation of language. As one interviewee commented, one success factor of this project was the good working relationship and communication between the learning technologist and the programmer.

Contradictions

Inevitably, technological limitations restricted effective automation. Instead of discussing these, this section explores two identified contradictions concerning human agency.

Contradiction in object: student expectations versus pedagogical rationale

During the development of the VLE Baseline, one contradiction that emerged was the difference between the values of two intersecting systems, the VLE Baseline Group's activity and the student expectations of VLE provision (Figure 8).

One example of this tension was, for instance, students' requests for exam papers. Whilst certain academics did not have a problem providing exam papers on the VLE, others had good pedagogical reasons for not doing so. This confirms previous studies which found students' digital expectations to be access or content-driven (Beetham and White 2013), and do not necessarily value, or even expect, what pedagogically may be beneficial for them, and why VLE minimum standards tend to focus on content provision (Varga-Atkins and Roberts 2016). To work with this contradiction, the Group decided to include a module area called 'exam resources' in the default VLE template. Whilst 'exam resources' did not strictly prescribe the provision of exam papers to be uploaded to the VLE, its mere presence was meant to encourage staff to populate it with useful resources. This solution hoped to satisfy student expectations in a way that did not jeopardise pedagogical creativity. This example

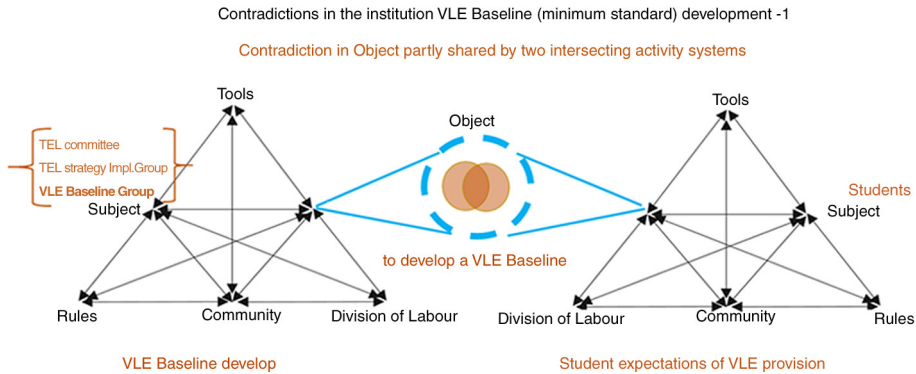


Figure 8. Contradiction 1: difference in value systems.

also demonstrates how the Group developed the template with pedagogical value as its underpinning principle (Hill, Fresen, and Geng 2012) to influence re-interpretation of policy.

Secondary and quaternary contradiction: reclaiming agency

Although the Group’s task had clarity, there were some tensions reported in terms of agency; For instance, concerning the origins of the project Brief (Figure 9).

The project Brief was an important mediating *artefact* for the Group to achieve their *object*. All agreed that the Student Report was to some extent the project Brief, which contained students’ wish-list for the VLE Baseline. Reasons for this uncertainty could have been because Group members were not able to easily recall events that happened 2–3 years prior on-the-spot during the interview, or owing to the lack of formal project documentation. Whether they were given this list to implement without the opportunity to debate, or whether they had agency in terms of going beyond the wish-list was unclear. The Group’s individual accounts slightly differed on this point. One view was that there was some agency around the Brief:

I think there was a question of what we could do, as well as what we would do. (I4)

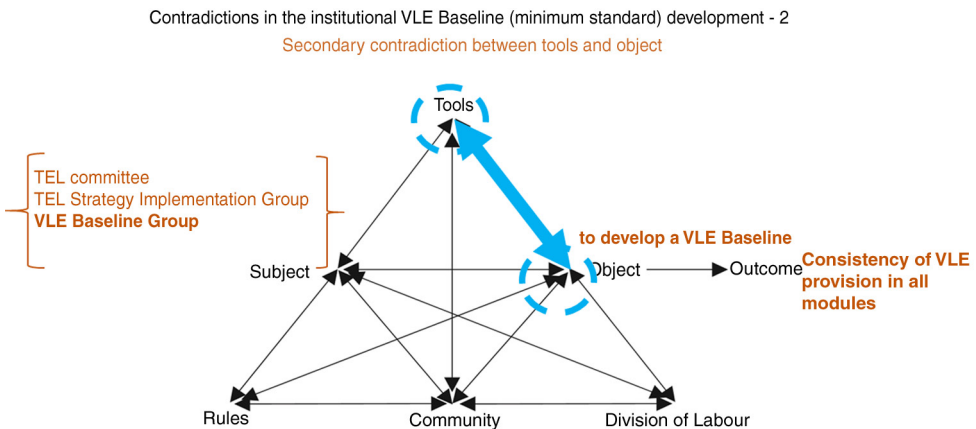


Figure 9. Contradiction 2: reclaiming agency.

Another reported that they felt the Brief was not negotiable:

what you had was a ready-made thing [students' wish-list] handed over, to then go and do something about without not much rationale attached to it. (I1)

This lack of agency was professionally challenging for this latter Group member who would have liked to have more agency to scope and shape this brief since they had the necessary institutional and national knowledge of VLE standards. The uncritical acceptance of student views with regard to the reported VLE inconsistency caused some frustration:

Is it a problem? Is it a problem of [student] perception as opposed to something real? (I1)

This combined with a quaternary contradiction between elements of neighbouring activity systems was a source of transformation (Engeström 1987), in other words opened window on a solution within this context.

The intended objective of the Baseline development would have been to arrive at a Baseline template containing the students' wish-list, which would have led staff towards a tick-box approach in their take-up of the Baseline (see blue dotted line in Figure 10). This was at odds with Interviewee 1's motivation using the Baseline as a mediating artefact for staff to pedagogically re-think their VLE use, similarly to the course templates designed by Fresen, Hill, and Geng (2014) – see this represented in Figure 10 (activity system of Interviewee 1). This was a quaternary contradiction between two intersecting activity systems: in the VLE Baseline development, the VLE Baseline template was the object; and in the activity system of Interviewee 1, the template acted as a mediating artefact.

To turn this contradiction into reclaimed agency transforming systemic contradictions to match their own goals, Interviewee 1 paid careful attention to the wording of the Baseline instructions so that it would raise staff aspirations to reconsider their VLE use from a pedagogical perspective:

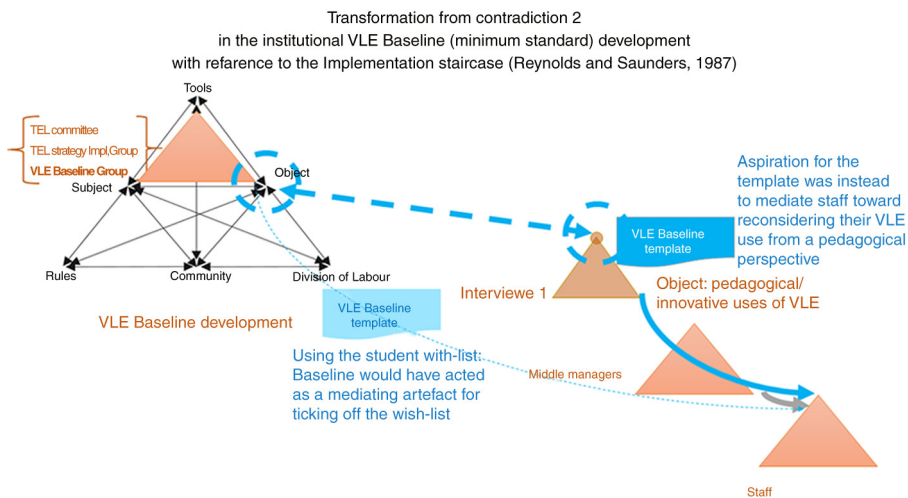


Figure 10. Transformation arising from contradiction 2.

[I would] tweak the agenda to move the language away from things to do with compulsion: 'You must', to move it more towards aspiration. Because there is that tension built into something like a Baseline. (I1)

Interviewee 1 purposefully used language as a mediating tool to match their own objective in texts such as instructions, descriptions and the Baseline template. This also highlighted that the linguistic discourse contained within Baseline artefacts acted as powerful mediators, influencing policy re-interpretation lower down the chain of the TEL implementation staircase (Figure 10) (Reynolds and Saunders 1987).

Conclusion

This study explored the nature of the work of a VLE minimum standard (or Baseline) group whose task was to develop a VLE template. The Group's activity was conceptualised as an important stage at the top of a TEL policy implementation staircase, who had a significant role in mediating institutional policy. The study was particularly concerned with the individual and collective agency of Group members explored and analysed through activity theory, which helped simplify and integrate diverse perspectives in a complex environment that developed over time (Engeström 1999). The activity's objective emerged in institutionally articulated mediated forms: in the tangible, digital VLE template and other texts such as Baseline instructions and guidance. Success factors and contradictions were analysed, pointing to implications to practice and theory, which are concluded next.

Implications to practice

Success factors demonstrated the importance of good project management principles, establishing clear rules and division of labour for such an institutional TEL development group. The finding that Group members needed to draw on both different and shared mediating artefacts supports the conclusion that the composition of the group and the expertise of its members are crucial for project success. Situated and combined knowledge of technology, including a knowledge of institutional systems, pedagogy and academic practice, are essential to be covered by Group members to different levels of expertise.

However, some level of technical awareness and understanding was crucial for the effective working of this institutional group in order to best represent academic and pedagogic concerns. The lead learning technologist had a key role in bridging and translating between these areas. Based on this, similar institutional TEL implementations would benefit from being led by learning technologists, rather than academic or computing staff. Tensions around the lack of clarity of the project Brief suggested that documenting the project brief and key decisions taken along its development are highly recommended for such projects.

Implications to theory

One theoretical contribution of this paper is an enhanced representation of a TEL policy implementation staircase (Figure 11). This paper demonstrated that in the case of a TEL policy implementation process, there is another level that could be considered in addition to those identified in previous studies.

The implementation staircase of the institutional VLE Baseline (minimum standard) development: the mediating role of the Baseline Group and Baseline template

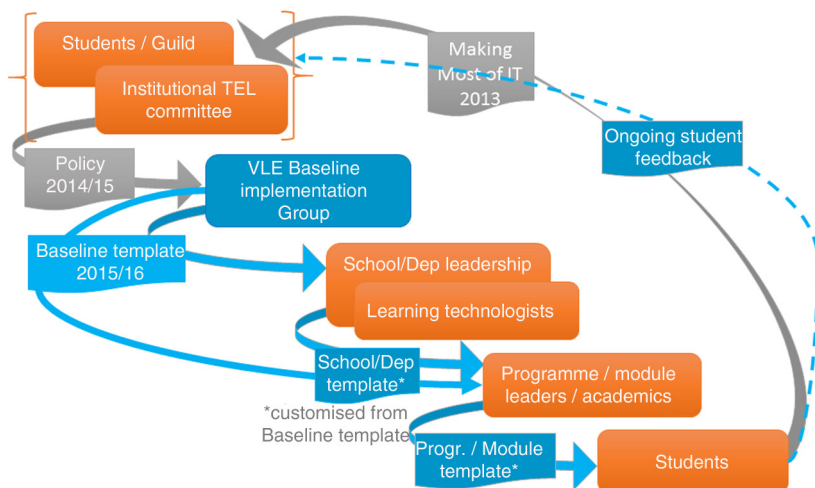


Figure 11. Adapted implementation staircase of a TEL policy.

This additional stage concerns the work of the VLE Baseline Group. Although its members were not necessarily situated at the more senior, top end of the institutional hierarchy, their work has significant, top-level impact on how the policy gets interpreted by the respective lower levels in the staircase. They are what Engeström (2010) calls ‘knotworkers’ coming together temporarily for a particular project as a knot gets tied on a rope. The outcome of their mediatory work is an institutional VLE template (Fresen, Hill, and Geng 2014). The potential reach of their impact is pictured in blue in Figure 11, paving way to further customisation and re-interpretation of policy in the form of Departmental/School level VLE templates (Figure 12).

Representations of TEL policy implementations, therefore, need to consider the presence of such TEL development groups. This study also highlighted that in the current HE context, students have a much stronger voice in influencing policy. Instead of being represented at the bottom (Figure 1), students now also occupy a place at the top of an educational/TEL policy implementation staircase (Figure 11).

Using activity system analysis allowed insights into how such a significant activity could work effectively and how the group dynamic, shared and different expertise and individual agency influenced the emerging the VLE Baseline template itself. Results pointed to a necessary combination of Group members’ situated knowledge. Linguistic discourse was one powerful mediating tool in the hand of human actors to both work effectively as a group as well as transform systemic contradictions when needed. These findings resonate with the Technology, Pedagogy and Content Knowledge model (Mishra and Koehler 2006), which describes the overlapping and situated knowledge areas TEL practitioners need to draw on. Future research could test the relevance of this model in other institutional TEL innovation projects.

The above implications to theory demonstrate the way that the strengths and weaknesses of the two theories combined into enhancing this study. The implementation staircase model helped to situate the work of the Baseline Group at

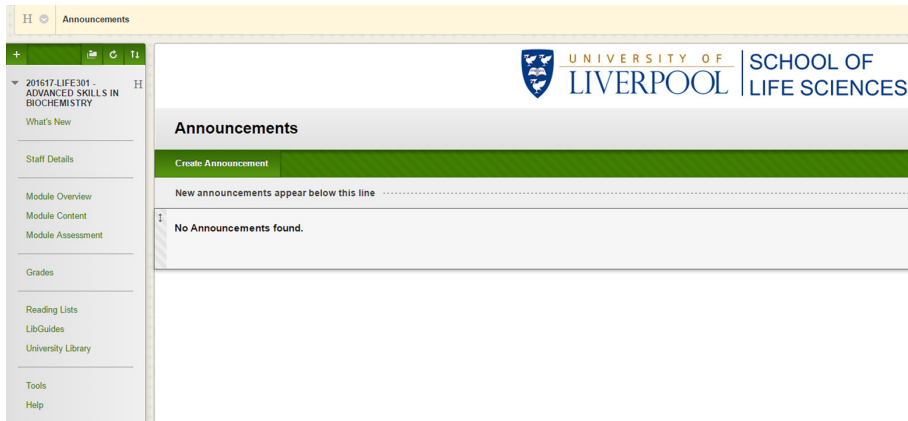


Figure 12. A School-level customisation of the central VLE Baseline template.

macro-level, within an institutional context of policy implementation. Whilst using activity theory, it was possible to analyse the nature of the Group's work at a micro-level, in terms of factors of success and how the Group members overcome contradictions through expansive learning to achieve their brief of developing an institutional VLE template. Finally, although the study was carried out in a specific context, it has potential relevance to other institutional TEL implementation projects that draw on a cross-institutional team.

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