The practitioner perspective on the modelling of pedagogy and practice

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Running title: modelling of pedagogy and practice

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Abstract: *The promotion of e-learning in policies internationally has led to questions about how best to employ technology in support of learning. A range of models has since been developed that attempts to relate pedagogy to technology. However, research into the effectiveness of such models in changing teaching practice is sparse, and work that compares these models to practitioners' own representations of their practice is absent.*

The study described here involved asking practitioners to model their own practice, and to compare these with a model developed by a government organisation. Practitioners were adept at using existing models and repurposing them to suit their own context. Our research provided evidence of broad acceptance of the existing model with practitioners, but indicated that practitioners would take this tool and remodel it for their own contexts of learning to make it meaningful, relevant and useful to them.

Keywords: pedagogy and e-learning; learning theory; models of practice

1.0: Background

There is widespread policy interest in the potential of e-learning approaches. The UK government, for example, has invested significantly in establishing computer-based and networked infrastructure in schools, colleges and universities, and has, in parallel, introduced many e-learning initiatives. Many of these initiatives have been top-down and strategic, including the Department for Education and Skills e-Learning strategy document (2005) introduced to facilitate and guide developments in pre- and post- 16 education sectors (Department for Education and Skills, 2004).

While Government policy-led initiatives may shape change management strategies operating at the organisational level, their influence on practice is harder to discern. There has been a growing interest, therefore, in interventions that are intended to change how teachers teach. Within this context, there is widespread research interest in the idea of modelling practices of teaching with technology (Conole et al, 2004). The assumption shared by all such attempts is that this process will improve practice. The assumption tends to work in one of two ways: either it can be used to create an idealized type of practice, which can then be planned for or implemented (e.g. Laurillard, 2001) or else it can be used by a teacher to represent their own practices so that they can be shared, negotiated and revised (e.g. Conole & Oliver, 2002).

A number of different approaches to modelling practice (practice-based, theory-based or organisation-based) have been identified (JISC, 2006), including:

- *Practice models* developed to describe or prescribe specific *approaches* by practitioners (e.g. Salmon's five-step model of online learning, 2000; Laurillard's conversational model, 2001).

- Other *practical accounts* that don't fit any modelling framework such as case studies, action research reports, project findings and staff development materials.

- *Theoretical accounts* designed to provide coherent *explanations* of learning activities and practice (e.g. systems theory, activity theory, cognitive/constructivist theories).

- *Taxonomies and ontologies* (structured vocabularies) developed to provide *systematic ways of labelling and organising* features of the learning situation.

Standards and specifications such as Instructional Management Systems Learning Objects Model (IMS LOM) and Learning Design (IMS LD) or ISO SC36; also representations such as workflow diagrams, Unified Modelling Language (UML) models or instantiations of standards in working systems.

- *Organisational models* designed to ensure an institution's processes make best use of learning systems and best practice standards, such as quality assurance documents.

Most relevant in this context, however, are practice models and theoretical accounts. Further work has been done to explore these specific topics; for example, Twining (2002) has developed a Computer Practice Framework to describe and explore the ways in which the introduction of technology changes teaching in schools, classifying developments as supporting, enhancing or transforming existing practices.

Similarly, Mayes & de Freitas, (2004; forthcoming) reviewed frameworks, theories and models, classifying theoretical accounts of learning into three perspectives: *associative, cognitive* and *situative* (Figure 1). These are not mutually exclusive, but each implies a different set of priorities for pedagogy. Pedagogical models are positioned within the theoretical space that reveals their origins, and thus their educational purpose. Rather than simply providing rubrics for practice, however, the authors make these three perspectives available for reflection and critique by practitioners in terms that relate closely to their practice.

[Insert *Figure 1, Model from JISC pedagogy and e-learning study*, here]

Some researchers have attempted to develop the ways in which such models might change, rather than just reflect, practice. For example, Conole *et al*, (2004) also sought to characterise how theories of learning differed in their advocacy of certain forms of teaching. This review identified three ways in which theories differed: in their emphasis on individual or social forms of learning, in the extent to which they were concerned with reflection (or the lack of it); and in the primacy they give to information or to experience.

These analytic differences were used to inform a theory-driven design process, involving the following steps:

- Outlining the overall learning activity and associated learning outcomes.
- Listing potential mini-activities.
- Outlining the contextual details in terms of resources and constraints.
- Mapping mini-activities to potential tools and resources.
- Selecting mini-activities and tools and resources based on their contribution to the overall pedagogic theory.
- Planning of the actual learning activity.

This approach led to a conceptual model (Figure 2) being proposed that was taken up as the basis for a learning design toolkit as part of the DialogPlus project (Conole & Fill, 2004). Importantly, it was recognised that this model can be applied at multiple levels, in a nested manner. It could be used, for example, to plan a lesson – or it could be used to plan a series of lessons forming a course. Within each lesson, important moments could also be planned.

[Insert, *Figure 2, An example of the conceptual model of learning developed for DialogPlus*, here]

Once a model has been created, a common next step in any of these research projects is the development of a tool intended to help practitioners (teachers, managers, *etc*) to design

appropriate uses of technology. Conole & Oliver (2002) differentiate between three different kinds of tool: frameworks, which define concepts and can be used as a kind of specialised language when discussing design issues; models, which relate concepts, and can be process-based (explaining how things are done) or analytic (explaining why they are done); and toolkits, which are used to provide a structured process for novice designers that facilitates the decision-making steps; and software wizards, which automate design by eliciting data from a user and acting on it.

As an example of this kind of development, it is worth considering the Learning Activity Management System (LAMS). Britain (2004) singles this out as an intervention that illustrates 'the idea that Learners perform Activities in an Environment with Resources' (*ibid*: 4). It is suggested that 'one of the highly attractive features of LAMS is that it provides a simple and highly intuitive user interface that allows the course designer to drag and drop LAMS activity tools into the workspace and use connecting arrows to organise the activities into a sequential workflow' (*ibid*: 10).

Thus the policy interest in developing e-learning practice has created a body of work concerned with the development of interventions that are intended to improve the way in which practitioners design learning. However, the impact of these interventions is not clear. A recent review suggests that the success of these (and other such resources) seems to be determined by a number of factors (Sharpe, 2004). The first is *usability*, the idea that the resource must be known about, be accessible and be understandable. This would normally involve designing the resource for a well-defined audience. *Contextualization*, the next factor, involves customising or adapting resources for the intended audience, in recognition of the issues, values and practices of that group. This might be done by the designers or by the audience themselves, as a way of adapting 'generic' resources for their own use. The next quality concerns *professional learning*. This proposes that a change in practice requires learning, usually involving changed conceptions of teaching and learning. This reflects the constructivist principles and assumptions that form a foundation to this classification. Central to many of these qualities is the idea of *community*. However, there is no proposal that a new 'community of practice' should be "created" (see Wenger, 1998, for the problems inherent in such an assumption); instead, success seems linked to working with *existing* communities rather than trying to create new social structures. Finally, successful resource use requires *learning*

design, interpreted as helping practitioners to base their practice on an understanding of student learning, designing to support this.

Previous research has made it clear that, no matter how good a model such as this is conceptually, nor how sophisticated it is technically, simply handing it to practitioners will not lead to understanding, engagement or impact (Conole & Oliver, 2002; Sharpe, 2004). Instead, practitioners need to be supported in engaging with the model or tool in order to understand its relationship to their own practice. This process of appropriation may result in the tool being used in unexpected ways – or even in ways the designer might view as undesirable. One way around this is proposed to be co-design, where the model or tool is left unfinished until practitioners and designers can discuss and agree upon its final form (Sharpe, 2004).

A powerful example of this can be seen with metadata. It has long been recognised that expecting practitioners to use controlled vocabularies created by others to describe their practice represents a form of coercion, intellectual colonisation and dominance (e.g. Oliver, 2004). The problems caused by such attempts to standardize the language of practice have led to new approaches being developed that recognize the variations in understanding, language and practice that exist across any sector. These culturally-specific forms of technical description have become known as 'folksonomies', juxtaposing them with the dominating, totalising claims that particular controlled vocabularies are 'taxonomies' or even 'ontologies' of practice (Currier *et al*, 2005).

Acknowledging this poses problems for those seeking to improve practice through the use of models. This leads to the central question for this paper: if the adoption of models is problematic, and convergence politicized as a form of cultural control, how should the use of models to instigate change be understood and re-theorized? It is this question that will be returned to in the sections that follow. First, however, we will describe a methodology used to explore this question, and then present an example in which a model was offered to practitioners.

2.0: Methodology

To explore the question of how such models relate to changes in practice, a structured intervention was prepared. This involved introducing practitioners to a model, asking them to try relating this to

their own practice, then eliciting their reflections on this process. The outcomes of this process were analysed using concepts drawn from Wenger's work on Communities of Practice (1998) – specifically, reification, boundary crossing and alignment. Given this community-oriented perspective, individualistic data generation was eschewed in favour of collaborative activities.

2.1 Data collection

Paired workshops were organised for teachers from schools, post-compulsory education and the adult and community learning sectors. These brought together a total of 29 practitioners, who were selected to represent teachers new to the profession, middle managers and members of the senior leadership team. Within each workshop, participants were encouraged to work together but were free to sub-divide into whatever groupings were most meaningful to them, so as to recognise (rather than try and predict) allegiances to particular communities of practice.

The first workshop opened by providing participants with the components of the model on separate cards, and asking them to sort these (adding to and removing from them as they wishes) to create a model they felt explained their own practice. The card construction exercise took place in the first workshop and groups were divided into two with one group provided with cards with the component parts of the models colour coded as in Figure 3. The second group were given cards with component parts of the model in white and without colour coding.

Participants were then introduced to the model and asked to comment on the differences between this and their own creation. Next, they were asked to undertake a SWOT (strengths, weaknesses, opportunities, threats) analysis of the model in order to generate opinions on its potential influence on practice.

Between the workshops, participants were asked to try out the model as a way of thinking about or changing their own practice. This fed into the second workshop, where each presented and explained how (if at all) they had used the model. These accounts of practice were then drawn together by self-organised groups within each workshop considering how the model should be developed. This small group work was followed-up by whole group discussions to see whether agreement on changes could be reached. Finally, the potential of the tool (original or revised) for lesson planning and as a prompt for reflection was discussed.

Obviously, there are limitations to this approach: the workshops were not part of the practices that the model addressed, being separately convened. A naturalistic approach may have overcome this, but tracking use of a model in teaching contexts would be extremely hard to achieve. Organising the workshops around a period of practice was intended as a compromise in this respect; it enabled practitioners to reflect upon actual design practice (albeit on a limited scale), but in a forum where collection of the data was possible.

2.2 Data analysis

Having collected the data, a two-stage process of analysis was undertaken. The first involved reviewing the artefacts produced and the discussions held so as to identify themes that related to the topic of using such models in practice. The themes that emerged from this review included representing the context of teaching, developing shared understanding and adopting the model. These are reported below. A second phase of analysis was then undertaken which involved applying Wengers' concepts to these. This is reported in the analysis section, which follows. This section is structured to reflect the use of Wengers' concepts. The three concepts used – reification, boundary crossing and alignment – were selected because they mirror the three themes presented in the findings.

We do not claim that these workshops constituted communities of practice; however, we would argue that the participants who took part came from closely aligned communities and were thus able to negotiate their membership of the workshops quite rapidly. This relative similarity and mutual comprehensibility is sufficient, we propose, for Wenger's concepts to be useful in this particular case, particularly since the ones we have selected to work with concern inter-community rather than intra-community meaning-making.

3.0: The Becta pedagogic model

The approach described above was applied to study the development of a particular model, which will be presented briefly here. This model was selected because it provided an opportunity to look at the *process* of developing and sharing a model; it is thus an opportunistic case.

The UK British Educational Communication Technology Agency (Becta) is a government agency responsible for activities such as supporting technology-enhanced learning (TEL), supporting standards and promoting greater integration within and between learning organisations. As part of their work on building and promoting standards, Becta developed its own model of pedagogic practice involving technology (Modelling Effective E-Learning – MEEL) to support practitioners in schools (primary and secondary), community learning (adult community learning) and post-16 (further and higher education) then commissioned research into its effectiveness and acceptability to practitioners. It is important to recognise that the model was designated as a work in progress, with the study described here intended to shape its development. This provided a rare opportunity to explore practitioners' uses of such models. Its provisional status was not felt to be a problem for this, since the general structure of the model was clear and sharable.

The model illustrates the mid-point in the evolution of interventions in practice, as reviewed above. Although its first incarnation was primarily descriptive, the intention was to use this as an intervention in practice, and it was its fitness for this purpose that was Becta's motivation for studying practitioners' use of the model. It was not yet considered robust enough to develop a formal structure or tool with, however.

Becta intended the model to have several purposes. Its primary purpose was intended to be to act as a planning tool for practitioners. However, it was also hoped it would promote reflection upon learning and teaching processes, support the development of lesson plans and lead to a shared vocabulary for learning design amongst practitioners. A tool that aims to support institutional as well as practitioner-based processes may be ambitious in scope, but the research undertaken was designed to investigate this scope and to problematize the use of the model in a range of different contexts to inform further development of the tool. The work therefore was intended to lead to formative revisions of the model. The rationale behind this model is '*usability leading to impact*', notably not just referring to technical usability. The model is intended, in the first instance, to provide a tool through which educational 'products' such as qualifications, inspection frameworks or educational software may be viewed, or described. The model was intended provide a starting point for developing and embedding a common vocabulary and for moving discussion on effective pedagogy from the academic arena to the practitioner arena.

Essentially, in its descriptive form, the model is process-orientated. The three dimensions are: *context, pedagogical approaches* and *outcomes*.

- The **context** dimension considers a number of elements in terms of constraints or opportunities and includes elements such as type of institution, prior learning, the skills of the practitioner, learner motivation, resources available, available support and so on.

- The **pedagogical approaches** dimension includes techniques, assessment and differentiation and may include traditional pedagogies. The 'techniques' group consists of a range of techniques such as objective setting, questioning, and collaborative work.

- The **outcomes** dimension contains a raft of elements spanning higher order thinking skills and dispositions such as autonomy and creativity, together with learner enjoyment and motivation.

In order to develop the model into one that serves an evaluative purpose, Becta has suggested that a fourth column called *evidence of impact* may be added.

[Insert, *Figure 3, MEEL Model*, here]

4.0: The study: main findings

While 29 practitioners[1] participated in the study, these were broken in to three different learning sectors. Each group attended one 'before using the model' and one 'after using the model' workshops, there were two weeks in between each workshop. The groups included:

- Schools (9 primary school teachers and 7 secondary school teachers),

- Community learning (6 adult community learning tutors),

- Post-16 (7 FE/HE tutors).

[1] Notably this number is statistically quite small so the findings from this sample are not generalisable. 23 other expert practitioners were included in the study but that data is not included here.

This section attempts to synthesis the findings of the 'before' and 'after' workshop activities in relation to three criteria that have emerged: how the models helped the tutors to represent the context of their teaching; how tutors developed a shared understanding through the process of reflecting upon the model and how the tutors felt that they might adopt the model into their own practice (e.g. of lesson planning, institutional planning and more generalized reflection upon learning and teaching processes).

4.1: Representing context of teaching

As has been discussed above one of the key challenges for the effective use of models (e.g. as a hypothetical description of a complex set of processes) is to create a link between the abstraction of the model and what it is trying to represent. In the case of learning and teaching processes this is particularly challenging as the processes themselves are often difficult to articulate. Not unsurprisingly then, teachers participating in the workshops from primary and secondary schools did find it difficult to consider their own processes and context of teaching in a different context – e.g. out of their usual teaching and learning context – or 'acontextually'. However, the activities designed as they were (by the experienced team of researchers) did allow the teachers to work collaboratively to unpick the specific categories of the model, and in the process through dialogue the teachers began to build up a representation of their own teaching through deconstructing the model presented. Out of that 'reverse engineering' of their own practice, and in the process of seeking to establish relationships between the different groups of elements, the teachers created a model that was cyclical in nature. Here the 'outcomes' category fed back into the 'context' category and this they referred to as 'limitations' or 'restrictions'. It is possible that this perception is based on the manner in which the existing proto-model is graphically presented.

To facilitate the process of 'reverse engineering' their own practice, and through their collaborative inter-working, the terminologies used became a critical aspect of the process of representing their teaching in a different context. For example, the model included several terms that the teachers were unfamiliar with (e.g. ipsative, affordances), as well as naming learning theorists that some practitioners had not previously encountered (e.g. Kolb, Gardner, Dunn) and this caused some consternation among the group, possibly creating blocks to their general understanding of the model. Familiar terminology is important for building groups and for creating ownership over the model used. Interestingly some of the practitioners categorized the terms hierarchically, indicating

a preference for some terms over others possibly reflecting their familiarity with the terms. The teachers in general seemed to prefer more practice-based and familiar terms over other less familiar and more theoretical terms.

Upon completion of the exercise, when given the MEEL map, the group's perception was that it was rather static and linear and not sufficiently dynamic. This was the key focus of their criticism of the model, and reflects how important *process* as well as *ownership* is in learning and teaching practice. While in practice the context, pedagogic approaches and outcomes often operate in parallel, the model separated the processes out into more static stages, and this was problematic for the practitioners, and produced a disconnect between how learning and teaching practice was represented to the teachers as compared with their connection to their own practice. Successful models of learning support and scaffold the process of designing learning and facilitate the learning process. But according to the workshop activities, successful models of practice must reflect the processes of learning and teaching and must allow for some ownership of the model (e.g. through familiar terminology, close similarity to the practice).

Interestingly, the community learning and post-16 tutors re-produced very different representations of the MEEL model. In the case of the community learning practitioners, they placed the learner at the centre of the page – and placed the other categories around the learner. Interestingly, the community learning group positioned the cards around the learner placed at the centre, and they divided the learner into three types: failed, social and skills focus. They did not see the teacher or institution at the centre of the processes of learning and teaching but rather the learner, giving greater emphasis to the learner in this way. The other cards were placed in clusters, with assessment grouped together, learner related cards grouped together, including 'progression', 'autonomy', 'support' and differentiation'. Processes of learning were also grouped together and including 'learning styles', 'modelling', 'explaining' and 'questioning'. Institutional aspects were likewise grouped together including: 'institution type', 'institutional culture', 'support' and 'accessibility'. 'Accessibility' was seen as extremely important to this sector and they added two extra cards for this. 'Retention' and 'motivation' were also highlighted as central for the community learning tutors. The community learning group also added 'evaluation' and 'learning management systems' as new cards.

The post-16 practitioners, on the other hand, developed a model consisting of six columns, intended to represent the *process* of designing for learning. This started with sanctioned frameworks ('qualifications', 'national curriculum'), moved through institutional priorities ('resources', 'accessibility', 'widening participation', 'motivation of learners', etc) and then to the specific issues that were of concern to teachers ('learning styles', 'prior learning', 'Bloom's taxonomy', 'student support', 'knowledge' and 'understanding', etc). A horizontal triad consisting of collaboration, creativity and enjoyment underpinned this column, which were described as stylistic elements that enabled and facilitated these teacher priorities. The next column concerned teaching practice – what the tutor does ('explaining', 'intervening', 'modelling', etc) – and the penultimate one concerned methods of 'assessment' and 'feedback'. The final column was intended to represent the longer-term outcomes of this process: 'progression' and 'lifelong learning'.

The different modes of re-presenting the model by the different groups was itself interesting, each group chose to re-present the processes of learning according to their own priorities, while the teachers grappled with the process of presenting their practice 'acontextually'. The teachers were keenly aware of the importance of context in their practice and externalised this issue in their representations through creating linkages between context and outcomes. The community learning tutors prioritised the learner, and this emerged from conversations not just as lip service but indeed in the way that they designed their courses with a greater emphasis upon work generated by the learner group. The further and higher education tutors had a more complex relationship with the model and considered the learner, the institution and the pedagogy itself as distinct components of an overall system debating lesson planning and institutional planning as part of the overall learning process.

Perhaps the over-riding theme of all the sessions was the need to place a greater emphasis upon the process dimension of the model. All groups wanted to inject a more iterative dimension to the model both to inform the way learning was designed and to reflect the process of learning more accurately. Any effective model for teachers and tutors therefore needs to ensure that the representation of practice and the processes of learning and teaching are accurately reflected. In addition, any model if it is to effective needs to allow the practitioner to take some ownership through familiar terminology and through proximity to familiar processes.

4.2: Developing shared understanding

The sessions also facilitated a good opportunity for teachers and tutors to share their experiences of learning and teaching both through peer dialogue and collaborative activities, which was noted as being desirable particularly for teachers who do not get much time to reflect upon practice in their daily lives.

Notably, the way the workshop sessions were designed – in particular with 'before using the model' and after using the model' activities – helped to create a shared understanding both of how to represent practice in model form, and how to promote greater reflection upon how learning is designed effectively using technology-enhancements. To illustrate this, for example in the schools workshop, initial discussion focussed on creating a shared understanding of the meaning of each of the 'element' cards, a number of which caused the group difficulty. In particular, these cards included references to "Bloom", "deployment of affordances", "ipsative" and "Kolb, Gardner, Dunn" (in relation to learning styles). In the ensuing discussion it was clear that the concepts associated with the above *were* familiar to the group in an operational sense and that the terminology rather than the concepts themselves were problematic.

In this way, once the teachers had explored the terminology and concepts collaboratively, they began to build up a greater confidence in their own understanding. This form of collaborative exercise allowed the teachers not only to take up and use existing models, but perhaps more interestingly, to develop their own variations on the model.

An example of this was evidence by one tutor in the community learning workshop, he used the model and discussions around the model as an opportunity to develop his own model, which injected a dynamic component into the MEEL model (see Figure 5). This re-iteration by a tutor develops the model significantly. Notably the tutor used the model to explain the selection of a particular choice of ICT tool as a way of facilitating learning for a particular group of learners as a way of demonstrating the model –re-presenting it as a flow diagram. He then used the model with other practitioners to help them with their particular problems with selecting ICT for use with their learners, drawn from recent past experiences. The process both helped to illustrate issues with ICT selection and made overt the particular contextual issues of the other tutors (e.g. technical support)

which it must be noted often related to pragmatic institutional support issues rather than pedagogic issues.

As the examples illustrate, the activities helped to support a more effective alignment between the tutors' own experience of practice and with a useful presentation – or re-presentation – of learning and teaching. In particular, the groups found it more productive to use the re-presentation of the model rather than the model as given in a complete form. In particular, the exercise helped the tutors to connect and communicate with others in their own community of practice. The process of how tutors come to share an understanding of what they create is important for professional development and improving practice, and also gives an opportunity for greater reflection upon practice and behaviour that may become taken for granted – or unproblematized.

4.3: Adoption of the model

Overall the tutors could see value in the process of deconstructing the original model and repurposing it for use in their own practice, if only as a way of putting greater focus upon the process of learning and learning design. However they were critical of the model in the form that it was given, in particular criticism centred upon how undynamic the model was when compared with their richer learning and teaching experiences.

Another flaw identified with the original model was aimed at a lack of attention of the model to the process of introducing technology (and new practices involving technology), a problem clearly corrected in the revised model offered by the community learning tutor in Figure 5. To exemplify this criticism, the post-16 practitioners produced a separate diagram: a flat 'tree' diagram, with 'senior management'/'institutional commitment' at the top and branches leading down to 'staff development', 'physical infrastructure', 'resources/content', 'technical support', 'pedagogic support', 'learner support', 'evaluation' and 'feedback'. They made it clear that these 'leaves' were intended to interact, not to communicate solely through the top level of the senior management team, but stressed that all would be necessary for effective e-learning.

The adoption of the model in practice was a subject debated by the three groups. To synthesis, they concluded that the plan for delivering the model into schools, FE and HE might focus on promoting critical engagement in a collaborative professional environment as part of a whole

institutional continuing professional development (CPD) programme (this point was validated by the expert groups who participated in separate single workshops as part of the consultation). This would allow practitioners to have a chance to 'play' with and explore the model with other practitioners in advance of using it in practice, as well as giving teachers and tutors the chance to create a community of practice that could then create some ownership over variants of the model (as used in their particular context).

While teachers and tutors alike were resistant to any prescriptive model imposed, the activities of producing variant models perhaps using MEEL, or another model, as a starting point might produce different benefits, depending upon context and learner groups (e.g. as a lesson planning tool for teachers, for ICT selection and meta-reflection upon learning practices amongst post-16 or as a planning tool for senior management).

Whilst the teachers and tutors outlined the main strengths of the Becta model in its flexibility, multi-dimensionality and cross curricula coverage, they shared a view that the 3-stage model was more effective than the larger model (see Figure 2). The teachers and tutors did suggest that the model was descriptive of problems they encountered in everyday practice, but needed updating in terms of the range of learning theory referred to and the teaching practices represented.

Almost all of the discussion took place with reference to existing roles, organisational structures and relationships and curricular arrangements, and as such e-learning was seen to be enhancing rather than transformative in nature. The discussion of the validity of the model acted as a catalyst for sharing ideas relating to the use of e-learning. The groups enjoyed being part of the process of designing the model and their ownership of the model.

For the model to be most effectively taken up in practice, therefore, a better reflection of the processes of learning and teaching would be needed. The model would also need to be more iterative, allow for planning, selection or design of learning, have terms familiar to the users, represent learning and teaching as experienced by the particular user and have flexibility of use. Because of these requirements – which are, clearly, closely tied to situated contexts of practice – it would be impossible to have a single, definitive model.

5.0: Analysis

5.1 Models as reification

The previous section indicated broad support for the idea of a pedagogic model, although each group created an idiosyncratic version of this. Whilst some of the models were broadly similar to that proposed by Becta, others were structurally different in quite significant ways. Whether this variation reflects profound differences in practice or merely differences in emphasis is hard to discern. Whatever the cause, however, this variation highlights the complexities of *reification* (Wenger, 1998).

A reification, Wenger proposes, is something that a community produced through its shared practice. It may be an outcome of practice (e.g. something that is produced, such as a lesson plan) or may reflect the process of practice (e.g. guidelines on how to design lessons). The way in which representations or labels 'stand for' practices is, Wenger argues (1998), highly problematic. In this context, the models that are described above are reifications of design practices. The initial model reflects the process of design that the development team at Becta advocated. The idiosyncratic models produced within the workshops represent practices undertaken by particular communities of designers.

This was evident in the way that the different workshop groups constructed the models. The practice of e-learning, being situated, will be different in an FE college than it will be in a school or university. Producing a model that organised design around the learner, as the community learning workshop did, contrasts with the process of negotiating national and institutional policy constraints, which framed the representation of practice in the post-16 sector. Both are design processes – but they express different design practices, highlighting the situated nature of such work.

Arguably, none of these models was definitive – other practitioners from the same sector might have developed something different; and even the same group might have produced a different model if the circumstances of the activity altered. What this emphasises is the provisional nature of such models. As Wenger argues, reifications emerge from practice, but they do not define it; the valorisation of any model (e.g. as "good" practice) must, therefore, be treated with caution.

5.2. Boundary crossing

An important feature of reifications is that they can act as 'boundary crossing artefacts' – they can be given to others (and their communities) in a way that a practice – essentially, a performance by those within the community – cannot. Meaning, Wenger argues, then emerges from the interplay between practices and reifications. When these reifications are produced, their meaning is clear to the producers, since they are aware of both the practice and the reification that seeks to describe it. However, when this reification is passed on to others (whether as a model, a design tool or an account of 'best practice') members of that new community must work to make it meaningful by constructing a link between the reification and their practice. In Wenger's view, then, the meaning of any model is situated, arising from the way that particular communities attempt to appropriate them.

This was clearly the case in the workshop involving school practitioners, where the reification (the terminology used on the cards) was unfamiliar, but the practitioners were able to relate these to activities they already undertook. Once such a connection had been established, the technical terms involved could be used to describe their own practices – allowing these to be reified and shared with the other groups. In effect, these tasks helped to establish a shared language for describing practice across the groups.

Viewed from this perspective, it is unsurprising that groups reported problems understanding particular terms even though they claimed that the practices these stood for were familiar to them. From a community of practice perspective, this problem is inevitable; consistency in the use of reifications only arises in the context of groups with particularly consistent patterns of interaction and mutual accountability. These have not been established between the sectors. This explains the recommendation of Sharpe (2004), reported earlier, concerning the presentation of tools using the audience's own language. Such tools need to reify *users'* terminology, not designers, if they are to be easily adopted; either the designer or the learner must take on the work of making the terminology of the other community meaningful, and if a model is intended to be usable, it would be prudent to spare practitioners the extra work involved in learning to relate these terms to their own practices.

What this specific case illustrates is how groups of teachers learn to talk the talk of educationalists by making sense of the artefacts that educationalists provide. The sense-making process again reflects one of Sharpe's criteria for successful tools: the idea that use of resources implies professional learning. This is important: what led to practice being re-thought in this study was not receiving a model, but adapting one (or even creating one).

5.3 Alignment

Sharing reifications is not a politically neutral process; Wenger argues that some communities of practice are able to use this process to influence the practices of others. Obvious examples include groups who control resources (such as budgets), but also those who act as gatekeepers or sanction particular kinds of activity.

It is interesting to explore how this process unfolded in this study. The model developed by Becta was intended to inform the process of designing e-learning. As such, it can be understood as an attempt to use a reification (the model) as a boundary crossing object (because it is given to other communities) to align their practice (attempting to make it conform to "good" – sanctioned – practices).

The findings concerning the adoption of the model show that this was not a straightforward process. Each model that was developed reflects the values and concerns of a particular group (such as cyclic planning or resource management); recognising this vindicates the comments that these models would need further adaptation as they are rolled out across sectors. Clearly, Becta's model did not create conformance amongst the practices present in the sectors; indeed, framed in this way, it seems simplistic to expect that it would.

Nonetheless, the effort to present groups with a model was viewed as positive (even where groups quibbled over the nature of the model). Consideration of a model developed elsewhere acted as a spur for reflection on practice. The process of accommodating this artefact within a group's own practices – making it meaningful, as described above – was disruptive, requiring the re-description of practices using reified terms that would not commonly form part of the group's discussions.

Although concerns have been raised about the attempt to impose standard vocabularies on practitioners (e.g. Oliver, 2004), what this study shows is that practitioners do not necessarily let

themselves be imposed upon. Any attempt to make this model a standard – to align these communites' practices – would clearly have failed, since the model changed considerably as the groups engaged with it. This is, arguably, a positive outcome. If it had been forced on the groups it would have signalled the lack of status attached to their own meanings, and thus their own relative status, in much the same way that the claims processors in Wenger's own case study (1998) were rendered marginal by the imposition of forms they had to use but could not explain.

However, as an attempt to make the three groups' practices converge, the model does seems to have had some small success: it was able to emphasise many common elements and introduce consistent terminology, even if idiosyncrasies remained.

6.0: Conclusions

The study described here has shown how the current interest in developing models of learning and teaching that can be used to influence practice is problematic. Although participants felt that the model studied here was of value as a prompt for reflection, simply taking and using it was not possible and would have marginalised rather than helped teachers. Instead, making sense of the model by adapting it (or creating a new one) allowed practitioners to reify their own practice, considering it in ways that they had not done previously.

At a practical level, there were indications of the kinds of concerns specific groups of teachers wanted to see modelled. These included organising things around organisational hierarchies, the learner or cycles of development, as well as the modification of (and addition to) concepts represented in the original model. Rather than seeing these as necessary additions to the model, however, the analysis presented here suggests that they reflect the preoccupations of the particular groups of people who took part in the study. These preoccupations may or may not be reflected more widely; however, the important thing to recognise is that practitioners *interpret* the resources they are given. For the designers of these models (or tools derived from them), the issue then becomes how to support the adaptation of these representations of practice so that they are usable by specific groups.

Perhaps most importantly, however, this analysis calls into question the whole project of standardised approaches. In this specific context, the role of research-generated models in influencing teachers' practice has been shown to be problematic. What this study indicates is that there is a stark choice for such models: either they will marginalise teachers by being imposed on practices in a way that practitioners fail to understand, or else they will be adapted, becoming meaningful but non-standard. The ideal of a universal approach to representing teaching practice becomes either undesirable or impossible.

7.0: References

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Figures:

Figure 1: Model from JISC pedagogy and e-learning study (Mayes & de Freitas, 2004).

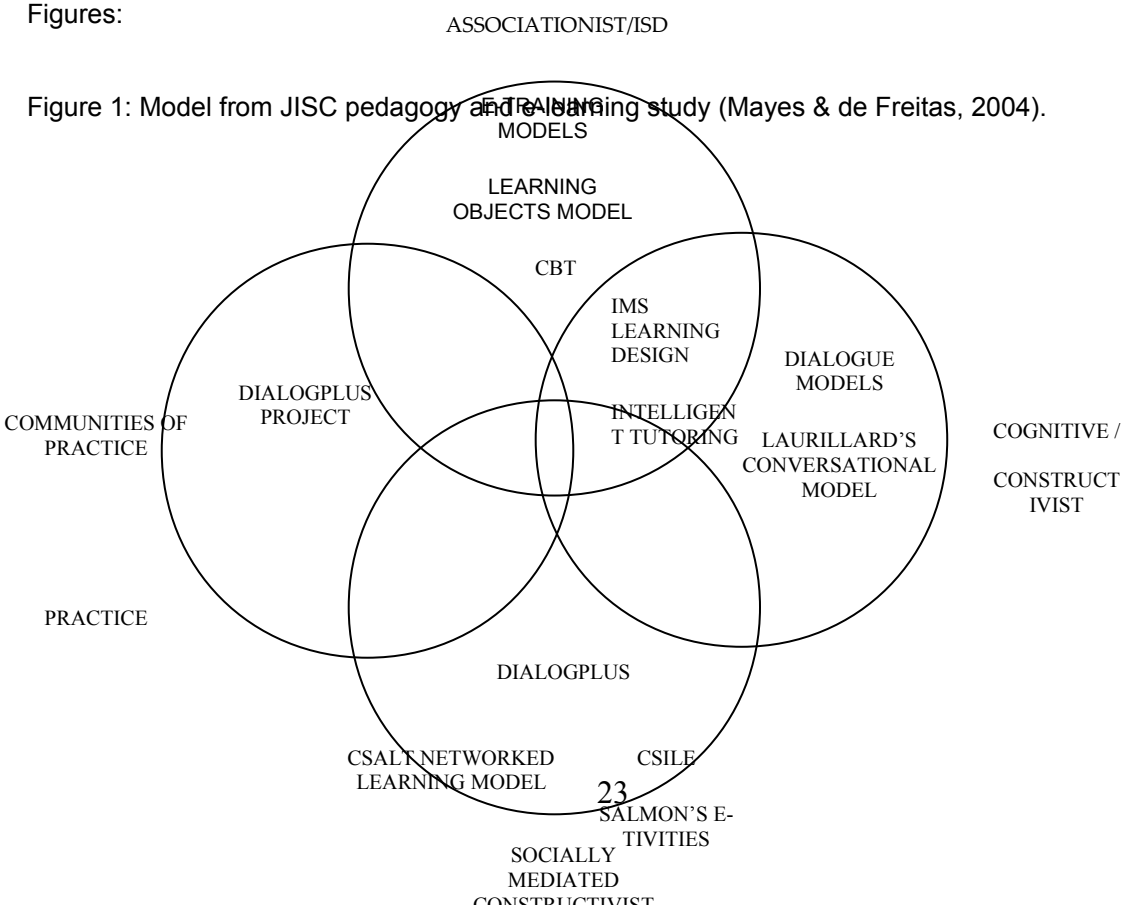

Figure 2: An example of the conceptual model of learning developed for DialogPlus (from Conole & Fill, 2005)

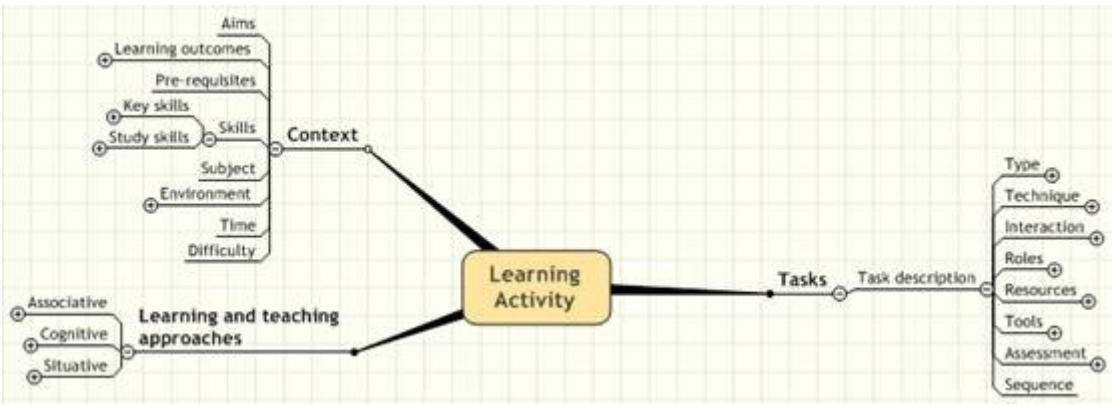

Figure 3: MEEL model. Source: Simon Harrison, Becta.

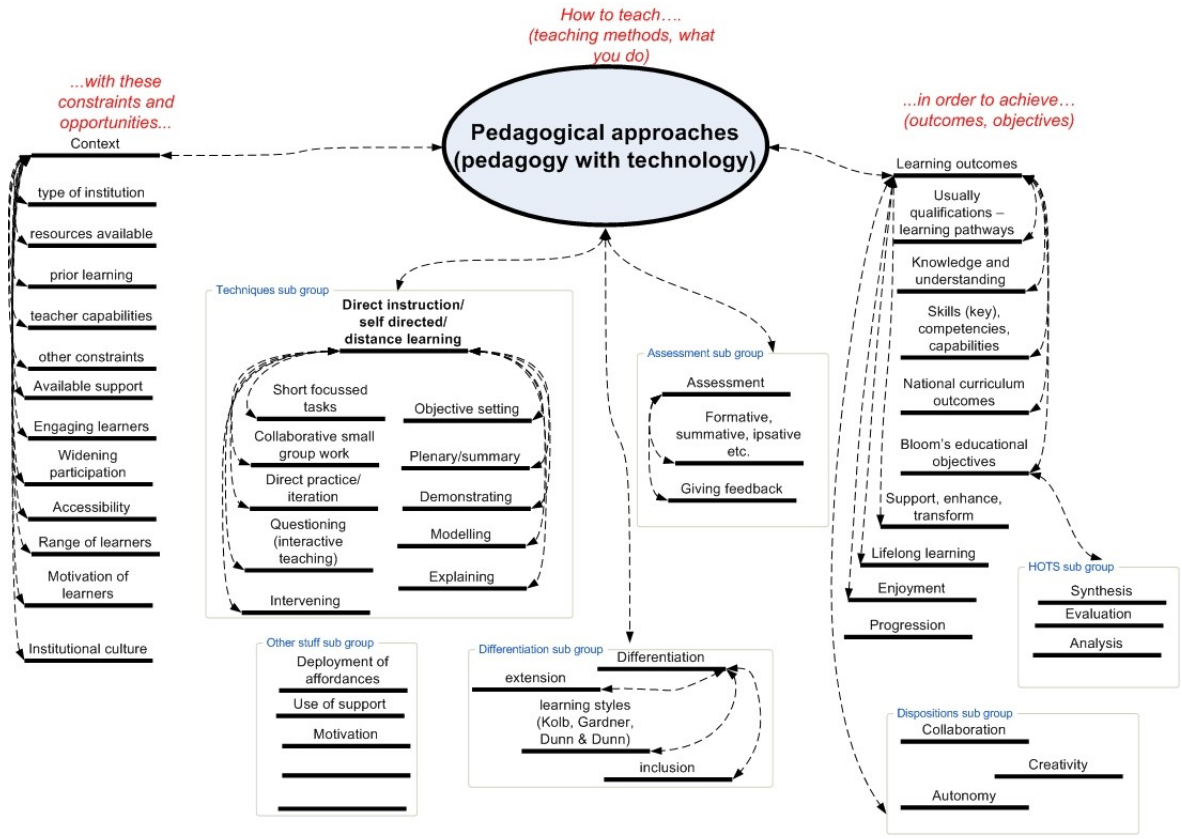

Figure 4: The 3-step version of MEEL model. Source: Simon Harrison, Becta.

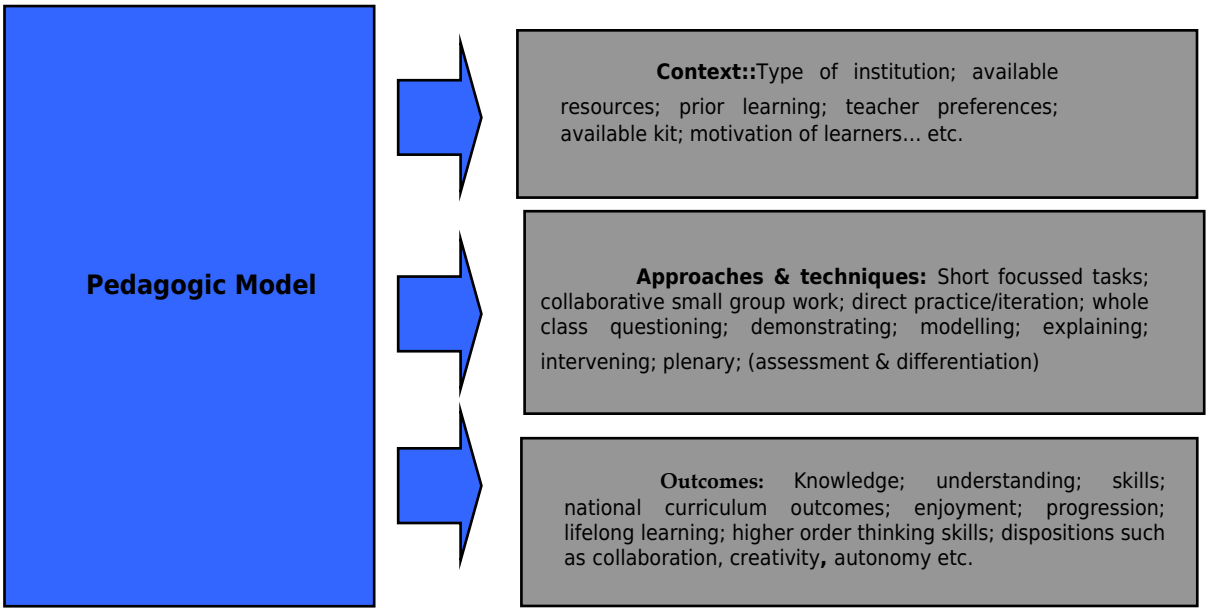

Figure 5: Iteration of MEEL framework. Source: Kieron Parkinson.