SUPPORTING GRADUATE DEVELOPMENT THROUGH WORKBASED LEARNING.

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Abstract

The genesis of this innovation lies in the commitment of a national Irish business enterprise to the professional development of its staff in general, and to the enhancement of its Information Technologies (IT) staff specifically, in collaboration with a national Higher Education (HE) provider.

A postgraduate degree, awarded by the HE provider, seeks to bring coherence and cohesion to the education and training provision for newly recruited IT graduate staff of the business enterprise, simultaneously acting both as an induction process for new staff *and* as a professional capacity building exercise, thereby enhancing the enterprise's organisational learning and collective competence in the areas of information technologies, IT security and technical service management.

The curriculum was designed by the HE provider in collaboration with the business enterprise to offer it to *circa* sixteen IT staff per cycle of delivery through a model known generally as the new apprenticeship for professional practice which uses a combination of college-based, block release taught elements, regular day release seminars and substantial work-based learning, supported by the academic staff of the HE provider and work-based support staff/mentors of the business enterprise. Academic quality assurance, pedagogical, assessment and accreditation responsibilities remain with the HE provider.

The learning model draws on good practice from the standard paradigm of college-based, HE learning *and* from the emergent paradigm of work-based learning (WBL). This mixed mode of teaching, learning and assessment is designed to ensure that learning both meets the required level of the proposed award *and* generates a community of professional practice among the participants within the business enterprise.

The design of this Masters degree has been influenced by traditional as well as by emerging trends in HE generally, and trends emerging at the interface of education and industry.

The model includes direct teaching and related project work in accordance with the paradigm of transmission/acquisition favoured by traditional HE pedagogies. However, it also takes account of the growing shift towards work-related learning in authentic communities of professional practice, especially at postgraduate level.

The paper sets out the principles upon which the curriculum was designed, the pedagogical model underpinning the learning, and the interface between college knowledge and working knowledge emphasising how the integration of pedagogical design from the traditional and emerging work-based learning paradigms requires academic staff to re-conceptualise some prior givens and to integrate into their conceptual frameworks that learning, which is collective, non-prescribed and

participatory will inevitably emerge in work-based learning regardless of the intended programme learning outcomes elaborated in the programme document, and that academics have low control over the nature and extent of this learning. It is in this complexity that work-based learning allows for greater affordances for learning than the prescribed curriculum of the traditional HE paradigm.

Keywords

Work Based learning, Pedagogical underpinning, Communities of practice, College knowledge, Working knowledge.

Introduction

Background to the development

The programme is one of a range of professional development programmes initiated and developed by the business enterprise for a range of staff to contribute to the organisation's investment in its cutting-edge learning culture and to the development of both its human resources and its social and cultural capital. The programme forms the central element of the IT Graduate Training Programme. It seeks to bring coherence and cohesion to the training provision for newly recruited IT graduate staff, simultaneously acting both as an induction [1] process for new staff *and* as a professional capacity building exercise, thereby enhancing the organisational learning and collective competence of the enterprise staff in the areas of information technologies, IT security and technical service management.

The programme curriculum was designed by the HE institution in collaboration with the business enterprise with a view to offering it to *circa* sixteen IT staff per cycle of delivery through a model known generally as the new apprenticeship for professional practice [2] which uses a combination of college-based, block release taught elements, regular day release seminars and substantial work-based learning, supported by the HE academic staff and the enterprise's work-based support staff/mentors. Academic quality assurance, pedagogical, assessment and accreditation responsibilities remain with the HE institution.

The programme aims to focus on the capacity of the enterprise to respond to the challenges of a global market with regard to its Information Technology systems through developing participants' key skills in critical areas such as Information Technology Service Management, Security, and Internet Development, and to allow participants to contribute to the on-going development of the e-Business infrastructure of the enterprise enabling them to deliver IT services at the highest levels.

The benefits for the HE institution in being involved in this programme include the opportunity to build its own capacity in the design and delivery of work-based learning programmes at postgraduate level, the opportunity to enhance its market profile in similar areas of the knowledge economy, and the opportunity to further fulfil its remit as a responsive provider of quality education related to the needs of Ireland's rapidly growing knowledge and financial services provider economy. It provides opportunities for research collaboration in the areas of expertise of the providing HE Department including Information Management, Software Engineering, IT Architectures and Quality Assurance. This potential has already proved productive through collaboration between the Department and the enterprise on Software Engineering practices. It also increases the potential of the institution to increase its profile as a

destination for high level graduates both nationally and internationally, thus generating increased opportunities for academic staff to initiate other programmes of this kind with a range of sectors and organisations. Additionally, it represents access to a secure funding stream for programme support at postgraduate level, a not unsubstantial incentive in the contemporary fiscal landscape.

Rationale for the development of the programme

The programme is innovative in the approach it adopts to building links between the HE Institute and industry in that it provides a combination of intensive lecture blocks, seminars/workshops and work-based learning with modules tailored to meet the postgraduates' learning needs as well as building on in-company learning opportunities. (See Figure 8 in section 4.)

The programme is deliberately focused at postgraduate level, meeting the criteria of a Level 9 award on the Irish National Framework of Qualifications and at the equivalent level on the Bologna Process Dublin Descriptors [3]. The preferred model of learning in the programme is envisaged as a balance between taught modules and team-based, work-related project work, with individual learning related both to the taught components and the teamwork components. The model draws on good practice from the standard paradigm of college-based, third level learning *and* from the emergent paradigm of work-based learning (WBL). The teaching and learning approach includes opportunities for structured lecture inputs related to discrete modules, workshops, seminars, presentations, mentoring, and working in teams on negotiated work-related projects. Assessment modes include continuous assessment papers, formal examinations, a critically reflective learning log related to the project, presentations and team project products. This mixed mode of teaching, learning and assessment is designed to ensure that the learning both meets the required level of the proposed award *and* generates a community of professional practice among the participants within the enterprise.

The philosophy underpinning the programme design and learning paradigm

The design of the programme has been influenced by traditional as well as by emerging trends in higher education generally, and trends emerging at the interface of education and industry [4]. In particular it took cognisance of the growing scholarship related to communities of practices, to work-based learning (WBL) and to validation of non-formal and informal learning in its curriculum design, its pedagogical approach and in its assessment strategies.

The model includes direct teaching and related project work in accordance with the paradigm of transmission/acquisition favoured by traditional third level pedagogies. Accordingly it frames its programme and module learning outcomes in standard terms related to NQAI level descriptors for a major award at Level 9. However, it also takes account of the growing shift towards work-related learning in authentic communities of professional practice [5], especially at postgraduate level. These two paradigms are briefly illustrated below.

Figure 1. Traditional Learning Model

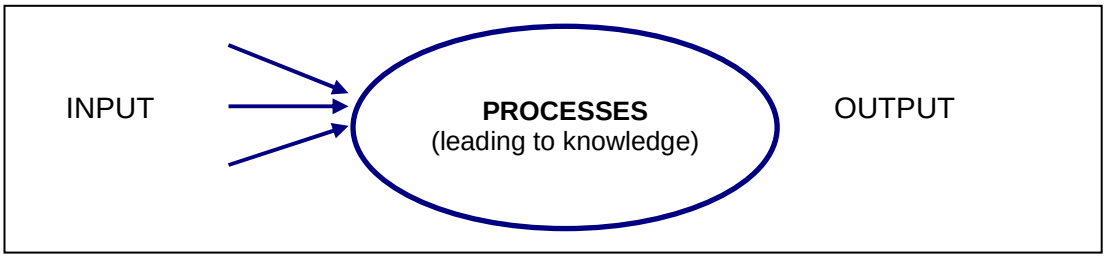
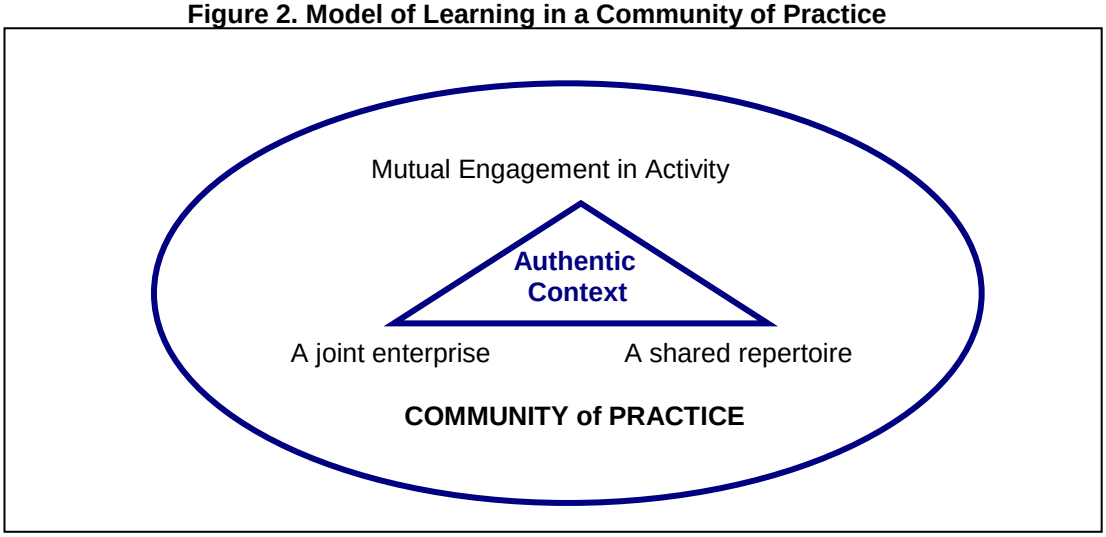


Figure 2. Model of Learning in a Community of Practice



The curriculum model in the programme took particular cognisance of the location of the participants in a context where affordances for informal and non-formal learning are ubiquitous. The importance of non-formal and informal learning in the working lives of adults is also now being recognised by the NQAI [6], by Cedefop [7] and by the OECD [8]. Interest in communities of practice, in tacit learning and in the social dimensions of work is growing both within academic scholarship and within the discourses of human capital and social capital theory [9]. The significance of learning in work, and from work, for economic growth and sustainability is widely acknowledged, as is the importance of work networks and social capital to the maintenance of civic society and political stability [10]. Likewise, business organisations recognise the importance of their own human capital as well as the social capital and cultural capital attendant on relationships developed in the workplace [11]. Development of human resources is now recognised as involving more than training: the affective dimensions of identity, sense of ownership and brand loyalty are now recognised as integral to successful companies [12]. The remit of higher education in contributing to this landscape is becoming increasingly focused on its relationship and interface with the world of work. There is increasing pressure on higher education to respond to, and to support, the move to a predominantly knowledge-based society in Ireland on several levels [13].

The contemporary requirement under the National Framework of Qualifications 2003 is that learning is articulated in terms of learning outcomes and pitched against the appropriate level descriptor. This makes the design of work-based learning programmes more systematic and coherent than heretofore, with more transparency of learning for assessment and award purposes. These factors are taken into account in the programme, as are the levels of learning articulated in the EHEA Dublin Descriptors 2004. The philosophy underpinning each of the pedagogical models mentioned above is that learning is not just the acquisition of pre-determined bodies of knowledge where theory is divorced from application in actual practice: rather learning is ubiquitous, is integral to being in the world in general and to the world of working lives in particular. This ecological view of learning acknowledges that learning is predominantly constructed, social, situated, contextual, bounded by the affordances of the immediate

milieu, and by the efficacy of the individual to turn experiences into sustainable and internalised learning.

The philosophical underpinning of the programme which has a substantial work-based learning project is informed by particular models, particular sets of learning theory and particular scholarly literature [14]. Its positioning was negotiated by the providing department of the HE institution and the business enterprise's Technology and Operations Directorate. As with all collaborations, this programme is the product of shared understandings of the purpose, context and culture of the two organisations, as well as a shared understanding of the purpose, culture and expected outcomes of the award for both partners. Tensions in partnerships are not uncommon: it is anticipated that such tension in the programme will identify the dynamics of its underpinning philosophies as the programme actualises in practice. Negotiations between the HE institution and the business enterprise resulted in the emergence of key principles with regard to the underpinnings of the programme, broadly as follows:

Principle 1

The level of learning of the programme achieved by participants should be directly mappable onto the NQAI level descriptor at Level 9 and the Bologna Framework Dublin Descriptors Second Cycle [15].

Principle 2

The syllabus content and mode of teaching should enable the acquisition of theoretical underpinnings of work-related elements so that learners will be equipped with sufficiently robust analytical frameworks to critically and reflexively relate their experiences of work-related aspects to the appropriate body of scholarship.

Principle 3

Affordances and supports in the workplace should be sufficient to enable learners to achieve the agreed learning outcomes for the work-related elements in the agreed time span.

Principle 4

The elements of the programme should be structured so as to meet the needs of the sponsoring organisation, the learning needs of individual participants, and the needs of the HE institution.

Principle 5

Mechanisms to document individual and collective learning should be appropriate to the context, to the intended learning outcomes of the programme and to the potential of learners to demonstrate understanding, insights, skills and competences in relation to the work-based elements and the major project.

Principle 6

Both the HE institution and the business enterprise respect the protocols in relation to privacy for the student on academic achievement and progress. The relationship between the student and the HE institution is not affected by the sponsorship of the programme by the business enterprise.

Theoretical underpinning of the programme

Theories of Learning related to a WBL Model

The programme locates its theoretical affiliation predominantly within an activist, constructivist and social learning paradigm open to complexity and emergence [16]. The programme designers acknowledge the centrality of the transfer and acquisition metaphors [17] in taught programmes and have knowingly designed a considerable element of direct teaching at the start of the programme delivery in the form of obligatory modules and optional modules before participants begin their work-based learning individual projects and team project. The theoretical rationale for this design is that at postgraduate level a considerable body of knowledge is required to achieve the level of learning assessed for award. The programme takes particular note of the need to integrate an understanding of how knowledge is both constructed and shared in the workplace through both organisational learning models and through individual and collective productive reflection, as illustrated in the tables below related to metaphors of work-based learning and to productive reflection [18]:

Table 1. Productive Reflection Metaphor of Learning

PRODUCTIVE REFLECTION	Vocational education and training	Organisational learning	Learning for work
Focus	Individuals	Organisations	Workgroups
Orientation	Learning achievement	Organisational development	Reflexive engagement with work
Practice	Training	Group development	Productive reflection
Criteria for learning	Individual qualifications	Organisational change	Work output and experience of work
Academic arena	Education	Business	Interdisciplinary

Table. Approach to Learning

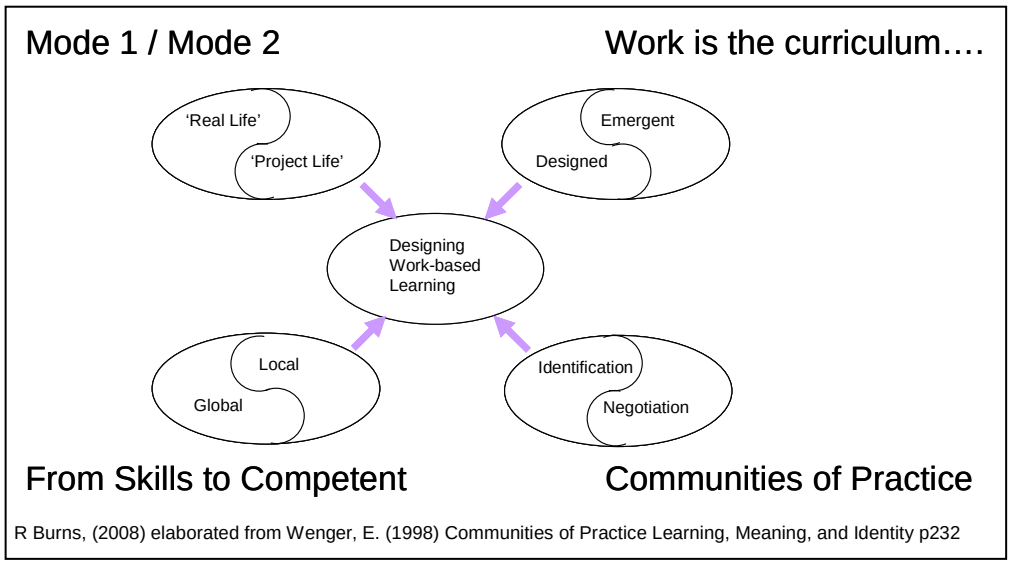
Approach to learning	TRAINING	ORGANISATIONAL LEARNING	PRODUCTIVE REFLECTION
Key needs	Rule-governed stability	Appreciation of contingency and ambiguity	Managing contingency and ambiguity
Approach to competence	Dependent on stable occupational categories	Dependent upon effective development of human resources	Dependent upon distributed and flexible competence
Approach to problem solving	Fragmented, directive approach to problem solving	Holistic, recursive, participative approach to problem solving	Reflexive, contingent approach to problem solving
Work organisation	Single-function specialists	Multi-functional teams	Flexible project groups

Work classification	Job description comprising set tasks and responsibilities	Fluid series of continuous reviewed and renegotiated assignments	Implicit contracts drawing on wide range of capabilities
Learning location	Training/learning largely external	Learning, employability defined within enterprise	Emphasis on contextualised workplace learning

Conceptual Design the programme

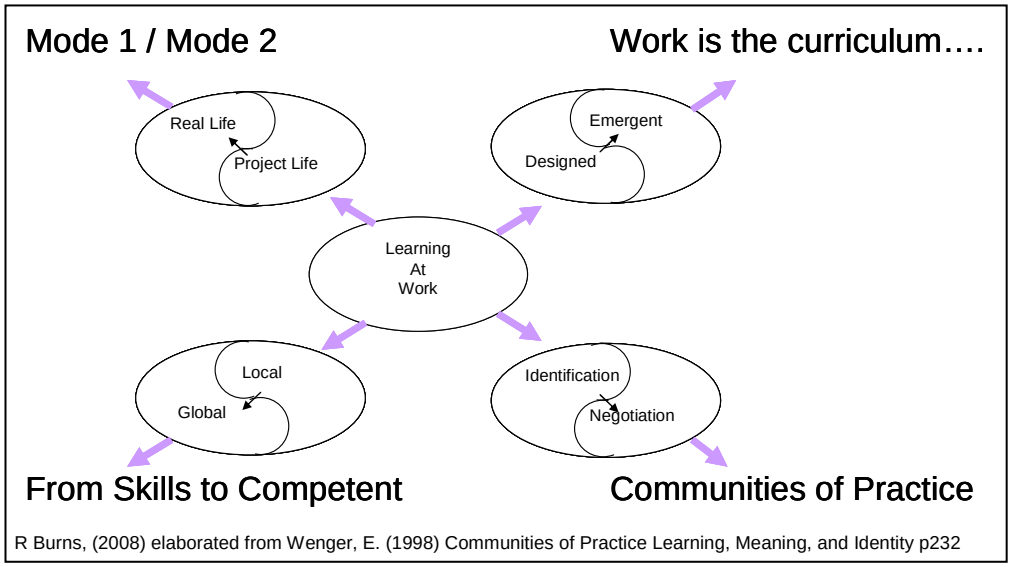
Building on the work of Wenger (1998) [19] a conceptual design of the programme is shown in Figure 3. Knowledge and knowledge production has now become connected with productivity in the workplace and accordingly a distinction is recognised between Mode 1, largely academic, knowledge and Mode 2 knowledge which is carried out in a context of application [20]. Cognisance was taken of these issues affecting the design of the programme by recognition that the learning would be experienced in the real world of business projects instead of within the limited scope of the academic equivalent of class projects. Whereas the participants who are graduates of Bachelor programmes may have been exposed to the skills required, and experienced the application of these skills within a 'local' Mode 1 environment, their competence to apply these skills would be extended by this work based learning programme which had global exposure. The personal identity of the participants would also be strengthened by their interaction with and involvement in various communities of practice as they would negotiate and exchange new learning within that 'situated' environment. The designers were conscious that a core framework of the programme could be designed but that emergent learning content would inevitably be an ongoing feature of, and for the duration of the programme where 'work is the curriculum' [21].

Figure 3. Conceptual Design of the Programme



These design features anticipate that by participating in such a learning-at-work programme the learners would then effectively be facilitated to extend their knowledge, skills and competences as expressed in Figure 4.

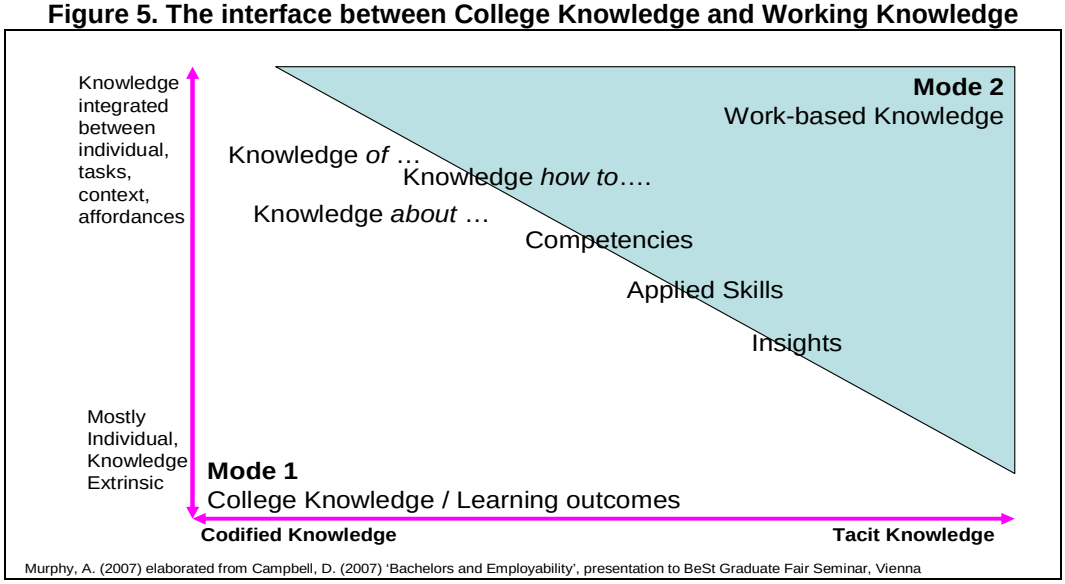
Figure 4. Experiencing Learning at Work



R Burns, (2008) elaborated from Wenger, E. (1998) Communities of Practice Learning, Meaning, and Identity p232

The programme, therefore, sits comfortably with the emerging paradigm of work-based learning while drawing on the wisdom and residual benefits of the traditional paradigm. The emerging paradigm of WBL focused on action-in-the-world, on connectivity, on complexity, on potential, and is based on the belief that learning changes both the learner and the learner's environment. It focuses on the agentic power of the learner at both individual and group levels and prefers an andragogical, and even a heutagogical [22] rather than a pedagogical or training model of learning. The WBL paradigm acknowledges the social situatedness, distributive and contextuality of learning and rejects the standard college-based paradigm that learning is an interior act at individual level which can be reproduced and replicated without changing the learner's environment. The programme team concluded that organisation learning is contingent on the situatedness and communal nature of learning with the worker-learner both being influenced by, and influencing, the workplace. The WBL paradigm considers it essential that programme design is practice-centred with learning tasks constructed and emerging from the lived world of work practice enabling co-creation, co-generation and collective ownership of knowledge. To illustrate this positioning it is useful to plot the interface between the Mode 1 knowledge of traditional higher education and the Mode 2 knowledge of the workplace. The interconnections at the interface are then revealed.

Figure 5. The interface between College Knowledge and Working Knowledge

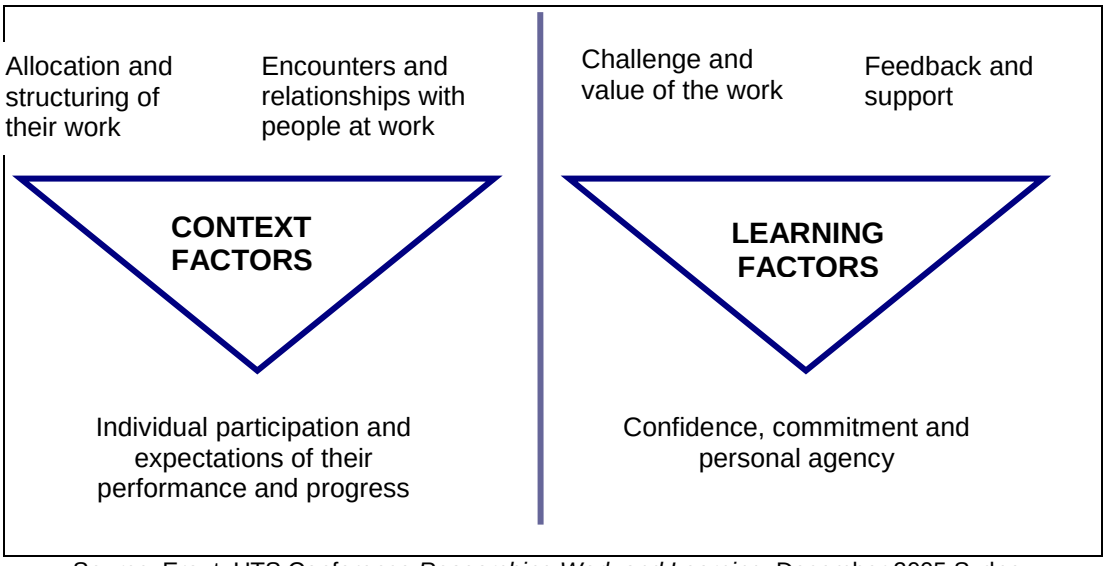


Eraut's conceptualisation of learning factors at work

However, the programme designers are conscious that there are limitations to reliance on unquestioned informal learning theory. In this regard Eraut (2000) distinguishes among informal, implicit learning and tacit knowledge, and rejects the notion that informal learning is the residual element when formal learning is excluded from the context [23]. He further advises against the use of the term 'informal;' as it connotes discourses of dress, behaviours and diminution of social differences. Eraut defines personal learning as cognitive reasoning that a person brings to a situation which enables her to think and perform. This includes both implicit knowledge and tacit knowledge, public knowledge and private knowledge. This knowledge, according to Eraut, is not solely individual, but distributed and socially constructed by many people. Eraut categorizes informal learning into implicit learning, reactive and deliberative learning. He argued from his empirical research into work-based learning, that there are context factors and learning factors at play. Context factors can enable learning by providing structures, relationships and motivation for learning. Learning factors include challenging work, feedback and self-efficacy.

These are captured in Figure 6 below.

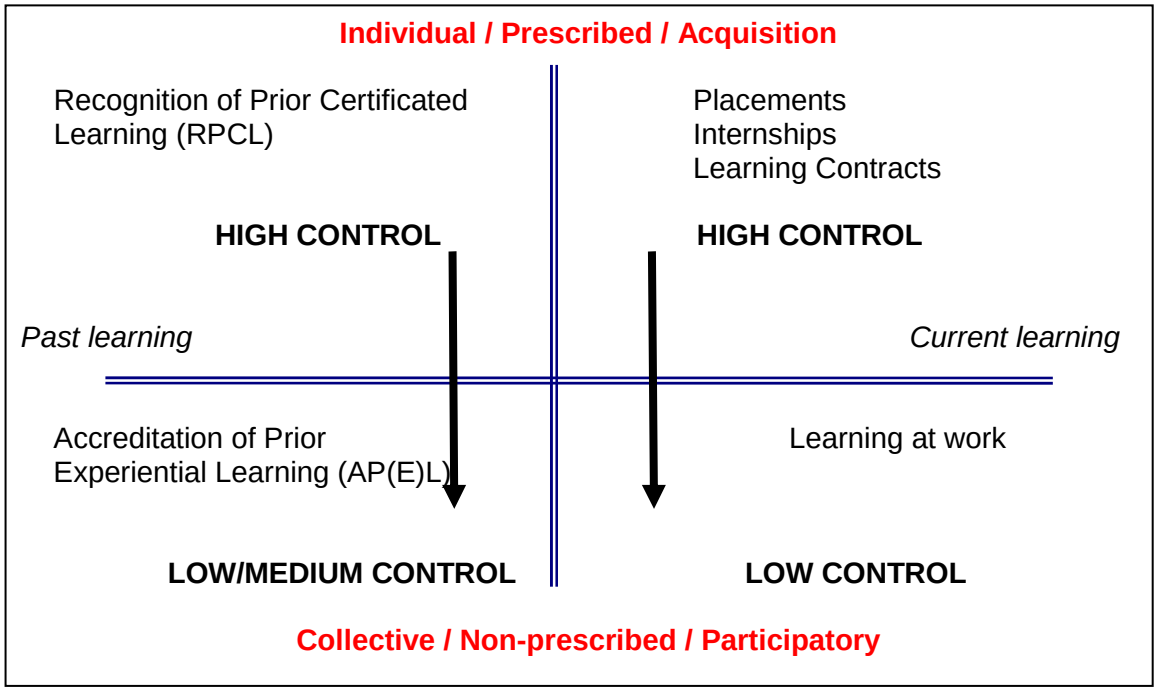
Figure 6. Learning factors at work



Source: Eraut, UTS Conference *Researching Work and Learning*, December 2005 Sydney

In summary then, this programme acknowledges that the integration of pedagogical design from the traditional and emerging work-based learning paradigms requires academic staff to re-conceptualise some prior givens and to integrate into their conceptual frameworks that learning that is collective, non-prescribed and participatory will inevitably emerge in work-based learning regardless of the intended programme learning outcomes elaborated in the programme document, and that academics have low control over the nature and extent of this learning. It is in this complexity that work-based learning allows for greater affordances for learning than the traditional prescribed curriculum of the traditional higher education paradigm, as illustrated in figure 7 below.

Figure 7 – Various elements of learning and the associated 'control' by academics

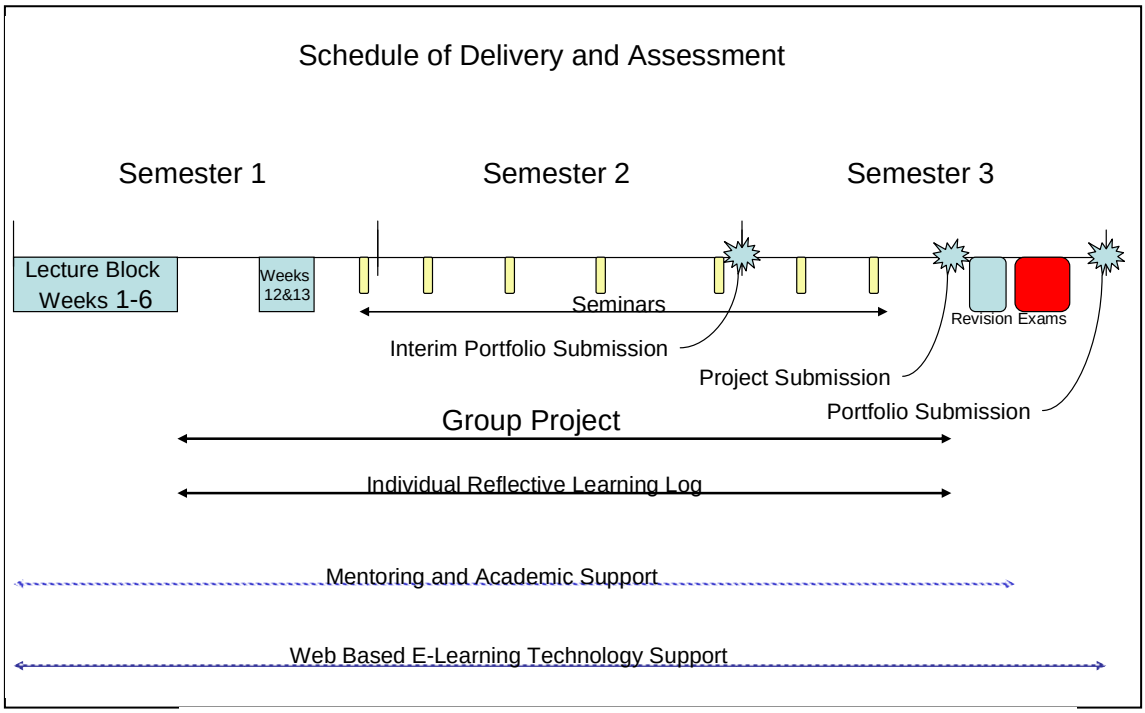


Source: A. Murphy (2007, generated for the programme document)

Programme schedule of delivery and assessments

A diagrammatic overview of the programme schedule of delivery and assessments is presented below in Figure 8, which also summarises the range of learning teaching and assessment strategies used.

Figure 8. Learning, Teaching and Assessment strategies



Source: H. O'Donnell, (2007, generated for the programme document)

In brief, the traditional teaching blocks are scheduled for the first six weeks, weeks twelve and thirteen and in the final teaching week of semester three; one-day seminars are scheduled at regular intervals throughout the work-based learning phase; continuous assessment work is assigned at regular intervals throughout the programme with specified submission dates, but is submitted collectively in an interim portfolio and a terminal portfolio; the group projects are scheduled from the end of the first teaching block; and written examinations are scheduled for the final weeks of semester three.

Discussion

In order to support academic staff in their re-conceptualisation of prior givens and to integrate new learning into their conceptual frameworks it was necessary to develop a continuing professional development course for academic staff involved in negotiating, designing, managing, teaching and assessing work-related programmes. This short course is deemed an essential response to the many pedagogical and procedural challenges now facing academic staff and academic support staff who are involved in franchised programmes, partnership programmes and customised programmes with external partners and/or for industry.

Recognising that there may be low control over the nature and extent of learning as mentioned above, the challenge associated with this work based learning programme is for the research team to better understand the learning that is being experienced, both by the graduate participants and by the mentors and academic tutors. A work-in-progress is on-going in the analysis of the various reflective logs, portfolio and project submissions and the web-based data that is becoming available. It is anticipated that the results of this analysis will be presented in a further paper.

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