



Learners in control

TESEP : THE PEDAGOGICAL PRINCIPLES

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1. TESEP'S Theoretical Positioning

This section seeks to answer an apparently straightforward question. What is the theoretical background for the TESEP project? This requires an account of some pedagogical principles and how they have been derived from learning theory.

There are two main areas of pedagogy that provide the background for this project:

- **social constructivist pedagogy**
- **e-pedagogy.**

We will try to unpack these terms but it is helpful first to distinguish between pedagogical and educational value. The former will derive from directly exploiting the nature of learning, the latter will also depend on variables that influence access and support. This paper focuses on the pedagogy. The paper **TESEP in Practice - The 3E Approach** (1) outlines the more practical challenges facing the project, dealing with the realities of attempting to develop a new approach with learners, teachers and managers who, for good reason, are already engaged in learning and teaching using their own methods.

Biggs (2) describes the task of good pedagogical design as one of ensuring that there are absolutely no inconsistencies between the curriculum we teach, the teaching methods we use, the learning environment we choose, and the assessment procedures we adopt. To achieve complete consistency, we need to examine very carefully what assumptions we are making at each stage and to align those. Thus, we need to start with carefully defined intended learning outcomes, we then need to choose learning and teaching activities that stand a good chance of allowing the learners to achieve that learning, then we need to design assessment tasks which will genuinely test whether the outcomes have been reached. This process is easy to state, but very hard to achieve in an informed way.

The crucial step is to judge whether the learning and teaching processes adopted will really achieve the intended learning outcomes. In adopting an approach of **constructive alignment** Biggs himself employed **constructivist** principles of pedagogy to make that judgement, but by so doing Biggs accepted a good deal of underpinning theory. For good pedagogical design, in fact, there is simply no escaping the need to adopt a theory of learning. This paper attempts to make clear this relation between pedagogy and assumptions about the nature of human learning: it (briefly) maps **learning theory** onto **pedagogical approaches**. Such a mapping is the logical and necessary precursor to any attempt to examine an e-learning implementation and position it in a pedagogical design framework. Like any pedagogy, e-learning is based on assumptions about achieving learning outcomes. In order to make principled judgements when surveying the range of e-learning models, it is important that these assumptions are clarified.

1.1. The Psychological Theory Underpinning Educational Design

There are distinct traditions in educational theory that derive from different perspectives about the nature of learning itself.

- The **associationist** perspective (learning as skilled activity)
- The **cognitive** perspective (learning as achieving understanding)
- The **situative** perspective (learning as social practice).

Each of these theoretical frameworks can be characterised as providing a model of an ideal learner, choosing to focus its explanation on identifiable but particular aspects of learning behaviour. Thus, the **associationist** tradition models the learner primarily as a set of skilled responses, the **cognitive** approach as a constructor of meaning and the **situative** strand pictures learners mainly as social agents. Of course, a learner is all of these at once. However, the lens through which the learner is viewed at any particular point, and thus the model adopted along with its associated pedagogical approach, will be determined at least partly by the nature of the intended learning outcomes and the way in which they are to be assessed. This description of the goals of a curriculum will convey underlying assumptions about the kind of behaviour being brought into focus, ie skilled performance, deep understanding or effectiveness of practice. Right from the initial point of defining learning outcomes an underlying model of the learner will emerge, a corresponding tradition of theory will be implied, and a pedagogical approach suggested.

TESEP is derived mainly from the cognitive and associationist perspectives. For those who wish to understand the contrasts with the associationist perspective see Mayes & de Freitas (3)

1.2. The Cognitive Perspective

The underlying theme for the cognitive perspective on learning is to model the processes of interpreting and constructing meaning. Knowledge acquisition is viewed as the outcome of an interaction between new experiences and the structures for understanding that have already been created. So building a framework for understanding becomes the learner's key cognitive challenge.

Increasingly, mainstream cognitive approaches to learning have emphasised the assumptions of constructivism that understanding is gained through an active process of creating hypotheses and building new forms of **understanding through activity**. In school-level educational research the influence of Piaget has been highly significant, in particular his assumption that conceptual development occurs through activity rather than by the absorption of information. Piaget's approach implies that we should consider concepts as tools, to be understood through use, rather than as self-contained entities to be delivered through instruction. This is the essence of the constructivist approach in which the learners' search for meaning through activity is central.

1.3. The Situative Perspective

The social perspective on learning has received a major boost from the re-conceptualisation of all learning as 'situated'. A learner will always be subjected to influences from the social and cultural setting in which the learning occurs, which will also shape the nature of the intended learning outcomes. This view of learning focuses on the way knowledge is distributed socially. When knowledge is seen as situated in the practices of groups or communities then the focus shifts right away from analyses of components of subtasks and onto the patterns of successful practice. This can be seen as a necessary correction to theories of learning in which both the behavioural and cognitive levels of analysis had become disconnected from the social. Underlying both the situated learning and constructivist perspectives is the assumption that learning must be personally meaningful and that this has very little to do with the informational characteristics of a learning environment. Activity, motivation and learning are all related to a need for a positive sense of identity (or positive self-esteem), shaped by social forces.

The situative perspective comes in a number of flavours. One, a **socio-psychological** view, emphasises the importance of context-dependent learning in informal settings and emphasises the social authenticity needed for effective learning. This involves the design of constructivist tasks in which the learning activity is as authentic as possible to the social context in which the skills or knowledge are normally embedded. Examples of approaches to the design of practice fields are problem-based learning and cognitive apprenticeship. Here, the main design emphasis is on the relationship between the nature of the learning task in educational or training environments and its characteristics when situated in real use.

A more **socio-anthropological** interpretation of situativity emphasises an individual learner's relationship with a group of people, rather than the relationship of an activity to the practices of the group, even though it is the practice that defines the community. Lave and Wenger characterised the learning of practices as processes of participation in which beginners are initially relatively peripheral in the activities of a community and as they learn the practices their participation becomes more central. Lave and Wenger emphasised how a learner's identity derives from becoming part of a **community of practice**. For Wenger (1998) therefore, it is not just the meaning to be attached to an activity that is derived from a community of practice: the individual's identity as a learner is shaped by the relationship to the community itself.

A community of practice is usually interpreted as a stable and relatively enduring group, teachers say, whose practices involve the development of a specific set of beliefs, attitudes, values and explicit and implicit knowledge built up over many years. Yet a community of practice can be built around a common endeavour which has a much shorter timespan. Some examples are a garage band, an engineering team, a day care cooperative, a research group or a kindergarten class. One characteristic of these groups is that they allow a greater scope for interplay between the personal and the social in determining practice than do the long-established communities. The influence of individuals, and of individual relationships, is likely to be greater.

A third major source of social influence can be seen in **activity theory**. The main pedagogical construct related to the activity theory framework, Vygotsky's zone of proximal development (**ZPD**), can be seen more comfortably as deriving through the cognitive strand, though the overall framework of activity theory serves to emphasise the way in which individual development is situated in group culture.

1.4. Learner-centred pedagogy

Embedded within the pedagogical approach adopted will be procedures for dealing with individual variation. It is important to go beyond merely noting that some learners learn more readily than others to try to understand the nature of the difference and to build this understanding into the pedagogy itself. Now we begin to seek the design of the process of aligning for an individual learner teaching and learning methods with outcomes. Their prior experience determines both their starting point and the speed with which they improve, their ability also influences both of these and their motivation to apply themselves to practice (which itself will be subject to influences from all kinds of sources, including their social environment) will also determine their progress.

In most HE and FE contexts a standard curriculum is taught in a standard form and individual differences in ability, prior knowledge or motivation are catered for in the kind of feedback and support given to individuals. There is, however, increasing interest in using self-assessment to cater for such differences in the learner group. (This is what the SFC e-learning transformation project called REAP - Re-engineering Assessment Practices - is based on).

Today, a real learner-centred approach can be seen in skills-based courses, where it clearly doesn't make sense to give the same instruction to all learners and the support given will be determined by performance on an initial diagnostic test, and by regular assessments. But in such cases, eg ICT skills or communication-skills courses, it can be readily acknowledged that learners differ both in ability, prior knowledge and motivation. In standard programmes these assumptions cannot really be explicitly recognised, since selection on prior educational achievement is assumed to iron out most if not all such differences. The introduction of e-portfolios can be expected to breathe new life into the debate about how the introduction of technology can help us to cater for individual differences between learners.

1.5. Mapping Learning Theory to Learning Outcomes

In order to set e-learning in the context of curriculum design it is first necessary to consider how the different theoretical perspectives emphasise different aspects of intended learning outcomes. The associative perspective emphasises task analysis, defining sequences of component-to-composite skills. It provides a highly focused set of objectives, described as learning competencies. The cognitive perspective emphasises conceptual development, stressing the importance of achieving understanding of the broad unifying principles of a domain. This view also encourages us to frame learning outcomes in meta-cognitive terms, with the educational aim of achieving learning how to learn, and encouraging the development of autonomous learners. The situative perspective encourages the definition of learning objectives in terms of the development of disciplinary practices of discourse and representation, and outcomes in terms of authentic practices of solving realistic problems. It also focuses on learning outcomes that are dependent upon the establishment of collaborative learning outcomes, and on learning relationships with peers, and more fundamentally on the development of an identity as a lifelong learner.

1.6. Designing the Learning Environments: From Theory to Design Principles

At this point we address the way in which we can map from the underlying assumptions about the nature of learning to the design of learning environments. This is the crucial stage in the design process: where the learning theory is unpacked into a detailed pedagogical approach.

We can summarise the design implications of the three theoretical strands as follows:

The associative view emphasises

- Routines of organised activity
- Clear goals and feedback
- Individualised pathways and routines – matched to the individual's prior performance.

The cognitive view emphasises

- Interactive environments for construction of understanding
- Learning and teaching activities that encourage experimentation and the discovery of principles
- Support for reflection.

The situative view emphasises

- Environments of participation in social practices of enquiry and learning
- Activities through which identities as capable and confident learners emerge
- Dialogue that facilitates the development of learning relationships.

1.7. The Pedagogy Derived From the Cognitive Perspective: Constructivist Learning Environments

It is rather too simplistic to argue that constructivism has emerged directly from a cognitive perspective. In fact, in its emphasis on learning-by-doing, and the importance of feedback, it leans partly towards the behaviourist tradition. In its emphasis on authentic tasks it takes much of the situativity position.

Piaget's constructivist theory of knowledge was based on the assumption that learners do not simply copy or absorb ideas through the senses directly, but must construct their concepts through active and personal experimentation and observation. In the constructivist view, which emphasises general conceptual understanding and thinking ability, there is a rejection of didactic teaching. This is based on strong evidence that didactic teaching simply does not produce generic understanding : "teaching by telling doesn't work". Constructivism can be seen to have developed as a reaction to the persistence in practice of a transmission-based didactic mode of teaching, for which there is no real theoretical base, but rather a strong folk tradition that compelling and vivid explanations will lead to better learning. This misconception about the transmission of knowledge was responsible for much of the disillusionment that resulted from computer-based learning in the 1980s and 90s.

In the constructivist learning literature we see an increasing focus on the design of learner-centred methods and environments: research on problem-based, project-based, enquiry-oriented pedagogies producing constructivist tasks and environments, placing emphasis on reflection and feedback. Reflection is not only a necessary pedagogical method, but also a learning outcome: learners must learn to be reflective learners.

The following methods have been extensively researched within a constructivist context: problem-based learning; anchored instruction; cognitive apprenticeships; reciprocal teaching; goal-based scenarios; project-based learning. Adopting a true learner-centred approach would imply treating each learner as an individual case. In a sense this has always been the ultimate goal of educational technology: the achievement of individualised instruction. Taking this to its logical conclusion would imply that teaching and learning activities should be designed to match the profile of the individual learner.

Much interest in cognitively-derived pedagogy surrounds the concept of the ZPD. Vygotsky operationally defined the ZPD as the distance between a learner's current conceptual development (as measured by independent problem solving) and that learner's potential capability, as measured by what can be accomplished *"under..guidance or in collaboration with more capable peers"*. With personal support, and with practice, novices *"gradually increase their relative responsibility until they can manage on their own"*. Vygotsky did not attempt to spell out the principles of what we now regard as the most interesting point pedagogically: how is the teaching intervention or assisted learning made most effective?

The concept of **scaffolding** describes the process of exploiting the ZPD. The learning and teaching activities themselves will be designed to provide scaffolding – with the tutor having the main responsibility for providing the guidance, but peers also playing a role. To be effective scaffolders, tutors must be sufficiently expert in their domain to judge individual learning needs, and sufficiently skilled as teachers to adjust dynamically, continuously to switch between the novice's and expert's perspectives. Tutors will themselves need guidance in the art of scaffolding as they learn to use and monitor e-mail, discussion fora, and synchronous communication tools, to engage learners supportively.

Some empirical work has thrown light on the process of scaffolding in tutorial situations. There is evidence that learners' learning cannot be attributed solely to the explanations and feedback that tutors provide. Instead, learning results from the way that the tutors scaffold the tutees so that the tutees can be constructive. This constructive, **self-explaining**, activity is powerful in inducing better problem solving.

1.8. The Pedagogy Derived From the Situative Perspective

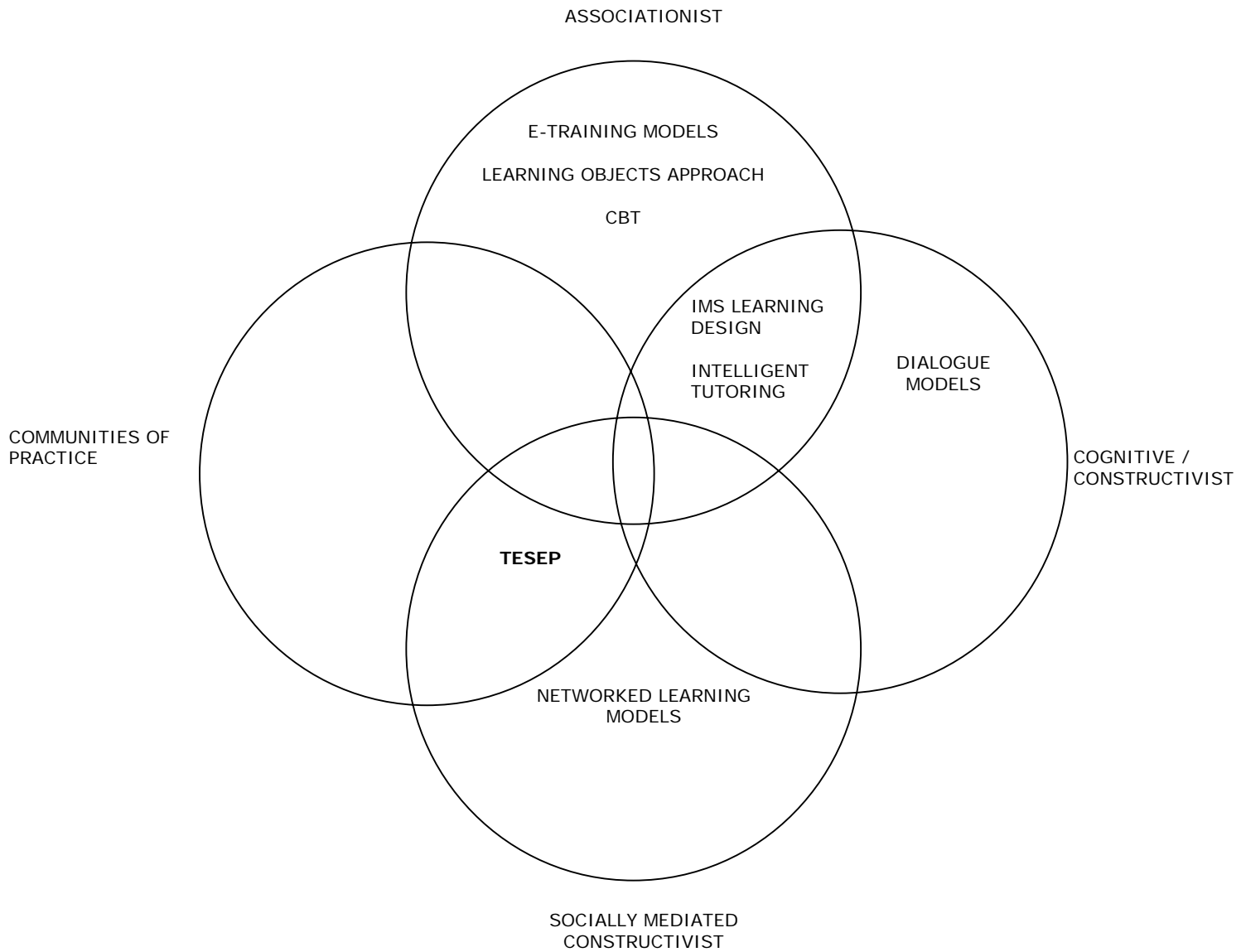
Vygotsky's ideas, particularly the impact of social learning in the ZPD, have also influenced situative thinking, both in the communities of practice and activity theory literatures. Both constructivist and situative themes are reflected in the way in which the ZPD idea has directly influenced the design of learning environments. Learning activities that are part of real or simulated activity systems, with close attention to the tools and interactions characteristic of actual situations.

1. Structured interaction among participants.
2. Guidance by an expert.
3. The locus of control passes to the increasingly competent learners.

In the general approach of networked learning we see various ways in which learners situate their experiences, their tasks and their growing knowledge. Much of this is not developing as conventional pedagogy – if by that term we imply the deliberate design of educational procedures – but as informal learning, facilitated by the rapid emergence of web tools that enable learners to connect with others sharing similar learning interests or tasks anywhere on the internet, and which are referred to as *social software*. This is facilitating the bottom-up development of learning communities on a scale that goes completely beyond our previous institution-bound concepts of educational groups. Learners form online communities spontaneously by combining one-to-one (email and instant messaging), one-to-many (discussion tools, blogs and podcasts), and many-to-many (wikis) communication modes.

Through these rapidly emerging tools, encouraging all users to share their own developing understanding of an area through social bookmarking and folksonomy, peer communication and collaboration becomes possible on a global scale and we start to glimpse a completely new kind of e-learning, in stark contrast to the conventional quality-controlled learning directed by top-down software, in which users' roles are circumscribed by the rigidities of institution-based VLEs.

Fig 1 below provides a map of the theoretical space covered by the Mayes and de Freitas JISC review of e-learning models, theories and frameworks. The proposed positioning of TESEP is in the intersection of socially-mediated constructivist and the communities of practice theoretical positions.



2. The TESEP Model

As we have seen above, TESEP derives its approach from both the cognitive and situative perspectives. From the cognitive perspective it takes the pedagogical principles of constructivism, particularly emphasising the need for personalisation and a shift towards learner control. From the situative perspective it takes the key aim of encouraging participation in a community of learning practice.

TESEP's main principles can therefore be described as follows.

- Emphasis on raising the level of engagement by giving learners more responsibility over their choice of learning tasks.
- Emphasis on peers learning together (building a learning community).
- Importance of giving the learner gradually-increasing control over the learning activities: project-based, resource-based, enquiry-based, discussion-based learning.
- Focus on learning tasks, discussion and frequent feedback.
- Importance of formative and self-assessment.

By adopting a constructivist position TESEP downplays the importance of the delivery of 'content'. However, it very much supports the approach of asking learners to use the internet to discover content, then to adapt it for the learning task at hand. The key act of teaching becomes the provision of feedback, rather than the delivery of information. Above all, TESEP is about making the learners think about the subject matter more deeply than before.

The main influence that TESEP brings to the process of *learning design* (of a unit or module or lesson plan) is to apply the concepts of learner control and peer learning to the principle of constructive alignment. This principle starts first with a) what the learner already can do, and b) what the learner is required to do by the intended learning outcomes, and then requires us to devise the learning and teaching activities, and the assessments, based on these.

As far as is practicable, the learning activities should be flexible enough to be capable of meeting the needs of individual learners. So, only when these activities are designed should we turn to the issue of fitting the resources, content delivery and support needed to these tasks. The TESEP version of this is to enable the learning activities to be more effectively carried out by using technology, and to follow the TESEP principles in deciding on the way in which learning outcomes can be met by emphasising learner control, constructivist learning tasks, and the movement towards building a community of practice. Thus, the learning activities (and even the assessments) should be the subject of negotiation with learners.

2.1. TESEP is Learner-Centred

The TESEP approach has three components, which together provide an elaboration of the principle of *learner-centredness*.

- TESEP's interpretation of learner-centredness means that the learner does not receive a standard provision, but the learning activities and the support are somehow structured around what he or she needs, or chooses.
- The learner is, wherever it is possible and practicable, given some measure of control over how she or he strives to achieve the intended learning outcomes. This implies a rich learning environment with the tutor in the role of facilitator and supporter rather than provider.
- Wherever possible there is an element of social learning involved, with a strong emphasis on peer-support, peer-tutoring, peer assessment. 'Peers' need not be fellow learners on the same course in the same institution but may be members of a global learning community reached through the internet.

2.2. TESEP Methods

TESEP interprets the model widely to incorporate at least one of the following characteristics:

- Designing a course around learner tasks, with individual feedback which involves a dialogue.
- Emphasising class discussion.
- Employing problem-based or resource-based learning, where each learner is able to choose exactly what resources to use.
- Emphasising peer collaboration, peer tutoring or peer assessment.
- Encouraging learners to act in the role of teacher of others.
- Emphasising personalisation: allowing each learner to choose their method of study.
- Designing a course around internet-based tasks where learners discover content and perform a task which requires that they seek understanding of the material.
- Using internet-based social construction tools eg blogs, wikis, etc.
- Using formative and/or summative e-assessment.
- Diagnosing the level of each learner's e-literacy (and matching the learner to the required support).
- Using e-learning tools to diagnose the level of each learner's generic skills, or prior knowledge or skill in a discipline (and matching the learner to the required support).
- Designing an extended induction around online skills, designed to empower the individual learner.
- Negotiating with learners over as much of the above as possible.

2.3. What the TESEP Model is not

It is helpful to describe aspects of e-learning design that do not emphasise the TESEP model.

- TESEP is not concerned with the delivery of content (unless it is created by the learners). No direct use of e-learning to *deliver* subject matter would be compatible with the learner control, social constructivist principles of TESEP. Thus, any use of technology to improve the understandability of the content would be excluded, which would include the design of web-based or interactive material designed to improve the comprehension of the material. Electronic whiteboards, multimedia CAL or CBT, Powerpoint, even advanced simulations would normally fall outside TESEP *unless placed in the hands of the learners*. The use of web-based courseware would be excluded if learners were simply directed to it, but included if learners were active in finding it for themselves, or where it was used as the basis of further learner activity or further dialogue.
- The use of VLEs to provide structure and consistency in the delivery of the courseware.
- The use of any tools which enhance the management of learning, unless in the hands of the learners.
- The use of e-assessment, except where it has been derived directly from the intended learning outcomes. The formative use of e-assessment would be compatible with TESEP principles where the learner could choose when and at what level it would be attempted, or where the results would be the subject of further dialogue with tutors or peer learners.
- The design of individual learning tasks which have no component of discussion or dialogue with others, no element of peer involvement, no opportunity for the learner to take control of the learning. (This is not to deny the pedagogical value of individual learning tasks without these aspects, merely to suggest that they would not represent TESEP principles).

2.4 Rationale for the TESEP Model

The overall aim of the TESEP Model is to achieve transformation through e-learning by initiating a distinctive approach to e-pedagogy.

There are a number of longer-term benefits that could be expected to flow from this approach on the institutions, the teaching staff and of course on the learners. These benefits are assumed to flow through the whole system, stemming from a higher level of engagement in the learning process by learners themselves. The TESEP model focuses on learner *engagement* as a key enabling construct, and is a shift of emphasis from the sector's continuing emphasis on *support*. These are not alternatives: engagement and support are mutually

reinforcing processes, both being necessary for an effective learning experience. However, the two processes imply a different locus of control.

The fundamental rationale for TESEP is to attempt to shift the locus of control for achieving learning outcomes towards the learners themselves. The contention is that a relatively small shift in this direction will achieve a genuinely transforming effect. Such a transformation would be expected to impact across the board in learning and teaching.

The strapline '**learners in control**' was identified as a simple way of communicating the fundamental rationale for TESEP.

References

- (1) **TESEP in Practice - The 3E Approach**. Available from the **Transform** website – www.napier.ac.uk/transform
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