

# Conceptions and Visual Representations of the Curriculum

## PART II ILLUSTRATIVE EXAMPLES

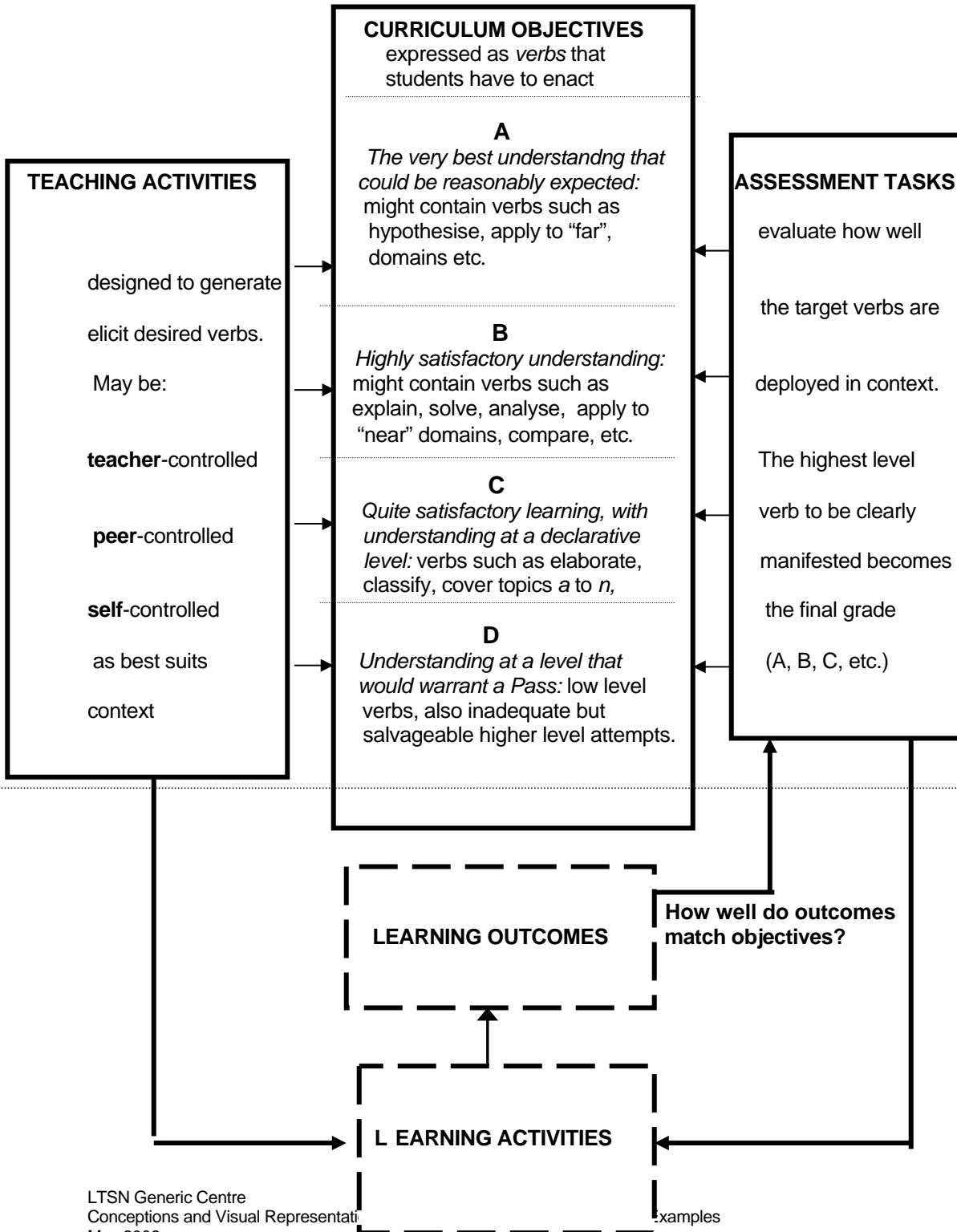
The imaginative curriculum project aims to advance knowledge about curriculum making by consolidating and extending the existing knowledge base. It is also supporting some primary research into how academics design courses. The purpose of the project is to enhance curriculum design in UK HE by improving access to knowledge about curriculum making through a dedicated website, raising awareness that this information exists and seeking to embed its use in institutional processes which promote staff learning and provide opportunities for reviewing and designing the curriculum. Background information is provided at <http://www.ltsn.ac.uk/genericcentre/projects/curriculum/>.

Part I of this paper introduced the use and value of conceptual imagery and visual representations in curriculum making in the belief that developing and using such imagery is an important creative and necessary part of curriculum making. Part 2 provides some illustrative examples for some of the main approaches to curriculum making. Members of the Curriculum Network are invited to develop the ideas in the paper and contribute to building a database of images and visual representations. All contributions are welcomed. Please send your contributions to [Norman.Jackson@ltsn.ac.uk](mailto:Norman.Jackson@ltsn.ac.uk) or ([gc.enquiries@ltsn.ac.uk](mailto:gc.enquiries@ltsn.ac.uk) after 01/09/2002) or [M.Shaw@lmu.ac.uk](mailto:M.Shaw@lmu.ac.uk).

**Conceptualizing the curriculum through the idea of constructive alignment**  
**Aligning curriculum, teaching and assessment to construct desired learning outcomes**  
*Professor John Biggs (Educational Consultant, Australia)*

**THE TEACHING SYSTEM**

**DESIRED LEARNING OUTCOMES**



## THE LEARNING SYSTEM

“backwash” from assessment

## Explanation

'Constructive alignment' starts with the notion that the learner *constructs* his or her own learning through relevant learning activities. The teacher's job is to 'broker' a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that all components in the teaching system – the curriculum and its intended outcomes, the teaching methods used, the assessment tasks – are *aligned* to each other. All are tuned to learning activities addressed in the intended outcomes. The learner finds it difficult to escape without learning.

There are two systems involved: the *teaching system*, which is set up by the teacher, and the *learning system*, which is to be activated by the teaching system (Figure 1). Central to the teaching system are the intended outcomes, called here the Curriculum Objectives. We know all students will not meet our objectives as perfectly as we would want (to those that do we award an 'A'), a few will only meet minimally acceptable standards (call that 'D'), others will fall in between at 'B' and 'C'. It helps to define those levels of performance by *verbs*. Those verbs take objects, the content being taught. We can now go beyond merely 'covering' the topics in the curriculum, and specify the levels of understanding we want.

The categories are defined by a particular *quality* of learning and understanding, not by the accumulation of marks or percentages.

The teaching/learning activities (left hand column) and the assessment tasks (right hand column) then address those verbs.

The real action, however, takes place in the learning system, when the teaching activities elicit the learning activities that produce the outcomes. The assessment question is how well the learning outcomes match the desired outcomes. The level of grade awarded tells how good that match is.

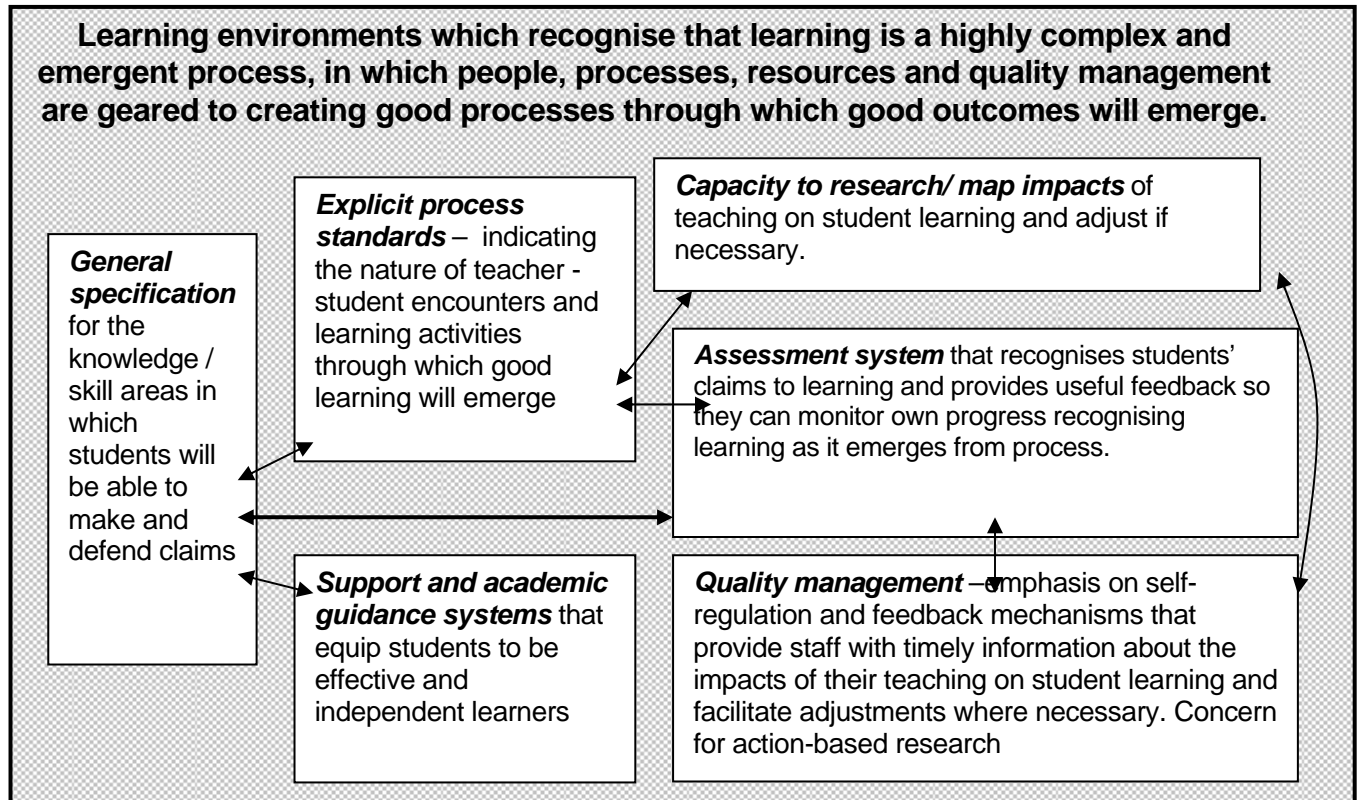
To sum up, in an aligned system of instruction, the teacher's task is to see that the appropriate learning activities, conveniently expressed as verbs, are:

- nominated in the objectives.
- likely to be elicited in the chosen teaching activities.
- embedded in the assessment tasks so that judgments can be made about how well a given student's level of performance meets the objectives.

## Reference

Biggs, J.B. (1999) *Teaching for Quality Learning at University*. Buckingham: Society for Research in Higher Education & Open University Press.

**A process approach to curriculum making to support complex learning**  
**Dr Peter Knight, the Open University UK**



**Beliefs and theory of learning**

- ❑ Complex learning emerges through good processes: much of it cannot be predicted. This educational philosophy is derived from complexity theory (see below).
- ❑ Trust and belief that good learning processes and student-teacher-task engagements within a supportive and rich learning environment will produce good learning outcomes.
- ❑ A self-regulating, self-critical and responsive community of teaching practitioners
- ❑ Shared understandings of the nature of good learning, teaching and assessment encounters in the subject: -- a commitment to personal research into the relationship between teaching and student learning.

**Principles for curriculum design**

- ❑ Construct a general specification of the outcomes of learning in respect of which students should be able to make and defend claims to achievement. This directs attention but does not specify, in the way outcomes-based planning does, what should emerge from the learning process. Complexity thinking denies that outcomes are that predictable.
- ❑ Be explicit about process standards - the nature of teacher-student-task encounters and the learning activities through which good learning should emerge (see Appendix 1). These standards will usually encompass the material, social and intellectual resources necessary to support students and staff in creating good processes.
- ❑ Pay attention to the support and academic guidance systems that equip students to be effective and independent learners in this type of environment. This requires students to

take seriously the development of their own skill in reflective learning and self-regulation.

- Ensure that the assessment system a) equips students to recognise their own learning and develop their capacity to evidence this learning b) includes strong and responsive feedback systems to enable students to gauge their learning and achievement c) has the capacity to recognise and reward student-determined learning outcomes that are supported with good evidence.
- Attend to quality management - there will be a strong emphasis on effective and conscious self-regulation and feedback mechanisms that provide staff with timely information about the impacts of their teaching on student learning and facilitate adjustments where necessary. Concern for action-based research so that staff are able to evidence and learn from the impacts of experimentation

### **A note on complexity thinking**

A lot of thinking about curriculum development has relied upon, albeit unwittingly, the 'rational curriculum planning' (RCP) model. It assumes that curriculum development begins with planners specifying aims and outcomes and then putting in place the processes that are rationally necessary for the outcomes to be delivered. It is a 'scientific', perhaps mechanistic approach to curriculum which is fine for some purposes but not for many. Resource allocation models then concentrate on the ways in which planners use sticks and dangle carrots to get teachers to follow the RCP curriculum.

There is a lot of evidence that RCP doesn't work as intended, as forthcoming Generic Centre publications on change processes will show. In fact these mechanistic assumptions don't work as well in natural science as non-scientists might believe. Complexity theories, of which explanations of quantum phenomena are a subset, say that the natural world is, in the main, different. They replace the specific certainties of classical mechanics with probabilistic statements about what is likely to happen in groups. They add that the same starting conditions can lead to different outcomes at different times, while different starting conditions can lead to the same outcome, a point well grasped by modern researchers into school effectiveness.

These theories have influenced curriculum scholars. Fullan (1999) suggests that they mean that we cannot expect plans to be faithfully implemented and that innovations which work in one place should not be expected to work in another. Reformers should, instead, concentrate on creating the general conditions likely to favour developments of the sorts they hope to stimulate. Ganesan and colleagues (2002), writing of the design of on-line and distributed learning, go on to argue that this renders obsolete many traditional principles for the design of curricula and learning environments generally. A concise treatment of implications of complexity thinking can be found in Chapter 6 of *Small-scale Research* (Knight, 2002).

### **References**

- Fullan, M. (1999) *Change Forces: The sequel*. London: Falmer.
- Ganesan, R., Edmonds, G. and Spector, M. (2002) The changing nature of instructional design for networked learning, in: C. Steeples and C. Jones (Eds.) *Networked Learning: perspectives and issues*. London: Springer-Verlag, pp. 93-110.
- Knight, P. T. (2001) Complexity and curriculum: a process approach to curriculum-making, *Teaching in Higher Education* 6(3), 371-383.
- Knight, P. T. (2002) *Small-scale Research*. London: Sage.

Conceptualising and designing problem-based curricula  
Maggi Savin-Baden, Coventry University, UK

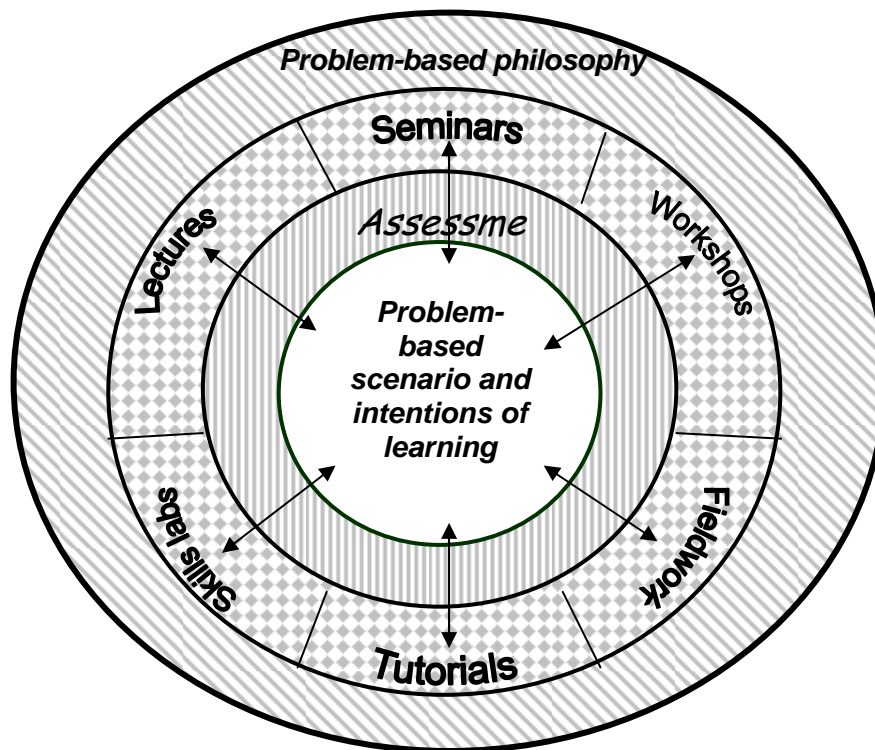


Figure 1 Problem-based curricula are suffused with an explicit educational philosophy and designed with problem scenarios central to student learning and to each component of the curriculum. Teaching and assessment methods support and inform student enquiry.

### Explanation

*In problem-based learning the curriculum is constructed with and through our students. If our learning intentions are concerned for the life world of the students then we need to examine the process of how they construct meaning with our subjects and disciplines and clarify how meanings are embodied within these, and in the language used by staff and students. We should be asking questions like what does knowing mean in a particular context? Or how do we create a curriculum that engages in the construction and development of knowing? Curricula where PBL is a central to student learning are largely constructivist in nature because students do, to a large extent, make decisions about what counts as knowledge and knowing. This may be at odds with benchmarking standards and the audit culture in higher education.*

### Problem-based learning is different from problem solving learning

In *problem-solving learning* the learning the problems are set within and bounded by a discrete subject or disciplinary area. In some curricula students are given specific training in problem-solving techniques, but in many cases they are not. The focus in this kind of learning is largely upon acquiring the answers expected by the lecturer: answers that are rooted in the information supplied in some way to the students. Thus the solutions are

always linked to specific curricular content that is seen as vital for students to cover in order for them to be competent and effective practitioners (such as engineers, accountants, doctors).

In *problem-based learning* the focus is on organising curricular content around problem scenarios rather than subjects or disciplines. Students work in groups or teams to resolve or manage these situations but they are not expected to acquire a predetermined series of right answers. Instead they are expected to engage with the complex situation presented to them and decide what information they need to learn and what skills they need to gain in order to manage the situation effectively.

### **Situating problem-based learning**

*The design of the curriculum is central to effecting PBL* because of the way in which the design impinges upon staff and students' roles and responsibilities, and the ways in which learning and knowledge are perceived. Problem-based curricula should be designed with the problem scenarios as central to student learning in each component of the curriculum (modules/units), as in Figure 1. The lectures, seminars or skills workshops/laboratories support the enquiry process rather than transmitting great chunks of subject-based knowledge. Designing a curriculum based on content and disciplinary knowledge and then trying to make it problem-based can end in disaster. Whether it is a module or a whole programme that is being designed the starting point should be a set of problem scenarios that enable students to become independent enquirers and help them to see learning and knowledge as flexible entities.

Designing a curriculum can begin with a single module and constructing it in a way that promotes PBL. For example, in Figure 2 a twelve-week module has been designed whereby the problem scenarios match the learning intentions of the module. The other teaching methods (lectures, tutorials, labs) support the scenarios and provide resources for students. Table 1 demonstrates how a team ideally numbering 8-10 students in 3 two-hour seminars over a 3-week period engages with one PBL scenario.

Figure 2. Designing a problem-based module

Weeks 1-3	Weeks 4-6	Weeks 7-9	Weeks 10-12
One problem scenario takes 3 weeks, thus three two hour PBL seminars, (one each week) are needed			
Fixed resource sessions over each 3 week period feed into the problem scenario			

Table 1. Example of seminars conducted over three weeks and structured to support students engaged in PBL.

Seminar 1	Seminar 2	Seminar 3
1) Students study the scenario 2) Identify what they need to know to <i>manage</i> the problem and where they can find information to help them 3) Identify group/team learning needs 4) Allocate learning needs to team/group members	1) Peer teaching of researched information 2) Reassessment of overall goals in light of learning	Formulation of an action plan for resolving or managing the problem that may be in the form of: - a proposal - a care plan - a business plan - a fact sheet - a learning package - an oral and/or written presentation

**Further reading – some key references and information sources**

Albion, P. R. (1999). PBL + IMM = PBL2: Problem-based learning and multimedia development. In J. D. Price, J. Willis, D. A. Willis, M. Jost, & S. Boger-Mehall (Eds.), *Technology and Teacher Education Annual 1999* (pp. 1022-1028). Charlottesville, VA: Association for the Advancement of Computing in Education.

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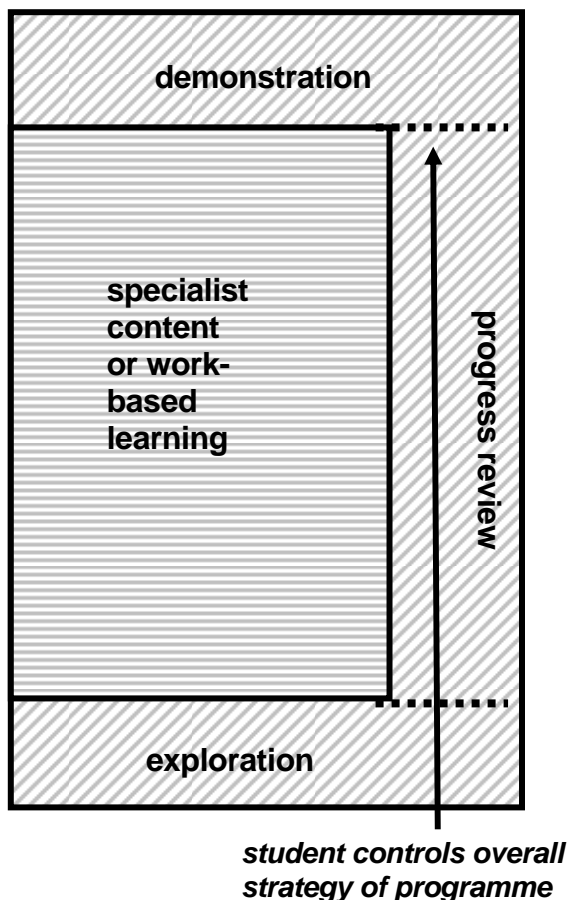
Savin-Baden, M. (2000) *Problem-based Learning in Higher Education: Untold Stories*. Buckingham: Open University Press/SRHE.

Savin-Baden, M. (2000) Group Dynamics and disjunction in Problem-based learning in Glen, S. and Wilkie, K. *Teaching Problem-based learning*. London: Macmillan

Taylor, I. (1997) *Developing Learning In Professional Education*. Buckingham: Open University Press/SRHE.

See LTSN PBL website at <http://www.hss.coventry.ac.uk/PBL> which has examples of PBL scenarios, links to other PBL sites, references and links to

**The Capability Envelope: framework for a negotiated curriculum**  
*Professor John Stephenson University of Middlesex, UK*



### Explanation

**The Capability Envelope is a curriculum framework which accommodates the different demands of preparing students to be capable in both predictable and unpredictable situations.** When academics determine the direction and purpose as well as the content of students' studies they are, in effect, restricting students' opportunities to develop their capacity to be effective in an unpredictable context, their own future.. *When given the opportunity to imagine and define their potential future and the responsibility to plan and complete a programme to bring it about, students experience personal risk and exposure. Successfully completing such a programme, particularly within a demanding and rigorous educational environment, builds their belief in their power to perform in new and demanding circumstances.*

The framework:

- gives students responsibility to formulate and manage their own **strategic educational development** according to their distinctive circumstances and longer-term aspirations,
- ensures that students develop intellectual, specialist and personal skills and qualities relevant to effective performance in life and at work,

- meets the needs of key stakeholders such as professional bodies, custodians of academic standards, future clients (in the case of vocationally oriented programmes) and the community at large,
- can, where necessary, accommodate current modes of delivery of specialist content,
- accommodates a wide range of resources and learning opportunities in the community and employment and the greater availability of resources through electronic and other media, and
- can be implemented within the specialist and general resource constraints of higher education.

The Capability Envelope is a sequence of stages formally established as part of the total programme and is wrapped around the specialist content. The Envelope begins with an **Exploration Stage** in which students are helped to plan and negotiate approval for their programmes of study; continues with a **Progress Review Stage** running through the main study phase, in which students are helped to monitor and review their progress; and ends with a **Demonstration Stage** in which students show what they have learnt through the application of their learning to real situations relevant to their intended career.

Each of these three stages relates to the other two, giving an overall coherent structure to the learners' programme of development which is managed by the learner. The Exploration Stage builds on the students' prior experience and looks ahead beyond the completion of the programme. The Progress Review Stage monitors progress according to the plans which emerge from the Exploration Stage and facilitates changes in response to experience and evolving aspirations. What is demonstrated at the end of the programme is what was planned at the beginning or renegotiated on the way. A final critical review of the whole process provides a basis for the students' plans for the next stage of their development. The Capability Envelope provides both a structure and a process for the autonomous management of lifelong learning, whether on campus, at work, or in life generally. People who adopt the central features of the Envelope as a habit are, we argue, independently capable.

By directly and actively involving students in planning, negotiating, implementing and demonstrating their learning - and reflecting on their progress - the Capability Envelope enables students to develop a wide range of important and high level skills in the context of their main stream studies (Table 1.)

**Table 1 Opportunities for skills development through learning contracts**

Adapted from Laycock and Stephenson (1993, p173)

<b>Activity</b>	<b>Skills, understanding and personal qualities</b>
Planning	Self-appraisal, context awareness, target-setting, scheduling, creativity, decision-making, problem formulation.
Negotiating	Communication (oral and written), awareness of others' needs, justification of relevance to self and external context, clarity of purpose, resource awareness, competence in formal procedures.
Implementing	Self-organisation, monitoring skills, adaptation to experience, application of knowledge, working for a purpose, working with others
Demonstrating	Presentation, communication (oral and written), evaluation of performance, dialogue with experts (clients, assessors), self and peer assessment.
Reflection	Conceptual development, understanding (knowledge, self, external context), problem reformulation, awareness of personal needs (knowledge and skills) for further development.

(Adapted from Laycock M and Stephenson J 1993 Using learning contracts in higher education. Kogan Page.)

The Capability Envelope has been used - with some adaptation - as the basis for Ufl/learndirect's Learning Through Work programme, available online at <http://www/learndirect-ltw.co.uk/>

**Fig. 2. The Four Stages of the Ufl/learndirect Learning Through Work programme**

