David Scott

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*To Lucas Scott, Robin Scott and Jake Scott
with love and thanks*

Preface

The impetus for writing this book comes from a general dissatisfaction with the state of education round the world. This has two principal sources. The first is the adoption by governments, policy-makers and practitioners of a set of knowledge practices that can be broadly characterised as positivist/empiricist/technicist and which has come to dominate how curricula are constructed and certainly how education systems and their work can be described. The second is the adoption of a model of curriculum that is both backward-looking and, in its own terms, confused and muddled. This book sets out an alternative model, which is more cogent and better focused on human well-being.

Liminality is the sense of ambiguity or disorientation that occurs during a learning episode, where participants no longer subscribe to a particular way of thinking or seeing the world, but have not yet fully adopted, or adapted to, a new way of structuring their identity, their time or their thinking.

There can be no curriculum development, as Lawrence Stenhouse (1975: 65) so persuasively argued, without teacher development:

> Idea and action are fused in practice. Self-improvement comes in escaping from the idea that the way to virtuosity is the imitation of others   pastiche to the realisation that it is the fusion of idea and action in one's own performance to the point where each can be 'justified' in the sense that it is fully expressive of the other. So the idea is tuned to the form of the art and the form used to express the idea. Thus in art ideas which are tested in form by practice, exploration and interpretation lead to revision and adjustment of idea and of practice. If my words are inadequate, look at the sketchbook of a good artist, a play in rehearsal, a jazz quartet working together. That, I am arguing, is what good teaching is like. It is not like routine engineering or routine management. The process of developing the art of the artist

is always associated with change in ideas and practice. An artist becomes stereotyped or derelict when he ceases to develop. There is no mastery, always aspiration. And the aspiration is about ideas - content - as well as about performance and execution of ideas.

Reforming curriculum arrangements also requires a fundamental change to those infrastructural elements of the education system which inhibit the implementation and use of the knowledge-based and learner-centred curriculum that this book advocates, i.e. top-down systems of accountability; punitive inspection systems; published league tables of excellence; external incentive schemes for teachers; hierarchical systems of organisation within schools; summative forms of assessment conducted at regular intervals in the careers of learners; and pre-service and in-service training programmes and protocols which marginalise effective learning and knowledge-producing activities. In short, this means that the curriculum, central to the learning experiences of children, needs to be: focused on learning; constructed around those forms of knowledge which constitute a sharing of culture; and supportive of modes of professionalism for teachers that position them as central to the construction of productive learning environments in schools.

Deborah Britzman (2003: 54) suggests the following:

> It is not only the child who dreams but the dream of the child, indeed, the child as dream that interferes with the question of knowledge in education. Can educators face the same sort of choice, between the empirical child made from the science of observation, behaviourism and experimental and cognitive psychology and the libidinal child who dreams and yet still desires knowledge? The field's dominant tendency is to choose the empirical child over the dream, the child the adult can know and control. But is so doing, education has reduced the child to a trope of developmental stages, cognitive needs, multiple intelligencies, and behavioural objectives. And these wishes defend against a primary anxiety of adults: what if the dream of learning is other to the structures of education?

These suggestions are clearly normative and prescriptive, and require a series of arguments, reasons and justifications to support them. This is what this book is about.

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Acknowledgements

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Chapter 1
Introduction: Curriculum, Learning and Assessment

The purpose of an introduction is unclear. Should it be a summary, a framing, a signposting or a landscaping? These have different functions. A summary suggests a synthesis of the various elements that make up the subject matter of the book. If this introduction were to serve exclusively as a framing device, then it would seek to place the body of work in its epistemic, social, spatial and temporal locales, to, in effect, historicise it. An introduction however, can have more modest aspirations, so that all it seeks to do is signpost the different parts of the book. Alternatively, an introduction may seek to make, or at least begin the process of making, sense of the central concepts, drawing boundaries round them, and framing the concepts and the relations between them, so that they can be used, modified and related to other concepts and ideas. To this end, this introduction will provide a brief account of the main ideas that concern us in the book.

Governments round the world at the end of the twentieth century and in the early part of the twenty-first century, with a few notable exceptions,[1] have reached an agreement about the nature of the school curriculum,[2] learning approaches[3] and assessment practices.[4] This consensus now operates at all levels of the education system, and can be expressed in terms of a number of propositions: traditional knowledge forms and strong insulations between them need to be preserved; each of these knowledge forms can be expressed in terms of lower and higher level domains and the latter have to be taught before the former and sequenced correctly; certain groups of children are better able to access the curriculum than other children, and, as a result, a differentiated curriculum[5] is necessary to meet the needs of all school learners; the teacher's role is to impart this body of knowledge in the most effective way, and thus their brief cannot concern itself with the ends to which education is directed, but only the means for its efficient delivery;[6] and the school's role is to deliver a public service that meets the targets set for it by governments. Later on in the book (see Chap. 8), I set out the evidence for this from a group of countries, districts and jurisdictions in the world. This book will argue for a different view of educational knowledge, learning, assessment, and the curriculum (and the

relations between them), with the intention of challenging the prevailing consensus. The critique that will be made is both immanent (i.e. in its own terms)[7] and from a different set of values and perspectives.

It has a number of elements. The first of these is the development of a coherent and socially just curriculum framework. There are perhaps eight contemporary curriculum models: scientific curriculum-development, epistemic foundationalism, cultural transmission, innovative pedagogical experimentation, productive learning environments, autonomous instrumentalism, critical instrumentalism and economism, though labelling them as such may act to erect artificial boundaries round them (cf. Scott 2008). The first of these is scientific curriculum-development, advocates of which argue for precision, objectivity, prediction and the use of the scientific method to establish once and for all what should be taught in schools and indeed how curriculum knowledge should be structured. A second model is epistemic foundationalism, which pivots on a notion of the intrinsic worthwhileness of knowledge. A cultural transmission model focuses on the transfer of knowledge from one generation to the next, and is conservative-restorationist in orientation. Opposed to this, and setting itself against scientific curriculum development, is the idea of teaching and learning as an innovative pedagogical experiment. Interwoven between them are various forms of instrumentalism relating to autonomy, criticality and economism. And in addition, there is a model that focuses on the construction of productive learning environments. This is the model that is highlighted in this book, and indeed, is the favoured model because it contains fewer aporias, contradictions and muddles than the other curriculum theories, and also because it is underpinned by a set of values which is more inclusive and better focused on human well-being. In Chap. 2, this part of the argument is addressed.

A curriculum indicates what is intended should happen in a programme of learning and the circumstances in which these activities can take place.[8] The activities referred to here are learning activities; a curriculum is a collection of exercises and tasks that culminates in learning of one type or another. There are three fundamental types of learning: cognitive, skill-based and dispositional, and they have different forms and operate in different ways. Cognition comprises the manipulation of those symbolic resources (words, numbers, pictures etc.) that points to something outside itself. Skill-based knowledge is different from cognition because it is procedural and not declarative; and dispositional knowledge refers to relatively stable habits of mind and body, sensitivities to occasion and participation repertoires. More importantly, these three types of learning are knowledge-oriented, so an argument can be made that learning is a knowledge-development activity. And what follows from this is that how we construe knowledge will determine how we construct productive learning environments and ultimately how learners then learn in and from them. In Chaps. 3 and 4 I show how a curriculum and a theory of learning requires a theory of knowledge. Subsequently I develop such a theory.

A view of learning is to theorise it as a process, with a range of characteristics. It has a set of pedagogic relations, that is, it incorporates a relationship between a learner and a catalyst, which could be a person, a text, an object in nature, a particular array of resources, an artefact, an allocation of a role or function to a person, or

a sensory object. A change process is required, either internal to the learner or external to the community of which this learner is a member. A theory of learning pivots on the idea that there is an entity called for the sake of convenience a human being[9] and this entity has a relationship (both inward and outward) with an environment. In mapping or characterizing the field, the theorist is concerned with the differences between a range of learning theories that have been developed, although these differences also focus on the probative force and attached value given to these entities and relations. Four theoretical models are examined in Chap. 3, behaviourist, phenomenological, constructivist and materialist, and a choice is made between them.

Knowledge and knowledge development are positioned then as the principal drivers of the curriculum. This is the central argument of the book. However, this cannot settle the issue of what should be included in that curriculum and what should be excluded from it. The first step in a new settlement is to determine what might constitute knowledge and knowledge development, and, in order to accomplish this, a range of knowledge theories, such as: foundationalism, instrumentalism, pragmatism, social constructivism,[10] social realism,[11] epistemic realism,[12] inferentialism[13] and critical realism,[14] are examined, and though parts of these theories are understood as useful for the task in hand, it is suggested that on their own they do not amount to a complete theory of knowledge and subsequently of learning. However, elements of each of these theories in combination[15] can contribute to a coherent and comprehensive theory of knowledge, and in addition, provide a reason or set of reasons as to why a curriculum should include some items and exclude others, and what shape and form it should take.

The next step is to identify and examine the elements of a learning environment (see Chap. 5). These comprise: temporal and spatial arrangements for learning, pedagogic relations, arrangements of learners, types of tasks given to these learners, progression and pacing within the learning process, types of knowledge-development, and the criteria and methods used for evaluating it. Learning is characterised as a change to the status quo, to what already exists. What this means is that the same learning object is likely to have different effects on different learners and on different occasions on the same learner. These elements with different emphases given to them and different strengths attached to them are the basis for a series of learning models: assessment for learning,[16] observation, coaching, goal-clarification, mentoring, peer-learning, simulation, instruction, concept-formation, reflection, meta-cognitive learning, problem-solving, and practice.

Central to the argument being made here is that in the preferred model of the curriculum, that of productive learning environments, a clear distinction is made between those evaluative or assessment-related activities which contribute to learning and those which allow an evaluation or assessment of what is happening or what has happened in an education system, within an institution or with a particular learner. Learning and assessment practices on a programme of study can be regarded as formative if evidence is provided of a learner's achievements in relation to knowledge, skill and dispositional acquisitions, and this evidence is used by the teacher, the individual learner, and their fellow learners, where the intention is to make decisions directly related to their subsequent programme of learning. Assessment is

used formatively then when it directly influences the learner's cognition. A learning programme or curriculum consequently needs to make a clear distinction between summative and formative assessment. If these two functions are conflated, then the curriculum is likely to be attenuated; and indeed, this is one of the principal defects of many curricula round the world, and of international assessment systems such as the OECD's Programme for International Student Assessment (PISA). In Chap. 7 I attempt to show why this is so.

There are extra-national influences on the development of a curriculum, although it is important to be clear that these globalising pressures do not determine policy and practice within particular countries in an over-arching way. Globalisation comprises a process of policy and practice convergence between different nations, regions and jurisdictions in the world. This can occur in a number of ways. The first is through a process of policy borrowing or policy learning, where the individual country is the recipient of policies from other countries or from a collection of other countries. These processes impact in complex ways on curriculum practices, and not only on state-sponsored ones. The second is through the direct impact of supra-national bodies which have power and influence over member countries and which are seeking the harmonization of national curricular policies and practices. The third is a more subtle approach and this is where the supra-national body does not deal directly in policies or practices but in a common currency of comparison. The fourth process is a direct response to globalisation pressures by a nation, region or jurisdiction. However, these globalising processes are always likely to be tempered by national and local preoccupations, concerns and interests, and this refers to curriculum matters as much as it does to organisational and governance issues.

A curriculum is an intended programme of learning and has three elements: a set of curriculum standards which set out the expected student achievements (what they know, what they can do and what dispositions they have acquired) at set points of time, the student having taken part in a programme of learning; a set of pedagogic standards; and a set of summative assessment or evaluation standards. Though the term *standard* is used throughout the book to describe the intentions of a learning programme, indeed to identify what the learning object is, it should be noted here at this early stage of the argument that this is not used in the same way as it is used by curriculum theorists who subscribe to a standards and accountability model (cf. Gipps and Stobart (1997) for a discussion of this issue). This issue is addressed in Chap. 6. What I want to endorse in this book is a version of a standard which fits with the idea that it is possible to specify intentions in a curriculum and that these can refer to future states of being of the individual learner. In the last chapter of this book I set out the different ways this important notion has been used and can be used.

The development of a curriculum therefore can be thought of as having a number of sequential stages. The first of these is the development of the aims and objectives of the educational programme and from those are derived a set of knowledge constructs, skills and dispositions, which the members of a society or system consider to be appropriate, now and in the future. From these aims and objectives a set of subject areas and a set of relations between those subject areas are derived. A vari-

ety of models of curriculum integration can be identified and these range from strongly classified and strongly framed curricula to weakly classified and weakly framed networked approaches to curriculum planning. Between the two extremes: traditional or fragmented *and* networked approaches, there are eight other points on the continuum: connected, nested, sequenced, shared, webbed, threaded, integrated and immersed (cf. Fogarty and Pete 2009).

From these aims and objectives, and also in relation to the decisions made about curriculum subjects and their integration, curriculum standards are derived, and these can be described as learning objects. They are written in such a way as to indicate to the learner and the teacher what the learner is required to know or be able to do, or have the disposition for, at the end of the programme of learning. The next stage is to identify the most appropriate means for the delivery of these curriculum standards. This is the identification of the pedagogic standard, and it involves choosing between a variety of teaching and learning approaches. The areas that choices have to be made about are: the pedagogic mode (the type of relationship between the teacher and the students), the learning mode (the type of learning approach that underpins the work of the teacher), the resources and technologies needed to allow that learning to take place, formative feedback mechanisms by the teacher (the modes, approaches and purposes), how learners are arranged in the classroom, timings of different activities during the lesson, the tasks that the learners are expected to complete, formative learning approaches (including assessment for learning approaches), and how the learning can be transferred to other environments. The important point to note here is that the pedagogic approach is derived from the curriculum standard and not from any summative assessment or evaluation protocol.

The final stage is the development of summative assessment or evaluation standards. These come from the curriculum standards, which in turn were derived from the aims and objectives of the whole programme. They should not be confused with formative assessment processes, as they are constructed in different ways and have different purposes. It is therefore important that any systemic or institutional summative evaluative or assessment process does not impact in any direct way on the learning processes that take place in classrooms and other educational settings. This is the core of the argument that will be developed in this book as a whole and in the chapters that follow, and the method or approach that I adopt is to set out the various alternatives in relation to the different parts and then give reasons as to why one of them is preferable to the others.

1.1 Learning

Teaching and learning processes are accentuated in this understanding of the curriculum. Jerome Bruner[17] and Lev Vygotsky,[18] though with different emphases, identified society and culture as the key dimensions of learning, and this was in contrast to behaviourist and technicist forms of pedagogy. The two most important learning theories, symbol-processing and situated-cognitive approaches, allocate

distinctive roles to learning stances, assessment and meta-cognition. Symbol-processing approaches understand the learner and the environment as separate; learning takes place within the human mind as the individual processes information they receive through their senses, assimilates that information and creates new ways of understanding. This positions the individual as a passive recipient of environmental influences. It separates out mind from body, language from reality and the individual from society. Situated cognitivists understand the relationship between the individual and the environment in a different way. Situated learning approaches view the person and the environment as mutually constructed and as mutually constructing. This is a process of dynamic modification rather than static matching. The learner acts with and on the environment, shaping or modifying herself and at the same time shaping or modifying the environment. Situated cognitivists give prominence to active, transformative and relational dimensions to learning; indeed, they understand learning as contextualised.

This has led in turn, principally through Donald Schon's [1959] (2005) critique of technical rationality, to an emphasis on reflection and meta-reflection within the context of a learning community; in contrast to theories of learning that understand the learner as a passive user of information from their environment. Schon's well-known distinction between reflection-in-action and reflection on reflection-in-action is the central theme of new developments in learning and pedagogy in this field, and though this in the first instance is focused on professional and workplace learning, it has implications for learning in formal settings such as schools.

Schon focused, in his seminal work *The Reflective Practitioner* [1959] (2005), specifically on how practitioners operate and learn in workplace settings. He suggested that most of our knowledge as it relates to action, or knowledge-in-action, is implicit. It does not involve conscious processes, so that actions, recognitions and judgements are skilled activities that are carried out spontaneously. Equally implicit is the knowledge the practitioner has about the background, the history and the social embeddedness of the respective practice. This could lead to an acceptance that professional action is basically a problem-solving activity where reflection and existing tacit knowledge is applied to emerging problems. Schon (*ibid.*) however, argued that this widespread understanding of professional practice is too limited and has to be extended to problem setting, a second-order, more complex, form of reflection, where the practitioner also considers wider concerns and implications of the problem, including for instance, institutional, political and social structures, which are external to the workplace but impact on it:

> From the perspective of Technical Rationality, professional practice is a process of problem *solving*. Problems of choice or decision are solved through the selection, from available means, of the one best suited to established ends. But with this emphasis on problem solving, we ignore problem *setting*, the process by which we define the decision to be made, the ends to be achieved, the means which may be chosen. In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic situations which are puzzling, troubling and uncertain. (*ibid*: 39–40)

At this stage, the practitioner sets in motion a process of re-naming and re-framing of the problem. Indeed, she might not even consider the issue at hand to be a problem anymore; although it is more likely that this meta-process will provide the learner with a different type of problem requiring a different type of solution.

Reflexivity and conscious analysis become even more necessary when the professional is confronted with new situations and as a consequence has to change or acquire new practices. Though the individual might perceive the new situation to be unique in the first instance, to make sense of it requires fitting it into existing frameworks of rules and resources. People do this by looking for similarities and differences:

> When a practitioner makes sense of a situation he perceives to be unique, he *sees* it *as* something already present in his repertoire. To see *this* site as *that* one is not to subsume the first under a familiar category or rule. It is, rather, to see the unfamiliar, unique situation as both similar to and different from the familiar one, without at first being able to say similar or different with respect to what. The familiar situation functions as a precedent, or a metaphor, or – in Thomas Kuhn's phrase – an exemplar for the unfamiliar one. (*ibid*: 138)

Schon understood the process of learning as cyclical with successive iterations of comparing new and familiar experiences with well-established routines of thinking, many of which the learner may have had difficulty with bringing to consciousness.

In workplace settings, however, the learner also interacts with and acts upon the environment and attempts to make sense of it in an experimental fashion that can involve the following non-sequential processes: exploring the possibilities inherent in the problem; developing a series of action steps; testing them out to see if they fit the problem; and evaluating the more successful solutions to develop working hypotheses. Experimenting in practice then is both reflective and transactional. The practitioner is at the same time testing out new hypotheses and seeking to change the external setting in which the problem is embedded. Change therefore operates at two levels, the psychological and the social:

> The inquirer's relation to this situation is *transactional*. He (*sic. and throughout*) shapes the situation, but in conversation with it, so that his own models and appreciations are also shaped by the situation. The phenomena that he seeks to understand are partly of his own making; he is in the situation that he seeks to understand. This is another way of saying that the action by which he tests his hypothesis is also a move by which he tries to effect a desired change in the situation, and a probe by which he explores it. He understands the situation by trying to change it, and considers the resulting changes not as a defect of experimental method but as the essence of its success. (*ibid*: 150–151, original emphasis)

Workplace learning is a process of reflection in action with different degrees of complexity and reflection on action where teachers have to be encouraged to experiment with and explore new practices, contents and procedures in their actual workplace contexts and to think about their relevance, usefulness and viability. Reflection however, can be greatly increased through collaborative meaning-making, dialogue and discussion between different practitioners who add alternative perspectives, ideas and experiences. The exchanges between practitioners within the workplace add a further level of reflexivity to the learning programme, namely, reflection on reflection in and on action.

An approach to this form of learning that emphasizes reflection in action, on action, experimentation and collaboration stands in stark contrast to common formal modes of workplace learning where learners are asked to reflect on their progress against a set of descriptors provided for them from an external source, and then have to plan and execute action steps with the intention of improving their performance. This is a limited form of meta-reflection that suffers from the disadvantage that the practitioner may feel that they do not own the process and that the set of descriptors are not written at the required level of particularity to enable them to improve their performance.

The model of workplace learning presented here therefore encourages practitioners to find appropriate and justified ways to apply the acquired knowledge in their own practice setting. To this end, it brings together three types of knowledge (Jackson and Timperley 2006: 5), namely the accumulated experience-based and context-specific knowledge practitioners hold, external 'practical and theoretical public knowledge which might serve to frame, support, structure, illuminate or (critically) challenge existing contours of knowledge and training', and new knowledge created by individuals and groups of practitioners, for example, through undertaking action research processes:

> This is knowledge which is collaboratively constructed by practitioners or developed through processes of interaction, design and creation, but builds upon what we know and what is known. This third field of knowledge attains its place from a belief that collaborative processes, founded upon respect for existing knowledge, are the vehicle through which innovation and creativity thrive.

Within this framework of situated learning, a new model of apprenticeship has been developed. The traditional model is characterised as a conservative and static transmission framework: only the apprentice learns; the body of knowledge being transmitted is fixed and unproblematic; the expert teaches and does not learn from the experience; and the knowledge that is acquired is context-bound and not transferable. Guile and Young (1999) contrast this with a form of apprenticeship that understands learning as an active, social and collective process that takes place in a community of practice. Contexts within which that learning takes place are always changing; and more importantly, new knowledge emerges for both the expert and the apprentice.

Practitioner learning in the light of these new developments is therefore understood as contextualised and situation-specific. However, much workplace learning, especially on programmes which have elements that are taught away from the practice site, frequently operate with technicist frameworks of understanding, and adopt unreflexively disciplinary forms of knowledge. That is, knowledge developed outside the practice setting is made available to practitioner-learners who are then required to apply it to their own practice. This knowledge may take the form of models of good practice or ideal simulations of what the practitioner should be doing in the practice setting. The knowledge being developed is generalisable, and moves beyond the repertoire of actions with which the practitioner is familiar. This can be contrasted with informal, work-specific and transitory forms of knowledge.

For Schon, knowledge that is underpinned by a technical rationality model fails to take account of the context-specific nature of knowledge acquisition. Schon, himself, was criticised, in turn, for not developing a critical approach to knowledge, and for in the end ignoring the complexity of the epistemic and learning arrangements he was advocating. I now turn to the different models of curriculum that have been developed, and choose between them.

Chapter 2
Curriculum Frameworks

Classifying and categorising the field schematically is fraught with difficulty and this is because a history, exposition, delineation or explanation of an idea is essentially a contested activity. Whether the analyst adopts a conventional view of narration or chronicling with its trans-historical subject and immersion in originary knowledge modes, or they seek to genealogise such a narrative or chronicle by subverting the naturalness of the categories and delineations in common sense discourses (after all everyone knows what learning is), it is still important to confront their own position as historian, genealogist, expositor, academic or critic. In other words the analyst still has to take account of the originary status of their viewpoint about knowledge, their epistemic position.

The purpose then of this chapter is to uncover, or begin the process of deciphering, the rules (overt or hidden) that constitute particular framings of the curriculum, without at the same time becoming embroiled in logocentric discourses that are underpinned by originary knowledge structures. To do otherwise would be to fall into the trap of what Michel Foucault (1980) suggests is the 'illusion of formalisation', in which the chronicler seeks to explain types of knowledge in terms of a formal logic that transcends those knowledge constructions: a logocentric viewpoint. Foucault also urges us to avoid the illusion of doxa where appearances in relation to power are treated as opportunities to unmask them and replace them with more truthful versions of reality.

There is a range of contemporary curriculum models: scientific curriculum-development, epistemic foundationalism, cultural transmission, innovative pedagogical experimentation, productive learning environments, autonomous instrumentalism, critical instrumentalism and economism. These models focus on the construction of a curriculum. They are distinct insofar as proponents of each have a different view on what a curriculum is – its various parts and the relationships between them, its underpinning ontological and epistemological stances and the relations between them, its way of turning all these into a coherent theory which

prescribes what is needed for an educational setting, and its set of educational values. Each of the models described below takes a different position on these key notions. This therefore requires a choice to be made between them, and this choice can only be made in relation to how coherent and relevant they are as models. And this in turn requires the curriculum theorist to set out the basic premises of these models and then to provide a reason or set of reasons as to why one model is more appropriate, coherent and relevant than the rest.

Basil Bernstein (1996) identified two models of curriculum and called these *performance* and *competence* frameworks, with the former, he argued, now in a dominant position round the world. His two models give different emphases or weightings to the various curriculum dimensions, such as time, space, discourse, evaluation, control, pedagogic text, autonomy and economy (cf. Fitz et al. 2006: 6). The performance model has its origins in the behavioural objectives movement, and though contested by curriculum theorists, retains its pre-eminent status. It is a model that clearly emphasises marked subject boundaries, traditional forms of knowledge, explicit realisation and recognition rules for pedagogic practice, and the designation and establishment of strong boundaries between different types of students. Such a model in the hands of policy-makers becomes both normative and teleological. Furthermore, in policy texts, it has been combined, in the sense that elements of it have acted as proxies for liberal and progressive ideologies, with discourses that seem to reflect a politics that offers a break with the past.

Bernstein compares this with a competence model, and in relation to this model he suggests that acquirers now have some control over the selection, pacing and sequencing of their curriculum. For Bernstein, performance modes are seen as the norm, whereas competence modes 'may be seen as interrupts or resistances to this normality or may be appropriated by official education for specific and local purposes', and 'were generally found regulating the early life of acquirers or in repair sections' (Bernstein 1996: 65). However, performance modes are being increasingly applied to early years' education and children with special needs, since recent developments in England, for example, have shown that policy-makers are prepared to move from a competence to a performance mode here as well. It is clear that curriculum discourses only become dominant through specific sets of historical circumstances, including technological developments, and particular sets of policy enactments. And further to this that within the policy cycle, there is space for resistance to particular modes of thought and imposed practices. As Bernstein (1990: 25) suggests, strong boundaries and clear insulations can be said to characterise performance modes:

> Punctuations written by power relations that establish as the order of things distinct subjects through distinct voices. Indeed, insulation is the means whereby the cultural is transformed into the natural, the contingent into the necessary, the past into the present, the present into the future.

These punctuations are key elements in constructing a curriculum.

Traditionally, there have been four ways of delineating a curriculum: as a body of knowledge to be transmitted, as a means for determining certain ends in students,

as process and as praxis (cf. Kelly 2004). In the first of these, the curriculum is understood as a body of knowledge that curriculum makers and implementers wish to transmit from one generation to the next. In the second, particular ends are specified and justified, the means for achieving these ends (insofar as the learner has acquired the capacity to apply these knowledge, skill and dispositional elements) are identified, and these are implemented. A process model focuses on providing the most effective framework for learning and less so on the ends of the activity. Curriculum as praxis makes explicit reference to the interests it serves, to, for example, collective human well-being or the emancipation of the human spirit. It is praxis insofar as it specifies an end-point. Instrumentalism is the dominant theme of the idea of curriculum as praxis. The first of the curriculum models, scientific curriculum-making, is commonly thought of as a transmission model.

2.1   Scientific Curriculum-Making

Kliebard (1975) reminds us of the genesis of the curriculum movement in the United States, and identifies two key figures in the early part of the last century, who represent this surge of enthusiasm for the application of the scientific method to the study and implementation of the curriculum. Franklin Bobbitt[1] and Werrett Charters in their different ways argued for precision, objectivity, prediction and the use of the scientific method to establish once and for all what should be taught in schools and indeed how educational knowledge should be structured. Bobbitt's two major works were, appropriately enough, *The Curriculum* (1918) and *How to Make a Curriculum* (1924), and in 1913, he published a long article entitled, 'Some General Principles of Management Applied to the Problems of City-school Systems' (1913). Charters' two major works were *Methods of Teaching: Developed from a Functional Standpoint* (1909), and *Curriculum Construction* (1923), both of which reflected then currently fashionable ideas of structural-functionalism.

Bobbitt's work provides an early example of the arguments for behavioural objectives and he is credited with developing a notion of objective analysis whereby designated skills are broken down into their constituent elements. These skills were derived from the activities of experts in a variety of fields essential to the well-being of society, and he claimed that curricular aims and objectives could be derived from an objective examination of these activities. Furthermore, these skills and their component sub-skills could be expressed as specific teaching objectives which could be so arranged that the curriculum could be designed around them. His work was behaviourist in that he understood learning as the acquiring of these skills and the evaluation of sets of behaviours so as to determine whether these skills had been successfully acquired by the learner. It is easy to see here the origin of the behavioural objectives movement which influenced curriculum making in the 1970s and 1980s and which continues to shape global, national and local curricula round the world.

What is noteworthy is the underpinning belief in science as the model for the essential practical activity of determining what should be included in a curriculum and how it should be delivered. Atomism, pre-specification and control are therefore foregrounded, with the curriculum conceptualised in terms of behavioural objectives and an input–output model of schooling. Ralph Tyler (1950, 1968),[2] for example, advocated a means-end approach to the development of the curriculum. He believed that educational aims could only be articulated in terms of objectives and that these preceded learning experiences and the evaluation of what is learnt. Curriculum-making was understood as a linear process which starts with the development of clear objectives or goals, proceeds through to the selection of content which is specified in behavioural terms – its acquisition must be an observable or testable process – and finishes with the evaluation of that process to see if those objectives have been met. However, he did not believe that objectives could be specified in precise behavioural terms, and he believed that they should be kept at a fairly general level. His work has influenced current models of curriculum-development, though his objectives approach has in turn been heavily criticised for its limited understanding of the enacted curriculum. Other theorists such as W. H. Popham (1972) were less discriminating about the use of behavioural objectives and were enthusiastic advocates of a scientific view of curriculum making. Such a position was underpinned by a view of knowledge that coloured their perception of the curriculum.

In his *An Evaluation Guidebook: A Set of Practical Guidelines for the Educational Evaluator* (1972), W. J. Popham argues strongly for a behavioural objectives model of teaching and learning, an approach that has had a considerable influence on the field of curriculum, culminating in the development of a national curriculum in the United Kingdom in the 1990s and similar policy initiatives round the world. Though educational theorists such as Popham embraced a technicist model of curriculum inherent in the specification of behavioural objectives, other curriculum theorists associated with this approach argued for weaker versions. Ralph Tyler (1950), for example, suggested that specifying objectives was the only logical way of determining learning experiences. However, he did not subscribe to the view that they could be broken down into thousands of detailed educational sub-purposes, because he felt that this would unnecessarily restrict the teacher, and overwhelm their capacity to use them.

The rationale for developing this type of curriculum model was to provide clarity of purpose where none had previously existed:

> The major advantages of such objectives is that they promote increased clarity regarding educational intents, whereas vague and unmeasurable objectives yield considerable ambiguity and, as a consequence, the possibility of many interpretations not only of what the objective means but, perhaps more importantly, whether it has been accomplished. (Popham 1972: 31)

Behavioural objectives, for Popham, therefore have a number of features. First, they have to be unambiguously stated so that they provide explicit descriptions of the behaviours that should occur after instruction has taken place. These behaviours

furthermore have to be stated so that any group of reasonable observers would agree that the individual has shown herself capable of performing them. Second, those behaviours have to refer to the learner and not the teacher. The teacher may devise systems of instruction that have merit; however, if they do not lead to the desired and pre-specified behaviours in learners, then they cannot be considered useful.

Third, those behaviours should be expressed so that they can be measured; clarity is therefore reduced to measurability. Popham's third proposition in relation to behavioural objectives is that:

> The educational evaluator must identify criteria of adequacy when using instructional objectives which require constructed responses from learners. (*ibid.*: 39)

He is also concerned about the generality of content within the behavioural objective. The distinction that he makes then is between content generality and test item equivalence and his fourth proposition therefore allows for some measure of generality:

> The educational evaluator should foster the use of measurable objectives which possess content generality rather than test item equivalence. (*ibid.*: 40)

In fact, Popham provides no guidance for determining whether objectives should be specific or general, but suggests only that teachers may prefer to work at a level of generality and as a consequence this should not be ruled out.

Popham makes a further suggestion to the effect that behavioural objectives should take account of proficiency levels of performance, and that they should refer to either the individual learner or the class as a whole. Objectives therefore can be formulated so that they are only partially achieved, but this does not rule out their usefulness as curriculum tools. Thus Popham's fifth injunction is that:

> Prior to the introduction of the instructional treatment educational evaluators should strive to establish minimal proficiency levels for instructional objectives. (*ibid.*: 40)

Popham further suggests that educational objectives need to be disaggregated according to the types of behaviours that they were designed to promote. Drawing on Bloom's *Taxonomy of Educational Objectives* with regards to cognition (Bloom and Krathwohl 1956) and Krathwohl's *Taxonomy* in relation to the affective domain (Krathwohl et al. 1964), Popham argues that curriculum-makers should use these to develop their lists of behavioural objectives. Three types of objectives are identified: the cognitive, the affective and the psychomotor, and these in turn are broken down into six cognitive domains (knowledge, comprehension, application, analysis, synthesis and evaluation), five affective domains (receiving, responding, valuing, organising and characterising by a value or value complex), and five psychomotor domains (perception, set, guided response, mechanism and complex overt response).

Popham's sixth injunction is that:

> The educational evaluator will often find the Taxonomies of Educational Objectives useful both in describing instructional objectives under consideration and in generating new objectives. (*ibid.*: 44)

Popham's final piece of advice in writing objectives is that the curriculum-maker should borrow from existing banks of objectives to suit their needs. His last proposition is therefore that:

> The educational evaluator should consider the possibility of selecting measurable objectives from extant collections of such objectives. (*ibid.*: 50)

Within this tightly bounded system there are a number of propositions about curriculum knowledge that need to be examined. These are: the nature of pedagogic knowledge and in particular, the reductionist form that the behavioural-objectives model takes; exclusions and inclusions within the knowledge corpus to fit the model; the purported value-free nature of the process that is advocated by behavioural-objective modellers; and the clear separation of means and ends in the system.

A behavioural objectives model has to be operationalised, and, since the process involves the specification of observable performances and not inner states of being of the learner, behavioural indicators can only serve as approximations of these inner states. Bloom et al. (1971: 33–34) for example, argue that words that refer to those inner states are acceptable as general statements of intent, but then have to be broken down into behaviours:

> Thus while "understands", "appreciates" "learns" and the like are perfectly good words that can be used in an initial, general statement of an objective, they should be further clarified by the use of active or operational verbs that are not open to mis-interpretation.

The logic of their argument is that if words and phrases used in constructing objectives are clarified properly, then they can be translated into actions for the learner, so that the verification of those behaviours is not open to misinterpretation. Whereas it may seem that this follows directly from the need to clarify these objectives, in fact this introduces a new idea. The student behaviour that is being evaluated can only qualify as a proper objective if it is capable of being evaluated in an unequivocal way. This would seem to preclude the evaluation of a number of behaviours and therefore a number of inner states of the individual because any use of them is always open to interpretation as logically they can only be framed in this way. Some worthwhile educational activities are designed to be open to a number of interpretations, and thus within the strict boundaries of a behavioural objectives model these would have to be excluded. It is clear here that the model fits better certain types of activities than others, and consequently to include all worthwhile activities necessarily involves a distortion or packaging of some of them to fit the model. Examples of these might include the more expressive objectives of the curriculum.

There is a further problem with the atomised model of knowledge that is being proposed. A subject or discipline is broken down into its constituent parts, which are then expressed in terms of behavioural objectives. Since this will consist of more and less difficult operations for the student to access, some order of these objectives has to be established, and this order comprises general principles for progression through a subject. In mathematics for example, this might consist of logically prior operations being taught which the student needs to be able to do before they can proceed to higher-level operations. The completion of one particular type of task

entails mastery of a number of mathematical operations that precede it. The one cannot be performed without the other, and this is a legitimate way of understanding progression within a subject, though, as I will suggest below, there are a number of other progression modes.

However, a distinction can be drawn between disciplinary knowledge and pedagogic knowledge, where this is understood as being between those logical connections and relations between different items of knowledge and the optimum way children actually learn (i.e. pedagogic knowledge), and these may be in conflict. In the first case a belief in a logical form is essential to sustain the argument, and in the second case, a belief has to be held that there is an optimum way by which children should progress through a disciplinary structure. If however, neither a belief in a logical form of progression nor a belief in an optimum way of progressing through a discipline can be sustained, then progression as it is currently understood is merely conventional. If it is merely conventional, then it is open to being changed because it has no a-historical warrant. A behavioural objectives model with its atomistic form comprises some type of logical ordering between the different items, and this ignores the two other possibilities referred to above: an optimum or natural developmental process of learning and a conventional ordering without any foundation in either logic or psychology.

Joe Dunne (1988), a critic of behavioural objectives, argues that there is no clear connection between teaching these atomised forms of knowledge and inculcating intellectual virtues, which may be an important goal for the educator. The most appropriate way of inculcating intellectual virtues, such as respect for truth, critical appreciation and the like, is through processes and methods, which are not reflected in the behavioural objectives model of teaching and learning. Dunne further questions whether a behavioural objective necessarily contains within it the unambiguous evidence for its verification. He points to the problem with a technicist language by definition precluding the need for interpretation, and the imperative of the behavioural objectives movement for unequivocal agreement that the behaviour being observed has been performed by the individual:

> This other assumption is what might be called practical verificationism – the stipulation that a well-formed statement of objectives must contain an indication of the evidence that would be required to verify whether or not it has been fulfilled. (*ibid.*: 67)

However, though this requirement was specified in the original model, a modified version is still logically coherent. Indeed, a modified version could be reconfigured as an objectives model, in which the links between inputs and outputs are considerably weakened, where these links refer to what is taught, how it is taught and what is learned.

There is a further consequence, and this is that a behavioural objectives model in its most extreme form must specify those types of objectives that conform to the model and exclude those objectives that do not. And this means that the objectives or purposes of a curriculum and the relative priority that is given to each of them is determined not by the criteria that a society develops as to the most appropriate and worthwhile items that should go in a curriculum, but by whether those objectives

can fit a behavioural objectives model; or in other words, whether they can be speci-fied in such detail, so that, to use Dunne's term, they can be practically verified. However, the objectives of a society as they are expressed in a school curriculum do not always take the same form. That is, some of these objectives can be better formulated within the model proposed by behavioural objectivists than others. For example, expressive objectives are unlikely to be able to be expressed so that an unambiguous view can be taken that the individual pupil can perform them, and if an unambiguous view of whether the individual can or cannot perform them could be made, it is likely that the expressive objective has been formulated so that it loses some of its credibility. As a result, there is a temptation to discard or marginalise objectives such as these, not because they are not worthwhile, but because they do not and cannot conform to the curriculum model being used.

Lawrence Stenhouse (1975) in his seminal book, *An Introduction to Curriculum Research and Development*, offers other objections to the behavioural objectives form of knowledge.[3] The first of these objections is that trivial learning behaviours may be prioritised at the expense of more important outcomes because they are easier to operationalise. As Stenhouse points out, the way this objection is framed can only be resolved by empirical investigation. However, there is a more profound point at issue, which is not directly addressed by the way this objection is framed, and this is that certain types of objectives can be framed in behavioural objective terms (they may then be called trivial, but that is a different argument); whereas other types of objectives cannot framed in this way. Thus concern for the spiritual well-being of students may be an entirely legitimate aspiration for a curriculum-developer, but determining whether at the end of a course of teaching this has been achieved is more difficult. In this particular case, it can only be framed as a guiding principle and not as a behaviour that can be identified after the event, however long after the event an attempt is made to identify it. However, there is a further part of the argument that needs to be addressed, and this is that given that it is easier to express some objectives in behavioural terms and that these tend to be at a lower level, then these will be prioritised at the expense of higher level objectives simply because they cannot be expressed in simple identifiable terms. So, if a behavioural objectives model is adopted and there is pressure on teachers to teach to those objec-tives that can be measured in relatively simple ways, then these will be prioritised at the expense of those objectives that cannot be measured in this way.

Dunne makes a further point about such a specification. A behavioural objective has to be written at a general enough level so that an unequivocal judgement can be made as to whether it has been met. This presumes that the judgement being made is devoid of context, as consideration of context may not allow the behaviour being assessed to be unequivocally determined. The language used in the framing of the objective therefore has to be of a technicist nature, which means that the language itself has been stripped of all those elements that refer to context. In short, the lan-guage has to be decontextualised:

> What must be overcome, likewise, is any boundedness by particular contexts – any relativ-izing or qualifying to be done by users of this language in deference to a particular context in which it is used. (Dunne 1988: 67)

Furthermore, this language has to be explicit, and a behavioural objectives model does not just rule out context, but also the tacit element of language.

In this model, teaching is understood as the delivery of a set of pre-specified behavioural objectives that can be translated into observable behaviours and it is therefore positioned between the formulation of objectives and the evaluation of pupil behaviours after the event. The technical language therefore applies to this activity as much as it does to the input and output phases of the process. This approach turns the teacher into a technician, in the sense that a teacher cannot during the course of the encounter with the student ask themselves any questions about the worth of the objectives or goals. These goals are pre-set, and context is ignored. One problem then is that the post-teaching evaluation can throw light on the effectiveness of the teaching procedure, but it cannot assess the appropriateness of the objective or what is being taught. A second objection is that the type of evidence demanded by the behavioural objectives model cannot provide any guidance as to how the teacher should modify their behaviour so as to produce better results. A behavioural objectives model that is underpinned by a taxonomic analysis of knowledge content does not take account of pedagogical knowledge or the way students learn.

With such a specification of the teacher-learner relationship, no account is taken of unintended effects. Since the purpose is effectively achieved if the learner can perform the clearly and explicitly stated action, the means to achieve this become irrelevant. So, there is both an issue about unintended effects and an issue about the ethical consequences of arguing that any means are appropriate if the desired end is to be achieved. Means, furthermore in this scenario, are treated as ethically neutral since they do not figure as actions to be deemed ethical or not, but simply as actions which can only be judged to be ethically sound if the end-point of the process is achieved. Means are judged by criteria such as efficiency and effectiveness. Dunne (1988: 68) points out that:

> these authors make a clear cut separation of ends and means, and deny any intrinsic purpose to means on the grounds that verified effectiveness in achieving given ends is the only relevant basis for selecting means (or 'methods'). No method then, can, a priori, be either excluded or preferred to any other means.

Despite this clear separation of means and ends, governments in the United Kingdom and the United States of America have developed curricula within a behavioural objectives model, and at the same time intervened in the specification of means as well. Thus the logic of the behavioural objectives model has been commandeered to produce a performative model in which teachers are held accountable both for the production of good ends and the efficient following of means (teaching approaches) specified by outside bodies.

A further objection, made by Lawrence Stenhouse (1975),[4] is that pre-specifying explicit goals means that the teacher is rarely in a position to take advantage of unexpected instructional opportunities. As Stenhouse notes, this can only be tested empirically, but it would seem logical to suggest that teachers conscious of the need to meet the requirements of pre-specified goals will deliberately forego other

opportunities for learning even if they can see some benefit for their students. However, implicit within this argument is a further question, and this is whether it is appropriate for the teacher to forego such learning opportunities, especially when they are also concerned to map the pre-specified curriculum to the developmental patterns of their students as they understand them.

Stenhouse argues that the teacher should not only be concerned with student behavioural changes, but also with wider issues such as the ethical dimensions of their behaviour, unexpected outcomes of adopting a rigid behavioural objectives model, and the effect of their behaviour on other stakeholders such as parents. This argument assumes that ends and means can be clearly separated, and that the efficient delivery of behavioural objectives can be achieved without the teacher paying any attention to unexpected consequences. A child can be forced to learn something and does so effectively; however, the means employed for this learning to take place may have future consequences for them as persons and for subsequent learning episodes, which may in the end be harmful to that child.

Stenhouse further suggests that a behavioural objectives model denies the teacher that degree of independence from external bodies and in particular from governments that is needed if a free society is to be sustained and if a truly educated society is to be created. For example, he argues that: 'classrooms cannot be bettered except through the agency of teachers: teachers must be critics of work in curriculum not docile agents' (Stenhouse 1975: 75). Stenhouse's objections rest on a particular model of how teachers should behave. For Stenhouse, there can be no proper curriculum development without the active engagement of the teacher. The teacher should not be understood as a technician, whose role is to deliver a pre-specified curriculum:

> Basically, the objectives approach is an attempt to improve practice by increasing clarity about ends. Even if it were logically justifiable in terms of knowledge – and it is not – there is a good case for claiming that it is not the way to improve practice. We do not teach people to jump higher by setting the bar higher, but by enabling them to criticise their present performance. It is process criteria which help the teacher to better his (sic) learning. (Stenhouse 1975: 83)

In summary, the adoption of a behavioural objectives model implies that all worthwhile ends can be measured at the end of the process of learning. However, some outcomes of education can only be reflected in behaviours that show up a long time after the teaching event and therefore cannot be expressed immediately. In addition, some outcomes can more easily be expressed in behavioural terms and therefore it is likely that, if the teacher is under pressure to deliver a curriculum expressed in outcome terms, they will prioritise these objectives at the expense of those less amenable to measurement. There is also a temptation to express a particular objective in quantitative measurable terms and thus emphasize its quantitative dimensions at the expense of its qualitative dimensions.

2.2   Epistemic Foundationalism

In the 1970s and 1980s curriculum theorists were concerned with knowledge, and in particular transcendental knowledge, which provides a rationale or justification for the school curriculum. Shorn of its metaphysical underpinnings, such an argument can be expressed in a number of ways. John White (1982: 10) suggests one approach:

> The argument is at its most plausible when used to justify the particular claim that the pursuit of *knowledge* is intrinsically worthwhile. It asserts that if anyone either doubts or denies the claim, he (*sic*) can be brought to see, assuming he (*sic*) is a rational person, that there is an ineradicable inconsistency in his (*sic*) position. For in asking: 'why pursue knowledge?', the sceptic is in fact already committed to the pursuit of what he (*sic*) is attempting to justify: it is presupposed to his (*sic*) seriously asking the question that he thinks it worthwhile to try to arrive at a well-grounded true belief about the topic in question, i.e. to come to know something. (White 1982: 10)

As White goes on to suggest, this argument is flawed in so far as asking the particular question about the pursuit of knowledge in a general sense does not commit one to the pursuit of all types of knowledge per se, and furthermore, does not provide an adequate justification for deciding that some types of knowledge are more worthwhile than other types of knowledge. Thus, even if the first part of the argument is accepted, there are no grounds within the argument presented here for determining what that knowledge should be.

A view of knowledge as intrinsically worthwhile has persisted for a long time; for example, Aristotle (1925) presents his readers with the following argument. The purpose of life is predetermined, as is the individual's nature, though it is not always clear to the individual what this natural purpose is. However, this lack of clarity can be corrected through rational deliberation and reflection on the self; and it is the possession of reason that distinguishes human beings from other animals. If this is accepted, then the end-point of human life is to pursue this aim; and therefore from this set of premises can be deduced the aim of education as the pursuit of rational activities that develop the mind. It is fairly easy to see how this syllogism rests on false or at least disputed premises, so that predetermination and a fixed nature are concepts that are not readily accepted in the modern era.

Epistemic foundationalism has three forms. The first type, cognitive-impressionism, suggests that an idea is correct in so far as it impresses itself on a person's consciousness with such force and conviction that she cannot doubt it. It is certainly reasonable to assert that an idea is true for this reason (essentially a psychological explanation), but this cannot provide the person with much certainty because on examination it is usually found that her preference for one idea over another is based on non-universal criteria or subjective preference. Why should another person accept that her idea is true because of the way she has received it? There needs to be a more convincing reason as to why one idea is better than another.

A second type, cognitive-universality, suggests that reality, or 'the thing in itself', is unknowable but the mind operating in a foundational sense supplies the structuring mechanism for the apprehension of the object. A universality of the operation of minds is suggested, thus ruling out a plurality of structures or a plurality of known objects or a plurality of different conceptions of the same object. This neo-Kantian[5] approach assumes that the categories of the world are given to every sentient human being and therefore cannot be forsaken or foresworn. They are intrinsic to the way human beings access the world, and are foundational because they do not need any further justification; they are end-points in arguments. A weaker version of this approach might focus on an aspect of social life, i.e. extant forms of agency, or the way human beings currently access the material world, or the sense of how they now construe logical forms, and proponents might argue that these are givens and thus constitute the essence of a human being, or the essence of how a human being accesses reality, or even, the essential logical forms used in discourse. They are foundational because they serve as terminating points for chains of justification for any beliefs that are held.

A third type is metaphysical and therefore refers to transcendental and ontological essentialisms, both of which have epistemic implications. The first of these, transcendental essentialism, is extra-material, since the authority for these beliefs rests on non-material foundations; or, at least, the source of authority for such beliefs resides in a series of inferences which culminates in an extra-material and transcendent being as the terminating point for their justification. The second is ontological, and therefore fits classical definitions of metaphysical beliefs. Bhaskar's (1998; Norrie 1998) later philosophy is the most apposite in this regard, because, as Hostettler and Norrie (2003) suggest, if an ethical theory is grounded in an ahistorical conception of human essence, then it must be foundationalist in an ontological sense. Furthermore, since objects have specific essences, it is these essences that drive the choice of means for knowing them. This doesn't mean that a singular epistemology can be identified – a method for dealing with all the different types of objects that exist in the world or that have substance – but it does mean, and logically has to mean, that a correct epistemology embraces the idea that different methods are appropriate for understanding different social objects because they are differently constituted. And this applies to discursive objects as well as to embodied, institutional or systemic ones, because discursive objects have ontological presence and are causally efficacious.

These three foundationalist positions are incomplete as theories, because the essentialisms they propose are synchronically rather than diachronically realised. Cognitive-impressionistic (cf. Frede 1987), cognitive-universal and metaphysical arguments ignore both temporal and stratificational emergence, though alternatives to these may still be ontologically real and causally efficacious. What these alternative theories do is build in a temporal dimension to the object under investigation. There is however, a more profound challenge to foundationalism, and this comprises an argument against epistemology itself as a core activity (cf. Taylor 1998).

Proponents of this view suggest that general epistemic arguments have no more credibility than any of the foundational arguments expressed above.

Epistemic foundationalism has implications for the curriculum. Foundationalist justifications for inclusion in a curriculum offer reasons for including some forms of activities and excluding others, and there are perhaps three types. These are: logical delineations between domains of knowledge, distinctive mental or cognitive operations, and cross-cultural social distinctions. An example of logical delineations is Paul Hirst's (1974a) forms of knowledge and experience: logico-mathematical, empirical, interpersonal, moral, aesthetic, religious and philosophical. Each of these forms has distinctive kinds of concepts, and distinctive ways of determining truth from falsehood. Hirst[6] claimed that each has a separate logical form. Another example is Philip Phenix's (1964: 6) 'realms of meaning', which he categorises as 'symbolics, empirics, esthetics, synnoetics, ethics, and synoptics'. An example of the second type of justification is Howard Gardner's (1983) forms of intelligence: language or linguistic intelligence, logical-mathematical analysis, spatial representation, musical analysis, bodily-kinesthetic thinking, interpersonal knowledge and intrapersonal knowledge. His justification for inclusion of these forms of intelligence is psychological; individual learners have cognitive or mental modules, which are separate and act separately from other mental modules. Individuals have been shown to differ in their capacity to perform these different types of operations. A third set of justifications moves us out of the mind and focuses on the culture we inhabit. Denis Lawton (1989) argues that all societies have cultural sub-systems: socio-political, economic, communicative, forms of rationality, technological, moral, belief, aesthetic and maturational. Because these are universal and cross-cultural, Lawton concludes that curriculum developers should seek to represent the forms of knowledge that underpin them.

Progression within a curriculum can also take a foundationalist form. Underpinning the notion of progression is a rationale for teaching some aspects of the knowledge domain before others and a belief that a subject can in fact be arranged in a reliable hierarchy. Philip Adey (1997) argues that it is possible to do this and develops a three-dimensional model comprising conceptual complexity, breadth and extent.[7] Using only the last of these two dimensions leads to a naive view of learning. For Adey, a measure of conceptual complexity is also needed to provide a fully developed model of curriculum progression. Examples of these frameworks are Piaget's (1971) schema comprising progression from concrete operational to formal operational thinking, and Kohlberg's (1976) stages of moral thought, where the subject progresses from pre-moral and conventional rule conformity levels to the acceptance of general rights and standards, and even to adopting individual principles of conduct. These hierarchies are based on empirical investigation. The other way of establishing knowledge hierarchies is through some form of logical ordering, where complexity comprises both a progressive development of more items of knowledge and the making of more complicated connections between these items of knowledge. Such foundationalist views are in conflict with instrumentalist views of the curriculum.

2.3   Cultural Transmission

In contrast, conservative-restorationists suggest that the curriculum should be anchored in the past and they argue for canons of influential texts, formal and didactic modes of pedagogy, the inculcation of values rooted in stability and hierarchy, strong insulations between disciplinary and everyday knowledge, strong forms of classification between different aspects of knowledge, and indeed in some cases a belief that curriculum knowledge is either intrinsically justified or even transcendental.

This points to what Michael Young (2005) has described as the internalist fallacy, where it is argued that knowledge evolves only as an internal feature of the knowledge itself, so that conservative restorationists are able to 'defend existing orderings of knowledge and the social structures that they serve' (Young 2005: 22). He contrasts this with what he describes as the externalist fallacy, or what can be broadly described as instrumentalist approaches to the curriculum. The externalist fallacy treats all knowledge as provisional and contingent, and therefore makes the mistake that curricular knowledge can only be identified in terms of specific social goals. These social goals may take a number of different forms, so critical theorists such as Michael Apple[8] and Henri Giroux[9] can argue, firstly, that the curriculum in the United States of America and in other parts of the world has been taken over by neo-conservatives holding sets of values with which they disagree, and secondly, since all values are contingent, they should be replaced by a set of values which leads to a more socially just society. Young (*ibid.*)[10] subscribes neither to an internalist nor to an externalist position in his specification of what should be included in a curriculum, but believes that knowledge can be rooted in the ever-changing and evolving disciplines of knowledge, and in particular, the transcendental conditions for knowledge production. As a result, he develops a set of curriculum desiderata:

1. The question of knowledge (what it is that people need to have the opportunity to learn in school, college or university curriculum) must be central to any educational policy.
2. Knowledge about the world, if it is to be the basis of the curriculum involves concepts that take us beyond the contexts in which learners find themselves and those in which knowledge is acquired or produced.
3. The crucial implication of this idea of knowledge for the curriculum is that a distinction is essential between the theoretical knowledge produced by scientists and other specialists, usually within disciplines, and the everyday practical knowledge that people acquire through their experience in families, communities and workplaces. It is the former not the latter that must be at the heart of the curriculum. This, however, is not to denigrate the latter which is essential and superior to theoretical knowledge for everyday knowledge living in all societies.
4. The primary but not only purpose of educational institutions is to take people beyond their everyday knowledge and enable them to make sense of the world and their lives and explore alternatives; the purpose of educational institutions is not to celebrate, amplify or reproduce people's experience (Young 2005: 22).

E.D. Hirsch is an advocate for this type of curriculum. He identifies a core knowledge component to learning: '(i)t is a lasting body of knowledge, which includes such principles of constitutional government, mathematics and language skills, important events in world history, and acknowledged masterpieces of art, music and literature' (O'Neil 1999: 28–31). He rejects both formalism ('the belief that the particular content which is learned in school – the content which he calls intellectual capital – is far less important than acquiring the formal tools which will enable a person to learn future contexts' (Hirsch 1996: 218)) and naturalism ('the belief that education is a natural process with its own inherent forms and rhythms, which may vary with each child, and is most effective when it is connected with natural, real-life goals and settings' (*ibid.*: 218)). Above all, he believes that: 'all human communities are founded upon shared information, and the basic goal of education in a human community is acculturation – the transmission to children of the specific information shared by the adults of the group or polis' (Hirsch 1996: xv–xvi). The new national curriculum in England developed in 2014 is an example of this.

2.4   Innovative Pedagogical Experimentation

A fourth episode in the history of curriculum ideas designates the curriculum as an innovative pedagogical experiment. John Elliott (1998) sets out the key themes and ideas that constitute this model of curriculum. He describes social change as continuous, and difficult to predict scientifically and control socially. Furthermore, it is dynamic and complex, rather than episodic, stable, static and involving simple entities. Modern societies are risk societies with fluid boundaries and shifting identities. Responsibility for shaping lives therefore cannot be left to governments on their own, but has to be devolved to individuals themselves. Here, Elliott is suggesting a form of grassroots democracy, in which schools and education services have an important part to play. Traditional curricula are poorly constructed to meet the demands placed on people in different and changing circumstances, and for Elliott, the task is to appropriate cultural resources to enable individuals to take responsibility for their lives.

Furthermore, the traditional strongly classified and strongly framed curriculum configures those cultural resources in a way that is accessible to only a few and not to everyone. A curriculum that is responsive to the needs of all pupils needs to have a particular form:

> More consistent with such an aim is a curriculum which organises cultural resources in usable forms for the purposes of enabling pupils to deepen and extend their understanding of the problems and dilemmas of everyday life in society, and to make informed and intelligent judgements about how they might be resolved. Such a curriculum will be responsive to pupils' own thinking and their emerging understandings and insights into human situations. It will therefore be continuously tested, reconstructed and developed by teachers as part of the pedagogical process itself, rather than in advance of it. Hence, the idea of "pedagogically driven" curriculum change as an innovative experiment… (Elliott 1998: xiii)

Elliott distinguishes between curriculum and pedagogy, but suggests that there should be a focus on both, and on teachers as curriculum experimenters and action researchers.

Furthermore, the action research element should not be treated as another strategy for the better delivery of educational ends developed elsewhere but as an essential part of the development of the curriculum per se. Educational change, for Elliott, involves reflection by teachers on the 'problematics of their curriculum and pedagogic practices' (*ibid.*). The implications of understanding the curriculum as an innovative pedagogical experiment and teachers as innovators presupposes a view of society as a community of educated people which is in opposition to a technicist standpoint. Planning by objectives 'distorts the nature of knowledge and leaves little room for individuals to use our culture as a medium for the development of their own thinking in relation to the things that matter in life' (Elliott 1998, p. xiv). Though this model has some affinities with a model that prioritises the construction of productive learning environments, it also has some significant differences.

2.5   Productive Learning Environments

A curriculum points to what is intended should happen in a programme of learning and the circumstances in which these activities can take place. Those activities are learning activities; a curriculum is a collection of exercises and tasks, which culminate in learning of one type or another. There are three types of learning: cognitive, skill-based and dispositional, and they have different forms and operate in different ways. Cognition is the manipulation of those symbolic resources (words, numbers, pictures etc.) that points to something outside itself. Skill-based knowledge is procedural and not declarative; and dispositional knowledge refers to relatively stable habits of mind and body, sensitivities to occasion and participation repertoires. Significantly, these three types of learning are focused on knowledge-construction and are knowledge-development activities, although there are some important differences between the three types. And what can be inferred from this is that how knowledge is construed will determine how appropriate learning environments are constructed and ultimately how learners then learn in and from them.

The learning aims and objectives of a curriculum do not specify how the knowledge, skills, and dispositions should be taught, though teaching and learning approaches are derived from them. As a consequence the curriculum-developer needs to reconceptualise each intended learning outcome into a programme of learning or action learning set. Pedagogic approaches and strategies range from didactic to imitative to reflective and meta-reflective action learning sets, and they have a number of common characteristics. A pedagogic approach specifies: the circumstances in which it can be used in the learning environment; the resources and technologies which allow that learning to take place; the type of relationship between teacher and learner, and learner and learner, to effect that learning; a theory

of learning, or, in other words, a theory of how that construct (i.e. knowledge set, skill or disposition) can be assimilated; and a theory of transfer held by the teacher, that is, how the learning which has taken place in a particular set of circumstances (i.e. a classroom, with a set of learners, in a particular way, with a particular theory of learning underpinning it, and so forth) can transfer to other environments in other places and times. Paying due attention to these allows a proper focus on learning.

Pedagogic arrangements also need to fit with the view of knowledge held by the curriculum-developer. To this end, curriculum decisions need to be made about: pedagogic approaches and strategies (i.e. observation; coaching; goal-orientated learning; mentoring; peer-learning; simulation; instruction; concept-formation; reflection; meta-cognitive learning; problem-solving and practice); relations between knowledge domains (i.e. traditional/fragmented or networked/fully-integrated modes); knowledge, skill or dispositional orientations; knowledge framings; progression and pacing; types of relations between teachers and students; relations between types of learners; spatial and temporal arrangements for learning; formative assessment and feedback processes; and the criteria that can be used for evaluating learning. All these need to be taken into account in translating curriculum knowledge into pedagogic knowledge.

Learning aims, objectives and prescriptions, or curriculum standards (i.e. learning objects), are therefore distinguished from these pedagogic approaches and also from assessment arrangements. Frequently, an assessment procedure specifies those knowledge-sets, skills or dispositions that a learner is required to have, and which are expressed in such a way that they can be tested in a controlled environment, such as an examination. The principal problem with assessment procedures of this type is that testing a person's knowledge, skills and dispositions is likely to have wash-back effects on the original set. Instead of the assessment process acting merely as a descriptive device, it also acts in a variety of ways to transform the curriculum it is seeking to measure. Wash-back effects work on a range of objects and in different ways. So, for example, there are wash-back effects on the curriculum, on teaching and learning, on the capacity of the individual and more fundamentally on the structures of knowledge, though these four mechanisms are frequently conflated in the minds of educational stakeholders. Micro wash-back effects work directly on the person, whereas macro wash-back effects work directly on institutions and systems, which then subsequently have an impact on individuals within those institutions and systems. Finally, a learner may have to reframe their knowledge or skill set to fit the test, and therefore the assessment of their mastery of this knowledge or skill is not a determination of their competence, but of whether they have successfully understood how to rework their capacity to fit the demands of the examination technology. As a result teaching to the test occurs and the curriculum is narrowed to accommodate those learning outcomes that can more easily be assessed. This is now common in schools in the United Kingdom.

The reason for separating out learning approaches from assessment approaches is now clear. If these assessment approaches are the same as learning approaches, then this is likely to have a detrimental and reductionist effect on the curriculum and

more importantly on the type and content of learning that takes place. However, there are different needs within a system of education, and one of these is that, at set points in time, national and local educational bodies need to have information about how well the system is doing. This is a very different process from improving learning with an individual learner. However, there must be some connecting link between learning and reporting, so that the latter doesn't distort the former, and this is the role of learning aims and objectives.

Learning and assessment practices on a programme of study, such as a curriculum, can be regarded as formative if evidence of a learner's achievements in relation to knowledge and skill acquisition is collected and used by the teacher, the individual student, and their fellow students, with the specific intention of deciding on their subsequent programme of learning. As a result, assessment is used formatively when it directly influences the learner's cognition. Curriculum developers consequently need to make a clear distinction between summative and formative assessment. If these two functions are combined, then the potential impact of the curriculum is weakened.

There are two principles which structure the choice and order of content within a curriculum: a spiral element or a re-visiting of concepts, skills or dispositions at a higher level of intensity and at a later point in the programme of study, and theory-transfer from theory to practice and from sites of learning to sites of application. The first of these is the need to incorporate a spiral element into the curriculum, i.e. a set of ideas or operations, once introduced, is revisited and reconstructed in a more formal or operational way, at different stages in the learning programme (cf. Bruner 1966). And the second refers to the relationships between experience, theory- or concept-development (in the three different domains of knowledge, skill and disposition), strategies for the application of this theory or set of concepts, applications of these learning and practice skills, strategies and plans for action, and evaluations of these practices for the purpose of changing them. The effect is to move the learner into the centre of the practice and away from the periphery.

In order for learning to take place, i.e. increased levels of knowledge, enhanced skill levels and dispositional improvements, the following are important considerations: a minimisation of wash-back effects; an emphasis on curriculum, rather than assessment-driven change; the preservation of the curriculum as the principal driver of the learning programme rather than that which can be most easily assessed; a clear separation of the evaluative and learning functions in any educational reform programme; and an intelligible set of curriculum specifications, expressed as learning standards or objects (see Chap. 9).

A further point needs to be made about the construction of a curriculum and this refers to how progression is understood within the domains of knowledge from which it has been derived. (This is disciplinary knowledge.) Many curricula round the world employ progression modes that are extensional in design, where this is understood as an increase in the amount, or range, of an activity, whether knowledge-based, skill-oriented or dispositional. This has the effect of limiting, and distorting, the notion of progression, both between items in a curriculum and in terms of the progress a learner makes within that curriculum.

There are a number of other forms of progression and they need to be incorporated into the design of the curriculum. The first of these is prior condition. In the acquisition of particular knowledge, skill and dispositional elements, there are prerequisites in the learning process. A second is maturational, where this refers to the physical development of the mind of the learner. A third is intensification. Whereas extension refers to the amount or range of progression, intensification or complexity refers to the extent to which a sophisticated understanding has replaced a superficial understanding of a concept. In relation to the knowledge constructs, skills and dispositions implicit within the curriculum, there are four forms of complexity that signify progression. These are behavioural complexity, symbolic complexity, affective complexity and perceptual complexity. There is also a type of progression, abstracting, which involves moving from a concrete understanding of a concept to a more abstract one. A further type of progression is an increased capacity to articulate, explain or amplify an idea or construct, i.e. the learner retains the ability to deploy the skill, and in addition, they can now articulate, explain or amplify what they are able to do and what they have done. And finally progression can be understood as part of a process, and this refers to the way that the learner interacts with the learning object. An example could be moving from an assisted performance to an independent one. This suggests that curricula as they are presently conceived round the world are deficient for employing extensional forms of progression exclusively at the expense of a range of other types. These forms of progression are not of the same order; however, they refer to different aspects of the process of learning. There is no category error here. They are linked by their capacity to affect different parts of the learning process, and in particular, where an individual moves from one state of being to another. For example, extensional forms of progression focus on the objects of learning, whereas processual forms of progression focus on the learner and the way they can and do respond to these objects.

A final point is that implementing these reforms also requires a fundamental change to those infrastructural elements of the education system, which inhibit the application and use of this knowledge-based and learner-centred curriculum, for example, top-down systems of accountability or punitive inspection systems. This means that the curriculum, central to the learning experiences of children, needs to be: focused on learning; constructed around those forms of knowledge which constitute a sharing of culture; and supportive of modes of professionalism for teachers that position them as central to the construction of productive learning environments in schools.

2.6   Autonomous Instrumentalism

In contrast to foundationalists or cultural restorationists, autonomous instrumentalists would argue that it is possible to provide a justification for the contents of a curriculum by focusing on the acquisition of certain virtues or dispositions. Two examples of this approach are examined here: autonomous decision-making and

autonomous reasoning. This approach is clearly normative. It is a distinctive approach in that the curriculum is constructed in terms of whether the experiences undergone by students contribute to the development of dispositions that allow them to lead the good or virtuous life. There are two principal problems with this approach: there is a difficulty with establishing what the 'good life' is or what an appropriate virtue might be; and there is an equal difficulty with identifying experiences for children in school which will lead to the development of dispositions so as to allow the individual to lead the good or virtuous life when they leave school (cf. Callan 1988; Clayton 1993).

This perspective therefore incorporates an idea of the good or virtuous life as the end point and indeed determinant of what should and should not be included in the curriculum. John White (1982) argues for a notion of autonomy or the capacity to reflect on, and make choices that allow the possibility of leading, the good life, and he suggests that if children do not develop such a capacity they cannot distinguish between projects that contribute towards the good life and projects that do not. Furthermore, if they do not develop such a capacity, they are liable to be in thrall to arbitrary authority. Thus, the autonomous individual is treated as an ethical absolute, though again there are problems with identifying such an individual, because it is difficult to distinguish between actions which have been motivated by conformity to an arbitrary authority and actions that have genuinely resulted from the exercise of autonomy, not least by the person themself.

This dilemma for White reflects the tension between leading an autonomous life and a fulfilled one, and the two are not the same. Indeed, a person who indulges their appetites may not be considered to be autonomous, though clearly there is a sense in which they have chosen to indulge their appetites and have thus exercised their autonomy. It is here that the problem is at its starkest because autonomy as a concept cannot carry the weight attached to it, and there are implicit and normative meanings attached to it. So, autonomy means more than making choices or even having the capacity to make choices. There is a sense in which it is used to indicate the making of good or right choices and this is reflected in White's distinction between self-regarding reasons for choosing one form of life over another and other-regarding reasons in which the person also contributes to the welfare of others. Instrumentalist views of curriculum-development are future-orientated, and can therefore only be justified with reference to particular political and social arrangements. These arrangements, in turn, need to be argued for, and are likely to be contested.

The philosopher, R. G. Collingwood (1993 [1946]), though writing before White, had developed this curriculum viewpoint in a slightly different direction. Whereas White was concerned with autonomous decision-making per se, Collingwood was more interested in autonomy as a marker of rationality or rational behaviour. He identified four forms that the imagination could take: imaging, pure and free, perceptual and historical. The most important of these, for Collingwood, was historical imagination, as this best exemplified autonomous reason. Education and socialisation, for him, were synonymous and their fundamental purposes were the develop-

ment of freedom of will or autonomy and the growth of an historical civilisation. Students were to be guided through 'various forms of experience', such as art, religion, philosophy and history, as these embody forms of rational conduct, or rational ways of believing, thinking, behaving and being. His views on history and philosophy were different from the cultural restorationists, as the endpoint of all curriculum activity is the acquisition by the learner of a rational autonomous orientation towards the world and an awareness of its temporality and transitivity. This is another version of autonomous instrumentality, and suffers from many of the same problems as White's version does.

2.7   Critical Instrumentalism

Critical pedagogy is instrumentalist in design and is underpinned by a belief that schooling and the curriculum 'always represents an introduction to, preparation for, and legitimation of particular forms of life' (McLaren 1989: 160). It therefore seeks, through pedagogic means, to surface, and in the process disrupt, conventional forms of understanding which serve to reproduce undemocratic, racist, sexist and unequal social relations. As Lankshear et al. (1996: 150) make clear,

> (t)he task of critical pedagogy …. is to unmask hegemonies and critique ideologies with the political and ethical intent of helping to empower students and more generally, the social groups to which they belong: by fostering awareness of conditions that limit possibilities for human becoming and legitimate the unequal distribution of social goods.

Unlike some post-modern viewpoints, critical pedagogy is predicated on a clear ethical position with regards to society and to the way society reproduces itself, though some versions of critical pedagogy emphasise the need to disrupt conventional school knowledge structures and the reproductive processes that accompany them, without specifying alternative frames of reference for students. The end-point becomes the disruptive process rather than the re-forming of schooling and society in a particular way.

Lankshear et al. (1996) suggest that critical pedagogy has had to wrestle with a number of serious problems. Though implicit within it is a notion of student-centeredness and student empowerment, all too frequently teachers found it difficult to forgo their role as orchestrators of proceedings, thus in effect critical pedagogy became a means by which one ideological viewpoint replaced another. Structural constraints on the implementation of critical pedagogic processes proved to be strong impediments to delivery, and indeed, the state sought to reinforce the power of those structural constraints with the result that alternative pedagogies proved difficult to enact (an example in the United Kingdom was the way the state imposed a national curriculum and appropriate methods for teaching it by strengthening inspection, evaluation and assessment arrangements). Students also found it difficult to give voice to their own localized and immediately available experiential knowledge within the constraints of a formal curriculum and a formal process of

schooling. The concentration on class, gender and race led to an essentialised, reductionist and as a consequence over-simplified view of identity formation; and the political ideals that underpinned critical pedagogy were frequently abstracted and decontextualised so that the movement itself lost impetus. Finally, critical pedagogy never developed beyond a system of ideas so that the relationship between culture and practice was never adequately operationalised.

To these problems and issues should be added the inability of critical pedagogy to confront the post-modern attack on foundationalism, both epistemological and more importantly ethical. In turn, critical pedagogy lost ground to technicist frameworks of understanding, which allowed governments round the world to set in place organizational and pedagogic structures antithetical to critical pedagogy.

2.8   Economic Instrumentalism

Economism understands the aims and purposes of formal education as directly to produce trained workers for an efficient and effective economy, whether market-based or state-controlled. It is the reduction of all social facts and processes to economic dimensions. The term is more broadly used to denote a moral and social philosophy that interprets the whole of human life in relation to the production, acquisition, and distribution of wealth. And this has implications for the curriculum, such as the exclusion of other curricular purposes than purely economic ones.

In broad terms, instrumentalism, as a curriculum form, has a number of different guises, and even critical pedagogy, underpinned as it is by a normative model of society, can be labelled as instrumentalist. Instrumentalism has thus come to be associated with any normative view of life as the end-point and purpose of formal schooling. Economism is the most prominent of these.

In this chapter, I have identified a range of different and conflicting curriculum ideologies. In later chapters, these curriculum ideologies are compared and contrasted in relation to some of the dimensions of learning environments: teaching and learning arrangements, relations between knowledge domains, knowledge or skill orientations, knowledge framing, progression and pacing, relations between teachers and students, relations between types of learners, spatial and temporal arrangements, and criteria for evaluation.

I have also identified a preferred model of curriculum, and provided reasons for this choice. There are four ways of distinguishing between different theories or models. The first is epistemic: a theory is superior to another because it is more empirically adequate. The second is the converse, so that a version of reality is superior to another because it contains fewer contradictions, disjunctions, and aporias. A third approach focuses on the giving of reasons, and concludes that some reasons and systems of rationality are superior to others, and therefore should be preferred. A fourth approach is pragmatic: a theory is better than another because it

is more practically adequate or referenced to/part of extant frameworks of meaning. A combination of all four reasons is appropriate. The productive learning model is more coherent, more empirically adequate, better referenced to frameworks of meaning, and is underpinned by a more apt rationale than the other models. Before I provide a full treatment of these inter-related issues of knowledge and judgemental rationality, I need to examine in more detail what learning is and the different forms it can take.

Chapter 3
Theories of Learning

This chapter focuses on epistemic differences between a range of learning theories, although these differences also reflect the boundary strengths, probative force and values given to those relations and entities that constitute learning. Four examples of learning theory[1] are examined here: behaviourist, phenomenological, constructivist and materialist. In addition, two important elements of a learning theory, representation[2] and emergence,[3] are investigated, as these provide the means to distinguish between the different theories and further extend our understandings of learning.

A learning environment (or temporal and spatial locale for learning) has a number of constituents or elements. Two of these stand out. The first is the mode of representation being used, and the second is the notion of change or how one situation emerges from another, both in relation to the individual and to society. The first of these then is the representational principle. Something in nature, which is being pointed at, is convened as already known before it is represented in some medium or another. Heidegger (2002: 59), for example, suggested in relation to physics, that:

> When, therefore, physics assumes an explicitly 'mathematical' form, what this means is the following: that through and for it, in an emphatic way, something is specified in advance as that which is already known.

These characteristics and constituents are not given in nature and then represented in an unmediated form in our descriptions of them. The essence of the learning object cannot be read off from what exists in nature. There is a social dimension to knowledge-construction, but this does not eliminate the possibility of reference to a world that is separate from the way it is being described. Conceptual framings and sets of descriptors are constrained and enabled by the world or reality at the particular moment in time in which they are being used, and in turn, the constitution of the world is influenced by the types of knowledge that are being developed. Our conceptual frameworks, perspectives on the world, and descriptive languages, interpenetrate what is being called reality to such an extent that it is impossible to conceive

of a pre-schematised world (cf. Putnam 2004). Thus representation, especially in its most fundamental sense, as in correspondent theories of truth, should always be understood as fallible, and even as potentially distorting.

This is the first point and it refers to the problem of representational knowledge. The second point in relation to learning essences is the issue of emergence. There are two forms that it can take. The first is ontological and the second is temporal. In the first case, emergence refers to the powers held by a person in their life-world or of an object in that world. At the ontological level, reality is stratified and the properties of objects, including people, are emergent. This stratified reality includes level distinctions, which refer to the actual, the empirical and the real; and divisions in the intransitive world between, for example, the atomic, the molecular, the biological, the social and so forth (Bhaskar 1989). The actual refers to things and events in their concrete historical contexts, only some of which will ever be known or experienced by human beings. The empirical is related to the actual, consisting of those phenomena that are experienced by people in the world. The actual and the empirical are both real, and consequently, are a part of the third domain. But the domain of the real also includes the structures of objects, for example, the relations between their constituent parts and the emergent properties to which their structuring gives rise. Since these powers of structures, when exercised, may bring about certain effects, they can be described as generative mechanisms.

The second form emergence can take is temporal. Social objects are structured in various ways, and because of this, they possess powers (cf. Brown et al. 2002). The powers of these structures (or mechanisms) are of three types. Powers can be possessed, exercised or actualised. Objects possess powers, even if they are not triggered by external circumstances and combinations of other powers, and therefore they lie dormant. On the other hand, powers that have been exercised have been triggered and are now having an effect in an open system, and are interacting with other powers of other mechanisms within their sphere of influence. Finally, powers that have been actualised are causally efficacious within the open system they are operating in, but in this case they have not been suppressed or counteracted. Embodied, institutional or discursive structures can be possessed and not exercised or actualised, possessed and exercised, or possessed and actualised. As a result, a causal model based on constant conjunctions is rejected and replaced by a generative-productive one, and objects and relations between objects have emergent properties, including discursive objects operating in the epistemological domain.

Consequently, if the structures of a learning environment are the focus, they have to be understood as traces from the past, configurations in the present and projections into the future. In developing a theory of learning, there is a need to understand how the activity to which it refers is constituted. There are three possibilities, though they are not mutually exclusive. The first of these suggests that within the form of words being employed it is possible to establish reference points, so that the words themselves and the relations between these words refer to a learning process that de facto happened, but the one does not correspond to, or is not isomorphic with, the other. The second of these is to suggest that the form of words employed cannot represent the particularity, concreteness and materiality of an experience of learn-

ing; but, given that this is a new medium, can provide a general account of a particular learning experience, which in turn can provide us with some understanding of the object, even if this is not definitive. However, this does not indicate or point to the existence of a causal relationship. There is a third possibility which is that the form of words which collectively constitute a theory of learning can also cause something to happen at the ontological level; this is the performative function of discourse. A theory of learning then, is causally efficacious, that is, it potentially, but not necessarily, has the power to change what exists outwith it.

3.1   Delineations, Boundaries, Classifications

Learning is conditioned by an arrangement of resources, including spatial and temporal elements. These arrangements are embodied, discursive, institutional, systemic or agential, and this has implications for the types of learning that can take place. Each learning episode has socio-historical roots. What is learnt in the first place is formed in society and outside the individual. It is shaped by the life that the person is leading. It is thus both externally and internally mediated, and the form taken is determined by whether the process is cognitive, affective, meta-cognitive, conative or expressive. Thus, learning has an internalisation element where what is formally external to the learner is interiorized by the learner and a performative element where what is formally internal to the learner is exteriorized by the learner in the world. Within this framework, behaviourists,[4] complexity theorists,[5] cultural-historical activity theorists,[6] social constructivists, symbol-processing theorists,[7] socio-cultural theorists of learning,[8] actor network theorists[9] and critical realists conceptualise the various elements of learning and the relations between them in different ways.

   Wenger (2008), for example, and particularly in relation to classifications of the concept, distinguishes between psychological and social theories of learning. In the first category he places behaviourist theories focusing on behaviour modification, cognitivist theories focusing on internal cognitive structures, constructivist theories focusing on building mental structures whilst interacting with an environment, and social interaction theories that focus on interactive processes but understands them from a primarily psychological perspective. In the second category there are a series of social theories of learning. These include activity theories such as cultural-historical activity frameworks, socialisation theories such as community of learning theories (cf. Wenger 1998), and organisational theories that concern themselves both with the ways individuals learn in organisational contexts and with the ways in which organisations can be said to learn as organisations.

   A theory of learning pivots on the idea that there is an entity called for the sake of convenience a human and that this entity has a relationship (both inward and outward) with an environment (for some, this entails a post-humanising and materialising process, cf. Edwards 2015). A further complication is that any description of this process and set of relations further entails another and different set of actions

and relations. In mapping or characterizing the field, here there is a concern with epistemic differences between the range of theories presented, though these differences also focus, as I have already indicated, on the probative force and attached value given to these relations and entities. Four examples of learning theory are examined here, behaviourist, phenomenological, constructivist and materialist, and these are distinguished by their different epistemic relations.

3.2   Behaviourism

Behaviourism is a philosophical theory and has been used specifically within the discipline of education to provide an explanation for the play of social, and educational, objects in history. It makes three interrelated claims. The first of these is that if investigators are trying to understand the psychology of a human being, they shouldn't be concerned with what is in her mind but with how she behaves. The second claim is that behaviours can be fully and comprehensively explained without recourse to any form of mental construct or event. The source of these behaviours is the environment and not the mind of the individual. And the third claim which behaviourists are likely to make and which follows from the first two claims is that if mental terms are used as descriptors then they should be replaced by behavioural terms or, at least, those mental constructs should be translated into behavioural descriptors. These three claims provide the foundations for three behaviourist sub-theories: a methodological theory of behaviourism, a psychological theory of behaviourism, and an analytical theory of behaviourism.

Methodological behaviourism has its origins in the sociological theory of positivism and the philosophical theory of empiricism, which can be understood as having the following characteristics: determinacy (there is a singular truth which can be known); rationality (there are no contradictory explanations); impersonality (the more objective and the less subjective the better); verificationism (the meaning of statements about human behaviours and their origins are understood in terms of observational or experimental data); and prediction (explanations of human behaviours are knowledge claims formulated as generalisations from which predictions can be made, and events and phenomena controlled). John Watson (1930: 11), one of the originators of behaviourism, in this vein wrote as follows in relation to the purposes of investigating human behaviour: 'to predict, given the stimulus, what reaction will take place; or, given the reaction, state what the situation or stimulus is that has caused the reaction'. Psychological behaviourism has its roots in British empiricism and in particular in the associational theory of David Hume. Observed or experimentally-induced associations allow the investigator to uncover causal structures on the basis of processes of spatio-temporal contiguity, succession and constant conjunction. Learning is therefore understood as associational without recourse to mental states or events, with an emphasis on the reinforcement histories of subjects. For psychological behaviourists any reference to experiences (especially if couched in the language of mental states or events) should be replaced by

observations of events in the environment; and references to thoughts, ideas, or schemata should be replaced by references to overt observable behaviours and responses to stimuli. Analytical behaviourism, whilst sharing many of the elements of methodological and psychological behaviourism, in addition, has the advantage that it avoids what has come to be known as substance dualism; that is, the belief that mental states take place in, and should be treated as separate from, non-physical mental substances, and yet are causally efficacious, especially with regards to events in the material world.

Behaviourism as a theory of learning then suffers from a number of misconceptions. Because of its strictures against immaterial mental substances, agents endowed with the capacity to operate outside of embodied, socially-derived or genetic causal impulses, reasons being conceived as causes of human behaviour, intentionality as a central element in any theory of human behaviour, and the internal conversation in learning (cf. Archer 2007), behaviourism is now rarely thought of as a coherent or convincing theory of learning. A number of problems with it have been identified, and perhaps the most important of these is the claim that a theory of human learning is not sufficient unless reference is made to non-behavioural mental states, whether these are cognitive, representational or interpretive. In particular, this refers to the way an individual represents the world in relation to how they have done so in the past, and how this is conditioned by institutional, systemic, embodied and discursive structures; stories, narratives, arguments, and chronologies; and structures of agency. A second reason for rejecting behaviourism is the existence of internal or inner processing activities. We feel, intuit, experience, and are aware of, our own inner mental states in the learning process. To reduce these phenomenal qualities to behaviours or dispositions to behave is to ignore the immediacy and instantaneous nature of those processes which condition learning. Finally, it is suggested that reducing learning to individual reinforcement histories is to develop an impoverished or incomplete theory, and consequently marginalise pre-existing structures, developed schemata, complex inner lives, prior representations, and structural enablements and constraints, which allow learning to take place.

3.3 Phenomenology

In contrast to behaviourist perspectives on learning there are phenomenological approaches. Phenomenology is a meta-philosophy that focuses on the three key aspects of learning, the relationship of the individual to and with the world involving a process of change, the subsequent conception and activation of being in the world, and how our descriptions, words, schema and theories can provide us with some purchase on that world. The focus is on the givens of immediate experience and this is an attempt to capture that experience as it is lived, both by the individual them self and the external observer. This knowledge-making activity is directed in the first instance to the things in themselves that are the objects of consciousness,

and that try to find 'a first opening' (Merleau-Ponty 1962 [1945]) on the world, free of those presuppositions brought to any learning setting. This entails a learning methodology which foregrounds subjective experiences and understands them in their own terms, both linguistically and conceptually, whilst at the same time treating these two modes separately. This presupposes that the experience of others is accessible to us, even if with the greatest of difficulty. And this points to the break with behaviourism that phenomenologists generated. Whereas behaviourists were concerned above all with the behaviour of individuals and eschewed the inner workings of the mind, phenomenologists understood behaviour and consciousness as essential to any theory of learning. They are different aspects of the same phenomena; the world as it is lived by the individual and as it is known by that individual and others.

A variety of key terms are used by phenomenological meta-theorists. The first of these is a bracketing or suspending of our everyday understandings, beliefs and habitual modes of thought. This involves the bracketing out of our facticity (a belief in the factual characteristics of objects) and transferring our focus to our experience. This complements the epoche where we learn (through a process of change) to see (because this is more truthful) only what is given directly in consciousness. The phenomenological reduction then is this attempt to suspend self and other viewpoints and already conceived perspectives on the world.

A number of distinct phenomenological learning approaches have been developed: individualist, situated structural descriptive, dialogical and hermeneutic. The first of these, the individualist strand, comprises a process of introspection, where the learner assumes an external viewpoint in relation to herself and tries to understand her experiences from this external perspective. The second of these is a situated structural descriptive or empirical approach to learning. Here the learner looks for commonalities in the many appearances of the phenomenon, which is the object of the investigation. Beliefs are understood in most circumstances as causes of behaviours. Dialogical phenomenology is a pedagogic approach, which prioritises personal and structural change delivered through bracketing and the epoche. Hermeneutic phenomenology is concerned with understanding texts and in the first instance the learner seeks to understand and acknowledge the implicit assumptions she makes in relation to the text and her bracketing out of these presumptions.

3.4 Constructivist Theories of Learning

There is a range of theories that might be labelled as constructivist. In contrast to phenomenological perspectives, Jerome Bruner (1996) distinguishes between symbol-processing views of learning, which he rejects, and socio-cultural or constructivist views of learning. Typically he avoids taking up a position in which these two theories of learning are seen as polar opposites, so that if one position is advocated, any reference to the other is excluded. However, he does want to draw clear

lines and boundaries between them. The first of these theories, the computational or symbol-processing view, conceptualises learning as a three-fold process of sorting, storing and retrieving coded information which has been received from an external source, and this mirrors the way a computer processes data. The mind is a tabula rasa, and learning comes from experience and perception. Information or data is inputted into the mind, and this consists of pre-digested facts about the world, which represent in a clear and unambiguous way how the world works. The theory of mind that this represents conceptualises each act of learning in input and output terms, and this assimilative process means that, as a result of the learning process, adjustments are made to the store of facts and theories that the person already holds, in the light of new information that the learner receives. This is a mechanistic process, and the notion of interpretation is subsequently reduced to the assimilation of new information and the reformulation of the mind-set of the learner. Learning is understood as a passive reflection of the world, with particular learning episodes being understood as more or less efficiently realised.

Symbol processing approaches have their origins in the philosophical theory of empiricism, proponents of which understand the world as given and then received by individual minds. This theoretical framework separates out language from reality, mind from body and the individual from society (cf. Bredo 1999). The first of these, the language-reality split, suggests that facts can be collected about the world, which are atheoretic and separate from the belief systems of the collector. These facts are understood as true statements about the world. Furthermore, the theory of learning which emanates from this points to the need to discover what they are, and then develop appropriate models to explain them. The claim being made here is that language is a transparent medium and has the capacity to faithfully represent what is external to it. There is, however, a more appropriate solution to the problem of the relationship between mind and reality and this is that representations of reality are not given in a prior sense because of the nature of reality, or because the mind is constructed in a certain way, but as a result of individual human beings actively constructing and reconstructing that reality in conjunction with other human beings, some contemporary, some long since dead. This brings to the fore the dispute between constructivists and situated cognitivists, in that the former suggest that this active process of learning occurs in the mind, while the latter locate the process of categorising, classifying and framing the world in society and not in individual minds.

Symbol-processing approaches to cognition also suggest a further dualism, between mind and body. This separation of mind and body locates learning and cognition in the mind, as it passively receives from the bodily senses information that it then processes. The mind is conceived of as separate from the material body and from the environment in which the body is located. Learning is understood as a passive process of acquiring information from the environment. Socio-cultural theorists take issue with the supposed passivity of the process, and want to build into it active and transformatory elements. There is a third dualism that critics of symbol-processing approaches have suggested is problematic. This is the separation of the

individual from society. If a learner is given a task to complete, they have to figure out for themselves what the problem is and how it can be solved. The task is framed by a set of social assumptions made by the teacher. The problem with the symbol-processing view is that an assumption is made that the task and the way it can be solved are understood in the same way by both the learner and the teacher. However, this is an assumption which shouldn't be made, and one of the consequences of making it is that the learner who then fails to solve the problem is considered to be inadequate in some specified way, rather than someone who has reconfigured or interpreted the problem in a way which is incongruent with that of the teacher or observer. The individual/civic distinction, which is central to a symbol-processing view of cognition, separates out individual mental operations from the construction of knowledge by communities of people and this leaves it incomplete as a theory of learning.

Winogrand and Flores (1986: 73) suggest that the symbol-processing approach has the following characteristics:

> At its simplest, the rationalistic (i.e. symbol-processing) view accepts the existence of an objective reality made up of things bearing properties and entering into relations. A cognitive being 'gathers information' about these things and builds up a 'mental model', which will be in some respects correct (a faithful representation of reality) and in other respects incorrect. Knowledge is a storehouse of representations, which can be called upon for use in reasoning and which can be translated into language. Thinking is a process of manipulating representations.

This symbol-processing or computational view of learning can be compared with learning theories which foreground cultural aspects, situated or embedded in society. Situated-cognition or socio-cultural theories of learning view the person and the environment as mutually constructed and mutually constructing. As a result they stress active, transformative and relational dimensions to learning; indeed they understand learning as contextualised.

A particular iteration of social-cultural or constructivist theories is cultural-historical activity theory. That there now is a three-generation model of cultural-historical activity theory is part of its formation as an established theory. This and each generation of activity theory can be understood in two distinct ways. The first is in terms of its historical trajectory, so it is possible to understand Lev Vygotsky's theory of mediation as a reaction against what it emerged from, i.e. it sought to replace the stimulus–response model of the behaviourists because it became apparent that there were aporias, gaps, contradictions and muddles in the theory itself (the theory in short was inadequate); or it can be understood as an attempt to frame the concept as a universalising category. Both of these versions have meta-theoretical and thus universalising elements, insofar as the first requires a theory of history and the second requires a theory of social psychology. However, these universalising elements are framed in different ways.

The first generation of Cultural-Historical Activity Theory was inspired by Vygotsky, and as its centrepiece had the well-known triangular model of subject, object and mediating artefact. When people engage in a learning activity (and in a sense this constitutes the principal activity of consciousness) they do so by interact-

ing with the material world around them (though here the material world is embodied, structured and discursive). What they are doing is entering into a social practice, which is mediated by artefacts. This needs to be qualified in two ways: there cannot be an unmediated practice, so, for example, a discursive practice cannot be atheoretic, and that as a consequence it is not possible to have direct access to the practice itself; indeed, it is difficult to understand the idea of a practice which is separate from the way it is mediated for us. For Vygotsky, our contacts with people and the environment are mediated by artefacts, such as physical tools, technologies, or social norms. This in turn led Vygotsky to a preoccupation with the notion of meaning and thus to the development of a notion of semiotic mediation and in particular to a rejection of the behaviourist paradigm, which posited a passive object-to-subject relationship.

Learning can be seen as adaptive rather than transformative, and Vygotsky's work has always been associated with the latter rather the former. However, the notions of adaptation and transformation are complex. The idea of adaptation would suggest that what is learnt conforms to those sets of behaviours, norms and strategies which constitute the social world, and which are external to the learner. The learner enters into a state of equilibrium, so that what is inside the mind of the learner (this changes) is now synchronised with what is outside the mind of the learner (which hasn't undergone any change at all). On the other hand, a transformative approach would suggest that both the mind of the learner and the object in the environment have changed. What this implies is not that one theory is misguided and should be replaced by another – a better account of a practice – but that there is a need to build into the theory being developed the possibility that some learning is adaptive and some is transformatory.

Four issues are of concern here. The first relates to whether meaning resides in the object itself or is created in conjunction with or through the interaction between subject and object. The second relates to the idealist tendencies in Vygotsky's thought (cf. Backhurst 2009). The third issue is that all these mediating devices are expected to work in the same way, even though they have different grammars and constitutions. And what follows from this, specifically in relation to learning, is that it is hard to believe that every interaction has an equal possibility of influencing and thus changing the zeitgeist or at least the learning environment. For Vygotsky the focus of his analysis was tool mediation and the activity system where these mediations occurred, rather than the individual per se. However, what is being suggested here is that this activity can be transformational both for the system (or learning environment) and for the individual, but not in every circumstance.

The second generation of cultural historical activity theory (cf. Engeström 2001) is usually though not necessarily associated with the development of the original theory by Alexei Leontiev, and in particular, his elaboration of the concept of activity, so that a distinction is now drawn between an action and an activity. An action is said to be motivated by the intentionality of the person: the person has an object or objective in mind; an activity is understood as undertaken by a community and thus has some of the characteristics of that community, i.e. a division of labour,

various means of production and so forth. Leontiev (1978: 10) argued for his notion of activity in the following way:

> In all its varied forms, the activity of the human individual is a system set within a system of social relations. [……….] Human activity is not a relation between a person and a society that confronts him. [….] A person does not simply find external conditions to which he must adapt his activity, but, rather, these very social conditions bear within themselves the motives and goals of his activity, its means and modes.

This still leaves many unanswered questions about both the mind-world relation and the way both of these and the relationship between them is transformed.

Five principles underpin the third iteration of cultural-historical activity theory, and in its articulation it is possible to discern its Marxist and Vygotskyian origins (Engeström 2001: 136). The first principle is that the activity system is central to the process of learning, that activity system being collective, artefact-mediated, object-orientated and networked with other activity systems. This constitutes the primary focus of analysis. The second principle emphasises the way the activity system is stratified, historicised (traces of other human activity are present), and multiply-layered. The third principle is that activity systems are in a state of constant flux and thus are transformed as they are shaped. The fourth principle is that a notion of contradiction is central to the transformation of the activity system. These contradictions are both internal and external to the activity system being examined, and, as Engeström (ibid.) reminds us, they are 'not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems. […] Activities are open systems. When an activity system adopts a new element from the outside … it often leads to an aggravated secondary contradiction where some old element … collides with the new one. Such contradictions generate disturbances and conflicts, but also innovative attempts to change the activity'. Finally, the fifth principle suggests that activity systems move through long cycles of change, as the internal and external contradictions lead to and indeed cause individual and collective changes. This is what he refers to as 'expansive transformation', and a full cycle 'is the distance between the present day everyday actions of …. individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potential embedded in … everyday actions' (Engeström 1987: 174).

An influential learning theory derived from, and with clear connections to, first generation socio-cultural activity theory is social constructivism. This is both a theory of mind as well as a theory of learning; so that learning is constructed in relation to and as a necessary element of the theory of mind that underpins it. In opposition to a belief in a mind-independent reality, strong social constructivists avoid epistemically-based commitments, and locate truth-forming mechanisms, justificationary rationales, and the means for determining that one type of knowledge is superior to another, in specific discursive formations, which have no external referents. What is being suggested here is that any truth claim comes from and indeed comes about as a result of agreements reached in society by influential and important individuals and groups of these individuals located in history; that is, what

determines the validity of any argument about knowledge is power arrangements in society. And what this means is that different knowledge claims, where one claim is considered to be more true, more adequate or more reliable, than another, are not acceptable, nor are knowledge claims which are underpinned by metaphysics, rationality, logic, essentialism (in particular, an essential human nature), or even intuition (direct non-discursive access to the real – a Platonic position). Knowledge is developed through contestations and struggles in the past and in the present about the means for distinguishing true from false statements, and thus knowledge and those apparatus and technologies that act to legitimise them come about through the contingencies of history.

Social constructivists hold to a belief that representations of both physical and social objects are social constructs. So, for example, if an investigation is being undertaken into the issue of gender in educational settings, then a moderate social constructivist (insofar as they subscribe to some but not all of the ascribed characteristics of the belief system) would argue that it is only social actors' representations or conceptions of gender which are socially constructed. On the other hand, a strong social constructivist would assert that both the representations made by individuals and the referents of those representations, the actual entities to which these representations refer, are socially constructed. A moderate social constructivist would accept that reality (at the ontological level) can exert an influence on the way it is represented (at the epistemological level), though this is not isomorphic with, or a mirror image of, what it is meant to represent. A strong social constructivist would argue, in contrast, that what it is that is being represented is either fictitious or fabricated, and thus has no reality outside of, and external to, how it is represented. Some strong social constructivists go so far as to extend this extreme form of idealism to the physical world and the project of science (cf. Barnes et al. 1996).

Social realists argue for a position that separates out the nature of reality from it being socially constructed. In other words, an object can be a social construction, or at least has been constructed in the past, and yet still be real, in that it exists as a social object regardless of whether a knower is engaged in the act of knowing it. Objects and relations between objects change their form. An example of this change process at the epistemological level is the invention (insofar as the set of concepts and relations between them is new) of the notion of probability (cf. Hacking 1990, 2000) in the nineteenth century, and this changed the way social objects could be conceived and ultimately arranged. Change then can occur in four ways: contingent ontological, planned ontological, epistemically-driven ontological, and in the transitive realm of knowledge, epistemological (cf. Scott 2010). With regards to the example above, the invention of probability, two phases of change can be identified. The first is where knowledge is created and thus operates at the epistemological level – the new arrangement of knowledge. The second is where this knowledge has real effects at the ontological level, so that new arrangements, new formations, new assemblages come into being. This last is an example of epistemically-driven ontological change. The dilemma is that the social world, in contrast to the physical world, is always in a state of transition and flux, so that it is hard to argue that there

are invariant laws by which the world works, at all times and in all places, except in a basic logical and rational sense.

Ian Hacking (2000: 20) has written extensively on the case for something to be thought of as socially constructed. He suggests that two conditions have to be met. The first of these is that '(i)n the present state of affairs, X is taken for granted; X appears to be inevitable' (ibid.). However, the second is a necessary part of the equation: 'X need *not* have existed, or need *not* be at all as it is. X, or X as it is at present, is *not* determined by the nature of things; it is *not* inevitable' (ibid.). Further to this, he suggests that the following claims are implied by the use of the term: 'X is quite bad as it is' (ibid.); and '(w)e would be much better off if X were done away with, or at least radically transformed' (ibid.). The point is that if these embodied, institutional and discursive structures could be shown to be merely social constructions and thus arbitrary, then in principle they could be changed or amended. The problem then is that any replacements are also likely to be arbitrary, given that their justification is of the same type and has the same status.

3.5 Post-Human, Actor-Network and Complexity Theories of Learning

What distinguishes a complexity theory of learning from conventional theories is the different foci of researchers and investigators, so that it is now the flows and relations between objects rather than the objects themselves which solicit our attention (cf. Davis and Sumara 2006). Complexity theorists generally subscribe to a version of emergence, which I identified at the beginning of this chapter as temporal emergence; society is characterised by notions of continuous emanation, flux and change, which though non-predictive, can be adequately captured in language. Objects in the world cannot be characterised by their essential qualities, but only through their interactions with other objects. Complexity resides in all these various interactions which produce new objects (characterised as different forms of structure), and results in a bewildering array of arrangements of material and human objects; and because they are difficult to characterise rarely allow definitive accounts of what is going on to be produced. It is the complexity of these object-interactions and their subsequent and temporary coalescences that makes it difficult to provide complete descriptions of them. The epistemic level is unsynchronised with the ontological level because researchers and investigators have not developed sufficiently their instruments and conceptual schema for capturing something that is both everchanging and has too many elements to it, i.e. it is too complex. However, this doesn't categorically rule out the possibility of providing more complete descriptions of events, structures, mechanisms and their relations in the world, and this suggests a notion of human fallibility which means that our actions (which correspond to learning episodes) are corrigible. The twin elements of complexity and temporal emergence (where systemic formations are understood as not incommensurable) cannot preclude correct descriptions being made of activities in the world,

only that these elements can create considerable difficulties. This is further compounded by how emergence operates ontologically.

Many of these theorists go further than this (for example, Osberg and Biesta 2007), and hold to a version of emergence in which there is a radical incommensurability between different formations over time (whether material, embodied or discursive). Furthermore, it is impossible to predict what inter-connections, new formations, and iterations of the object-system will be realised because the principles of the new mechanism are not given in the current arrangements. In other words, the relations between objects and the objects themselves, which make up activity systems, are not patterned in any meaningful sense; there is a radical incommensurability between these different iterations. What this also suggests is that any attempt to describe even the basic outline of the system and the way it works is incompatible with this idea of radical incommensurability. For example, the autopoetic principle (Maturana and Varela 1987) cannot coexist with radical incommensurability and chaos theory. In a similar way, localism, historicity, holism, organisational necessity, complex causality, logical circularity, non-linear dynamics and uncertainty, positive feedback, self-organisation and inter-connected diversity, are all principles which pertain to and indeed define complex systems (Alhadeff-Jones 2010); but which act to order our understandings of these complex systems and thus in part contradict the more important principles of radical incommensurability and chaos.

It is possible to focus on the formations, but not on the way they were formed. This operates at the ontological level. In other words, though one formation, it is acknowledged, has emerged from a concatenation of others (prior to it in time), this process cannot be codified or captured symbolically (using words, numbers or pictures) except by using words such as chance, non-linearity, or non-predictability. However, each of these, as I have already acknowledged, is contested conceptually. Because something is non-predictable at the time it operates does not mean that it cannot be described after it has happened; a post-hoc theorisation of the object or arrangement. Non-linearity implies that the sequence of events has not followed the accepted pattern whether this has been deduced from previous occurrences or from logical and normative investigations, i.e. what should happen if X is transformed into Y, if certain logical canons are adhered to. Chance by virtue of what it is precludes an explanation of it.

Actor Network Theorists argue for a symmetricality of human and non-human elements, which means that at the level of analysis they should be treated in the same way. This has the effect of marginalising the hermeneutic dimension of learning, and fits better a structuralist and materialist ontology. The intention is to understand history not as the outcomes of originary actions by individuals or collectivities of individuals, but as sets of material objects (human and non-human) coalescing and working together. It is the networks, confluences, collective action sets that produce the conditions of action.[9] What follows from this is that the contents of these networks and the inevitability of flux and change as essential elements are likely to mean that our descriptions of them are incomplete and fragmentary. However, what applies to the networks and assemblages themselves and to the

relations between them, also applies to the meta-theory itself. Thus notions of symmetry, translation, problematisation, interessement, immutable mobility, delegation, multiple-perspectivism and actor-networking should be understood as incomplete and undeveloped as the theorist tries to plot what is happening and what has happened.

Translation is the process by which entities come together to form networks, assemblages and the like. Fenwick et al. (2011: 98) argue that an entity 'is a loose way to refer to various things that can be entanglings of human and non-human, including different kinds of material things and immaterial (conceptual, moral, virtual) things and actions, that are not pre-given, essentialised and defined'. The problem of symmetricality is foregrounded here, as this does not allow different entities and therefore different networks to potentially have different effects because they have different grammars and different capacities to influence the internal and external relations of a network or assemblage. By forgoing boundary and capacity analysis, the investigator is left bereft of explanatory tools.

Actor network theorising cannot then, amount to an argument in favour of social patterning or systemic predictability. Actor network theorists have argued against treating those traditional educational constructs and forms, such as curriculum, learning, leadership, management, standards, etc., as stable, expressing their opposition to the conventional understandings of these terms by pointing to the emergent and unstable ontology of material, discursive and human objects, and the need to move away from prioritising intentionality and therefore human agency over other objects in the world. Determinism would imply in its strongest form that our thoughts, feelings and subsequent behaviours do not deviate from the impulsions laid down in our genetic make-up or in customised knowledge within our bodies or in the social arrangements (i.e. embodied, discursive, agential, institutional and systemic) that constitute our lives. However, if we want to build in a notion of agency, then we have to believe that our cognitive and volitional capacities can operate without recourse to, and outside of, those causal impulses that come from these determining impulses. Furthermore, if we hold to a belief that our cognitive and volitional capacities are inextricably tied to our genetically-determined, embodied or socially-determined impulses, then it follows that our capacity to determine whether or not we are being deceived, i.e. our capacity to tell the truth or not about our fundamental belief in determinism, is thoroughly compromised. Agency therefore involves a set of activities that are not caused or influenced by those impulses that emanate from our genetic, embodied or social beings; that is, they do not involve an affirmation or a negation of them or even a reaction against them.

By disprivileging the agential and giving it equal status to other objects, action network theorists are making a point about what happens in the world. They are implicitly if not explicitly arguing not just that as theorists they should foreground something other than human agency, i.e. the relations between different networks of human and non-human material objects, but that this allows a better purchase on the world than theories which privilege an essentialised version of the human being and their relations.

All discussions of a person over time require some understanding of change; that is, the notion of change is built into the conception of the human being. There is also the problem of persistence. If there was no cohering element between time moments, so that every moment entailed a change of person, we would not have a sense of personhood, which therefore has to include a notion of persistence over time, and, in addition, has a notion of emergence. And this is emergence understood in its two modes: as a temporal phenomenon and ontologically as a response to the stratified nature of reality.

This sense of agency, structured in different spatial and temporal ways, allows and conditions the various acts of learning. Charles Taylor (1998: 12) writes about this sense of agency and its differential structuring in the following way:

> So autonomy has a central place in our understanding of respect. So much is generally agreed. Beyond this lie various rich pictures of human nature and our predicament, which offer reasons for this demand. These include, for instance, a notion of ourselves as disengaged subjects, breaking free from a comfortable but illusory sense of immersion in nature, and objectifying the world around us; or the Kantian picture of ourselves as pure rational agents; or the romantic picture ……., where we understand ourselves in terms of organic metaphors and a concept of self-expression. As is well known the partisans of these different views are in sharp conflict with each other.

A theory of learning pivots on the idea that there is an entity called for the sake of convenience a human and that this entity has a relationship (both inward and outward) with an environment. Four theories, which give different emphases to these elements have been examined here: behaviourist, phenomenological, constructivist and materialist. In characterizing the field, there has been a concern with epistemic differences between the principal theories of learning, and therefore inevitably also with the strength, probative force and attached value given to those relations and entities. This is the way the field is constructed. However, there are two implications of this. The first is that because the field has been constructed in a particular way this doesn't then preclude choices being made between these different theories (Indeed, I have been making choices throughout by characterizing each theory in a particular way and by offering an immanent critique of each). And secondly, these choices are underpinned by a particular theory of knowledge, which is developed in the next chapter, and which also has implications for the development of a theory of curriculum in which knowledge plays such an important part. In the next chapter, I examine the knowledge element of the curriculum, and suggest that learning is a knowledge-development activity.

Chapter 4
Knowledge and the Curriculum

This chapter focuses on knowledge and how it relates to the school curriculum, with the argument being made that a curriculum, and a set of curriculum standards, is necessarily framed by a theory of knowledge, whether this is acknowledged or not. Indeed, it would be difficult to think about learning and the curriculum without also at the same time making reference to what is to be learned, in other words, the learning object or objects. And therefore our aim as curriculum-developers and educators becomes the development of some form of knowledge, and in turn this points to the many different types of knowledge that can come from learning. The issues of how knowledge is transformed at the pedagogic and evaluative sites, and the relationship between these three sites, are also briefly addressed here, though a fuller account is offered in the chapter that follows. A curriculum, which is a set of teaching and learning prescriptions, is a knowledge-forming activity. However, this cannot settle the issue of what should be included in that curriculum and what should be excluded from it. And in addition, there is still a need to determine what might constitute legitimate and illegitimate forms of knowledge.[1,2]

In this chapter, I identify a number of approaches or theories which have tried to answer the question as to what knowledge is (its function, its constitution, its genealogy and its rationale), and though parts of these theories are understood as useful for the task in hand, I suggest that on their own they do not amount to a complete theory of knowledge and therefore of learning. However, elements of each of these frameworks can contribute to a coherent and comprehensive theory of knowledge and subsequently provide a reason or set of reasons as to why a curriculum should include some items and exclude others, and what shape and form it should take.

Axiomatically then, a school curriculum is always a selection from a range of cognitions, skills or dispositions that are available within a society; that is, these are being, or have been, manifested in human practices of a discursive, institutional, agential or embodied kind. Michael Oakshott reminds us of the importance of locating these selections in the continuing conversation that human kind has with itself and with those who are being initiated into the best of these selections. The mind

reaches its full potential only through participation in the culture, and the conversation, to use Oakshott's terminology, that sustains it:

> As civilised human beings we are the inheritors, neither of an inquiry about ourselves and the world, nor of an accumulating body of information, but of a conversation, begun in the primeval forests and extended and made more articulate in the course of centuries. It is a conversation that which goes on both in public and within each of ourselves. [……] Education, properly speaking, is an initiation into the skill and partnership of this conversation in which we learn to recognise the voices, to distinguish the occasions of utterance, and in which we acquire the intellectual and moral habits appropriate to conversation. And it is this conversation which, in the end, gives place and character to every human utterance. (Oakeshott 1962: 198–199)

Choices also have to be made as to how a curriculum is constructed, i.e. what relations are considered to be appropriate between the contents of the curriculum, its pedagogic forms, its learning strategies, and its evaluative criteria and apparatus. These choices of cognitions, skills and dispositions then, if they are to be considered reasonable, or at least in Sellars' (1997: 89) terms able to be placed within 'the logical space of reasons', require a justification or rationale for them as curricular contents.

Knowledge is fundamental to the three types of learning identified in Chap. 2: cognitive, skill-based and dispositional. Cognition comprises the manipulation of those symbolic resources (words, numbers, pictures etc.), which points to (though not necessarily in a mirroring or isomorphic sense) something outside itself, though the referent might also be construed as internally-related (for example, cf. Brandom 2000). Skill-based knowledge is different from cognition because it is procedural and not declarative; though the competency curriculum that underpins an international comparative system of testing such as the *Programme for International Student Assessment* (PISA) (OECD 2009b) would mistakenly reject this distinction and its designation as an activity fundamentally concerned with knowledge and knowledge-development. Distinguishing between knowledge of how to do something and knowledge of something is important but both are in essence knowledge-making activities. Dispositional knowledge refers to relatively stable habits of mind and body, sensitivities to occasion and participation repertoires. These three types of knowledge therefore have different forms in their original states and as a result different pedagogic structures, and different expressive or performative modes; and can only be assessed functionally in relation to their different internal relations; that is, there have to be different ways of assessing or evaluating them.

Any knowledge-forming activity, whether cognitive, skill-based or dispositional, needs a reason or set of reasons as to why the production of this form of knowledge should be preferred to the production of other possible forms. In order to provide a rationale or justification for these inclusions and exclusions, it is important to determine what that knowledge is and how it is constituted. This activity involves the acceptance of certain types of knowledge and the subsequent rejection of others. For example, knowledge which is understood as being determinate, rational, impersonal and predictive is fundamentally different from knowledge which is retroductively produced, and referenced to a social world which is stratified, open and has onto-

logical depth (cf. Bhaskar 2010), and thus a belief in both of these at the same time is difficult to sustain. Another example refers to the nature of knowledge, and, in particular, whether it is individual or social. Standard epistemology construes the conditions for justified belief in individualist terms, rather than placing it within social contexts. This can be contrasted with social epistemologies (cf. Vygotsky 1987), which prioritise the social over the individual.

Knowledge, whether the reference is to its essence, its legitimacy or its genealogy, is contested and therefore requires choices to be made between these different formulations, conceptions and arrangements. This in turn has implications for the types of pedagogy that can be employed and the types of evaluative procedures that should be adopted. This is predicated on an assumption that learning per se is always about learning something which might be called knowledge; binding knowledge and learning closely together then is an acknowledgement that knowledge can be declarative, procedural or embodied and that in its production it can be construed as a learning activity. The next step is to examine the set of knowledge perspectives that have been developed.

4.1 Foundationalism

A common argument that purportedly allows one to distinguish between legitimate and illegitimate items in a curriculum is foundationalist in orientation. Foundationalist views of epistemology were developed to combat the radical sceptic's argument that human beings can have no security in their beliefs about the world or that absolute knowledge is fundamentally impossible. If they subscribe to a relativist epistemology with the implication that this is all there is, i.e. their descriptions of reality are relative to particular and specific time- and space-bound sets of ideas in the world, and if they further accept that it is not possible to make theory- or schema-free observational statements, then reality itself can have no restraining function on how they acquire knowledge of it, and what ultimately that knowledge is. This means that there may be a number of different ways of knowing the world and no means of distinguishing between them.

Classical or demonstrative conceptions of foundationalism insist that any justification for the truth of an educational proposition rests on identifying those sets of basic principles that underpin subsequent statements about the matter in hand, and the relevant inferences that allows the researcher to move from premise to conclusion. These basic principles or beliefs must be self-evident, and not in need of any further justification, if they are to qualify as foundational principles. This strong foundationalist view therefore comprises a process of identifying self-evident truths, which only those human beings with a defective perceptual apparatus cannot recognise. Note that these fundamental and self-evident truths are not subject to argument, development or agreement, except in so far as those advocating them might choose to exclude those they consider to have a defective sensibility; they literally

present themselves to the normal person and provide the means by which a foundational structure can be built.

Epistemic foundationalism has two forms. The first of these is structural (cf. Williams 2001), and this is where beliefs are said to be basic when no further evidence is needed to justify them, or those beliefs are inferentially connected to other beliefs which are either basic or not in need of any further justification. The second, substantive foundationalism, again according to Williams (2001: 164), has all the characteristics of structural foundationalism, and in addition, is epistemically basic, because such beliefs are 'intrinsically credible or self-evidencing'. What this means is that for a foundational belief to be substantive, it requires no further justification and no further evidence to support it. In effect, it plays the end-role in any chain of justification, and there is nowhere else to go if such a justification is sought.

4.2 Instrumentalism

A different type of justification for the inclusion of items in a curriculum rejects foundationalist justifications, and suggests that any rationale for the contents of a curriculum has to rest with some conception of what is trying to be achieved in the delivery of that curriculum. As a result, children in formal education, having been through a process of successful exposure to this curriculum, are acquainted with certain designated types of knowledge, have developed certain designated skills, and have acquired certain dispositions, which, it is argued, allow them to lead a fulfilled life, and which also allow everyone else within that society to lead a fulfilled life. This justification is clearly normative and instrumental. What this implies is that a set of experiences can be identified which a child is exposed to and that these lead inexorably to the development of knowledge constructs, skills and dispositions which can be utilized by the individual outside of (in time and place) the learning environment. There are two principal problems with this approach: it is difficult to identify and reach agreement about what the good life for all is, or at least a life for all which allows everyone to be fulfilled; and there is an equal difficulty with identifying experiences for children in school which will lead to the development of knowledge constructs, skills and dispositions so as to allow the individual to lead a fulfilled life when they leave school (cf. Michael Reiss's and John White's Aims-Based Curriculum 2012).

As I suggested in Chap. 2, a variety of instrumentalist curriculum rationales have been developed, such as autonomous instrumentalism, critical instrumentalism and economic instrumentalism. Instrumentalism denotes a view of the curriculum that makes reference to a future state of affairs for the learner which is external to the setting in which the learning is taking place. Autonomous instrumentalism refers to a view of the curriculum in which pedagogic arrangements, knowledge or skill orientations, knowledge framing, relations between knowledge domains, progression and pacing in the learning environment, relations between the teacher and learner, relations between types of learners, spatial and temporal arrangements, and criteria

for evaluation are determined by the principle that the end-product is an autonomous individual, or at least an individual who is able to exercise their autonomy, even if they choose not to or are prevented from doing so. Critical instrumentalism, in contrast, as a rationale for a curriculum and its internal relations, seeks to eliminate from society sources of inequality and unfairness. The purpose is therefore indubitably normative. Economic forms of instrumentalism prioritise the economic over other functions in society (see, for example, the California Career Technical Education Model Curriculum Standards 2006).

These different versions of instrumentalism, though rooted in different value-systems and educational rationales, have a similar form. There are three stages in their formation. A preferred vision of society and the conditions for the existence of such a society are identified. The role and purposes of the education system, and the contents and form that a curriculum should take to realise these ends, are clarified; and finally, after the most effective means for the delivery of those ends have been identified, they are enacted, resulting in changes to existing curricular forms and subsequently to changes in society.

4.3   Pragmatic Arguments

A further rationale for the curriculum is provided by those who subscribe to a pragmatist philosophy, a version of which has come to be known as inferentialism (cf. Brandom 2000). Jan Derry (2013: 232), as an advocate for this inferential philosophy, suggests that:

> the gist of the argument is that in order to make a claim of knowing we are not, as commonly thought, giving a description of an event but placing our claims about it in a space of reasons – that is to say, making claims on the basis of knowing what follows from them and what it is necessary to assume in order to make them in the first place. Where a word is used without the user being aware of its conceptual connections to other concepts, these connections are still present.

This places knowledge within networks of meaning that are social in character and historical in origin.

There are a number of other knowledge frameworks that broadly can be thought of as pragmatic (in a philosophical sense). Peirce's (1982) pragmatic maxim was that any theory of meaning takes as axiomatic that the content of a proposition is the experienced difference between it being true or false. Truth is therefore understood in terms of the practical effects of what is believed, and particularly, how useful it is. The concept of usefulness is and can be used in a number of different ways, i.e. making a set of propositions more coherent or consistent, or alleviating some need in the world, or fulfilling a personal desire, or moving from one state to another.

A further version of pragmatism is that something is true if it enables that person to say that this mechanism or sequence of activities will happen or can be sustained in other situations than those in which it is being applied. It therefore has an external validity dimension. This points to the idea that something is true if it works; and this

immediately presents itself as problematic because a further justification needs to be provided as to whether what works is ethically sound or has consequences which can be judged to be ethically sound. Furthermore, any theory that incorporates an external element is realist in principle, even if this begs the question as to what type of realism is being advocated.

A final pragmatic justification then is that a rationale for including an item in a curriculum and excluding another rests on the consequences of it becoming a part of that curriculum and on how that curriculum operates in practice; so a judgement is made between two different items on the ground that the one is more likely to be useful than the other. It should be noted here that an epistemic judgement (in the traditional sense, and where this refers to a true or false proposition) is being replaced by a pragmatic judgement about efficacy, though in this case a different type of truth theory is being invoked. As a result, it is possible to argue that an item should be included in the curriculum because it is more practically adequate, that is, human practices within which it is subsumed work in a better way as a result of its inclusion. The issue still remains as to what might constitute successful work, or, to put it another way, what criteria can be used to judge whether the practical adequacy of one practice is superior to another. This can only be resolved by arguing that the one theory contributes to a better way of life than the other, and that this better way of life is determined by preferences of people in society and instantiated through current networks of power. The problem with this is that those sets of indicators that determine whether a theory is practically adequate may not be acceptable to those who hold a different and rival theory, and this therefore cannot form a basis for distinguishing between different theories except in so far as this is decided on the basis of asymmetrical power arrangements within society. Even here it is not possible to say with any certainty that the one is more practically adequate than another as a result of current arrangements in society, because what those arrangements signify might be disputed, and, in addition, they are likely to change over time. Pragmatists foreground the social in knowledge-production and it is therefore important to examine social theories of knowledge, whilst also avoiding some of the problems inherent in these epistemologies.

4.4 Social Epistemologies

A number of other social epistemologies have been developed: social constructivism, social realism, epistemic realism, inferentialism and critical realism. The first of these is social constructivism. In opposition to a belief in a mind-independent reality, strong social constructivists avoid epistemic commitments, and locate justificationary rationales and apparatus in specific discursive formations, which cannot be externally referenced. The argument being made then is that all truth claims emanate from agreements or disagreements between human beings in the present and stretching back in time, which can be and have been only resolved by the exercise of power in society. Knowledge is the result of

struggles in the past about the means for distinguishing true from false state-ments, and in the sense that the contingencies of history resulted in one such mechanism enduring at the expense of its rivals, knowledge comes into being. This social epistemology is generally challenged on the grounds that the issues surrounding epistemic relativism are not resolved in a satisfactory way (see, for example, Cromby and Nightingale 1999).

A second framework is social realism. This is a philosophy developed in reaction to the excesses of social constructivism, and in particular, its irrealist assumptions. It parts company with social constructivism by its insistence that it is the social nature of knowledge (and this includes the way it is constructed, developed, given the status of theoretical knowledge, etc.) that allows theorists to make the claim that knowledge is legitimate (cf. Young 2006). As a result, though knowledge has a social basis, this doesn't mean that it is being reduced to vested interests, the activi-ties of specific issue groups, or even relations of power. Even if one accepts that knowledge production is not tied inexorably to the furtherance of particular vested interests, including the furtherance of cognitive interests, this doesn't mean that there isn't room for cognitive values which are independent of local power strug-gles; or that there are no cognitive values relative to particular places and times or specific discourse communities; or that there are no means for determining that a particular curriculum is better than another; or even that there is no infrastructure for the production of knowledge which transcends time and place. The sociality of knowledge therefore does not undermine its objectivity, but is a necessary condition for that objectivity to be realised. Furthermore, if this view is correct, then knowl-edge processes such as differentiation, fragmentation, subsumption, progression and the like are key moments in its development, and thus key framing devices for understanding it and its legitimation.

However, what is central to this as a curriculum rationale is a belief that some knowledge is objective (and therefore should be included in the curriculum) in ways that transcend the historical conditions of its production. And this in turns means that it has to be possible to distinguish between those elements of knowledge that have been formed as a result of struggles within disciplines about legitimacy and form *and* those which have not emerged in this way. This would seem to be impos-sible to achieve for practical reasons, and even then other curriculum rationales would need to be invoked, such as instrumentalist, epistemic or pragmatic justifications.

A version of this argument can be developed from a particular reading of the Russian psychologist, Lev Vygotsky. He distinguishes between thinking and sensa-tion, or science and commonsense. What is being suggested here is that higher lev-els of thinking or of how human beings can respond to the environment have been developed within the disciplines, and these have been characterised as science. This form of knowledge can be contrasted with common sense forms. It is:

> not only a transition from matter that is incapable of sensation to matter that is capable of sensation, but a transition of sensation to thought. This implies that reality is reflected in consciousness in a qualitatively different way in thinking than it is in immediate sensation. (Vygotsky 1987: 47)

It should be noted here that this viewpoint privileges thought over sensation without saying why it is more important, even though the suggestion is that without thought an aspect of consciousness is neglected. What this argument is suggesting is that it is possible to identify a transcendental condition for the production of knowledge and the form that it should take. However, this transcendental condition necessarily has pragmatic and normative elements in the way it is constituted, and therefore there would need to be an acknowledgement of these in providing a rationale for a curriculum.

A third position, epistemic realism, is qualitatively different. As Putnam (2004) has suggested, our conceptual frameworks, perspectives on the world, and descriptive languages interpenetrate what is being called reality to such an extent that it is impossible to conceive of a pre-schematised world. This has a number of consequences for an exclusively representational view of knowledge; so, for example, the curriculum cannot be a simple representation (expressed as a series of facts) of what is out there in the world because the world is not entirely separate from those mediating devices that human beings have developed to make sense of it, and this therefore means that in order to develop a curriculum rationale it is important to take account of those activities which can be called epistemic-to-ontic (i.e. knowledge of the world to being in the world) and ontic-to-epistemic (i.e. being in the world to knowledge of it) transactions. This has certain implications. The first of these is that a correspondence between a static intransitive world and an unchanging epistemic world misrepresents the nature of both and the relationship between them. Secondly, any attempt at describing the world always has the potentiality to change it, though not in every circumstance. Thirdly, regardless of the accuracy or authenticity of the original set of descriptors, and as a result of this epistemic-to-ontic activity, those descriptors may become more accurate or more authentic. Though this suggests a one-way relationship, this is misleading. Those conceptual framings and sets of descriptors are informed, constrained and enabled in a non-trivial way by the world or reality at the particular moment in time in which they are being used, and in turn the structure of the ontological realm is influenced by the types of knowledge that are being developed.

Representational epistemologies in some of their manifestations construe knowledge as a collection of social facts. Some social facts are facts by virtue of an agreement by people to act as though they exist, for example, fixed and differential intelligences (see Dweck 2007, for a refutation), or dyslexia (see Hacking 2000, again for a refutation); in this case, that agreement is forged in the present and deliberately so. Social facts are facts by virtue of an agreement which has evolved over time, are likely to have been created within disciplines or practices of knowledge-making, and users may have forgotten that they were constructed, created or invented in the past, so deeply embedded in the collective psyche have they become. (For an example of a curriculum that has adopted this curricular form, see the new History Programme of Study for England 2013.)

Robert Brandom (2000) has argued against a representational mode of knowledge, so that knowledge which is considered to be legitimate can be said to be discourse-specific, and prioritising of a language game which he privileges, the giv-

ing and asking for reasons. As Derry (2013: 231) suggests, this has significant implications for pedagogy:

> However, though word meaning may be tightly connected with its referent, how this connection arises is a matter of significant pedagogical importance. For, in the light of Brandom's *inferentialism*, we can understand the forging of the connection between word and object as one that involves reversing the conceptual framework in which so much conventional pedagogical practice operates. Instead the emphasis needs to be on bringing the learner into the inferential relations that constitute a concept prior to its acquisition.

An inferentialist approach to knowledge development and to understanding what knowledge is also has implications for those processes of evaluation, assessment, attribution and normalisation that are central to any construction of a curriculum.

Three overarching theories of knowledge have been examined in this chapter: foundationalism, instrumentalism and pragmatism, and each in turn was criticised for an excessive focus in the first case on an essentialist view of knowledge and its divisions and a neglect of the transitivity inherent in the development of knowledge within the disciplines; in the second case on knowledge being treated as provisional, contingent and arbitrary, and curricular knowledge being identified exclusively in terms of specific social goals; and in the third case, on an unwarranted emphasis on the sociality of knowledge-development and learning, without at the same time providing any transcendental grounding of knowledge in reality.

In addition, a number of exclusively social epistemologies were examined: social constructivism, social realism, epistemic realism, inferentialism and critical realism. Elements taken from each of them allowed the development of the means for determining what should be included in and what should be excluded from a curriculum. The epistemic principles then from which a curriculum rationale can be constructed are complicated and they work in combination. There is a social dimension to knowledge-construction, but this doesn't categorically preclude reference to a world that is separate from the way it is being described. Conceptual framings and sets of descriptors are informed, constrained and enabled in a non-trivial way by the world or reality at the particular moment in time in which they are being used, and in turn the shape and form the ontological realm takes is influenced by the types of knowledge that are being developed. Our conceptual frameworks, perspectives on the world, and descriptive languages, interpenetrate reality to such an extent that it is impossible to conceive of a pre-schematised world (cf. Putnam 2004). However, this doesn't preclude indirectly-conceived references to the structures of the world. A curriculum cannot be a simple representation (expressed as a series of facts) of what is out there in the world because the world is not entirely separate from those mediating devices that human beings have developed to make sense of it. It is important to avoid essentialising knowledge and its divisions and neglecting the transitivity inherent in the development of knowledge within the disciplines. Any knowledge claim has to be placed within the space of reasons (cf. Sellars 1997), which means that this claim is discourse-specific and positioned within conceptual frameworks that precede it in time and place and have implications for future use. There are significant differences between the transitive realm of knowing and the intransitive realm of being; the social world is an open system; and reality has

ontological depth. And it is possible to identify a transcendental condition for the production of knowledge and the form that it should take. However, this transcendental condition necessarily has pragmatic and normative elements in the way it is constituted, and therefore there would need to be an acknowledgement of these in providing a rationale for a curriculum.

Translating these knowledge constructs into practical forms of curriculum development is the next step. The issues then of how knowledge is transformed at the pedagogic and evaluative sites, and the relationship between these three sites, are still considered to be important. However, what it is possible to suggest at this stage of the argument is that those relations between curriculum contents, pedagogic forms, and evaluative processes are a function of how knowledge is conceived and used within a curriculum, rather than they being independently derived. In the next chapter I examine the idea of a learning environment.

Chapter 5
Learning Environments and Transitions

(with Carol Evans)

In this chapter I identify and examine the elements of a learning environment and the relations between different learning episodes in a person's life course. Learning comprises a change to the status quo, to what already exists. What this means is that the same learning object is likely to have different effects on different learners and on different occasions on the same learner. These elements with different emphases given to them and different strengths attached to them are the basis for a series of learning models: assessment for learning, observation, coaching, goal-clarification, mentoring, peer-learning, simulation, instruction, concept-formation, reflection, meta-cognitive learning, problem-solving, and practice.

Knowledge then is transformed at the pedagogic site, so it is possible to suggest that modes of progression and pacing, the relations that are adopted between teachers and learners and between types of learners, the spatial and temporal arrangements that are made, the criteria used for evaluation, the degree and type of simulation of the object under consideration, and the performative element of the learning process, are fundamental components of this pedagogic transformation. For example, this pedagogic transformation comprises in part a degree and type of simulation. In a simulation a new medium is chosen which gives the learning object a new form, these media being virtual, graphic, enumerative, enactive, symbolic or oral. Indeed, depending on the new form, there is a distance between the original object and the mediated object, and this can vary in strength. This doesn't mean that the object is better or less well represented in its new form, only that it takes on a new guise; it is pedagogically formed. And this means that its potential impact is likely to be different. A simulation might involve, for practical purposes, a computer representation of something in nature that cannot be experienced by the learner. Inevitably, the elements of the object and the relations between those elements are both reduced and changed in the simulation; and what this means is that any reaction or response to the object by a learner is influenced by its new media as well as

the shape and form it now assumes. The response is always to the mediated object. And, the implication of this is that the pedagogical relation between the learner and the world is never direct but is realised through the mediated object, with the process of knowing the unmediated object a retroductive one, although this may be understood in a different way by the learner.

In constructing a theory of learning, there is a need to understand the constitution of the learning object (i.e. its structure and grammar), which is then animated by the learning process. A learning object's effect and history can be categorised in four ways: the capacity of the object to change the present state of affairs, the sustainability of the integrity of the object during the process, the malleability of the receiving schema (cf. Piaget 1962), and the transformative potential of the learning experience. All of this amounts to a set of relations between a cognizing subject and the social and natural worlds.

The first of these is the capacity of the learning object to change the status quo. This refers to the structure of the learning object or the way it is constituted. Some of these learning objects are crafted so that, even given the state of the schema into which they are being introduced, they have a more fundamental impact than other forms of learning. The second is the sustainability of the integrity of the object over time. What I am referring to here is the capacity of the learning object to retain its original shape, form and content in the learning process. When I refer to the integrity of a learning object, I am not understanding this in an ideal sense. A learning object is always an amalgam of different ideas, values and prescriptions, which is never completely coherent. What this suggests, however, is that in the long process of formulation, to internalisation, through to realisation, and thence to performance, the original integrity of the learning object is either strongly or weakly maintained.

The third feature is the malleability of the receiving schema, and this in turn points to the degree of resilience of the schema, or the capacity to resist or allow learning to take place. Learning has a greater or lesser capacity to impact on and change these schemas, and in part this refers to how it is going to be introduced, but also to the constitution of the learning object. Its penetrative power (though this may not be realised) or capacity to effect change is different in different learning episodes. This is the intensity of the learning object, and clearly its obverse is the resilience or otherwise of the current arrangements within the individual's mind. This is the malleability of these arrangements. Then there are the performative elements of the learning experience, and these refer to the capacity of the learning process to feedback into the environment, both the natural and social worlds and the learning process itself.

Jean Piaget (1962) suggested a number of interactive mechanisms between the stimulus and the person that characterise learning. The first of these is accumulation and this is where there is little schematic formation in the individual (usually due to age) and learning consists of recall and applications in situations that are similar to those which were originally absorbed. The second is assimilation and this is where a new element has to be addressed and made sense of by the individual; but this process is still essentially passive. The new elements are easily absorbed, indeed

assimilated, into the existing schema of the individual and easily applied when directed to the field in question. The third element is accommodation and this is where the new element cannot easily accommodate to the new schema and thus a process of transformation of both takes place, i.e. the original stimulus or object of learning and the schema that is attempting some form of accommodation with it. In Piaget's terms it has been internalised.

5.1   Learning Models

Theoretical and contextual considerations impact, then, on how elements of teaching and learning are realised. Acknowledging this allows the identification of a number of learning models: assessment for learning, observation, coaching, goal-clarification, mentoring, peer-learning, simulation, instruction, concept-formation, reflection, meta-cognitive learning, problem-solving, and practice. These models give different emphases to the various elements of a learning environment that I have identified above.

   The first of these models is the assessment for learning model. Assessment for learning can be presented as five key strategies and one cohering idea. The five key strategies are: engineering effective classroom discussions, questions, and learning tasks; clarifying and sharing learning intentions and criteria for success; providing feedback that moves learners forward; activating students as the owners of their own learning; and activating students as instructional resources for one another (Wiliam and Thompson 2008). And the cohering idea is that evidence about student learning is used to adapt instruction to better meet learning needs; in other words, teaching is adaptive to the student's learning needs and evidence from the assessments is used by teachers, learners, or their peers to improve instruction (ibid.).

   An important aspect of this model is the active engagement of the learner in the learning process as both an initiator and user of feedback (cf. Waring and Evans 2014). The key then is the relationship between assessment (designed as formative and developmental) and learning. As noted by Boud (2000: 221), '(f)or assessment to be formative, it has to be used'; an important element of any assessment for learning model is that students are given opportunities as part of the assessment design to use feedback to improve their work. Evans (2013) has suggested that this forms an important part of an holistic assessment design and that it also includes a number of key principles: feedback is ongoing and an integral part of assessment; assessment feedback guidance is explicit; greater emphasis is placed on feed-forward processes compared to feedback activities; and learners are engaged in, and with, the process. The assessment for learning movement has been criticised on three grounds: the focus on formative assessment has inevitably marginalised other learning elements; as a result, some of the strategies are both misunderstood and consequently misapplied, for example, peer learning does not amount to asking students to make quantitative judgements about their colleagues' work in relation to a set of criteria;

and the reductive process for the purposes of quantifying and comparing results may have led to a distorted understanding of the process of learning.

Torrance and Pryor (1998) have identified a range of assessment approaches with 'convergent assessment' at one end of the spectrum and 'divergent assessment' at the other, where convergent assessment demands correct answers from students and divergent assessment explores what students can and cannot do and how they make connections between ideas. They suggest that divergent assessment leads to students choosing to engage with subject knowledge to a greater extent and to make new connections between ideas, while convergent assessment tends to be an end in itself. Feedback within a convergent framework focuses on the elicitation of correct answers and identifies errors in a student's performance (see also, Black and Wiliam's 'directive' feedback, 1998a; and Hattie and Timperley's 'task-focused feedback', 2007), while within a divergent framework, feedback is 'exploratory, provisional or provocative' (Torrance and Pryor 1998: 4), often encouraging students to reconstruct their thinking about the subject domain or learning process (see also, Black and Wiliam's (1998b) 'facilitative feedback'; and Hattie and Timperley's (2007) 'process-focused/self-regulation-focused feedback').

Underpinning student involvement in assessment is Boud's (2000) concept of sustainable assessment which is defined as practices which meet students' immediate assessment needs, but do not marginalise the knowledge, skills, and dispositions they require to develop lifelong learning practices. Building on this work, Hounsell (2007) has outlined three key areas of sustainable feedback practice: providing 'high value' feedback carrying impact beyond a task; enhancing the student's role in generating, interpreting and engaging with feedback; and constructing teaching and learning environments in which productive dialogue between the learner and the teacher is generated. For feedback to be sustainable, students need to be supported in the self-monitoring of their work, independently of the teacher (cf. Carless et al. 2011). Repositioning assessment feedback, it is suggested, emphasises: the co-constructed nature of feedback as dialogue between students and teachers; the use of multiple sources of feedback, with the teacher not necessarily being the dominant source of feedback but more the facilitator of student access to sources for learning; a move from individualistic to collectivist styles of learning through, for example, peer feedback mechanisms; and assessment feedback as a fully integrated element of assessment rather than as a series of isolated events (Boud and Molloy 2013).

The second learning set is an observation model.[1] Here the teacher displays the action which the learner is required to imitate in the classroom, and then later in the context of application. There are three principal types: a live model involving a demonstration or acting out of the behaviours to be learnt; a verbal instructional model where this comprises descriptions and explanations of behaviours; and a symbolic model, examples of which are scenarios and expressive performances. These are stimuli for learning. The learning skills required of the learner are: observing a performance by the teacher, whether this comprises live modelling, verbal instruction or symbolic modelling; comparing the performance with an embodied form of that display already held by the learner; adjusting their current construct

through modification or substitution; practice by the learner whilst being supported within the artificial environment; practice by the learner without support within the artificial environment; transferring the skill to the real environment whilst being supported; and consolidation without support through use in the real environment (cf. Bandura 1977). The importance of appropriate scaffolding to support learning is an important aspect of this model.

The third of these is a coaching model.[2] Here the focus is on a series of steps: modelling by the expert; coaching whilst the learner practices; scaffolding where the learner is supported during the initial stages with that support gradually being withdrawn as the learner becomes more proficient (coaching here involves the teacher in identifying for the learner deviations from the model in the performance of the learner, and then supporting the learner as they make attempts to correct this performance); articulation by the learner of that process; reflection on those processes and comparison with the expert's reasons for action; and exploration where the learner undertakes the various activities without support (cf. Collins et al. 1989). Coaching can be seen as one-to-one activity, or as a collective exercise within a community of practice.

A fourth model involves clarifying and sharing learning intentions and criteria for success with the student over a period of time.[3] To this end, teachers provide learners with explicit statements and explanations about the instructional objectives in a lesson or series of lessons (Zimmerman and Schunk 2011). Goal clarity has three learner-focused aspects: explanations about how they are expected to perform the tasks assigned to them; opportunities for them to grasp what is expected of them; and reflections about their capacity as self-directed learners in the completion of the task. This mechanism comprises a number of processes: identifying the standard and interpreting its meaning; providing a description with the learner of their mastery of that standard, which should allow the identification of weaknesses in their capacity and the means for ameliorating these weaknesses; record-keeping for further identification of the learner's current capability; reflection on this and the identification of the means of improving; and a meta-reflective record of progress in the curriculum (Meece et al. 2006).

A fifth model is mentoring.[4] This supports the informal transmission of content knowledge, social capital or psycho-social resources. It is usually conducted face-to-face and involves a relationship between two people, one of whom is considered to have greater knowledge, wisdom or experience. Five possible mentoring techniques have been identified (cf. Aubrey and Cohen 1995): supporting the learner and taking part in the same activity and learning side-by-side with them; preparing the learner for the future even if they are not ready or able to learn what is being offered to them in the present; catalysing learning so that it provokes a different way of thinking, a change in identity or a re-ordering of values; showing through personal example; and finally, helping and supporting the learner in reflecting back on their previous learning. The terms, coaching and mentoring, are often used synonymously but important distinctions between these two approaches have been identified. In distinguishing between these two terms, Clutterbuck and Megginson (2005) identify three specific differences in terms of emphasis: time-scale, approach and

context. For example, coaching is focused on performance change whilst mentoring is focused on managing elements of the life-course; and coaching is focused on the immediate context whereas mentoring involves enlarging a learner's networks. In addition, coaching is typically seen as of much shorter duration and in response to a specific goal, whereas mentoring considers immediate issues as part of long-term change. Both mentoring and coaching are about achieving change, and place a strong emphasis on the development of learner self-regulation through the use of appropriate tools, such as critical reflection and scaffolded support.

A sixth model of learning is peer learning.[5] The other forms of learning comprise unequal relations between the teacher and the learner. Here the assumption is made that the learning relationship is between equals, and thus a different form of learning is implied. Examples of this type of learning include: being offered emotional support if learning proves to be difficult and this is always a better form of support if given by someone who is going through the same learning process; dyadic performance confrontations, where learning is provoked by confrontational exchanges between learners so that each individual can test their theories, ideas and constructs against those held by other learners engaging in the same type of learning; pair-problem-solving, where learning is enabled through cooperation between two learners of roughly equal standing, so that in a problem-solving exercise, better solutions are forthcoming because there are two problem-solvers rather than one; reciprocal peer tutoring, where non-expert tutoring between equals has the advantage of each person being able to make their own evaluation of the advice being offered unencumbered by status or hierarchy; and scripted cooperative dyads, where peer engagement is focused on the joint production of a script, artefact, performance or text with the advantage that alternative and new interpretations/readings are forthcoming (cf. Falchikov 2001). The efficacy of peer feedback depends on the extent to which students are proactive in their receipt, use and giving of feedback (cf. Evans 2013).

A seventh model of learning involves simulation.[6] Simulation is a reproduction of an event or activity, conducted outside the environment in which that event or activity usually takes place. Simulations can be produced through computer games, role-plays, scenarios, presentations and affective and conceptual modelling. The purpose of this learning process is to simulate a real event, and this is to allow the person or persons taking part in that simulation to explore it, to experiment within it, to understand the process, to begin the process of internalization, to experience albeit in a limited way the emotions and feelings that would normally accompany the experience in real-life, and fundamentally, to allow learning to take place through trial and error and making mistakes in safe situations, which do not have the consequences they would have in real-life situations. Simulations compress time and remove extraneous detail. They are immersive learning experiences, where skills and performances can be enhanced in a way that is not possible outside the simulation.

With instruction, the teacher needs to: gain the attention of the group of learners; inform the learners of the objectives of the learning exercise; stimulate recall of prior learning amongst the group of learners, so that the new information is related

productively to previous and current learning; present content to the learner; implement appropriate scaffolding processes; stimulate a performance by the learner; provide feedback to the learner which is a comment on their performance and allows corrective action to take place; and evaluate the corrected performance (cf. Gagné 1985).

A concept-formation learning process focuses on the re-forming of the conceptual schema held by the learner. Learning is complex and potentially rich and rewarding, where the learner is presented with a mass of information, ideas, and opinions from a number of different sources (i.e. books, articles, lectures, seminars, emails, eseminars, personal communications and so on). What the learner does is shape this mass of information, and this shaping can take a number of different forms: partial shaping, complete shaping, discarding with no replacement, confusion, on-going, going backwards and forwards and so on. Shaping takes place against a scholarly background; aspects of which may or may not be implicit and where some but not all of its aspects can be surfaced for deliberation. Conceptual learning is irredeemably social, embedded, and selective. So the learner has to absorb some of the ideas they are presented with and discard or partially discard others.

Reflection is a seminal form of learning.[7] It has been variously described as critical reflection, reflective practice, reflective thinking and reflexivity. Whereas some see these terms as interchangeable and as having similar meanings, others have sought to differentiate between different types and levels of reflective activity (cf. Black and Plowright 2010). For example, Harvey et al. (2010) have argued that not all reflection is critical reflection. Bolton (2010: 13) defined reflection (single loop activity) as 'an in-depth consideration of events or situations outside of oneself: solitary or with critical support', and reflexivity as a double loop process which includes reflection and reflexivity and is focused on 'finding strategies to question our own attitudes, thought processes, values, assumptions, prejudices and habitual actions, to strive to understand our complex roles with others'. Wilson and Demetriou (2007: 224) have highlighted the varying quality of different types of reflection drawing on the work of Schon (2005) and Eraut (2004). They differentiate between three types of reflective practice: intensive action reflection which is seen as tacit, implicit and occurring on a daily basis in practice where individuals use intuitive tacit knowledge to inform practice (reflection-in-action); reactive or reflective learning (knowledge of action) involving immediate reactive reflection on events that have already taken place; and deliberative reflection (knowledge for action) involving the conscious management of thoughts and activity and the deliberate setting aside of time to ensure that judgements are based on a deep understanding of a particular issue.

The learning cycle, developed by David Kolb (1984), is based on a belief that deep learning (learning for real comprehension) comes from a sequence of experience, reflection, abstraction, and active testing. Reflection is a form of evaluative thinking. It is applied to ideas for which there is no obvious solution and is largely based on the further processing of knowledge and understanding and possibly emotions that the learner already possesses. It is thus a second-order internal activity,

which can in certain circumstances be transformed into a learning strategy. There are some optimum conditions for reflection: time and space, a good facilitator, a supportive curricular or institutional environment, and an emotionally supportive locale for learning.

Meta-cognitive learning[8,9] refers to learners' awareness of their own knowledge and their ability to understand, control, and manipulate their own cognitive processes. However, most meta-cognitive processes can be placed within three categories (cf. Harris and Graham 1999). The first is meta-memorisation. This refers to the learners' awareness of their own memory systems and their ability to deploy strategies for using their memories effectively. The second is meta-comprehension. This refers to the learners' ability to monitor the degree to which they understand information being communicated to them, to recognize failures to comprehend, and to employ repair strategies. And the third is self-regulation. This term refers to the learner's ability to make adjustments in their own learning processes. The concept of self-regulation overlaps with meta-memorisation and meta-comprehension; its focus is on the capacity of the learners themselves to monitor their own learning (without external stimuli or persuasion) and to act independently. These regulatory processes may be highly automated, making articulation of them difficult for the learner.

Self-regulated learning has been conceptualised in a number of different ways; notable examples are Boekaerts (1999) and Vermunt and Verloop (1999). Both approaches stress the importance of three regulatory processes: regulation of the self, regulation of the learning process, and regulation of information processing modes. The efficacy of the self-regulation process depends on the aggregated effect of cognitive, metacognitive and motivational elements. The interrelated nature of self-regulatory processes is also evident in Zimmerman's (2002) three phase cyclical model, involving forethought, performance and self-reflection. Forethought involves task analysis (i.e. goal setting and strategic planning) and self-motivational beliefs (i.e. self-efficacy, outcome expectancies, intrinsic valuations and learning goal orientations); performance involves self-control (i.e. self-instruction, attention focusing and task strategising) and self-observation (i.e. self-recording, self-experimentation and self-reflection); and self-reflection involves self-judgement (i.e. self-evaluation and causal attribution) and self-reaction (i.e. self-satisfaction and affect).

A problem-solving approach is where the learner finds out for themselves rather than being given answers to problems. The learner is required to engage in a series of interrogative processes with regards to texts, people and objects in the environment, and come up with solutions to problems. The learner is also required to use the skills of information retrieval, information synthesis and analysis, and knowledge organization. The learner may come up with inadequate, incorrect and faulty syntheses and analyses. However, this is acceptable because the learning resides in the process rather than the end product. Problem-solving learning involves the learner in judging their own work against a curriculum standard and engaging in meta-processes of learning, that is, understanding about processes related to their own learning; the development of learning pathways; the utilisation of formative

assessment processes; the development of personal learning strategies; and the internalisation of the curriculum.

Finally, there is practice. Practice is the act of rehearsing a behaviour over and over again, or engaging in an activity again and again. This reinforces, enhances and deepens the learning associated with the behaviour or activity. Choosing between these models depends on the nature and constitution of the learning object; in other words, the former is logically dependent on the latter.

5.2   Internality, Externality and Vertexicality

These learning models are characterised by a relation between an internal and an external process. To this end, Lev Vygotsky (1978: 45) suggested that:

> Child logic develops only along with the growth of the child's social speech and whole experience. It is through others that we develop ourselves and…. this is true not only with regard to the history of every function…. Any higher mental function was external because it was social at some point before becoming an internal, truly mental functioning.

Thus learning is social, both in the sense that learning takes place in society and with people in society, but more fundamentally, because the contents and processes of learning are social phenomena. We are therefore confronted in relation to learning with a particular set of relations between external structures and internal or agential processes, and it is the vertexical relations between the two that produces learning.

In any learning sequence, the learner is confronted with a set of ideational resources or structured discourses, and in addition, they are embedded in another set of structures, which refer exclusively to their sense of agency. These structures of agency mediate, for the individual learner, entry into those discursive structures which act as a resource for their belief systems; as a result, learning theorists are required to confront notions of formal and informal learning and therefore of assimilation, discarding, layering, organising, synthesising, selecting, and meta-processes connected to learning. Discursive structures may be characterised as those ideational resources which sustain the learner, and they include a range of stories, narratives, arguments and chronologies that have a number of distinctive features: they have a specific time-place location, and thus are subject to change and amendment; they are structured in turn and thus different patterns of story-telling or narrative genre are possible; and they compete with other genres. In addition, they play a role in the construction and maintenance of structures of agency.

It is this relationship then between these structures and the agential capacity of the learner, which determines whether and in what way learning can take place. These vertexical modes have five forms. The first refers to the knowledgeability of the learner, that is, the amount and type of knowledge held, with this type of knowledge comprising cognitions, skills and dispositions. The second vertexical mode again refers to the agential learner but this time to those factors which impact on the knowledgeability of the agent, i.e. unconscious beliefs, unacknowledged conditions of action, tacit knowledge and unintended consequences. The third vertexical mode

refers to the degree and type of give in the structure, and each type has a different shaping capacity. An embodied structure such as a notion of sexuality, compared with a discursive structure is an example of this, and this is in part because the discursive structure can in certain circumstances be ignored, though there are consequences or sanctions as a result. The fourth vertexical mode refers to the degree and type of give in the agent or in those structures of agency, which provide the conditions for those agents to make the decisions they do. And finally, the fifth mode refers to the consequences of that vertexical relation in learning. There are different consequences depending on the type of vertexical relation that is implicated in the learning episode. One such consequence is identity-development in learning, and I now turn to examining this important phenomenon.

5.3   Learning Transitions

In order to accomplish this, I want to focus on transitions in learning and their characteristics. Learning environments are not static entities; they develop, are transformed, and connect with other learning environments. Indeed, within the life trajectory of an individual learner, there is experience of, and movement between, different learning environments. The characteristics of these transitions include: their structure/agency relations; their compliance capacity in relation to formal rules, regulations and norms; movement through time (all transitions are characterised by movement from one time moment (T_a) to another (T_b), and onwards to a series of other time moments (T_c to T_n)); their cultural embeddedness (this refers to factors such as duration, intensity, import, etc.); their pathologising capacity (i.e. whether and to what extent the transition is understood as a normalizing and therefore pathologising mechanism); their position in the life course; their focus (for example, learning transitions, which refer to issues such as familiarity, receptiveness, assimilation, negotiation, rearrangement, formalisation, assessment/accreditation, and the like); and how they relate to an end-point. An example of transitional learning is postgraduate study at a university and I will focus on these types of learners, whilst also making the assumption that transitional processes apply to all types of learning experiences, both formal and informal.

A learning transition comprises movement from one learning moment to another. This means that a transition takes place when the person thinks, has acquired the skill of, or now has the disposition to do, something that is different from what they could before. So, this knowledge, skill, or disposition is newly acquired and there is a transitory process that takes the learner from one state to another. Furthermore, this transitory process has an official form (created in part by the rules and arrangements of resources of the setting in which the learning is taking place), which may be in tension with the learner's understanding and even preferred view of this particular transition. This process seeks above all else to fashion the learner to its way of going through the transition. Secondly, and in part, the learner's preferred way of going through the transition may begin to influence the formal manifestation of the

transition, or the rules that act to construct this learning environment. If, for example, someone in authority realises that a particular set of rules and resources is not working, or is creating problems in other aspects of the learning environment, or even that there is a conceptual gap/contradiction within the learning discourse, then they may change the rules.

A key influence on the type of transition experienced by a postgraduate student, for example,[10] is the type of knowledge developed on each programme, and as a result, identity development is regionalised (in an epistemic sense) (cf. Bernstein 2000). However, this is not to deny that there will be common aspects across different programmes of learning. So, for example, the learning experience is likely to be hierarchical, with the postgraduate student accepting that she will have less experience and knowledge than her teachers. There will also be aspects of commonality in the 'rites' of initiation and acculturation that she will go through.

However, and this is where differentiation occurs, knowledge disciplines which emphasise 'correct' views of knowledge and fixed and agreed procedures for developing that knowledge are also likely to be underpinned by a particular view of the relationship that should be maintained between a teacher and a student, and about how the learner is positioned. In contrast, in those disciplines, which are characterised by a plethora of languages or approaches, and which do not have an agreed view of knowledge or of knowledge development procedures, the teacher/student relationship is likely to be understood in a different way.

Furthermore, students conceive of the experience of postgraduate study in different ways. The student learns the rules about how they should behave and adapts temporarily. This may be about what constitutes an appropriate form of writing and talking (presentation), or what constitutes appropriate forms of knowledge in the discipline and how to make sense of them, or even what constitutes appropriate practices in the discipline and how to operate within them. But they do not integrate them into their repertoires of action and belief. In other words, they dissemble, because, for the duration of their study, they want to be accepted into the discipline.

On the other hand, the student may take on this academic identity but for a variety of reasons they cannot or do not enter into the practices of the discipline; that is, they do not fully understand the rules of the new practice, or the rules of the new practice are opaque, or the rules are disputed and their understanding of them is mediated through a maverick tutor, or even that the pull of the rules in their professional setting is so compelling that they ignore the new rules. Students may even undergo smooth and authentic progressions into the discipline.

The experience of learning is also deeply embedded in disciplinary contexts. For many postgraduate students, the prescribed link is to practice and the assumed mediation between theory and practice is usually, though not exclusively, through engagement with empirical research, commonly of the relatively small-scale, focused on their own or someone else's practice, and related to *this* disciplinary framework or approach rather than *that*. Yet, learning is complex and potentially rich and rewarding, where the learner is presented with a mass of information, ideas, schema and opinions from a number of different sources. Shaping takes place

against a scholarly background, aspects of which may or may not be implicit and where some but not all of its aspects can be surfaced for deliberation. This background also includes a retrospective view of the identity of the learner, a sense of their present identity(ies), a prospective view of their identity(ies), a placing of the work in various discourse communities, a particular understanding of the way the rules work in those discourse communities, and much more; all of which interact in various ways. For individuals mediating between their various multiple identities, learning is irredeemably social, embedded, and selective. So the learner has to absorb some of the ideas they are presented with and discard or partially discard others. Even if the learner is prepared to operate through a notion of multiple identities, they are still selecting, filtering, endorsing, rejecting, enhancing and discarding.

5.4   Structures, Agents and Time

These identities are made and remade at different points of time during the study period, and in relation to the affordances of social practices and discursive formations within which they are located. These structures (i.e. embodied, discursive, agential, institutional and systemic),[11] which also act as identity positioners, are fluid, transitive and at times contradictory (but not in equal measure), and the learner is interpolated in them, though never so that their freedom of action and re-creation is absolutely circumscribed. Each discursive formation is temporally sequenced, though in different ways, so, for example, a learning narrative might consist of exchanges between teachers and learners where the purpose of these exchanges is to dissolve, fragment or otherwise disrupt the model of knowledge held by the learner. This is a non-linear learning narrative and it therefore has implications for an understanding of how time impacts on a transition. All transitions are characterised by movement from one time moment to another, and onwards to a series of other time moments.

There is a further issue and this relates to what Michael Bratman (1999) has referred to as the 'subjective normative authority for the agent'. These structures of agency impact on the intentionality of the learner or person, and in particular on what constitutes a good reason for that person to act; what, in short, gives that person the subjective normative authority for her planned and intentional activity. Indeed, it is reasonable to go further than this and suggest that those activities which are the outcomes of agential decisions but which are not planned, intended, or subject to a process of reflection, are also implicated in those reasons for action. What constitutes a good reason for doing something or even thinking about something, and how much weight or significance the person should give to that reason, are conditioned by those affordances embedded in historically specific discursive structures, made manifest through narratives, stories, arguments and ideational formations, and their availability to the individual agent. Individuals themselves cannot create discursive structures, though they may contribute to them either through col-

lective action of a specific type, or through penetration of, and change to, current ideational formations. The point here is that particular transitional moves made by a learner may not conform to those expected and sanctioned forms of learning transitions, as they are practised on programmes of study, and indeed may contribute to changing them.

5.5   Identity

Identity formation[12] assumes a particular shape in relation to transitional activities. Previously I referred to the way that learners are positioned within assemblages of official rules and arrangements of resources; stories, narratives, arguments, and chronologies; structures of agency; and discursive structures, all of which has implications for particular transitions. So for example, an international postgraduate student at a British university might want to assume the formal identity of a learner on their particular programme of learning. She is placed within the assemblage (which is not static but changing) and has to find her way through it. There are clues as to how a good learner might think, behave, feel, or act, as in the following of rules, such as using academic forms of literacy, following accepted notions of referencing, avoiding plagiarism, being critical, asking relevant questions, beginning to understand disciplinary mechanisms and appropriate knowledge structures, judging their work against the criteria for excellence, finding a way through the formal assessment processes, developing productive relations with supervisors, and so forth. However, she might want to adopt an authentic identity, that is, one which is not temporary or on the surface or superficial (authenticity certainly has an integrated and depth feel about it). And all of the above have superficial and depth forms. So for example, in order not to plagiarise, she can follow a set of rules, and perform in the practice in the correct way, without at the same time fully understanding notions of originality, ownership, self-realisation, performance and the like. Indeed, with regards to this particular example, it may be that the rules themselves do not fully incorporate these principles and therefore in the set of rules there are contradictions, aporias, gaps and incomplete statements, etc. But the point is that it is possible to distinguish between in depth and superficial forms of understanding.

And within the appropriation of these rules and many others and the rest of the assemblage is a notion of identity as a learner. These assemblages never impose in any absolute sense, however, the learner who actively seeks an identity as a learner works within this assemblage. In working within this assemblage, she brings to it previous identities, knowledge constructs, skills, dispositions, etc. and thus the process of identity formation is an overlay. This is a transformative process and it may take a number of forms, i.e. accretion and thus retention of the original formation; or subsumption, where the original formation is subsumed into a new domain and thus loses its identity; or reduction so that parts are discarded to accommodate the contingencies of the new formation.

5.6 Pathologising Capacity

There are different types of transition and therefore they have different characteristics. This implies a possible contradiction between the practice of the transition at an official level (official refers to the original and subsequent construction of the practice by the university) and how it is understood and practised by participants in the practice, i.e. students. This doesn't just involve students learning the new rules and understanding the new set of arrangements of the new practice, but also conforming to those new rules and arrangements. What this also means is that the participant is inducted into the rules of the practice, though this may not be successfully achieved.

Pathologising can take the form of constructing the learner as initially diminished or inadequate, with the study period being about repairing these deficiencies. This view of learner identity fits with a training model for students currently endorsed by governments such as the United Kingdom, in which the learning metaphor is that of acquiring a set of behaviours, called skills, which once acquired, enables the learner to perform a set of actions which have been designated as appropriate or the norm for the workplace. This is not to deride the importance of training or professional development as aspects of study, but rather to take issue with some of the forms taken and the assumptions that underpin them. The training tendency is further exaggerated by another false assumption, that learners begin their learning journey as deficit learners in which the deficit can only be reversed by recourse to training that points to ways in which individuals might be encouraged to handle their emotional as well as learner-selves better, and so become more adept at personal planning, coping with the stress of study and so on. This is a version of what Ecclestone and Hayes (2007) have referred to as a view of the learner as 'the diminished self',[13] increasingly referenced and revered in education policy and practice. This, of course, takes on a specific nuance with professional learners, who, in other respects, are at, or approaching, the peak of their professional careers, and might be expected to have these skills in abundance.

However, learning may be thought of as essentially and fundamentally holistic and therefore incorporating beliefs, dispositions, worldviews etc. and as a result a student studying on a programme is not just concerned with changes to their knowledge structures in a superficial sense but also with changes to the background to that knowledge, and this comprises understanding and internalising new rules and ideas, replacing the old or perhaps storing the old alongside the new, in other words, becoming a different person. There is no pathology involved, there are only right and wrong ways of behaving.

What I am suggesting here is that universities have established a set of norms relating to progression through their programmes of study. This is an expectation about what students should be doing and how they should be behaving; it is an output and performance model, so that students are expected to provide outputs and behave in particular ways, and the form they take is constructed by those in authority at the learning site. They are instantiated by the student in different ways depend-

ing on their past histories and current levels of understanding, and in particular, in terms of their own view of what constitutes knowledge development, where the criteria might include their sense of security (i.e. not being disconcerted or uncomfortable), or their positioned identity in relation to the educational setting.

An example of this is the use of a notion of independent learning. At postgraduate level, this is an essential feature of the official discourse. The independent learner operates by themselves in relation to their mediations with people, practices, documents, texts, and objects. They have the capacity to perform on their own, including performing or being in a learning situation. The independent learner operates at a distance from their tutor (and this therefore suggests a restricted role for the tutor). The independent learner doesn't require help over and above a stipulated amount. This comprises a particular way of organising practice (i.e. through quantifying allocations of time for each student), in order to place pressure on students to perform and to perform in a particular way.

The norm works by disciplining the student, so that they strive to be independent. Normalising also involves an overt process of standardisation. However, it is important to be aware that 'normalising processes produce norms and their agencies, which are rarely free of the contradictions, cleavages, and dilemmas they are set up to control' (Bernstein 1990: 159). So, 'normalising' never works in an essentialising and determining way. However, it operates as part of an efficiency model and it can be easily captured to support a managerialist agenda: '(t)he new subject of free-market neo-liberalism, the independent student, is thereby fully responsible for her own educational *choices* and *future*, and the *non-traditional* students [and others] are pathologised as being deficient because they are dependent on their tutors' (Leathwood and O'Connell 2003, my emphases). The dependent student is demanding of time, information, reassurance, feedback, models of good practice, and specific interpretations of level criteria.

5.7 Progression

Then there is the learning of the norm. The transition comprises learning a different set of parameters, new ideas, or a different way of understanding in the field of practice. It therefore requires a re-norming, a new expectation, a different determination of the task. If I take writing as an example, then these might be some of the new characteristics: longer, more theoretically-orientated, and more abstract pieces; writing from a disciplinary perspective; comprehensive, referenced, argued, grammatically correct, relevant types of writing. In short, the style of writing demands: complexity, formality, precision, objectivity, explicitness, an evidence base, accuracy and is written in a way which qualifies its pronouncements.

Inevitably learning comprises a pedagogical process. However, there are two distinct ways of understanding this. In the first, the expert or scaffolder constructs, in relation to their understanding of the needs of the student, a scaffold or pathway to the acquiring of knowledge by the student, and presents it to the student. The

student then follows the implicit and explicit rules of the scaffolding and acquires the new knowledge. There is no negotiation involved in the development of the scaffold with the student. Diagnosis of the student's needs and state of readiness is undertaken by the other or expert; they then construct a learning programme based on this initial diagnosis and support the student through this learning programme. In the second, a different form of scaffolding operates, where the student not only undertakes a programme of learning, but is involved in the development of this programme. Whether the form of the scaffolding is negotiated with the student or not varies between programmes, and is thus either an imposed or negotiated settlement with the student.

Clearly, this model of scaffolding depends on the idea of the expert also being the facilitator; and it is hard to see within the constraints of this model what the role of the expert is unless the programme of work was in some sense constructed and delivered by someone with a greater knowledge of the process of learning. The student is unlikely, given their developmental state, to be able to construct such a programme; because if they could then there would be no need for a relationship with an expert. In so far as this suggests an either/or picture of the process, it is misleading. There are a number of in-between-situations in which elements of negotiation are present. These might include: the desirability of involving the student in the diagnostic process, because only they have sufficient knowledge of their learning needs; or the positioning of the student so that they take a full, engaged and willing part in the scaffolding process for it to work. These two in-between-positions reflect different views on the nature of the negotiated process that comprises scaffolding.

There are different forms that learning can take. Learning implies a form of internal change and thus some focusing by the learner. These foci are: attributes, dispositions, or inclinations, that is, more permanent states of being of the person; knowledge constructs; skills; virtues or ethical dispositions; meta-linguistic processes; meta-learning processes; and meta-cognitive processes. It suggests a disruption to one or more of these attributes. There is an element of scale here, so that learning may be more or less influential. There is also a sense in which that influence is manifested in different ways, with the more powerful the message the greater potentiality for learning to cause disruption to the equilibrium of the learner. There is then a sense of confusion or dissolution of certainty, and this has an impact on how that learning can take place. Effective learning sets up a jolt to the system, though it is not necessarily disabling. There is also the sense implied here that learning does not always take a linear form; in other words, there are forward *and* backward steps. Finally, there is an expectation that confusion is imminent; an expectation of it is a pre-requisite of learning.

Learning experiences (in relation to different modes, manifestations and effects) are implicated in the type of transition the student undergoes; and any learning episode is characterised by a relation between an internal and an external process. Learning is social, both in the sense that learning takes place in society and with people in society, but more fundamentally, because the contents and processes of learning are social phenomena. It is these relationships then between these

structures, the learning object and the agential capacity of the learner that determines whether and in what way learning can take place.

5.8   Learning Careers

It is widely agreed in the literature that lifelong learning is not a sequence of learning events from cradle to grave, that the social context in which learning takes place is significant, and that learning is not just a cognitive process but is socially mediated. However, Bloomer and Hodkinson (2000) argue that recognising that learning is culturally embedded at the time it takes place is not enough. A longitudinal perspective on learning that incorporates past as well as present learning experiences and contexts is needed and they introduce the term, learning career, to capture this. They argue that in a learning career learners acquire dispositions to learn which are shaped by their social position or by the social class they belong to. A career is usually associated with patterns of work over a lifetime, but a learning career comprises:

> …events, activities and meaning, and the making and remaking of meanings through those activities and events…. in other relevant human experiences, and ways of experiencing them, are described in terms of their relationships with the pivotal concept, learning. (ibid. 2000: 590–591)

The relationship between being a learner and other aspects of a learner's past and present life in a learning career is complex, and cannot be understood without consideration of the way the learner constructs their identity and how this changes over time. This has resonance with what Barnett (2007) refers to as the 'ontological turn' in higher education, in which being a learner at more advanced levels is about living with intellectual uncertainty and involves a metamorphosis which impacts on all aspects of their life. A learner who becomes a critical thinker through academic study will assume a new critical perspective on work, leisure and their life-world, which is unlikely to be reversed.

It might appear that within a learning career, the concept of a clear transition, or stage, becomes redundant. Yet, key transitional stages have been identified. The danger here is viewing these stages as discrete. Viewing such transitions from within a learning career means that it is possible to argue that they are not discrete or uniformly experienced, but fluid and variable. Embarking on postgraduate studies can be viewed as a key transitional part of a longitudinal learning career in which particular intellectual, social and emotional challenges are likely to arise.

In addition, there is a growing recognition that assessment is an area where learners at all levels express dissatisfaction and this has prompted an interest in the relationship between assessment and learning, and as it relates to their learning career. There is evidence that assessment regimes have a significant impact on learners because assessment has the potentiality to drive both learning and motivation. Learners in general at this level are highly grade dependent. Advocates for

Assessment for Learning, particularly in secondary education but not exclusively so, have argued that formative assessment and the provision of feedback is more important than grades (for example, Stobart 2008). However, in higher education, although there is evidence that students value feedback, feel that they deserve it, and sometimes claim to pay it close attention (cf. Higgins et al. 2002), there is little evidence of a shift away from summative towards formative feedback and assessment for learning.

Assessment episodes can be understood as identity markers, moments in the life-course of the individual, which has the effect of fixing attributions given to them by others (even if those attributions are recognised within the community), whilst at the same time offering legitimacy to notions of essentialism and metaphysical notions of human nature. Judith Butler (1993: 532), for instance, suggests that:

> The student achieves precisely through mastering the skills and this mundane practical appropriation of norms and rules culminates in 'excellent work' and fine marks that can be recognised publically as such. The acts of skill acquisition are thus modes of subject formation and this formation takes place within a set of norms that confer or withdraw recognition.

Assessment is thus both an attributional *and* an emotive process and dealing with success or failure forms part of a learner's identity. The concept of an assessment career is potentially very useful for capturing the complexity and diversity of experience of groups of learners and for recognising that there cannot be a distinct group of postgraduates, but rather individuals who may have commonalities with others because of the transitional moments of their learner careers, their maturity and some overarching expectations for developing expertise and autonomy in postgraduate study.

5.9 Position in the Life Course

If the issue of time flows is temporally put to one side, i.e. linear, stepped, recursive, it then becomes possible to identify the life course in different ways. A first approach is that the life course is a stepped system of statuses. The person moves from a lower status to a higher status, or from S_1 to S_2 to S_3 to S_n, a series of status steps, where status is understood as the accord given to the position attained by the person. A transition is understood as movement between these steps. A second approach is that the life course is a stepped system of learning markers. This can be understood in two ways. The first is formal, and an example might be sectorial, i.e. pre-school to primary to secondary to post-compulsory, etc. The second is in terms of informal conceptually-orientated learning stages, for example, Piaget's schema comprising progression from concrete operational to formal operational thinking, or Kohlberg's stages of moral thought, where the subject progresses from pre-moral and conventional rule conformity levels to the acceptance of general rights and standards, and even to adopting individual principles of conduct. A transition is then understood as

movement between these stages. A third approach is that the life course is understood as a stepped system of resource accumulations. Resources are here defined as cultural, social, economic and emotional capital accumulations. A transition is understood as movement in one direction between the different accumulation episodes. A fourth approach is where the life course is understood as a stepped system of career events, and therefore as age-related. Here the formal system is given priority, and it refers to events such as: birth, school, marriage, motherhood, death, etc. A transition in this mode is conceptualised as progression through these life-determining moments. And finally, the life course is framed as a stepped system of identity moments. This is the most controversial because it involves the identification of a stable system of identity-developments or in this case a series of stable identity-developments, and the person moves between them. Some examples are induction, self-realisation and graduation. The transition is from one identity moment to another.

The transition is always time-specific, although as I suggested above, it may be linear, stepped or recursive; and the trajectory may be horizontal or vertical. A vertical trajectory is where the one event gives way to another, so for example, e_1 leads to e_2 leading to e_3 and then in sequence to e_4. A horizontal (with vertical elements) trajectory consists of Time Moment$_1$ ($e_1+e_2+e_3$) moving into Time Moment$_2$ ($e_1+e_2+e_3$), and so forth. In addition, transitions are either progressive, in that movement in the transition is characterised by the type of change, i.e. qualitative or quantitative, or teleological, where this refers to a notion of attaining some final end or point of stasis. Finally, there are transitional mechanisms, i.e. what occasions movement between the different stages, such as critical incidents, crisis points, normal points, and maturational points. In the next chapter I address the important issues of power and accountability in learning environments.

Chapter 6
Accountability

In Chap. 2 I suggested that in any curriculum model a clear distinction needs to be made between those evaluative or assessment-related activities which contribute to learning and those which allow an evaluation or assessment of what is happening or what has happened in relation to education systems, institutions or particular learners. Learning and assessment practices on a programme of study, such as a curriculum, can be regarded as formative if evidence is provided of a learner's achievements in relation to knowledge, skill and dispositional acquisitions, and this evidence is used by the teacher, the individual learner, and their fellow learners, where the intention is to make decisions directly related to their subsequent programme of learning. Thus, assessment is used formatively when it directly influences the learner's cognition. A learning programme or curriculum consequently needs to have within it a clear distinction between summative and formative assessment. If these two functions are combined, then the curriculum is liable to be distorted; and indeed, as we will see in the next chapter, this is one of the principal defects of curriculum systems round the world. One form that these summative evaluative or assessment processes take is quality assurance mechanisms.

There is a variety of quality assurance mechanisms,[1] and they can be demarcated by their different structures and different causal narratives, notwithstanding that they are all designed to ensure that the system, institution or individual performance is as good as it could be and remains so. However, this raises a series of questions about such mechanisms. What constitutes the system, institution or individual performance? What constitutes efficiency, effectiveness or efficacy in relation to these? What is the best way for such organisations or persons to improve, and then sustain this improvement over a period of time? And what unplanned and unforeseen effects are there in the implementation of different models of quality assurance? These quality assurance mechanisms provide a measure of accountability. However, there is a need to distinguish between a system, institution or person giving a transparent account of their activities because this is intrinsically worthwhile; and that system, institution or person giving an account of their activities because this will trigger a

mechanism that results in a more efficient, effective or productive state of affairs. It may be that less accountability in our first sense actually triggers a mechanism that leads to the better performance of the system, institution or person, and counter-intuitively, more accountability in our first sense may lead to a decline in the performance of that body.

The precise form that an accountability system takes is determined by policy-makers answering five questions (Halstead 1994: 34): 'Who is deemed to be accountable for a set of activities? To whom are they accountable? For what are they accountable? In what way are they accountable? And in what circumstances are they accountable?' The history of education in the United Kingdom over the last 70 years shows how different answers to these questions are required when new arrangements and structures are put in place. The post-war consensus reflected a settlement between competing stakeholders in the construction and maintenance of the school curriculum. Schools in both the primary and secondary sectors were not considered to be accountable to governments for the curriculum that they followed and thus were not required to justify curricular decisions they made to policy-makers either for the contents of their curriculum or for the consequences of follow-ing it. (In fact, different forms of accountability operated, but these were to different people and were constructed in different ways.) In the post-war settlement schools were, however, relatively independent of governmental and parental pressures. The accountability form was of a professional kind, with schools organising their activi-ties on the basis of a presumed expertise in curriculum and pedagogy. (This still operates in the private sector, though market forces are holding these schools to account through a results-based mechanism.) When this post-war consensus broke down, the result was that a national curriculum was introduced (which over time has been extensively revised with more and more exemptions to it allowed), account-ability relations between the different parts of the system changed, and a different type of account had to be given.

Different accountability models in education have different knowledge bases. Central control models of accountability are underpinned by an output mechanism in which schools as a whole are judged in relation to past performance, or to stan-dards achieved in other countries, or to some projected ideal about what they should be achieving. Consumer-dominated systems of accountability, which focus on parental mechanisms of choice, are reliant on aggregated judgements between schools, usually in the form of published league tables. Evaluative state models are predicated on a notion of accountability at the levels of process and outcome. Self-evaluative models of accountability are less concerned with cross-school compari-sons and more concerned with those schools providing accounts of their practice, which enable them to improve. This means that different accountability mecha-nisms are underpinned by different epistemic bases and as a result different types of judgement are made about those schools, systems and institutions. Indeed, the desire to substitute one system for another is driven by different knowledge commitments. Models that emphasise external forms of accountability and control are more likely to subscribe to epistemologies that emphasise determinacy, rationality, impersonality and prediction. Systems of accountability and control that emphasise local knowl-

edges and devolved systems of power are more likely to be holistic and interpretive. Knowledge always serves particular interests and consequently, accountability systems need to be understood as being interest-based (Habermas 1972).

6.1   Different Models of Accountability

Five models of accountability then, have been developed: a central control model, an evaluative state model, a quasi-market model, a professional expert model and a partnership model. The first of these is the central control model. Accountability is uni-directional. Educational institutions are accountable for delivering a service that has its remit defined by the state. Governments also stipulate how judgements should be made about successful delivery (the evaluative dimension) and about how this should be achieved (the pedagogic dimension). A number of criticisms of this model have been made; principally that it has adopted a top-down statist policy mode, which is rarely realised in practice. Within democratic states, government directives and consultative documents are read in different ways, and this has an effect on policy implementation. As a result the policy process needs to be understood as continuous rather than cyclical. Policy texts are never complete, but always allow themselves to be over-written at every stage of the process and at every level (including the stages of implementation). This more fluid model of policy means that central control models rarely operate in the way that was intended.

The second model is an evaluative state model where the state withdraws from the precise implementation of policy though it clearly has an important role in framing that policy. It sets up a series of semi-independent bodies which are accountable to governments, but which override current forms of accountability, and whose purpose is to guarantee that institutions, systems and individuals conform to government policy. These semi-independent bodies have both a role in interpreting government policy and imposing sanctions on those educational institutions if they do not conform. Whitty et al. (1998: 46) suggest that this form of accountability is detached but ultimately compelling.

> The strong evaluative state is a minimalist one in many respects, but a more powerful and even authoritarian one in others. In Britain, it is not just that policies of deregulation have allowed the government to abdicate some of its responsibilities for ensuring social justice, but in increasing a limited number of state powers (most notably through a National Curriculum and its associated system of testing), it has actually strengthened its capacity to foster particular interests while appearing to stand outside the frame.

A number of criticisms have been made of it and these focus on its capacity to change the nature of what is being taught and thus distort the curriculum for the sake of generating descriptions of systems and institutions, which can then be deemed accountable.

A third model is the quasi-market model. Here governments decide to withdraw directly from the formation and implementation of policy, and set up quasi-market systems which hand power to the consumer, thus putting pressure on educational

institutions by either exercising or threatening to exercise powers of exit or voice. If in the latter case too much of this takes place, then this threatens the survival of the organisation. In this quasi-market model, a currency is needed to allow consumers to make judgements between institutions to exercise exit or voice. In the school system in the United Kingdom over the last 20 years, a number of technologies have been proposed and tried out: the publication of unamended examination and test results; the publication of value-added results taking account of prior achievement; and the publication of value-added results taking account of the different socio-economic circumstances of children. Each of these is likely to result in a different order of merit. Whichever system is adopted, accountability works by making institutions responsive to a quasi-consumer interest, usually in the form of parents. The market is of course a quasi-market, not least because some groups of consumers have a greater capacity to exercise their rights of exit or voice, because they have a greater degree of cultural capital and can display and use it more effectively than other people.

A fourth form of accountability is a professional expert model. Here it is thought that different types of decisions within a system should be made by different people, because at the level at which they operate they are more likely to have the required expertise for making such decisions. The model rests on a notion of expertise that results in better decisions being made by those whose knowledge of particular matters is superior to others. This expertise can be understood as a capacity to make right decisions within specific contexts, having acquired those knowledge, skills and dispositions appropriate to the solving of problems within these contexts. Accountability is therefore to a professional interest. This accountability model has come under sustained criticism for allowing particular vested interests to dominate and these values are considered to have superseded other more relevant values.

The final model is the partnership model and the principle underpinning this is that since there are no absolute ways of determining the correctness of particular sets of values, decisions within educational systems have to be made through negotiation between all the stakeholders. This means that no one stakeholder has a monopoly of power over any other, or can claim a special status, but the various partners negotiate with each other and come up with agreed solutions. What this also means is that the method for reaching agreement has to be in some ideal sense divested of those power relations which privilege one stakeholder over another. Governments in turn forsake their privileged position in the policy process, avoid sectionalism and properly enter into a deliberative process.

6.2   Bureaucratic Knowledge and Accountability Mechanisms

Giving an account of a series of activities is not a neutral activity, but changes the nature of that activity, and acts to transform our understandings of it and thus our response to it. An example of this is those mechanisms set up to monitor teaching

and learning processes in higher education institutions in the United Kingdom. There is a disjuncture between the actual process of learning and those technologies that are both intended to allow that learning to take place in a more efficient manner and monitor the effectiveness of that learning. The disjuncture occurs because these technologies contribute little to the process of learning; in effect, they are different activities with a different focus, though they purport to be about the same issue. Quality assurance mechanisms have as their purpose an intention or desire to change what is happening in the world, and this is because they act in a performative sense so the teacher conforms imitatively, or is compelled to conform or comply because of a fear of sanctions, or because those sanctions have been applied. What frequently results is a simulation where the teacher conforms on the surface to the demands of the quality assurance process, but in fact operates through a different set of logics. Whether they do this successfully is a different matter because they have to be highly skilled in playing both games simultaneously; in effect operating discursively along parallel tracks and making sure that the one doesn't contaminate the other. Their sense of direction however, is always primarily directed towards putting in place the optimal conditions for learning of their students. Though the purpose of bureaucratisation is to act as a form of labour control, this term fails to give expression to the full import of the process, because the colonising process achieves its purpose through changing the epistemology of the setting. This entails a displacement of content through operating a standardised bureaucratic form of knowledge. The consequences are firstly, confusion in the mind of the learner, and secondly, the emergence of different descriptions of the processes the learners are going through.

This is a process of fabrication. There is a sense in which a first notion of simulation (a positive learning experience for the learner, whereby she acts out the performative element of the learning construct within a constructed environment on the assumption that transfer to a real-life setting then becomes possible) actually merges into a second type of simulation (a faux investigation for example, where she conforms to the epistemological underpinnings of the bureaucratically modelled practice). There may be a sense in which the social actor is also fabricating by pretending to be committed to something and actually going through the motions of doing something when in fact she is doing the opposite. Bureaucratisation always operates at a superficial level, and it is worth noting that the preferred type of data is reductionist and thus potentially distorting.

This is how quality assurance mechanisms operate in practice. These mechanisms have different characteristics and dimensions, and they can be understood as positions on a number of scales: the degree to which they engender a low or high level of trust within the system; the degree of punitive strength they can muster; their capacity to influence the activities under scrutiny, for example, whether they do or do not initiate washback effects; their capacity to influence the epistemological character of the setting; the degree of affordance they give to participants in the setting; and their underpinning ideological framework regarding human nature and possible forms of human interaction.

Most quality assurance mechanisms comprise explicit rather than tacit accounts of practice, and this is not just a question of showing or demonstrating, but of the

practitioner stating them in a formal codified way (and in a particular form which means that they have particular consequences):

> It is also knowledge, so the dreamers dream, that has one other important characteristic, relevant to education; it need not be learnt by apprenticeship to a master but can be learnt in a form of training that is open to mechanisation. Expensive, holistically fashioned, professional practice is thus replaceable, *ex hypothesi*, by cheaper, atomised, lower-order activity. (Arnal and Burwood 2003: 379)

Here there is direct engagement with the constitutive practices. However, the nature of the practice may be distorted by the desire to make it explicit; in other words, there may be a problem of reductionism, especially if the expressive mode used is quantitative.

6.3   Accountability Judgements

An evaluator, inspector or quality assurer has to, in the first instance, make an epistemic judgement about the boundaries of the programme of activity they are investigating. Since a programme by definition includes activities-over-time, then that judgement needs to take account of changes to the programme that are caused by the actions of internal or external participants. As a consequence, this initial epistemic judgement is in fact a series of judgements (i.e. J_a, J_b, J_c .... J_n), and, in addition, the judgements themselves as parts of a series may not be in line with the boundaries of the object being scrutinised, i.e. the programme. The next step is making a judgement about the programme; and this requires two types of judgement to be made: the first is about the type of evidence required to make a judgement and the second is about the type of inferential relationship that is present between evidence set and conclusion. And finally, the evaluator makes a value-laden judgement about the programme's activities, which refers firstly to her own set of values and secondly to the type of judgement that she chooses to make.

All judgements about educational matters are inferential judgements about evidence and the conclusions that the investigator wishes to draw. In making a judgement about a system, an institution or the performance of a person, evidence and its analysis are central. There are two types of evidence: primary data, which is not and cannot be a-theoretic, and comes in the form of testimony or direct observations of worldly events or happenings; and a codified chain of reasoning which involves the collection and analysis of primary data and the positioning of those data in an inferential sequence to allow a conclusion or judgement to be made (as to whether and to what extent an hypothesis about the organisation or person is reliable and valid). Evidence can be more or less authentic, reliable and accurate, and more importantly, more or less salient, where this is defined as a chain of reasoning involving evidence and inference leading to a conclusion about a set of activities and involving judgements at every level. So, a piece of evidence may have a weak indirect relationship to the chain of reasoning, or a strong direct relationship to the chain of reasoning, because it refers to the chain itself and not to evidential elements of it.

Furthermore, salience as a criterion for determining the suitability of a piece of evidence for supporting a judgement is practice-specific. This refers to the kinds of information which serve as supporting facts in making a claim, and these, it is suggested, are practice-dependent: what is a relevant fact is determined within a practice. Therefore evidence may not be relevant because it does not fit with the evidence base within which that claim is embedded and which gives it some measure of credibility. And further to this, each and every evidence-set also has within it a threshold for determining the required probative force of any claim that is made.

Evidence in relation to a judgement about a system, institution or person therefore may be illegitimate for a number of reason: domain incommensurability; non-conformity to the implicit and explicit rules of the domain; a lack of probative force to achieve credibility within the domain; its lack of fit with the way the domain is formed; the degree and type of fallibility accepted in the domain; and the degree to which the evidence set provides a complete or incomplete account of the activities being investigated. The content of that evidence and the form it takes differs between domains. And this in turn means that judgments that relate to other domains are illegitimate when applied to particular domain-specific sets of evidence and inference.

There are a number of ways by which such judgements can be made. The first is deontological, where the judgement is made in terms of a set of absolutely right actions or a set of universal precepts. A second way is consequentialism. This suggests that a normative judgement is made in relation to the consequences of the actions of participants in the programme, and not in terms of intention, circumstance or process. There are a number of different versions. The first of these is actual consequentialism, where an act is judged to be correct or morally right in relation to those consequences that actually resulted from the actions of the individual or institution. Direct consequentialism, on the other hand, suggests that an act is morally right only in relation to the consequences that directly flow from the act itself, as opposed to consequences relating to the agent's motives, or acts of a similar type and so forth. Evaluative consequentialism depends only on the value of the consequences and filters out from the equation any consequences that can be described as non-evaluative. Hedonistic consequentialism refines this still further, so that value can only be given to those consequences that focus on pleasure and pain, and not other types of goods such as freedom, or intrinsic knowledge. A further variant, universal consequentialism, focuses on the consequences for everyone, as opposed to particular group or sectional interests.

A third way by which such judgements can be made is by examining the intentions of the programme or person, and then comparing what has actually happened with what was intended to happen. There are a number of problems with this. Intentions are always future orientated, and fundamentally they reflect what key participants think can be achieved in terms of what currently exists and how what currently exists may change in the future, i.e. they are predictive. Furthermore, they may be wrong, misguided, badly formulated, incorrectly predictive, etc. The question has to be asked: who is responsible for the programme?

In making these judgements the evaluator of the programme (whether internal or external) is making a judgement about the amount and type of moral responsibility that can be attributed to those social agents who are central to the activities of the programme. This raises a number of questions about moral responsibility. Does the person (or persons) qualify as a moral agent (or moral agents)? Do they possess the general capacity to perform as a moral agent, where this refers to an ability to evaluate their reasons for doing this rather than that? Are the conditions in place in the setting which is being evaluated that allow the agent to perform in a way that conforms to their sense of moral accountability, i.e. have they performed it freely and were they allowed to exercise their moral culpability? And finally, have they taken sufficient account of the conditional nature of any decision-making they might want to engage in? This conditionality has four forms: social actors are relatively unaware of some of the conditions for their actions; that is, every action has a set of conditions underpinning it, for example, a speech act requires a language, vocabulary and grammar; they are unlikely to be able to predict all the consequences of their actions, so there are going to be unintended consequences; social actors may not be aware of much of their own knowledge and expertise, in other words, much of their knowledge is tacit, and thus they cannot, except with the greatest of difficulty, surface it in their accounts of their actions; and equally they may be motivated by unconscious forces and impulsions which they find great difficulty in articulating. A distinction can be drawn between attributability and responsibility as accountability (Aristotle 1925), and this distinction rests on the difference between ascribing moral responsibility to a person or organisation because they or the organisation is formally responsible for their or its activities and only making someone or some organisation responsible if they were in a position to do something about it and thus effectively make a difference. This last involves a judgement about what is reasonable in attributing praise or blame to a person or organisation in the actual circumstances in which those activities were performed and about which that judgement is being made.

A distinction has been drawn here between a system, institution or person giving a transparent account of their activities because this is intrinsically worthwhile and that system, institution or person giving an account of their activities because this will trigger a mechanism which results in a more efficient, effective or productive state of affairs. Five models of accountability then, have been identified: a central control model, an evaluative state model, a quasi-market model, a professional expert model and a partnership model. Giving an account of a series of activities is not a neutral activity, but changes the nature of that activity, and acts to transform our understandings and thus our response to it. Quality assurance mechanisms have different characteristics and dimensions, and they can be understood as positions on a number of scales: the degree to which they engender a low or high level of trust within the system; the degree of punitive strength they can muster; their capacity to influence the activities under scrutiny, for example, whether they can or cannot initiate washback effects; their capacity to influence the epistemological character of the setting; the degree of affordance they give to participants in the setting; and their

underpinning ideological framework regarding human nature and possible forms of human interaction.

An evaluator has to, in the first instance, make an epistemic judgement about the boundaries of the programme of activity they are investigating. Since a programme by definition includes activities-over-time, then that judgement needs to take account of changes to the programme, which are caused by the actions of internal or external participants. In reality, this initial epistemic judgement is a series of judgements, and, in addition, the judgements themselves as parts of a series may not be in line with the boundaries of the object being scrutinised, i.e. the programme. The next step is making a judgement about the programme; and this requires two types of judgement to be made: the first is about the type of evidence required to make a judgement and the second is about the type of inferential relationship that is present between evidence set and conclusion. The evaluator then makes a judgement about the programme's activities, which refers firstly to their own set of values and secondly to the type of judgement that they choose to make. A distinction can therefore be drawn between attributability and responsibility as accountability, and this distinction rests on the difference between ascribing moral responsibility to a person or organisation because they or the organisation is formally responsible for their activities *and* only making someone or some organisation responsible and therefore accountable if they were in a position to do something about it and could have effectively made a difference. This is a judgement about what reasonable attribution is. Another form of accountability is through international comparisons and the development of a common currency of comparison. It is to these issues that I now turn.

Chapter 7
Globalisation Mechanisms

There are always extra-national or global influences on the development of curricular practices within nations, regions and jurisdictions, although we have to be clear that these globalising pressures do not determine policy and practice within particular countries in an over-arching way.[1] Globalisation comprises a process of policy and practice convergence between these different nations, regions and jurisdictions. There are a number of possible manifestations. The first is a process of policy borrowing or policy learning, where the individual nation is the recipient of policies from other nations or even from a collection of other nations. These processes impact in complex ways on educational practices, and in particular on the development of the curriculum. The second is the direct impact of supra-national bodies which have power and influence over member countries and which are seeking the harmonization of national educational policies and practices. The third is a more subtle approach and this is where the supra-national body does not deal in policies or practices but in a common currency of comparison. This is perhaps the most significant form that globalisation takes, an example of which is the influence exerted by international comparative systems of assessment. The fourth process that potentially allows convergence is the autochthonous response of each national system of education to a common imperative from outside its jurisdiction, though this may lead to divergence rather than convergence. The fifth is a direct response to globalisation pressures by a nation, region or jurisdiction. However, I have suggested in a number of places in this book that globalising processes are always likely to be tempered by national and local preoccupations, concerns and interests (cf. Lingard 2000). This chapter will focus on the third of these processes, and show how a common currency of comparison is created through the development of an international comparative student assessment system, such as the Programme for International Student Assessment (PISA) by the Organisation for Economic Cooperation and Development (OECD).

Two knowledge-acquisition and knowledge-development states of being can be identified. The first is focused on those knowledge sets, skills, and dispositional states of a person, collectively known as capacities, and the second on those knowledge sets, skills and dispositional states which allow this person to do well in tests, and in particular, high stakes tests. They have different characteristics. If an education system introduces high stakes testing, that is, testing in which there are significant rewards attached to success in the test for an individual, an institution, or even a nation, then there are two consequences. The first is that the second of the knowledge-development models becomes the dominant form of knowledge-development in the curriculum and the second is that the first model over time is transformed so that it becomes more like the second model, that is, it has more of its characteristics. Testers commonly conflate the two models, and in doing so make a number of false assumptions about knowledge and its assessment, with the consequence that these two forms of knowledge-development become indistinguishable in the minds of policy-makers, educational practitioners, learners and other stakeholders. Furthermore, knowledge of an individual's or a group's (i.e. nation, age-cohort or category) capacities, as in international comparative systems of testing such as the Programme for International Student Assessment (PISA) (OECD 2000, 2005, 2006, 2009b), is underpinned by a particular and specific geo-historical notion of comparison.

Before I develop the argument in this chapter any further, I need to set out an alternative to the theory of mind, which underpins psychometric views on educational testing and assessment. This is provided by the philosophy of critical realism. Critical realists make three initial claims: there are significant differences between the transitive realm of knowing and the intransitive realm of being; the social world is systemically open; and researchers and observers need to grasp the ontological depth of reality. The first of these then, refers to a distinction between the intransitive world of being (the ontological realm) and the transitive world of knowing (the epistemological realm), so that to conflate them becomes illegitimate, either upwards, resulting in the epistemic fallacy, or downwards, resulting in the ontic fallacy (cf. Bhaskar 1989). There are two implications of this. Social objects, though real, constantly change, and it is therefore the changing object that is relatively enduring, even to the extent that the object has been so utterly transformed that it is barely recognisable in relation to its former self. The second implication is more significant, and this is that, in certain circumstances and within certain conditions, social objects from the transitive realm can penetrate the intransitive realm and be objectified. What follows from this is that in principle the measurement of the capacities of an individual or set of individuals can activate emergent properties of the construct being measured and change that construct.

This also suggests that a disjuncture can occur between the two realms, with the result that they become unsynchronised. Bhaskar (1989) identifies four reasons for this: there are social objects in the world whether they are known or not; knowledge is fallible because any epistemic claim can be refuted; there are trans-phenomenalist truths which refer to the empirical world and discount deeper levels of social reality, i.e. the work of social mechanisms; and more importantly, there are

counter-phenomenalist truths in which those deep structures may actually be in conflict with their appearances. If these two are conflated this leads to confusion and misappropriation.

The second claim is that the social world is systemically open. Closed systems are characterised by two conditions: objects operate in consistent ways, and they do not change their essential nature. Neither of these conditions pertains to open systems. In closed systems measured regularities are synonymous with causal mechanisms. Experimentation is therefore unnecessary because experimental characteristics are naturally present. There are two alternatives: artificial closure and the use of methods and strategies that fit with systemic openness, including, but not exclusively, inferential judgements from the analysis of indirect evidence. The first of these alternatives, artificial closure, makes a number of unsubstantiated assumptions: cross-environmental transferences can be made even if the original knowledge is constructed in artificial conditions; and this original knowledge is correctly related to the constitution of the object, i.e. an assessment result is isomorphic with the capacity of the individual, whether this is expressed as a knowledge-set, skill or disposition. Social theorists are therefore left with those methods and strategies that conform to the principle of systemic openness.

The third claim is that social reality has ontological depth. Social objects are the real manifestations of the idealised types used in discourse and are the focus for any enquiry. They are structured in various ways, and because of this, they possess powers. The powers that these structures (or mechanisms) exert can be one of three types (cf. Brown et al. 2002). Powers can be possessed, exercised or actualised. As a result, a causal model based on constant conjunctions is rejected and replaced by a generative-productive one, and objects and relations between objects (as in educational systems or testing regimes) have emergent properties.

Three propositions follow from this critical realist perspective. The first is that any descriptions we make of human agency and its capacities are dependent upon 'intentional causality or the causality of reason' (Bhaskar et al. 2010: 14). Second, these descriptions need to take account of 'synchronic emergent powers materialism' (*ibid.*), that is, time-sequenced and stratified changes to the powers of objects, whether discursive or embodied; and thirdly, there is a need to acknowledge 'the *evaluative and critical* implication(s) of factual discourse' (*ibid.*, my italics). These three principles have significant implications for developing a comprehensive explanation of cross-national and cross-cultural testing regimes, such as PISA.

7.1 False Beliefs

The default position taken by those working within the psychometric tradition of knowing other minds is that a person has a number of capacities (i.e. knowledge sets, skills and dispositions), which can be described as the contents of that person's mind,

and which subsequently can be characterised using the methods of experimentation and testing. There is therefore potentially a true score for a person, and this true score represents in symbolic terms her capacity in the particular domain being tested. For a variety of reasons, errors may occur in the process of constructing that true score, but these are corrigible, i.e. they can be corrected by using different (and thus by implication better) methods and approaches. Errors may occur because the wrong type of instrument is chosen for determining the person's true score or because her emotional and affective states are such that she gives a false impression of her capacities. In contrast, the argument being made here is that there are a number of false assumptions being made by psychometricians and test-constructors, perhaps best expressed as false beliefs.

The first of these is that a person has a knowledge, skill or dispositional set, which is configured in a particular way (i.e. it has a grammar), and it is this knowledge, skill or dispositional set, or at least elements of it, which is *directly* assessed when that person is tested. In contrast, any testing that is carried out with the purpose of determining whether these attributes are held, not held, or even partially held by an individual, always involves an *indirect* process of examination, where the additional element is a conjecture, logical inference or best guess. Furthermore, the required performance elicited during the test is specifically related to the testing technology, so, for example, if a multiple-choice test is chosen, the correct answer and therefore the correct construction of the problem are framed to fit this technology. In order to obtain a true measure of that person's capacity, and not, it should be noted, a comparative measure of the construct being tested at the individual or group level, then a retroductive mode of inference would need to be used to identify what must have been the case in order to bring about the observed event (i.e. the testee answering a multiple-choice question in a standardised test).

A second false belief is that this grammar is organised into elements, there are relations between those elements, and each element can be scaled, which can then be directly investigated. This can be contrasted with a position which suggests that, in the application of the knowledge, skill or dispositional set, whether for the purposes of testing or for use in everyday life, a range of other knowledge elements, skills and dispositions are invoked. This should not be conflated with the idea that the contents of the curriculum cannot be disconnected for the purposes of testing, leading to a belief in property holism (cf. Curren 2006, for a refutation). What, in contradistinction, is being argued for here is that in the application of a knowledge set, skill or disposition, whether for the purposes of testing or otherwise, a range of other types of knowledge and skill are needed, and the testee may not have sufficient knowledge of these matters or be sufficiently skilful in relation to them. For example, the application of higher-level mathematical skills, such as solving algebraic equations, assumes a knowledge of, and a capacity in, lower level mathematical skills, such as addition and subtraction.

There is, on the other hand, a set of factors that in combination may result in construct-irrelevance variance (Messick 1989), that is, variance amongst a population of testees as a result of factors that do not have anything to do with the construct being tested. Even if knowledge of or competence in the construct is equally distributed

in this population, some testees will do better than others (i.e. on their actual scores) and this is not because they have greater knowledge or are more competent in the construct being tested. This might involve either construct-under-representation or construct-over-representation (William 2006), and within the confines of the test itself it is impossible to determine which of these has occurred. The challenge for testers then is to eliminate such construct-irrelevance variance. However, this is not without its problems. First, we cannot say with any degree of certainty what the variance might be because we don't know what a true score for the individual or an aggregated true score for a group is, and therefore have nothing to compare it with. Analytical comparisons can be made, and in PISA are made, over time (between T_1 and T_2, where T represents a time-point), between different capacities (if an individual is expert at C_a, then she will also be expert at C_b, where C represents a capacity), between different constructs (Co_1 has the same level of difficulty as Co_2, where Co refers to a construct), between different performative settings (S_1 is considered to be isomorphic with S_2, where S refers to a setting), on the same test at two different time points (this is an external measure of reliability, R_a), with different items on the same test at one point in time (this is an internal measure of reliability, R_b), and on comparable tests at two different time-points (this is another external measure of reliability, R_c). With the first of these an assumption is made that no emergent properties of the construct being tested are activated, and moreover, that no learning takes place, as a result of the testing or otherwise, between T_1 and T_2. With regards to the second an assumption is made that expertise in specific capacities automatically transfers to expertise generally. With the third analytical comparison, an assumption is made that all measureable constructs have an equal level of difficulty in their acquisition and in their application. The fourth of our measures seeks to confirm the validity of a score on a test by examining whether that aptitude can be applied to other spatio-temporal settings outside of the test setting. An assumption is made that the construct being tested has transferable characteristics and is not specifically connected to a particular performative setting. Finally, with the last three, an assumption is made that if a score on a test is reliable then it is also valid. Each of these analytical comparative forms is underpinned by assumptions or beliefs that in turn need verification, or at least can allow trust in their use. And thus a further rationale needs to be provided for each of these assumptions.

A second problem with eliminating construct-irrelevance variance is that it cannot be achieved by replacing a knowledge construct with a competency, despite this being the clear intention of PISA test constructors. For example, PISA – 2006 attempted to assess three broad science competencies: 'i) Identifying Scientific Issues; ii) Explaining Phenomena Scientifically; and iii) Using Scientific Evidence' (OECD 2008: 12). This is because the problems associated with construct-irrelevance variance apply equally to knowledge *and* competence constructs, and in addition, with regards to the assessment of competence constructs, there is the problem of multiple interpretations being made.

Test-constructors confronted by the problem of construct-irrelevance variance may seek to reformulate the construct, so that those matters which might be considered to be separate from the construct, such as the time element for solving a problem in

a test, now become part of the construct, i.e. the assessment now relates to the capacity to solve the problem within a definite time period and not just to the capacity to solve the problem. This introduces a performative element into the construct itself. Once again, this move is beset with problems, since it weakens the idea that individual expertise in that construct can be transposed to other settings because it is now more context-dependent as an assessment. What has been weakened is the predictive validity of the assessment. In cross-national testing environments such as PISA some of those performative elements can be standardised, i.e. the tests are conducted in roughly similar conditions. However, what cannot be standardised is the relation between what is taught and what is being assessed, how this assessed knowledge relates to its usage in other environments, and the test-taking capacity of the individual or group.

A third false belief is that in the use of a knowledge-set, or in the performance of a skill, or in the application of a disposition, no internal transformation takes place. (In fact, both internal and external transformations are neglected within traditional psychometric accounts.) In contrast, within a person's mind two knowledge sets are being activated. The first is the original knowledge set; and the second is the transformed set. Further to this, the transformed set is not only the result of a causal mechanism at work but may also at different points in time influence and transform the original construction of knowledge; that is, it has the capacity to bend back on itself and act recursively to change its original form.

There is also an external transformative process at work, and thus a fourth false belief is that testing a person's knowledge, skills and aptitudes has no washback effects on either the original knowledge construct, or the internally transformed knowledge set ready for testing. In contrast, the well-documented process of washback works in just this way (cf. Stobart 2008), so that instead of the assessment acting merely as a descriptive device, it also acts in a variety of ways to transform the construct it is seeking to measure. Washback effects work on a range of objects and in different ways. So, for example, there are washback effects on the curriculum, on teaching and learning, on the capacity of the individual and more fundamentally on the structures of knowledge, although these four mechanisms are frequently conflated in the minds of educational stakeholders.

Micro-washback effects work directly on the person, whereas macro-washback effects work directly on institutions and systems, which then subsequently have an impact on individuals within those institutions and systems. For example, at a global level, policy enactments may lead to changes in national curricula and national systems of testing, which in time will lead to changes in curriculum and assessment at the level of schools and thence to changes in what is learnt and what an individual considers to be performative knowledge. What is considered to be appropriate performative knowledge has therefore changed as a result of changes at global, national and school levels. Washback effects do not work in a deterministic way, since there are a large number of activities that have to be coordinated during the sequence of events to achieve the desired result, and mechanisms such as these have emergent properties because they operate in open systems (cf. Bhaskar 1989).

The argument is therefore made by cognitive psychologists and test constructors that no internal or external processes of transformation occur when the knowledge, skills, or dispositions of the person are tested; i.e. that person knows something or has a particular skill or has developed a particular disposition, and that in the act of displaying that knowledge or using that skill or allowing that disposition to be realised, no change occurs to the original knowledge construct, or skill set or disposition, in order for that person to respond in the appropriate manner to the situation confronting her. In contrast, I want to suggest that there is a transformative process and it can take a number of forms, i.e. accretion and thus retention of the original knowledge domain, skill or disposition, or subsumption, where the original knowledge domain is subsumed into a new domain and thus loses its identity, or deletion so that parts are discarded to accommodate the contingencies of the new setting. What this also points to is that in the process of determining whether a person knows this, or can do this, or has the necessary disposition, an inferential process is required so that the observer can move from evidence, i.e. the test result, to a description of an actual state of being. The assumption is made that if this person can do something in the test situation, then they can also do it in different situations, or if that person knows something in the test situation, then they also know it in other situations. It is, in short, the problem of transfer, and it is problematic because it is prospective and morphogenetic. A measure of predictive success to determine whether a person or group of people can do something in other settings outside the testing environment can be developed; however it is an unreliable measure for two reasons. Events, happenings and unplanned occurrences during the interval between the two time points (the test setting and the application setting) cannot be controlled for; and the two different activities are not comparable.

A fifth false belief is that the process of testing works in a unidirectional linear fashion. For example, a person knows something, that person is subjected to a test which is designed to test for traces of that learning in a population of knowers with similar characteristics, and a score in relation to that construct is recorded indicating that the person either knows it, doesn't know it or knows it to some extent. No consideration is given to bidirectionality, incorporating forward and backward flows, so that the taking of the test and the recording of the mark impact on and influence the original knowledge construct. This changes the structure (both quantitatively and qualitatively) of the construct, and its affordances, making the original determination of it and them unreliable.

A sixth false belief is that different types of knowledge, including those at different levels of abstraction, can be tested using the same algorithmic process. For example, testing a knowledge of facts and testing a capacity to synthesise basic facts are different processes. And this is because in the former case the test item refers directly to the construct being tested, whereas in the latter case it refers to an example of the construct, and successful mastery of the construct has to be inferred from successful mastery of the example. This latter process therefore additionally has to satisfy criteria such as relevance, quality and probative force for that inferential relationship between example and construct to be considered valid.

A seventh false belief is that the performance on the test represents to a greater or lesser extent (given that the person may have been distracted or constrained in some way or another) what the testee can do or show, rather than there being a qualitative difference between the performance on the test and the construct, skill, or disposition of the testee. An individual may have to reframe their knowledge set to fit the test, and therefore the assessment of their mastery of the construct is not a determination of their capacity in relation to the original construct, but a determination of whether the testee has successfully understood how to rework their capacity to fit the demands of the testing technology.

7.2   Culture-free Tests

An eighth false belief is that a test can be constructed which is culture-free or free of those issues that disadvantage some types of learners at the expense of others. This mechanism works in a number of ways: test constructors may use background material which is unfamiliar to some testees but familiar to others; test items may have been taught in different ways to different groups of testees, that is, they have been given different values, or taught in a different order, or even not taught at all; and the testing technology may be unfamiliar to them because of factors which are peripheral to the articulation or use of the particular construct, but central to the testing technology used to assess it.

The extent of cultural bias in the PISA tests is unrealised and certainly underreported. For example, Southern European girls performed less well than their male counterparts across the whole population of people being tested in relation to a question in the 2009 tests about a car lapping a race track. Some cultural dispositions disadvantage certain types of children, particularly in those countries where guessing is discouraged. An example, Bracey (2004) gives, is that French students preferred not to answer questions relating to personal experience, because they felt that such questions were not appropriate to the testing of academic knowledge.

A particular technical problem with PISA relates to its sampling procedures. If different types of sampling in the different countries are used, then some of these countries will be disadvantaged compared with others. Sampling issues are present in any test, whether they are referring to selecting children from a number of grade levels and not specifying proportions from each grade, to selecting parts of countries for reporting purposes and ignoring the rest, as in the latest PISA tests (OECD 2014), where only the richest and better educated cohort of learners was entered (from Shanghai), and these were allowed to represent China as a whole, to the selective (by the individual country) non-participation of some types of schools in some countries and not others. For example, in the 2009 tests, special schools were excluded in England but not in Germany. Bracey (2009) further suggests that there was a selective non-participation of learners: '…not only do schools need to agree to participate, learners must agree too, and it is not clear how local culture and school regimes may have produced differential degrees of participation'. In Argentina some learners handed in largely blank tests.

One of these options then is withdrawal from the programme. An example of a country where this happened is India. Of the 74 countries tested in the PISA 2009 cycle, two Indian states (Himachal Pradesh and Tamil Nadu) were placed in 72nd and 73rd position out of 74 countries that participated in both reading and mathematics, and 73rd and 74th position in science. The poor results in PISA were greeted with dismay in the Indian media. India withdrew from the next round of PISA testing, in August 2012, with the Indian government attributing its action to the unfairness of this testing process for Indian learners. The Indian Express reported on the ninth of March in the same year that '(t)he ministry (of education) has concluded that there was a socio-cultural disconnect between the questions and Indian students. The ministry will write to the OECD and drive home the need to factor in India's "socio-cultural milieu". India's participation in the next PISA cycle will hinge on this'. In June 2013, the Indian government, still concerned with the future prospect of fairness of PISA testing relating to Indian students, again withdrew India from the 2014 round of PISA testing.

Cultural differences take a number of different forms, such as, ascribing different values, and different strengths of values, to cultural items, or determining the nature, quality, probative force, relevance-value and extent of evidence, or focusing on practices which may be more familiar to people in some countries and less so in others. However, more importantly, cultural differences with regards to the selection of test items refer to the expression of the problem to be solved. If, for example, different national idioms, different national ways of thinking embedded in language forms, and different normic values woven into the fabric of national discourses are ignored, then the presentation of the actual test items as well as the range of possible answers that can be given may favour students from one nation at the expense of students from another.

This is the problem of fair comparison. And in order to make a fair comparison, it may not just be a question of translating the words which are being used, that is, substituting one set (i.e. words, sentences, language structures) for another, but transposing the example and the problem, so that it better reflects its new epistemic base. Underpinning the notion of an international test is the idea of a universal, i.e. culture-free, form of knowledge, which can be adapted so that superficial differences between nations are eliminated. However, it is never enough to say that a test simply tests the capacities and knowledge constructs of a group (in this case a trans-national group) of students. What a trans-national test does is make a number of reductionist assumptions about the knowledge bases being tested which result in imperfect caricatures of all the national knowledge bases under consideration.

7.3   Examination Technologies

If no incentive is attached to the taking of a test, i.e. personal benefit such as gaining entry to a higher education institution, or monetary reward, or furtherance of a student's learning trajectory, or national advantage, then the student is not likely

to treat it very seriously. The value that she attaches to it is always a matter of perception, rather than designation, and this means that different types of students will be motivated to do well to different degrees. Cognitive psychologists and test constructors argue that these individual characteristics of test takers are accounted for at the level of the group, and the argument is then made that these characteristics, i.e. propensity to lose concentration in a test or not give a true account of their capacities because the examination technology offers them no incentive to do well, or having a presentational style which is at variance with the affordances of the examination technology, are randomly distributed amongst members of any group, and therefore do not effect scores at the group level. As a result, groups can be reliably compared with each other. However, the assumption that these characteristics of group members are evenly distributed is false, and in addition, this is a measure of reliability rather than construct validity. Furthermore, these characteristics may be the defining characteristics of the group.

An example of this is a multiple-choice test. The technology only allows a limited range of answers; therefore there is a high probability of false negative and false positive errors (Wood and Power 1987), despite misleaders being inserted as questions to allow reliability checks to be performed. Only a limited range of knowledge items and processes can potentially be tested because correct answers are being asked for, and those answers are framed in ways that do not allow discursive, equivocal responses. As a result, this technology has the effect of widening the gap between the capacity of the individual and her performance (both internally and externally), because the test is constructed so that it has few of the characteristics of the original knowledge construct and potentially its application. There is in short a limited discretion given to the person being tested and therefore in principle at least, multiple-choice testing has a greater propensity to washback onto the curriculum. Furthermore, the characteristics of the technology used for multiple-choice testing favour some groups in comparison with others, i.e. boys may have an advantage over girls.

A contrasting example is the use of a free-ranging essay format to determine the comparative capacity of a group. A wide discretion is given to each candidate, though marker unreliability effects may be high. The assessment is not focused on discrete facts but on general competencies, i.e. the ability to sustain an argument. Thus in principle it may be better able to measure higher-level skills. Validity may be strong if this is understood as an alignment between the knowledge, skills and dispositions of the person and the description that is made of them. Because marker discretion is high and because the candidate is allowed more latitude in how she frames her answers, then the possibility of a significant washback effect is reduced.

A test is always a performance. The taker of the test frames their response to the test in terms of what they perceive to be the correct answer. This operates at the unconscious level, and it is unremarkable. When I have a conversation with another person, I frame my response and my mode of responding to how I think my message is going to be received. With regards to testing, there is a further element, which is that the testee frames their answers in terms of their perception of what they consider

to be the correct response. If, for example, there is some ambiguity in the question, the testee asks herself the question: what type of answer should I give which is likely to result in the award of the maximum amount of marks? Test constructors aim to write questions or construct problems to be answered with as little ambiguity as possible. This is achieved (though rarely successfully) by reducing the scope of either the question/problem to be solved or by reducing the response that the testee is required to make, and this involves a reformulation of the knowledge construct, though it may still contain residues of its original form.

7.4   A Competency Curriculum

The Organisation for Economic Cooperation and Development (OECD) decided at the outset that the PISA tests should be based on competencies rather than knowledge or skills, though as I have suggested above, this cannot solve the problems associated with construct-irrelevance variance. Here, the OECD (2005: 1) sets out its intention to construct a competency curriculum:

> Today's societies place challenging demands on individuals, who are confronted with complexity in many parts of their lives. What do these demands imply for key competencies that individuals need to acquire? Defining such competencies can improve assessments of how well prepared young people and adults are for life's challenges, as well as identify overarching goals for education systems and lifelong learning. A competency is more than just knowledge and skills. It involves the ability to meet complex demands, by drawing on and mobilising psychosocial resources (including skills and attitudes) in a particular context. For example, the ability to communicate effectively is a competency that may draw on an individual's knowledge of language, practical IT skills and attitudes towards those with whom he or she is communicating. Individuals need a wide range of competencies in order to face the complex challenges of today's world, but it would be of limited practical value to produce very long lists of everything that they may need to be able to do in various contexts at some point in their lives. Through the DeSeCo Project, the OECD has collaborated with a wide range of scholars, experts and institutions to identify a small set of key competencies, rooted in a theoretical understanding of how such competencies are defined. Each key competency must: contribute to valued outcomes for societies and individuals; help individuals meet important demands in a wide variety of contexts; and be important not just for specialists but for all individuals.

It should be noted then, that the application of these competencies is future-orientated, and that though a competency curriculum is designed to replace a knowledge-based one, it doesn't succeed in all the cases where it has been attempted, and in fact cannot do this. What usually takes place is a sleight of hand; calling something by a different name doesn't mean that its fundamentals have changed.

PISA test constructors have chosen to measure competencies rather than knowledge sets on the grounds that the latter are specific to particular countries, whereas competencies have universal characteristics. There are two problems with this. First, those national and local features of knowledge domains apply in equal measure to skills, competencies and dispositions (configurations of individual capacities which can be expressed as affordances). Second, there is a longer and more complex

inferential chain involved in the measurement of competencies than there is in the measurement of knowledge acquisition, and there is therefore a greater likelihood of construct-irrelevance variance occurring.

PISA has attempted the difficult task of constructing curriculum-free tests; the most notorious example being the 11+ examination in the UK (cf. Torrance 1981, for a critical evaluation). The reason for this is that making comparisons between the test performances of students from different countries, with different curricula and with different teaching methods and approaches, requires the selection of test items that do not reflect national curricula or national pedagogic methods. So these international comparative tests, and this includes items which refer to socio-economic conditions of the student and attitudinal data (as in the latest PISA Science-focused set of tests), are not a measure of their curriculum, nor what they have been taught, nor are they a measure of what they have learnt in any formal sense. This means that the content of the test items and the presentation of those test items are likely to favour some countries at the expense of others.

The New Zealand national school curriculum claims to be a competency curriculum, but here competency is being construed as knowledge constructs, skills and dispositions, an example perhaps of the mislabelling involved when a nation offers a competency curriculum:

> The New Zealand Curriculum identifies five key competencies: thinking, using language, symbols, and texts, managing self, relating to others, and participating and contributing. People use these competencies to live, learn, work, and contribute as active members of their communities. More complex than skills, the competencies draw also on knowledge, attitudes, and values in ways that lead to action. They are not separate or stand-alone. They are the key to learning in every learning area.
>
> The development of the competencies is both an end in itself (a goal) and the means by which other ends are achieved. Successful learners make use of the competencies in combination with all the other resources available to them. These include personal goals, other people, community knowledge and values, cultural tools (language, symbols, and texts), and the knowledge and skills found in different learning areas. As they develop the competencies, successful learners are also motivated to use them, recognising when and how to do so and why.
>
> Opportunities to develop the competencies occur in social contexts. People adopt and adapt practices that they see used and valued by those closest to them, and they make these practices part of their own identity and expertise. The competencies continue to develop over time, shaped by interactions with people, places, ideas, and things. Students need to be challenged and supported to develop them in contexts that are increasingly wide-ranging and complex.
>
> *Thinking*
> Thinking is about using creative, critical, and metacognitive processes to make sense of information, experiences, and ideas. These processes can be applied to purposes such as developing understanding, making decisions, shaping actions, or constructing knowledge. Intellectual curiosity is at the heart of this competency. Students who are competent thinkers and problem-solvers actively seek, use, and create knowledge. They reflect on their own learning, draw on personal knowledge and intuitions, ask questions, and challenge the basis of assumptions and perceptions.

Using Language, Symbols, and Texts

Using language, symbols, and texts is about working with and making meaning of the codes in which knowledge is expressed. Languages and symbols are systems for representing and communicating information, experiences, and ideas. People use languages and symbols to produce texts of all kinds: written, oral/aural, and visual; informative and imaginative; informal and formal; mathematical, scientific, and technological. Students who are competent users of language, symbols, and texts can interpret and use words, number, images, movement, metaphor, and technologies in a range of contexts. They recognise how choices of language, symbol, or text affect people's understanding and the ways in which they respond to communications. They confidently use ICT (including, where appropriate, assistive technologies) to access and provide information and to communicate with others.

Managing Self

This competency is associated with self-motivation, a "can-do" attitude, and with students seeing themselves as capable learners. It is integral to self-assessment. Students who manage themselves are enterprising, resourceful, reliable, and resilient. They establish personal goals, make plans, manage projects, and set high standards. They have strategies for meeting challenges. They know when to lead, when to follow, and when and how to act independently.

Relating to Others

Relating to others is about interacting effectively with a diverse range of people in a variety of contexts. This competency includes the ability to listen actively, recognise different points of view, negotiate, and share ideas. Students who relate well to others are open to new learning and able to take different roles in different situations. They are aware of how their words and actions affect others. They know when it is appropriate to compete and when it is appropriate to co-operate. By working effectively together, they can come up with new approaches, ideas, and ways of thinking.

Participating and Contributing

This competency is about being actively involved in communities. Communities include family, whānau, and school and those based, for example, on a common interest or culture. They may be drawn together for purposes such as learning, work, celebration, or recreation. They may be local, national, or global. This competency includes a capacity to contribute appropriately as a group member, to make connections with others, and to create opportunities for others in the group. Students who participate and contribute in communities have a sense of belonging and the confidence to participate within new contexts. They understand the importance of balancing rights, roles, and responsibilities and of contributing to the quality and sustainability of social, cultural, physical, and economic environments.

Competence is a contested term (cf. Chappell et al. 2000). Indeed, four different underpinning approaches have been identified: positivist, humanist, critical, and postmodern. A positivist interpretation of competence focuses on the technical aspects of work and behaviour, so that the concern is to measure directly observable performances against specified criteria. As Chappell et al. (ibid.: 35) acknowledge: '(o)ne consequence of this view of the educational system is the development and implementation of highly mechanistic and task oriented curricula, with the focus on skills and outcomes'. Interpretivist or humanist approaches suggest that social actors focus on the meanings that they construct about their lives and in relation to the world, and argue that human beings negotiate these meanings in their social practices. And in particular they subscribe to a view of human nature that is based on reason and a common humanity, an enlightenment aspiration. Critical theorists

argue for the development of a notion of knowledge and therefore of competence that is potentially transformative or emancipatory; its purpose is to detect and unmask those practices in the world that limit human freedom. Postmodernists suggest that competencies as expressions of universal traits need to be historicized and deconstructed in time and space.

Epistemology has traditionally been concerned with what distinguishes different knowledge claims, specifically between legitimate knowledge *and* opinion and belief. Theorising learning and competencies is a contested activity and this is in part because the various renditions of each are epistemically framed. There are four possible types: positivist/empiricist, interpretivist, critical, and postmodernist, and this mirrors the four approaches taken to competencies that are set out above. When in the nineteenth century the social sciences were beginning to be developed, they did so under the shadow of the physical sciences. Therefore as immature sciences they sought to mirror the procedures and approaches adopted by the natural sciences (or at least by an etiolated version of scientific methodology which rarely equated with how scientists actually behaved).

Such positivist/empiricist approaches can be characterised in the following way. There is a real world out there and a correct way of describing it. This allows us to think that theorising is simply a matter of following the right methods or procedures. What follows from this is that the knowledge produced from this algorithmic process is always considered to be superior to common sense understandings of the world, by virtue of its systematicity and rigour. Science works by accumulating knowledge, that is, it builds incrementally on previous knowledge. However, it is hard to argue that the social sciences have developed a body of knowledge, which presents unequivocal truths about its subject matter. Furthermore, twentieth and twenty-first century philosophy has generally accepted that any observations we make about the world, including those which are central to the research process and can be construed as 'facts', are always conditioned by prior understandings we have of the world. There are no theory-free facts, and this puts at risk the distinction made by positivists/empiricists between observation and theory.

The positivist/empiricist method equates legitimacy with science (although this is very much an idealised view of scientific activity) and is characterised as a set of general methodological rules. A clear distinction is made between knowers *and* people and objects in the world. Facts can be identified, free of the values and personal concerns of the observer. Thus, any assertions or statements we make about learning and competencies are about observable measurable phenomena, and this implies that two theorists if they apply the correct method would come to the same conclusions. It is the correct application of the method that guarantees certainty and trust in the theories we produce. Although all these assumptions are significant in their own right, they give the impression that positivism and empiricism are simply highly idealised abstruse doctrines; however, such theories have important social consequences and speak as authorities in the world about social and physical matters.

As I have suggested above, this view of theory-development has been disputed by humanists, critical theorists and postmodernists, who in their turn have been criticised for not providing a way of developing their theories which fulfils the

Enlightenment desire for universal knowledge that is shorn of superstition, personal preference and special pleading. Humanists, critical theorists and postmodernists thus sought to provide an alternative to a view of theory-building which prioritised reduction to a set of variables, a separation between the knower and what they sought to know, a means for predicting and controlling the future, and a set of perfectly-integrated descriptions of the world with a view of the social actor as mechanistic and determined. Humanist approaches provide one possible alternative. They focus on the meanings that social actors construct about their lives and in relation to the world, and argue that human beings negotiate these meanings in their social practices. Human action then cannot be separated from meaning-making, with our experiences organised through pre-formulated interpretive frames. We belong to traditions of thought, and the task of the theorist is to make sense of these interpretations, even though such interpretive activity is mediated by the theorist's own frame of reference. This is a practical matter for each individual, though of course she cannot make meanings on her own, since all meaning-making is located within culturally-and historically located communities of practice. The field of study, and particularly as it relates to learning and competencies, is therefore the meaningful actions of social actors and the social construction of reality; and one of the consequences is that the social sciences are now thought of as distinct from the natural sciences.

Learning is therefore understood as a practice in the world, primed for investigation, but resistant to algorithmic and mechanistic methods for describing it used in the natural sciences. Critical theorists and critical realists take the interpretivist critique of positivism/empiricism one stage further. In the search for a disinterested universal knowledge, they look for a solution either in communicative competence or in the stratified nature of reality itself. The focus here is on the former and in particular Habermas's (1981) argument that any claim to theoretical credibility must be able to make the following assertions: this work is intelligible and hence meaningful in the light of the structuring principles of the discourse community it is positioned within; what is being asserted propositionally is true; what is being explained can be justified; and the person who is making these claims is sincere about what they are asserting. These four conditions if they are fulfilled allow a theorist to say something meaningful about learning. The aim above all for a critical theorist is to develop knowledge that is potentially transformative or emancipatory. Its purposes are therefore the direct replacement of one set of values (unjust, muddled, and discriminatory) with another (rational, just and emancipatory).

The fourth framework is a postmodernist one and again it should be noted that it was developed in reaction to positivist and empiricist epistemic frameworks and in particular to all those epistemologies which posit a real world separate from the activities of the knower. As Lather (2007) suggests, any work or theory should give a voice to those social actors that have been traditionally marginalised (an explicit emancipatory purpose), and in the process undermine and subvert the agendas held by those with more power in the world than others; surface for public discussion those textual devices (both spoken and written) used in conventional theory-development, and suggest ways of countering these powerful knowledge constructions; question how theorists construct their texts and organise their sets of meaning in the world;

and re-introduce the theorist into the research text by locating them within those frameworks which act to construct them as theorists and as human beings.

All these frameworks cannot be equally correct and this explains why theorists produce conflicting and contradictory results about important educational and learning matters. However, the situation is more serious than this, since even though two theorists may subscribe to the same epistemology, they may still disagree with one another, even if they are focusing on the same set of social problems, such as whether to adopt a knowledge or competency curriculum. The dispute might be about correct and incorrect uses of the method, different views and interpretations of the epistemological tradition to which they claim to belong, or the use of different interpretive frameworks. This has been called the crisis of representation, and it is hard to imagine how we can escape from it, since the alternative is to revert back to a pre-Enlightenment time of knowledge being privileged because of who could command the most attention.

However, theorising is too important to simply ignore the problems of representation alluded to above. Indeed, we need to understand how our theories are constructed and how power is ever present in their construction. This is because theory-development is conducted with and through other people (some of them more powerful than others), and the theorist is always in the business of collating and synthesising accounts by social actors of their lifeworlds and activities in the world. These accounts, and this includes auto-ethnographies and descriptions of competencies held by individuals, are always self-serving, and what I mean by this is not that they are wrong per se, but that they are living documents that enable them to go on in life.

7.5 Comparative Emergent Properties

PISA results are expressed as comparative national tables rather than scores achieved by participants. The focus is on position rather than score, even though significant improvements made by one nation between two time points may be masked by improvements made by other nations. If one adds to this the idea that there is some uncertainty or unreliability about the scores (i.e. marker error, poor performance by testees, cultural bias effects, epistemic differences, inability to transform internal knowledge into performative knowledge, etc.), it is hard to believe that such league tables can and do provide a nation with very much useful information. However, what this is a display mechanism (located initially at the transitive level, but also penetrating, and thus taking on a capacity to operate at, the intransitive level). This display mechanism clearly has scientistic aspirations (cf. Habermas 1972), adding further to the need to introduce critical and evaluative elements into any accounts made, whether they refer to individuals, groups within nations, or nations themselves. The PISA technology also has implications for pedagogy.

Michel Foucault provides an example of the construction of a pedagogic formation in relation to the use and development of examinations. In *Discipline and Punish: The Birth of the Prison* (Foucault 1979), Foucault surfaces the common

sense discourse that surrounds examinations by showing how they could be understood in a different way. Previously, the examination was thought of as a mechanism for combating nepotism, favouritism and arbitrariness, and for contributing to the more efficient workings of society. The examination was considered to be a reliable way for choosing the appropriate members of a population for the most important roles in society. As part of the procedure a whole apparatus or technology was constructed which was intended to legitimise it. This psycho-metric framework, though continually changing, has served as a means of support for significant educational programmes in the twenty-first century, i.e. the establishment of the tripartite system in the United Kingdom after the Second World War, and continues to underpin educational reforms since the passing of the Education Reform Act for England and Wales in 1988. Though purporting to be a scientific discourse, the theory itself is buttressed by a number of unexamined principles: a particular view of competence; a notion of hierarchy; a view of human nature and a correspondence idea of truth. Furthermore, the idea of the examination is positioned as progressive: society is progressively becoming a better place because scientific understanding gives us a more accurate picture of how the world works.

In contrast, for Foucault (1979: 184) the examination:

> combines the techniques of an observing hierarchy and those of a normalizing judgement. It is a normalizing gaze, a surveillance that makes it possible to qualify, to classify and to punish. It establishes over individuals a visibility through which one differentiates them and judges them.

The examination therefore allows society to construct individuals in particular ways and in the process organises itself. Knowledge of persons is thus created which has the effect of binding individuals to each other, embedding those individuals in networks of power and sustaining mechanisms of surveillance which are all the more powerful because they work by allowing individuals to govern themselves. The examination introduced a whole new mechanism which both contributed to a new type of knowledge formation and constructed a new network of power, all the more persuasive once it had become established throughout society.

This mechanism works in three ways: firstly, by transforming 'the economy of visibility into the exercise of power' (*ibid*.: 187); secondly, by introducing 'individuality into the field of documentation' (*ibid*.: 189); and thirdly, by making 'each individual a "case"' (*ibid*.: 191). In the first instance, disciplinary power is exercised invisibly and this contrasts with the way power networks in the past operated visibly, through the explicit exercise of force. This invisibility works by imposing on subjects a notion of objectivity that acts to bind examined persons to a truth about that examination, a truth which is hard to resist. The examined person understands themselves in terms of criteria that underpin that process, not least that they are successful or unsuccessful. The examination therefore works by 'arranging objects' (*ibid*.: 187) or people in society. In the second instance, the examination allows the individual to be archived by being inscribed textually. Furthermore, it is possible to understand this process even when the rhetoric of what is being implemented is progressive and benign. Over the last 20 years in English schools, the proliferation and extension of assessment through such devices as key stage tests, records of

achievement, examined course work, education certificates, and school reports *and* evaluation through such devices as school inspection, teacher appraisal, profiles and the like, means that teachers and students are increasingly subject to disciplinary regimes of individual measurement and assessment which have the further effect of determining them as cases. The third of Foucault's modalities then is when the individual becomes an object for a branch of knowledge:

> The case is no longer, as in casuistry or jurisprudence, a set of circumstances, defining an act and capable of modifying the application of a rule; it is the individual as he (sic.) may be described, judged, measured, compared with others, in his very individuality; and it is also the individual who has to be trained or corrected, classified, normalized, excluded, etc. (*ibid*.: 191)

One final point needs to be made about the examination, and this is that for the first time the individual can be scientifically and objectively categorized and characterized through a modality of power where difference becomes the most relevant factor. Hierarchical normalization becomes the dominant way of organizing society. Foucault is suggesting here that the examination itself, a seemingly neutral device, acts to position the person being examined in a discourse of normality, so that for them to understand themselves in any other way is to understand themselves as abnormal and even as unnatural. This positioning works to close off the possibility for the examinee of seeing themselves in any other way.

Learners are constructed pedagogically. An example of this process is the application of the notion of intelligence, and in particular, the use of the idea of a fixed innate quality in human beings which can be measured and remains relatively stable throughout an individual's life. This has come to be known as an intelligence quotient and is measured by various forms of testing, e.g. the 11+ test. The 11+ had a significant influence on the formation of the tripartite system of formal education in the United Kingdom as it was used to classify children as appropriate for grammar schools (those who passed the 11+), technical schools (those who passed the 11+ but were considered to be better suited to receive a focused technical education), and secondary moderns (the vast majority who failed the 11+ and in the early days of the tripartite system left school without any formal qualifications).

Central to the concept of the intelligence quotient is the tension between the relative emphasis given to genetically inherited characteristics and the influence of the environment. Many contemporary educationalists believe that children's early and continuing experiences at home and at school constitute the most significant influence on their intellectual achievement. However, early exponents of the argument that genetic inheritance determined intellectual potential saw intelligence, measured by tests, as the factor which could be isolated to produce a 'quotient' by which individuals could be classified. Regardless of environmental factors such as teaching and learning programmes or socio-economic variables, it was argued, some people were born with low levels of intelligence. Schooling could bring them to a certain level of achievement, but there would always be a genetically imposed ceiling on their capabilities. An extreme version of this belief was that intelligence, like certain physical characteristics, followed a normal curve of distribution, so that within any

given population there were a set number of intelligent people and a set number of less intelligent people. It was further argued that those individuals who were most generously endowed were obviously more fitted to govern and take decisions on behalf of those who were less fortunate.

The use of IQ tests was widely accepted as a selective device among academics and the writers of government reports, including, for example, The Spens Report (1938) and The Norwood Report (1943), both of which influenced the writing of The United Kingdom Education Act of 1944. The 1944 Education Act incorporated the beliefs that intelligence testing could reliably predict who would succeed academically at a later point in time, and that children could and should be divided into categories based on the results and educated separately.

Soon after the 1944 Act was passed, the use of IQ tests to allocate places began to be discredited. One of the appeals of the policy was its supposed objectivity and reliability. If intelligence was innate and could be measured, then the tests would simply reflect this notionally 'pure' relationship, but this is not what happened. A number of other problems with this idealised concept became apparent. IQ tests should by definition be criterion referenced. If children had the intelligence, the theory went, then the tests would show it. All children who demonstrated their intelligence by achieving the designated mark ought to be awarded a place at a grammar school. In practice, Local Education Authorities set quotas for grammar school entrance. Furthermore, different Local Education Authorities set different quotas for passing (Vernon 1957). The quotas also discriminated against girls and the argument was frequently made that since girls developed earlier than boys in their intellectual abilities, fewer girls should be given places in grammar schools because this would unfairly discriminate against boys who would catch up later.

A second problem with IQ tests was that if intelligence, as measured by the tests, was innate, then coaching and practice ought not to improve pupils' test scores. However, it was reported that pupils' performances were indeed enhanced by preparation for the tests, demonstrating that a supposedly free-standing assessment was being connected to the curriculum in contradiction to the intentions which lay behind it (Yates and Pidgeon 1957). More importantly, Yates and Pidgeon's findings threw into question the notion of an innate and immutable intelligence quotient. Finally, the deterministic beliefs underlying the system implied low academic expectations for pupils who failed the 11+. A low IQ score at eleven ought to be a reliable guide to the rest of their school careers. However, it quickly became apparent that some of those who failed were capable of achieving high-level academic success.

This complicated story illustrates one of the problems with a symbol-processing approach to the relationship between mind, society and reality (cf. Chap. 3). What was considered to reside in the nature of reality, i.e. innate qualities of intelligence in human beings, has been shown to have undeniably social or constructed dimensions to it. Powerful people had constructed a tool or apparatus for organising educational provision, and given it credibility by suggesting that it was natural and thus legitimate.

This is one example. Another has been the subject matter of this chapter, international testing regimes such as PISA. This testing instrument is a performative device, in so far as its intention is not just to describe the knowledge levels, skills and dispositions of children, but also to promote and thus contribute to national policy-making. Certain forms of performative knowledge become the norm. The instrument for measuring knowledge and skill levels of children becomes an instrument for determining what those knowledge levels and skills should be, and how they should be learnt. It operates as a standardising device in relation to these matters (i.e. it creates a norm) and should not be understood as a device for making fair, reasonable and accurate judgements about the capacities of cohorts of students in different countries. There is a final point to be made, and this is that a nation's place in these league tables becomes part of the folkloric account a nation gives of and to itself. Since this account is an important part of a nation's identity, then success in an international test such as PISA becomes even more important. This is reflected in the different arrangements made by national education systems in relation to the curriculum, though as I suggested in the introductory chapter to this book, these national arrangements have more commonalities than differences. The next chapter then examines the different types of curriculum arrangements made in a range of countries, regions and jurisdictions round the world.

Chapter 8
International Comparisons

(with Sandra Leaton-Gray and Euan Auld)

Education systems and their curriculum arrangements round the world are in a constant state of reform and change.[1] The catalyst for reform emanates from multiple sources, such as governments seeking to demonstrate different priorities in education to the opposition parties on the one hand, or agree to a range of constituents' demands on the other. As the last chapter suggested, reforms may reflect the growing importance of global education policies, where national education systems seek to align their programmes to improve their rankings on international comparative assessments such as the OECD's PISA programme (cf. OECD 2005, 2007a). National concerns reflecting local economic and cultural priorities may also be influential.

More recent education policy researchers such as Stephen Ball (1994) depict curriculum reform and policy-making as a 'messy', complex and contested enterprise. As has been frequently observed (e.g. Whitty et al. 1998) policy is an object of contest and struggle between competing ideologies, education visions, personal interests and political or organisational positions. All of these forces come together in an incubator of international, national and local contexts. For Ball, understanding education reforms requires us to interrogate policy cycles, policy discourses, policy actors, policy arenas and contexts. His is a nuanced and more realistic approach to analysing education reform developed over years through a series of empirical analyses of policy sites, discourses and contexts.[2] Policy is produced through a series of struggles involving many actors and agencies. In addition, local policy cannot be understood without reference to the global impact of transnational agencies such as the OECD, UNESCO, UNICEF, the World Bank, not for profit and for profit organisations, and so forth.

The central issue that concerns us in this chapter is the way education systems are and can be reformed. Change to an education system and its curriculum is always a change to the status quo, to what already exists. Thus in trying to understand how national education systems and their curricula change, it is important

to understand how those systems and curricula are currently structured. What this means is that the same programme of reform delivered in different countries is likely to have different effects on the different elements of the system and will have different histories within the system. It is possible to categorise reform effect and history in five ways: point of entry into the system and direction of flow, sustainability of the integrity of the reform, intensity of the reform or capacity to effect change, malleability of the system or capacity to change, and institutionalisation processes.

With regards to the first of these, point of entry and direction of flow, it is possible to identify a number of possible scenarios. There are different points of entry and these may be characterised as: at the top of the system where this is understood either as the progenitor of policy or as the apex of a power structure however diffuse it is or becomes; at the bottom of the system so that the point of entry is not at the political, policy-making, bureaucratic or official level but at the level of teacher and classroom; or at a variety of entry points in the system. Broadly three models depicting direction of flow can be identified: a centrally controlled policy process where the direction is uni-directional, and downward oriented; a pluralist model where the direction of flow is still uni-directional, however, the developmental flow is to all parts of the system and the orientation is pluralist; and a fragmented and multi-directional model where new policy (which represents the reform) is always in a state of flux as policy texts are received and interpreted at different points in the system and the process is understood as fragmented, non-linear, contested and as a place where original intentions are rarely fulfilled in practice. In other words, without a consistent flow that is distributed throughout the system, there will always be an element of risk involved that the reform will result in unintended outcomes.

The second of these elements is the sustainability of the integrity of the reform over time. What I mean by this is the capacity of the reform to retain its original shape, form and content as it is disseminated through the system. A curriculum reform is embedded in what already exists. Most obviously the reform itself as it was originally conceived (in its pure and ideal state) undergoes processes of amendment, modification, correction and revision, and it does this at different points in the process. These different points can be described as: exploration and development, recontextualisation, implementation, re-implementation, and institutionalisation. When I refer to the integrity of a reform, this should not be understood in any ideal or absolute sense. A reform or an intervention in a system is always an amalgam of different ideas and prescriptions that is never completely coherent. What can be suggested however, is that in the long process of formulation of the reform to application, to implementation, and thence to institutionalisation, the original integrity of the reform is either strongly or weakly maintained.

The third feature is the intensity of the reform (or intervention) or its capacity to effect change. This refers to the structure of the reform or the way it is constituted. Some reforms are focused on relations within the system that are likely to have a minimal impact on the system as a whole; others aim to influence the whole workings of the system. Examples of the former include labour market reforms, which

though they usually come within a package of other reforms, are designed to impact on one part of the system and not the whole. On the other hand reforms which focus on the curriculum and the way it is delivered, as in the 1988 Education Reform Act in the United Kingdom, which changed the whole tenor and orientation of education in that country, can be thought of as whole system reforms or interventions. Furthermore, some of these reforms are crafted so that, even given the state of the system into which they are being introduced, they have a more fundamental impact than other reforms. This in turn points to the degree of resilience of the system or capacity to resist a reform. And, indeed, any educational system has a limited capacity to resist being reformed, not least because those elements that allow it to resist may be the objective of the reform; systems therefore have a greater or lesser capacity to resist reforms. Equally, a reform itself has a greater or lesser capacity to impact and change the structures and environments into which it is being introduced, and in part this refers to how it is going to be introduced, but also to the structures and constitution of the reform package itself. Its penetrative power (though this may not be realised) or capacity to effect change is different with different reforms. This is the intensity of the reform or intervention, and clearly its obverse is the resilience or otherwise of the current arrangements within the system. This is the malleability of that system.

    Then there are institutionalising elements in the system. The first of these refers to the longevity and sustainability of: resource arrangements, allocations of particular people to positions of responsibility, particular roles and arrangements of power and authority, the capacity of key people in the system, new policy discourses, new policies and new priorities. And the second element is the capacity to adapt to changes to them. An example of an institutionalised mechanism set up to allow this to happen is a formal curriculum review at a set point in time, though most educational processes of review, development and implementation round the world are conducted on an ad hoc basis; when, where and how are decided by political imperatives. What I have been identifying here are internal relations in a systemic change process. I now want to examine the histories and practices of educational systems and curricular reforms in a sample of countries and jurisdictions: Finland, Massachusetts (USA), Scotland, Ontario (Canada), The Netherlands, Germany, England, Chile and Singapore, before briefly analysing how different curricula within these systems are constructed.

8.1   Finland

The great majority of the relatively homogeneous Finnish population, numbering no more than 5.4 million, is less than two generations removed from its agrarian roots. Indeed, contemporary urban Finland with its concentration on research and development, principally in the electronics and high technology industries, is of very recent origin. It is a product of a state-sponsored exodus from the countryside into a booming tertiary sector that started in the 1960s and that observers argue owes its

success to a series of timely and far-reaching educational reforms (cf. Finnish Minister of Education and Science 2010). As recently as 50 years ago Finland was still a country dominated by small-scale rural-based freeholders, with the agricultural and forestry industries largely in the hands of small and independent producers, who came into their own with the dissolution of the estates as a result of the great agrarian reform movements of the 1920s (Jörgensen 2006).

The educational initiatives at the heart of these changes were set in motion by sometimes formal and more usually tacit alliances based on commonly shared perceptions, values and goals of the Finnish Social Democratic Party (Suomen Sosialdemokraattinen Puolue (SDP)), and the very active and pivotal Agrarian League (Maalaisliitto), its successors, such as the Centre Party (Suomen Keskusta), and, to a certain extent, even the recently formed populist Finns Party (Perussuomalaiset). As late as the 1960s when the first education reforms were enacted, almost 50 % of the population lived off the land. In stark contrast today about 20 % are employed in high technology electronics, a further 20 % in machinery, metallurgy and engineering, and about 20 % of the population work in modernised chemical and forestry industries, where the manufacture of paper and the transformation of pulp are now based on state-of-the-art processes. About 25 % of the active population are public employees who work in the greatly expanded welfare sector. The encouragement of these modern industries required the rapid creation and dissemination of new skills, especially for those who worked in the more traditional industries. The transformation of the working population in England, France and Germany took decades, whereas in Finland it occurred in less than a single generation, aided and abetted by the creation of modernising educational institutions and practices unique to Finland (cf. Tuovinene 2008; Välijärvi 2012).

The progress that has been made is exemplary[3] and Finland's success is underpinned by particular contextual features: a strong sense of professional independence, sprung, as we will see, from a particular socio-cultural economic configuration of its productive sector, fed by agrarian and social-democratic precepts built on an underlying Lutheran religious ethic of hard work and devotion to duty through cooperation. This unique conjuncture provided the foundations of a well-financed education system (cf. Välijärvi 2012).

Inventing durable and viable educational structures and suitable practices almost from scratch was an immense task. As Välijärvi (2012) reminds us, in 1950 only 27 % of 11-year-old Finns were enrolled in the equivalent of grammar schools, designed for the most part to train the intelligentsia, and there were very few institutions providing a relevant technical education. The system consisted of two-tiers copied largely from Germany, in which, at the end of the fourth year of primary school, students were separated into an academic stream, consisting of eight further grades leading to higher education, and what was called a civic stream, that was intended to lead to employment or vocational schools. One should hardly be surprised that a society so overwhelmingly rural in character, and where in the more industrialised areas apprenticeship schemes provided all the skills necessary for work,

would be anything but poorly educated, with the vast majority leaving school after no more than 6 or 7 years of a very basic formal education.

Hence, the first phase of reform was concerned with establishing the institutional groundwork for the new system through the integration of the hitherto separate civic and middle schools into one single system of institutions and practices, true to the principles of promoting a cooperative society based on what the Finns called pluralism, pragmatism and, above all, equity.

The second phase, between 1968 and 1985, witnessed the further development of these institutions and practices. One of the first steps to achieve these ambitious aims was a thorough reform of teacher training. From 1971 teachers were trained in universities through programmes that emphasised a close relationship between the theoretical and the practical and the need to personalise education to suit the needs of individual pupils as described in the 1968 Act. From 1978 all teachers were expected to have a Master's degree in education with an emphasis on pedagogy and research as well as curriculum development.

However, even in the light of these reforms, the achievement gap between students remained stubbornly large, and this was blamed on practices of streaming students into groups (cf. Sahlberg 2007). That is, the gap between competence and performance was felt to be far too wide, and steps were taken to correct this by abolishing streaming, and, in the case of mathematics and languages, grouping by levels of achievement. It led to the devolution of planning decisions to the schools themselves and their local authorities. Having paid considerable attention to the development of comprehensive education, the planners and reformers after lengthy and thorough discussions with stakeholders established a core national curriculum. At the same time heterogeneous groupings of students became the norm in order to favour lower achievers, but without lowering the level of the most advanced students (cf. OECD 2007a).

The third phase has lasted from 1985 to the present day, and has largely been concerned with developing the infrastucture for managing the system in order to create a system conducive to maintaining and strengthening Finland's new identity as a high-technological and knowledge-based economy. Building upon previous institutional reforms and the availability of newly trained teachers and administrators, decision-making powers, bolstered by adequate financial safeguards, were devolved to individual schools and local authorities. Attention was focused, in part, on developing practices of special needs education and further developing teacher training programmes based upon the principles of autonomy, responsibility and respect. Given the nature and philosophy of the system, Finland rejected external accountability processes, standardisation, and an examination-based curriculum, replacing them with internal self-assessment processes in schools. No national testing was put in place for the school system and the only standardised examinations were scheduled at the end of upper secondary schooling when students reached 18 or 19 years of age (cf. Sahlberg 2013). Until 1998 students attended the nearest comprehensive school to their homes; however, in that year, as a result of parental pressures, this was altered to allow a measure of choice.

So, a salient characteristic of the Finnish system is the abandonment of standardised testing so common in other countries. Three principal reasons have been given. The system gives 'a high priority to personalised learning and creativity as an important part of how schools operate' (Välijärvi 2012: 32), therefore students' progress is assessed in terms of individual development. Education authorities 'insist that curriculum, teaching, and learning, rather than testing, should drive teachers' practice in schools' (ibid.). And finally, '(d)etermining students' academic performance and social development are seen as a responsibility of the school, not the external assessors' (ibid.). Hence, the core principles of the Finnish system include the following: a common curriculum[4] throughout the entire system of comprehensive and upper secondary schooling; extensive and effective teacher education through research-based Master's degree programmes; teachers and schools making decisions about what and how to teach autonomously, with little direct interference by the central education authority; no external standardised tests used to rank students or schools; the provision of resources for those who need them most, special education services, and transportation to schools; and high standards and supports for special needs students (cf. Finnish Ministry of Education and Culture 2013a, b, c).

8.2   Massachusetts

The introduction to the literacy programme of study in Massachusetts (2014) outlines its aims and vision:

> The standards are based on research and effective practice, and will enable teachers and administrators to strengthen curriculum, instruction, and assessment. The standards in this Framework set requirements not only for English language arts (ELA) but also for literacy in history/social studies, science, and technical subjects. Just as students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, so too must the standards specify the literacy skills and understandings required for college and career readiness in multiple disciplines.

This is supported by ten guiding principles:

1. An effective English Language Arts and Literacy (ELA) curriculum develops thinking and language together through interactive learning.
2. An effective ELA curriculum draws on literature in order to develop students' understanding of their literary heritage.
3. An effective ELA curriculum draws on informational texts and multimedia in order to build academic vocabulary and strong content knowledge.
4. An effective ELA curriculum develops students' oral language and literacy through appropriately challenging learning.
5. An effective ELA curriculum emphasises writing arguments, explanatory/informative texts, and narratives.
6. An effective ELA curriculum holds high expectations for all students.

7. An effective ELA curriculum provides explicit skill instruction in reading and writing.
8. An effective ELA curriculum builds on the language, experiences, knowledge and interests that students bring to school.
9. An effective ELA curriculum nurtures students' sense of their common ground as present or future American citizens and prepares them to participate responsibly in our schools and in civic life.
10. An effective ELA curriculum reaches out to families and communities in order to sustain a literate society.

The standards are divided into Reading, Writing, Speaking and Listening, and Language strands. Throughout the curriculum there is a principle that these will be integrated in order to closely connect the processes of communication. For example, 'writing standard nine requires that students be able to write about what they read. Likewise, Speaking and Listening standard four sets the expectation that students will share findings from their research'. In pre-K to G5 there are expectations for reading, writing, speaking and listening and language applicable to a range of subjects, including but not limited to English Language Arts (ELA).

There is an emphasis on the need for pupils to engage with, analyse and create a 'high volume and extensive range of print and non print texts in media forms old and new'. The reading of the range of texts highlights the belief that both 'literary and cultural knowledge' will be gained through reading and that this grounding in reading will establish the reader's skills ready to access texts in all curriculum subjects. This view focuses on the 'need to produce and consume media' and to embed this throughout the curriculum. There is also an emphasis on information texts, as a response to research on the best ways to establish college readiness for students.

In 2009, the President signed the American Recovery and Reinvestment Act of 2009, aiming to invest in critical sectors. For education this involved a Race to the Top fund (RTTT). In 2010, Massachusetts, one of 12 states, was awarded $250 million in the Race to the Top programme to accelerate its education reform efforts. This fund has provided the focus for recent education development. Its purpose is to strengthen the public education system to ensure that every student is college and career ready and able to compete in the global economy. This has moved the state curriculum towards increased integration with the intentions of the RTTT, particularly at the upper secondary level.

The Massachusetts' Department of Education coordinates its state-wide student assessment programme so that it fits with the curriculum framework. Standards are monitored through the Massachusetts Comprehensive Assessment System (MCAS), developed and administered by the Student Assessment Services (SAS). MCAS was set up to meet the requirements of the Education Reform Act of 1993. The law dictates that the testing programme must: test all public school students, including those with disabilities and English Language Learner students, measure performance based on the Massachusetts Curriculum Framework and learning standards, and report on the performance of individual students, schools and districts.

No qualifications are awarded upon completion of the compulsory phase of education at the end of Grade 10 (Age 16), but to receive the High School Graduation Diploma students must have successfully completed the MCAS Grade 10 tests in English and Mathematics (and, since 2010, Science and Technology). These tests are referred to as 'competency determination', and are taken to indicate whether students have mastered the necessary core skills, competencies and knowledge in these subject areas. There are plans to expand the MCAS Grade 10 tests to include History and Social Science, depending on funding.

In addition to being a condition for high school graduation, the MCAS acts as a mechanism for ensuring standards and accountability. Schools and districts are ranked on a five-level scale, with '1' being the highest performing level, and '5' being the lowest. The 2010 Act *Relative to the Achievement Gap* provides 'tools, rules and supports' to allow the state to engage 'aggressively' with schools and states that fall into categories 4 and 5. The stated aim is to provide appropriate tools for diagnosing problems and identifying appropriate interventions.

Districts and schools that perform well are held up as exemplars and used as sites to harvest 'best practices', which are then displayed on the Ministry of Education website. District and School Assistance Centres (DSAC) have been established (six at the time of writing) to help schools and districts make use of professional development materials and 'best practices', and to allow them to 'engage in a continuous cycle of improvement'. The DSAC staff is also partnered with an external evaluator to assess the quality and impact of their 'assistance services' (another 'continuous cycle of review').

The curriculum review process in Massachusetts is largely democratic and open to debate. Rather than being instigated by political shifts in power, the curriculum frameworks are all treated as works in progress and are therefore subject to a continual process of review and refinement. This continuous process of review is primarily motivated by a concern to ensure that the framework is up to date. There is no rigid schedule for the review of curriculum frameworks, and the time taken varies considerably from subject to subject. The review process involves a broad array of stakeholders from across the state, including, teachers, administrators, associations, parents, the public, businesses, higher education faculties, and students. When a framework has been reviewed, a first draft is generally published for public feedback. This is followed by further consultation, drafts and feedback. The process can involve many revisions, but is again, highly variable.

The English and Mathematics curricula were recently reviewed after the decision was taken to become a part of the Common Core Standards (CCS), a nationwide initiative intended to raise standards in Mathematics and Literacy and to ensure that American students receive a 'world class education'. The amended curricula for Literacy and Mathematics were published with implementation guides for the 2012/2013 school year. States participating in the Common Core Standards initiative are encouraged to benchmark performance with one another and to share experiences and best practices. It may therefore feature as an impetus for future review, and as a source of research evidence. However, despite this attempt at engendering a professional ethic, this reform has resulted in a curriculum

which is strongly framed, i.e. there are clear and strong boundaries between the subjects; it has adopted progression modes which prioritise extension, rather than intensification and complexity, and it is dominated by an emphasis on summative forms of assessment. Its reform processes, though initiated at state-level in keeping with the federal system of government in the United States of America, are centrally-directed, the direction of flow of the reform is uni-directional and downward-orientated, and they derive their power from strongly framed accountability systems to the central authority.

8.3   Scotland

The majority of schools in Scotland are state-maintained but there are a small number of independent fee-paying schools, attended by 4–5 % of the population. Independent schools are afforded charitable status but they do not receive support from the state. Political responsibility for all levels of education rests with the Scottish Parliament and the Scottish Government's Education and Lifelong Learning Department. State schools are the responsibility of local authorities (LAs), whereas independent schools are represented by the Scottish Council of Independent Schools.

The curriculum has recently undergone a comprehensive process of review, resulting in the introduction of the *Curriculum for Excellence* (CfE). The new curriculum has been described by the Scottish Executive as the most significant reform in Scottish education for a generation. Previously, the curriculum was structured according to three distinct stages: early years, covering ages 3–5; primary and S1-S2, known as the 5–14 framework; and the senior phase, covering S3 onwards. The Curriculum for Excellence is the first attempt in Scotland to develop a continuous and coherent programme of learning for students from 3 to 18 (Scottish Executive 2004). Progression in the CfE is determined by a series of levels, encompassing five stages of learning. The first four levels are described as 'experiences and outcomes', with progression to qualifications occurring once the student has entered the fifth and final 'senior phase' of the CfE. The eight curriculum areas in CfE are: Expressive Arts, Health and Wellbeing, Languages, Mathematics, Religious and Moral Education, Sciences, Social Studies and Technologies.

Like most other mass systems of education, Scotland does not have an established curriculum review cycle. Two reports, *Improving Scottish Education* (HMI 2009), and *Quality and Equity of Schooling in Scotland* (OECD 2007a), are cited in the *Case for Change for the CfE* (Scottish Government 2008). Yet by the time these reports were published the review process was already well underway. By the mid-1990s there was widespread feeling that the current curriculum arrangements were not working. Although delivery of the English and Mathematics curricula was generally felt to be adequate, other areas were found to have been implemented less well. Consultations and debates began promptly after the Scottish Parliament was convened in 1999.

The 1999 *Review and Consultation of Pre-School and 5–14 Education* concluded that current testing arrangements had become fragmented and were not 'working well' for students. Hutchinson and Hayward (2007) noted that the main problems identified were: the separation between curriculum and assessment, with assessment being treated as a 'bolt-on' task; the approach to staff development, with key materials intended to improve professionalism and assessment made available only on request, and largely not taken up; and the wider context of accountability, target-setting and mistrust of the teaching profession, which led to assessment being prioritised over professionalism.

The 1999 review was followed by a consultation in December 2000, involving a broad range of stakeholders and communities (Hutchinson and Hayward 2007). It identified three main areas for change: formative assessment as a part of everyday activities, reconciling the relationship between assessment for learning and assessment for accountability, and managing evidence to keep the emphasis on learning rather than bureaucracy. A subsequent Parliamentary Debate, *Effective Assessment in Scotland's Schools* (Scottish Parliament 2001: 46), concluded that Scotland needed 'a coherent and effective system of assessment focused on progress and learning'. The Assessment Action Group (AAG) was established to help inform the development of the *Assessment is for Learning* (AifL) programme, the main purpose of which was to support learning. AifL drew on a range of research (for example, Black and Wiliam 2004; Fullan 2006; Black et al. 2003) that 'emphasised a set of shared principles across participating communities, collaborative projects that created real context for deeper understanding and development structures and support for the collaborative communities' (Hayward 2007: 32). Teachers were expected to be involved in continuous professional development, and the major issue was taken to be the alignment of the curriculum with pedagogy and assessment.

A further national debate, in 2002, on *Education and Young People*, invited responses from a broad range of stakeholders, and the Scottish Executive's response, *Educating for Excellence* (2004), expressed the intent to review the national curriculum, 3–18. A curriculum review group was duly established, and tasked with identifying the purposes of education 3–18 and the principles for curriculum design. They were asked to consider: views expressed in the National Debate, international comparisons, and current research, as well as global factors which might affect the aims and purposes of education in the coming decades (for example, changes in the job market).

In November 2004 the Curriculum Review Group published *A Curriculum for Excellence*, which claimed to 'establish clear values, purposes and principles for education from 3 to 18 in Scotland' (Scottish Executive 2004: 3). It further stated that, 'the starting point… [for curriculum development] is the set of values which should underpin policies, practice and the curriculum itself' (ibid.: 10). They determined that the curriculum would provide a basis and ends, but not dictate means. Further, the development of the curriculum would be underpinned by a concern for process, and not content, with implications for assessment practices. The group established principles for curriculum design, namely: challenges and enjoyment; breadth, progression, and depth; personalisation and choice; coherence; and relevance.

In their rationale for reform, the Curriculum Review Group had noted 'global social, political and economic changes, and the particular challenges facing Scotland: the need to increase the economic performance of the nation; reflect its growing diversity; improve health; and reduce poverty' (Scottish Executive 2004: 10). They further anticipated 'more changes in the patterns and demands of employment, and the likelihood of new and quite different jobs during an individual's working life' (Scottish Executive 2004: 10). This was met with a resolution to move towards a 'continuous cycle of review' (Scottish Executive 2004: 7). As the ministers' official response stated: 'this is not a once-and-for-all task but a continuing process… there will be a continuing cycle of evaluation, refreshment and renewal, taking account of developments in technologies for learning and in our knowledge and understanding' (ibid.: 10). Despite this, there does not yet seem to be any progress on a standardised curriculum review cycle.

The CfE attempted to 'move away from central prescription of curriculum, towards a model that relies upon professional capacity to adapt curriculum guidance to meet the needs of the local school communities' (Priestley and Humes 2010: 345). This, accompanied with the proposed reduction in summative assessment during the early phase and levels 1–4, indicated a shift away from rigid accountability and towards a culture of self-evaluation in schools and their local authorities.

Priestley and Humes (2010) suggest that the CfE follows a trend that has emerged since 2000, a recognition that sustained and meaningful improvement should, to a significant extent, be shaped and owned by those who will put it into practice. A similar resolution was outlined in the review of subject content. Groups were formed in each of the eight subject areas (see above) at an early stage. Members of the groups reflected a wide range of professional experience, including teachers and staff from education authorities, curriculum bodies and teacher education institutions, with support from the inspection service. The first step was to carry out an initial review of existing curriculum guidance against the values, purposes and principles of the curriculum. They provided initial advice on updating, prioritising and simplifying outcomes, and reducing over-complexity. Examples of possible outcomes and experiences were developed and tested against the principles of curriculum design (Scottish Executive 2004: 26). Members of the curriculum development teams were expected to draw on the expertise and advice of staff across all educational settings: early years, schools, universities, and colleges. To do this, they organised meetings, events, seminars and focus groups. They maintained contact with subject networks and other specialist forums, collating ideas and case studies of good practice. Learning and Teaching Scotland (LTS) published the proposed experiences and outcomes to allow practitioners and broader stakeholders to comment. This was followed by extensive engagement during the process of refinement leading up to publication.

The Scottish Executive has acknowledged that the impact of the curriculum reforms will rest largely on approaches to teaching. Teachers have been encouraged to employ a broader range of approaches, utilising different learning styles and collaborating more with their colleagues. The curriculum review has therefore been accompanied by a programme of professional engagement and professional development. Further to this, the Educational Institute of Scotland (EIS) has

stressed that teachers need to be given sufficient time during their working week to meet and discuss issues that have arisen from the review, and for local authorities to ensure that the teachers they employ can undertake the necessary programmes for professional development (EIS 2006). These initiatives reflect concerns for both the reforms' capacity to effect change and their sustainability.[5]

Scotland's reform process is intended to be cyclical; however, as yet there is no regular curriculum review cycle. This means that curriculum reviews, when they happen, are ad hoc, unplanned, dependent on the political cycle and a response to a particular problem by government. The formal process that did happen involved information collection, analysis of the current curriculum, a genuine engagement with expert advice, recommendations for change, *and* implementation and institutionalisation phases. Furthermore, implementation of the reform had a multi-directional orientation.

8.4   Ontario

Ontario is the largest province in Canada, with a population of approximately 13 million. The province educates around two million students (around 40 % of Canada's total student population) and has one of the country's most diverse student populations. Ontario's students are among the highest performers in international student assessment surveys (such as the OECD's PISA). They also demonstrate high levels of equity in outcomes. As recently as 2002, Ontario's students had been performing relatively poorly in such comparative assessments, leading to the perception that the education system was 'stagnating'. The dramatic improvement in student outcomes has generated global interest in their reform initiatives.

There is no education ministry at the federal level in Canada. Each province and territory is empowered to determine the direction of education policy. They are, however, encouraged to cooperate and to use one another as benchmarks when formulating major policy initiatives (e.g. funding, curricula, and student assessment). This collaboration is aided by the Council of Ministers of Education Canada (CEMC), which is composed of the heads of the ministries of education in each province. Perhaps as a result of this close collaboration, studies have demonstrated great similarity across the provinces and territories in key policy areas.

Though the education system in Ontario has undergone a high number of policy changes since the early 1990s, the main catalyst for these improvements is most often located with the Liberal Government's ascension to power in 2003. In 1995, the new conservative government had begun an aggressive programme of reform, part of an agenda that became known as the 'common sense revolution'. Reforms included a new, more standardized, curriculum; the reduction of high school from 5 to 4 years; the reintroduction of tracking students in Grade 9; higher graduation requirements; the reduction of high school streams from three to two streams;

standardized report cards; and a literacy test requirement for high school graduation (Anderson and Jaffer 2006). Several of these initiatives are still operating.

The focus of the reforms to the curriculum was to drive up numeracy and literacy, with the resulting product termed the 'back to basics' curriculum. Critically, however, the government focused improvement heavily on centralized testing and punitive teacher accountability. Aside from failing to generate the desired improvements in student outcomes, the policies alienated teachers and their unions, creating a combative environment marked by distrust.

The 2003 Liberal government brought with it a resolution to develop 'positive partnerships between educators and policy makers' (Levin 2008). Transforming a combative environment into one of collaboration was itself an important policy goal. Although the Liberals also insisted on high academic standards, they engaged a broad range of stakeholders, including teachers, in a joint effort to improve the capacity to meet targets. The Liberal Government further adopted an approach to school improvement that views schools as 'ecologies' (Levin 2008), working on each of its distinct but interrelated aspects (for example, improving leadership, teacher professionalism, parent involvement, policy initiatives, including curriculum reform, and enhancing resources) simultaneously to effect change. The new government felt that there were too many 'top' priorities, electing to focus their efforts primarily on improving literacy and numeracy rates (and closing the achievement gap), and improving high school graduation rates. Although they emphasized the importance of other aspects, these aims were considered non-negotiable, and also fundamental to the achievement of other targets. Among other things, a review of the curriculum was considered necessary to support these priorities.

In 1996, the *Education Quality and Accountability Act* was passed, in response to the recommendations of the 1994 Royal Commission on Learning. This led to the formation of the Education Quality and Accountability Office (EQAO), which would conduct province-wide testing to ensure independent and public scrutiny of Ontario's education system. Prior to the implementation of its programme of assessment, the EQAO consulted widely on elements of design and also the purposes of assessment. The process drew on feedback sessions with a range of stakeholder groups, including educators in Ontario and the public. It also drew extensively on commissioned research into similarly large-scale assessment programmes from around the world and in North America.

One of the key requirements was that the assessments were clearly connected to the Ontario Curriculum expectations for students at key points in their education. The key principles of the assessments were as follows: they should be curriculum-based; educators should be involved in all areas of assessments (e.g. administration, development, and scoring), so as to guarantee that they would be practical and relevant, and also to build the professional capacity of educators; and all students would be expected to participate. Results would therefore be available at the provincial, school board, school and individual student levels; student achievement data should be comparable year on year, to enable the tracking

of performance; and there should be constant communication and collaboration with all stakeholders.

In 2003, the Ontario Ministry of Education established a 7-year cycle of review for each individual subject. Under this system, each year a number of subjects are entered into the review process. The stated purpose for establishing a standardized review cycle was to ensure that curriculum materials remain up-to-date, relevant and age-appropriate. Other rationales given are the perceived need to 'thin down' or 'rebalance' the curriculum to combat overload, and the need for the curriculum to be 'modernized'. In 2007 the Curriculum Council was established to advise the Ministry of Education. The group is composed of community leaders and education experts. They review a broad range of issues at the request of the ministry, providing strategic advice, and are generally supported in their work by experts in the given area.

In addition to these subject-based reviews, entire stages or phases of the curriculum may be reviewed at any time. For example, in 2008, the Curriculum Council began to review the curriculum for the entire elementary phase of the curriculum (grades 1–8, ages 1–14). The main impetus for the review was the perceived need to reduce 'over-crowding', thereby thinning content and allowing students to achieve deeper learning. The Working Group on the Elementary Curriculum was established in 2009 to assist the Curriculum Council in the process, examining the curriculum, consulting with the public and reviewing information before providing recommendations.

Ordinarily, working groups consider a wide range of sources, including: studying research in the subject area; comparisons with other jurisdictions; focus groups comprised of educators from all Ontario school boards; technical content analysis conducted by subject experts; consultations with stakeholders, including the Minister's Advisory Council on Special Education, faculties of education, employers, parents, students, universities, colleges, other branches of the Ministry of Education, other ministries, and NGOs (Non-Governmental Organizations).

Recommendations from these sources are then passed through a further series of stages, including: feedback consultation on the draft curriculum from educators and stakeholders; overall fact-check for accuracy and subject integrity; and expert checks to ensure alignment with government policies and frameworks such as environmental education, First Nation, Métis and Inuit Policy Framework and equity and inclusive education strategies; publishing processes, including editing; and approvals processes.

Some of the changes that have been implemented as a result of this cyclical review since 2003 are as follows: a reduction in content in each subject; the addition of examples and other aids to assist teachers' preparation and planning; more information for teachers supporting English language learners; embedding expectations to enhance students' language and numeracy across all subjects; and the alignment of curriculum aims with new policy initiatives, for example, in the area of environmental education. This is the one example of a regular review cycle that takes place in a system of education and in relation to the curriculum.[6]

8.5   The Netherlands

The current system of organizing education in the Netherlands dates from 1969. Provision is divided between the maintained and independent sectors, although as a matter of principle enshrined in the constitution since 1917, virtually all education is funded by the State's *Ministerie van Onderwijs*, *Cultuur en Wetenschap* (Ministry of Education, Culture and Science) if the necessary criteria are met. It is considered important for public and private schools to be run on an even footing. Out of the total number of pupils, one third attend local authority run schools chosen by their parents, and two thirds attend independent schools chosen by their parents on religious or pedagogical grounds, for example Catholic, Protestant, Jewish, Montessori, Jenaplan, Dalton, Freinet and Steiner schools, and partially financed by government grants. Although schooling itself is usually free, voluntary parental contributions for certain activities are required, a practice known as *ouderbijdrage*. The costs of text books, exercise books and other materials are also met by the parents. In addition to pupils being divided on the basis of attendance at local authority and independent schools, older pupils are also divided into different ability groups as well as academic/ vocational paths. However regardless of type, all schools come under the remit of the official Government inspection body, known as the *Onderwijsinspectie*. The Netherlands is seen as having a high performing education system and is ranked 11th out of 66 in the PISA tests in 2009, 9th out of 36 for Mathematics in the 2007 TIMSS test, 17th out of 36 in the 2007 TIMSS test, and 12th out of 45 in the 2006 PIRLS test. These results appear to have been fairly stable over the last decade.

Since the Compulsory Schooling Act of 1969, schooling in the Netherlands is required between the ages of 5–16, and is known as *leerplicht*. Prior to that, children are able to attend kindergarten (VVE) if their parents wish, with means tested parental contributions. This can be a playgroup, pre-school or day nursery. Children then move to a *basisschool* (BAO) at the age of four or five. From the age of 16, young people are required to attend school for a minimum of 1 day a week until the age of 18, and they are required to achieve at a minimum a basic qualification equivalent to the *Voorbereidene Middelbaar Beroepsonderwijs* (VMBO), the *Hoger Algemeen Voortgezet Onderwijs* (HAVO) or the *Voorbereidend Wetenschappelijk Onderwijs* (VWO).

At the age of around 12, children are divided into different streams for their secondary education, based on their results in aptitude tests such as the *Cito Eindtoets Basisinderwijs* (CITO test) and the recommendation of their class teacher. Transfer is possible between programmes at the age of 16, although there have been criticisms that the system is not sufficiently flexible in this regard. At the end of primary school, 85 % of pupils sit the Cito, or 'school leavers' test in primary education'. The results of this multiple choice test are also aggregated to provide data about school standards. At the end of secondary education students take final examinations in their profile subjects, as and when it is appropriate. The final examination has two parts: a school based examination, and a nationally administered one.

Schools have considerable autonomy in determining the structure and scope of the school-based examination. However, sometimes the results of this assessment process are weighted less heavily than those of the national examination. For school inspection purposes, the output indicator of a school is considered to be its average result in the national examinations, and this metric is also used as a means of checking the validity of school-based examinations (Beguin and Ehren 2010).

As in other Western countries, recent curricular and structural reform in the Netherlands has been heavily influenced by the agenda of the political parties in power at any given time. For example, many initiatives were introduced in the 1970s by the social democratic government, in its 'constructive educational policy' centralized programme. These included: curriculum reform, experimental comprehensive schooling and the integration of nursery and primary schools. However with hindsight, the impact and effectiveness of such initiatives remains unclear, as the objectives and lines of responsibility for implementation were not always sufficiently transparent, making retrospective evaluation difficult (Scheerens et al. 2012). Similarly during the 1980s and 1990s, there were further centralized changes to the structure of secondary schooling. Yet, just as with earlier changes, it is not clear whether any of these structural reforms had any impact on pupil performance or labour market outcomes (Berkhout et al. 2011). However this should be considered in the context of the Netherlands' long-term status internationally as a high performer in a number of performance tables such as PISA, PIRLS and TIMSS.

At the same time as the top-down structural reforms of the late 1990s, there were also upward-orientated, school-based, reforms, based on developing teacher capability and introducing more independent study skills amongst pupils as well as personalization in learning (Vergelers 2003). Teacher flexibility has been an important part of these reforms, with lesson times, tasks and content determined and monitored at school level rather than centrally, although there are national reference standards (minimum standards with basic and advanced levels aimed at different types of pupil) for Mathematics and Literacy. In addition, since the reforms of the 1970s, there has been an increased emphasis on independent study skills, with opportunities for self-directed learning known as 'study house' (*de Studiehuis* – introduced in 1998), ideally complemented by personal coaching and mentoring. The aim of such initiatives has been to raise standards whilst preparing pupils better for engagement with further and higher education, which itself divides into academic, professional and vocational institutions and routes (WO, HBO and MBO). However the policy has been criticized on the grounds that evidence for the use of study house is somewhat limited, and its implementation is restricted in some cases as a result of the large numbers of subjects students are required to study at secondary school (Vergelers 2003). Indeed the apparent conflicting imperatives of study house and a highly structured set of subject profiles offers a useful example of the tension between centrally driven policy and the day to day reality of schooling, which is certainly one that is not confined to the Netherlands alone.

Though the reforms of the late 1990s were influential and encountered little resistance from practitioners, as I have suggested, there have been some attempts at upward-orientated reforms since then. These have been less effective and have

generally been overshadowed and marginalised by reforms which operate within a centrally controlled, uni-directional and downward-oriented model. This in part was because the penetrative power of these top-down reforms was greater than the penetrative power of these upward-orientated reforms. The curriculum model that emerged from these reforms was generally subject-orientated, traditional or fragmented in relation to integration processes, assumed progression modes which prioritised extension, and prioritised summative assessment processes.

8.6 Germany

While schooling had been a national affair during the dictatorship (1933–1945), the post-war government (1949) shifted policy decisions and responsibility to a lower level and re-established the authority and independence of federal states in cultural issues and education (*Kulturhoheit der Länder*). The 16 states are responsible for the design of curricula, the selection and placement of teachers, the development of textbooks, the internal organization and accountability of schools etc. The PISA reports have had a strong impact upon public discussion and educational policies in Germany. One effect of the international comparison is, according to Hopman (2008: 438), the wish for a greater homogenization and centralized control of the system.

One negative effect of decentralization is the differences between curricula, teaching material, entry requirements and qualifications, pupils and their families are confronted with when they move from one state to another. At the level of each federal state, however, decisions are made by the respective state government. As a consequence, educational policies depend largely on the political standpoint of the political party or coalition in power. In order to harmonize this system and ensure some coordination and commonality, the Standing Conference of Ministers of Education and Cultural Affairs (*Kultusministerkonferenz* or *KMK*), established very soon after the Federal Republic of Germany was founded, makes recommendations in the areas of education, science and cultural affairs which have to be subsequently ratified and implemented by the *Länder*.

Schools are free (with a small percentage of private institutions) and mandatory to the age of 18. While attendance at Kindergarten and pre-school is voluntary, all children enter primary school (*Grundschule*) between the ages of 5–7. After 4 years, a decision is made (*Zeugniskonferenz*) on the basis of grades and psychological evaluations which type of secondary school a child can go to. In some federal states, however, parents decide if their child fulfils the basic grade requirements.

The secondary school system is stratified, dividing between different strands for 'high' and 'low' achievers, and providing, for example, different schools for 'academic achievers' (*Gymnasium*), for more 'practically oriented' youth (*Realschule*, *Hauptschule*, *Berufsschule*), and for children with 'special needs' (*Sonderschule*). Germany has a system of vocational education combining school with on-the-job training, sometimes beginning at the lower-secondary level, but more usually

covering those who do not attend a Gymnasium or the like for upper-secondary education (cf. Hopman 2008: 436). After finishing the *Haupt-* or the *Realschule*, which takes between 5 and 6 years, students usually enter the labour market by taking up an apprenticeship in a trade, craft or the service sector or go to a full-time vocational school. The ones who start their training in a company also have to attend a part-time vocational school (*Berufsschule*) until they are 18 years old or until they conclude their apprenticeship.

This stratification of children at the age of 10 or 11 into different school types and thereby into 'manual' and 'academic' workers unfortunately also reproduces socio-economic divisions. Children from a lower socio-economic background or from immigrant families tend to go to a *Hauptschule* or sometimes even to a special education school (*Sonderschule*), whereas middle and upper class children from a German family background constitute the majority of the student population in the *Gymnasium*. At the same time though, the system allows movement between the different strands. It is not uncommon for an adolescent to start an apprenticeship or go to a vocational school and begin a university career at a later stage in life, after the completion of an evening or part-time education programme leading to the *Abitur*. Moreover, the system 'equalizes resources within each type, thus legitimizing differences' (Baker and LeTendre 2005: 47). It is guided by the principle that general and vocational training are of equal value and that participants in vocational training should receive support comparable to that given to university students (Federal Ministry of Education and Research 2003: 33).

After having successfully passed through any of the secondary schools described above, young people have several options at the upper secondary level depending on the school they have so far attended, their grades and talents. They can continue with the Gymnasium (which qualifies them to enter higher education after having successfully passed the *Abitur*), acquire a vocational qualification at a full-time vocational school (*Berufsfachschulen*, *Fachoberschulen*, *Berufsoberschulen*, *Berufskolleg*, *Berufsschulzentrum* etc.), or take up an apprenticeship in a company. The attractiveness and enormous importance of the latter two options is demonstrated by the fact that about 60 % of each age cohort complete a training programme by the age of 25 (Reuling and Hanf 2003: 12).

The German VET system is marked by a complex coordination of social actors who share a common responsibility. This governmental, institutional and private cooperation has evolved historically and been restructured and modified over several centuries. While the Chambers and the Federal government are responsible for the professional regulation and validation of qualifications and in-company training in accordance with the *Vocational Training Act*, the 16 federal states (*Länder*) are, as in the general education system, responsible for the *Berufsschule* (vocational schools). They nevertheless cooperate closely with the Federal Government through the Federal Ministry of Education and Research (BMBF) in order to coordinate their decisions. This means, as the OECD report by Reuling and Hanf (2003) outlines, that the national qualifications system and its continuous development is based on negotiations and agreements between the individual federal states, the Federal Government and social partners, such as the Chambers, the Federal Institute for Vocational

Training (*Bundesinstitut für Berufliche Bildung* (BIBB), unions and employers. While the system bears high costs for employers, there seems to be generalized agreement that vocational training and education is an investment in the future.

The curriculum is divided in three parts: the vocational specific learning areas (berufsbezogener Bereich), the area of differentiation (Differenzierungsbereich), and the general area (berufsübergreifender Bereich). In the dual vocation system, the general part of the instruction is taught in accordance with the curriculum and schedules of the respective federal strand. The vocational part of the instruction is based on the framework curricula of the KMK, which are harmonised with the relevant training regulations. All three are integrated in order to achieve the professional competence, although the generic part is also meant to contribute to the social and ethical education of the student. The vocational specific part consists of 12 learning fields (Lernfelder), which have to be realized in the classroom through learning situations that the teachers develop. In the professional strand 'Textile', for example, there is *Sewing Techniques*, *Decoration Techniques* and *Sewing of Clothes*. In the professional strand 'Wood', *Planning Products*, *Planning Work Processes* and *Maintenance* might be on the agenda. Other vocationally specific fields include *Mathematics*, *Administration* and *English*, which in a traditional curriculum would have figured in the general knowledge area. The latter, however, solely consists of *German*, *Physical Education*/*Health Studies*, *Religion*/*Religious Studies* and *Politics*/*Social Sciences*. The area of differentiation offers students the possibility to either acquire additional or more profound competencies in their vocational specialization or to amplify their general knowledge. These could include, for example, *Business English*, *Marketing*, *Computer Science* or an internship in a company.

Germany is an example of a country with a well-developed system for allowing reforms to succeed, though implementation and institutionalisation of these reforms are the responsibility of the states or *Länder* in this federal system. The system into which these reforms in Germany are introduced has a strong capacity to sustain the longevity of the reform and in particular, this refers to the system's resource arrangements, allocations of particular people to positions of responsibility, particular roles and arrangements of power and authority, the capacity of key people in the system and its policy discourses and new policies.

8.7   England

Here I trace some of the developments and changes in the forms of educational governance in England over the last 25 years. This is not a complete history of educational reform over this period, since the volume of centrally directed experiments and interventions was such that it is difficult to document them all. However, this period can be characterised as a continuous process of change, flux and perturbation, in which successive governments experimented with, intervened in, and changed, the governance of the system. Changing the types of rewards and sanctions for teachers, the criteria for judging quality within the system, the compliance capacity

of the workforce, and how they judged themselves and each other, contributed to changing the learning experiences of children. Ball (2010) argues that the processes of public sector transformation in the English education system had five key elements: de-concentration, disarticulation and diversification, flexibilisation, de-statisation and centralisation. The first of these, he suggests, was the 'devolving of budgets and teacher employment to the school level' (ibid.: 24). The second of these processes, that of disarticulation and diversification, refers to processes such as the weakening of the local government structure, the introduction of new types of schools with different governance and financing arrangements (for example, city technology colleges, grant maintained schools, academies, and free schools), and diversification, so that, as Ball (ibid.) suggests, there is 'a self-conscious attempt to promote new policy narratives, entrepreneurship and competitiveness in particular. Through these new narratives new values and modes of action are installed and legitimated and new forms of moral authority are established and others are diminished or derided'.

The third of Ball's processes of public sector transformation is flexibilisation, where a plethora of approaches to teachers' conditions of service were legitimated, a new tier of teaching assistants was introduced into schools, and new and competing (with existing and well-established forms) systems for training teachers were introduced. The fourth process is destatisation and destabilisation. Ball (ibid.: 26) explains this as, the 'introduction of new providers by contracting-out of services, programmes and policy work, drastically blurring the already fuzzy divide between the public and private sectors'. The last of Ball's processes of public sector transformation is, perhaps paradoxically, that of centralisation. This was manifested in the retention of a national curriculum, albeit that large swathes of the sector were allowed to opt out, the central funding and governance of certain types of schools, and the creation with substantial powers of an inspection service to act as an enforcer of government policy, with this rapidly becoming known as a standards and quality agenda.

Fundamental to these changes has been a rescripting of the notions of quality and service, and consequently, new positions, roles, and sets of moral ordinances for the workforce. Ball (1994: 216) suggests that in addition to new forms of managerialism that were introduced into schools during this period, there was a greater emphasis given to *performativity*. This is 'a technology, a culture and a mode of regulation that employs judgments, comparisons and displays as a means of incentive, control, attrition and change' (ibid.). Performativity requires measurements of staff productivity and employs rewards and sanctions to guide staff performance to meet organisational goals. While professionalism and performativity may share the same goals, for example, improvements in performance, their cultures and discourses are fundamentally different. Sanguinetti (2000: 240) contrasts the discourses of teacher professionalism, which include 'professional ethics, collegiality, social responsibility and good practice' with the discourses of performativity, which include 'value for money (efficiency), accountability (outcomes), international competitiveness and market discipline'.

In the United Kingdom (UK), Scotland, Northern Ireland, England and Wales have very distinct educational systems, policies and curricula. As Harris and Gorard

(2009) report, free elementary education was (near) universal in the UK by 1900. In order to achieve the same for secondary education, the government issued an Education Act in 1944 that made schooling mandatory up to the age of 15. Three types of schools prevailed in the following decades: *technical schools* which de-emphasized academic content and focused on the preparation of pupils for the crafts and trades, *grammar schools* which had the most academically oriented curriculum, and *secondary schools* which catered for the majority of children and offered a mixed academic, general and vocational curriculum. From the 1960s onward, most secondary institutions were converted into comprehensive schools.

Traditionally teachers had been granted autonomy in terms of the curriculum. Until the 1960s control over curriculum and examination was in the hands of the Schools Council for Curriculum and Examination (SCCE), a teacher-controlled body. The Conservative Government abolished this institution and returned control to the Department of Education and Science (DES). In 1988, a first national curriculum was implemented and schools were allowed to opt out of the Local Education Authorities (LEAs) and control their own budgets. The first National Curriculum was a definite step towards greater control and homogenization of school subjects and the maintenance of particular teaching and learning standards controlled by a school inspection system (under the auspices of the Office for Standards in Education (OFSTED), followed by the introduction of national league tables, labelling 'good' and 'poorly' performing schools (Harris and Gorard 2009: 2). Core subjects of the National Curriculum include Mathematics, English and Science. Other foundation subjects at KS3 are Design and Technology, Information and Communication Technology, Geography, History, Music, Physical Education and Art and at KS4, in addition to the ones previously mentioned, ICT, Citizenship, and a Modern Foreign Language (Harris and Gorard 2009: 8). Further developments in the same direction were the National Literacy Strategy (1998) and the National Numeracy Strategy (1999), both of which established national curricular objectives and standards.

Since the election of the first Labour government in 1997 various reforms targeted issues like social exclusion, educational failure and access for all to quality education. This was meant to be achieved through increased regulation and governance of education, including the allocation of resources, depending on, for instance, the respective position of schools in league tables, the admission of pupils to schools and the appointment of staff, the formulation and control of contents and standards of teaching, learning and assessment, for example, through the design of curricula and monitoring of its provision, etc.

Education in England has gone through many changes in the last decades, among them an increased standardization, regulation and auditing of the education system. While the social status of teachers had been continuously diminished, there is an increasing awareness that teachers are the essential factor for educational quality. Therefore increased emphasis is put on initial qualifications and continuous professional development of teachers and principals, as indicated by the *Qualified Teacher Status* (QTS) and the *National Professional Qualification for Headship* (NPQH) qualification. The focus on accountability and evaluation of performance has generally led to a marginalization of areas that are not and cannot be assessed. Social

class remains the key variable associated with educational participation and opportunity in the UK. There is considerable reproduction of status and education within families across generations.

A profound change to the English education system over the last 25 years was achieved through devaluations and revaluations of the currency of education for schools, teachers and students. This happened because successive governments drove through an assessment-led reform process, with consequences for curriculum, governance, notions of quality, learning and accountability. The main features of these reforms have been high-stakes testing and external forms of control. Education professionals at all levels are required to provide numerical evidence to show how they perform, and this is expressed as indicators of effectiveness. Rewards and sanctions based on these numerical indicators have created pressure on school managers and teachers. The expectations and roles of school principals and teachers are reduced to targets and numbers, instead of the quality of teaching and the quality of the learning experience. School principals increasingly see themselves as managers who interpret and manipulate these numbers. Teachers teach curriculum content that is relevant to standardised testing, focusing on improving test results. The curriculum is narrowed while students are drilled to master tests. Comparison and hierarchy based on test scores in schools demoralises less successful children and reduces the value of learning from making mistakes. This process dissuades schools from long-term improvement processes as it 'places people in a high-alert dependency mode jumping from one solution to another in a desperate attempt to comply' (Fullan 2006: 11). This technocratic school culture disengages teachers from high quality teaching and a commitment to shared practice.

As in Finland there is no need to use educational policy in England to create a national model and policy-makers and practitioners can concentrate on selection and control, with nation-building not of significant importance. That is, the country as a whole and service provision such as education are run and integrated according to relatively open bureaucratic principles. Debate and procedures seem to be relatively straightforward, unlike more patrimonial societies where nation building is a priority. An increasingly heterogeneous population and cultural norms challenge uniform notions of nationhood, though these differences are worked out more through public debate and consequent pluralist policies rather that the power brokering that occurs in patron-client societies, such as Chile. The curriculum model that emerged from these reforms was generally subject-orientated, adopted fragmented integration processes, assumed progression modes which emphasised extension, and prioritised summative assessment processes.

8.8 Chile

Compulsory education includes 8 years of basic education (*educación básica*) and 4 years of secondary education (*educación media*). During the first 2 years of secondary education students follow a general curriculum. During the last 2 years they

choose either the general track (*EMCH*) or the vocational track (*EMTP*). Two thirds enter general programmes and one third vocational programmes. Chile allocates 22 % more resources per student to general education than to vocational/pre-vocational programmes. This contrasts with most OECD countries, where more is spent per student on vocational programmes (OECD 2009b).

Chile introduced a unique voucher system for school financing in the early 1980s, whereby publicly financed schools receive, for each of their students, a subsidy that was essentially flat until recently. Public schools, which have been run by municipalities since the reform, and private subsidised schools, receive the voucher subsidy. Private subsidised schools, but not municipal schools, are allowed to top up the voucher subsidy with fees from parents. If these fees exceed a certain limit, private schools lose their right to the voucher subsidy and are financed by parents' fees alone. This school type is called a private fee-based school. Since the voucher reform, Chile has relied on free school entry and school competition as the main quality assurance mechanism, with, until recently, little or no state intervention to ensure minimum quality standards. The reform has led to the creation of a large number of private subsidised schools, which have increased their share in enrolment from 30 % to 48 % since 1986, and a flight of the middle classes from public schools, with their enrolment share decreasing from 63 % in 1986 to 43 % in 2008. As before the reform, a small share of pupils (around 7 %), mostly from high-income families, go to private fee-based schools. Private subsidised schools receive students from a wide range of weaker socio-economic backgrounds. Municipal schools receive the poorest children, around 60 % of children from the two lowest income deciles.

Chile has made some progress in terms of educational coverage and attainment, which is in part related to the large increase in the number of private schools, but quality is still weak. The coverage of primary education is now almost universal, and secondary and tertiary attainment rates have increased rapidly. Yet while the Programme for International Student Assessment (PISA) results improved considerably between 2000 and 2009, the scores of 15-year olds in Science, Reading and Mathematics are still well below the OECD average, even after adjusting for the lower socio-economic background of Chilean students.

The Chilean system has four levels of education with universal coverage up to the standards of any first world country. Chile invests 7.5 % of its gross domestic product in education, a considerable amount which surpasses some developed countries like Finland or the United States. Chile's education system is decentralized; the administration for each establishment is executed by persons or municipal and private institutions known as sustainers, who are responsible for managing the educational establishment on behalf of the State. The system is made up of subsidized establishments, municipal and private establishments with four levels of education: pre-school or early education, elementary or primary, high school and higher education. Coverage of Chile's education system is practically universal. 99.7 % of all children between the age of 6 and 14 are enrolled in elementary or primary school (EGB). 87.7 % of all children between the age of 15 and 18 are enrolled in high school. 2009 higher education figures indicate that total enrolment in 2008 came to 752,182 students, the highest rate in history and up 14 % compared to 2007. The

system coverage is already surpassing 40 %, which is very high and even comparable to some developed countries. Advances have been possible because the education system is now compulsory and the most recent administrations have made important efforts to improve education quality.

Pre-school or early education is the first level of education in the Chilean education system and it is provided free-of-charge for children up to the age of six. Pre-school coverage has increased substantially over the last few years. The category currently extends throughout the entire country, covering over 30 % of the total population under the age of six. Education for this category is not obligatory, but the benefits provided by personalized education for boys and girls is so important that it is even considered an effective mechanism for interrupting the poverty cycle. Pre-school education is provided by a wide range of public and private institutions, including the following: municipal and subsidized private schools; subsidized private schools with shared financing; pre-schools and day care centres managed by the National Board of Early Education (JUNJI); private pre-schools and day care centres; day care centres managed by Integra Foundation; and pre-schools and day care centres managed by companies.

Elementary Education is the first level of obligatory education and it includes two 4-year cycles. The system provides scholarships and other benefits. Elementary education consists of 8 years of study divided into two cycles. The first 4-year cycle teaches basic contents with a universal methodology. The second 4-year cycle features contents organized into subjects and more specifically educational activities. The structure of this level has been designed to provide students with an integral, general and basic education; *integral* in that the system encompasses all aspects of human development (affective, cognitive and ethical), focusing on the process of growth and personal self-affirmation and providing guidelines as to the way the person relates with others and with the world; *general* in that it promotes lessons learned and a wide range of knowledge pertaining to humanistic, scientific and artistic areas; and *elementary* because it provides the minimal formal education required in keeping with study plans.

Children between the ages of 13 and 17 prepare for university education and active integration into the workplace. Secondary school education lasts 4 years and is divided into two areas: scientific-humanistic and technical-professional. Scientific-humanistic education is divided into two cycles and includes general education subjects which aim to prepare students to enter university. The first cycle is ninth and tenth grade, while the second cycle is 11th and 12th grade. Technical-professional education aims to prepare students for the workplace and this comprises different categories: commercial, industrial, agricultural and maritime. These are chosen with students starting these programmes in the tenth grade.

The curriculum model that emerged from these reforms was generally subject-orientated, adopted traditional or fragmented integration processes, assumed progression modes which emphasised extension, and prioritised summative assessment processes. In addition, the curriculum review process is adhoc, unplanned, dependent

on the political cycle, and a response to particular problems, as they are conceived by successive governments. The point of entry of the reform into the system is at the top or apex of the power structure.

8.9 Singapore

Singapore features regularly in the news as an example of a high performing education system as measured in international tests (OECD 2014). Its education system has been the centre of attention for national policy-makers, educationalists and social scientists wishing to understand and emulate its achievements, and international organisations like the OECD anxious to promote a close relationship between economic development and educational institutions and practices (cf. Barber and Mourshed 2009; Goh 1997; OECD 2000, 2005, 2009b).

The small recently formed island state of Singapore, with a tightly packed resident population of about four million, overwhelmingly of Chinese origin, has captured the imagination of international organisations like the World Bank and the OECD as a stable and reliable provider of services to international capital through the agency of a single-minded party (the People's Action Party (PAP)[7]). The PAP has monopolised and shaped Singapore's social and political landscape since its independence from the United Kingdom in 1963. Explanations for this range from the view that Singapore is an example of *authoritarian capitalism* to the official view that, in the words of its veritable founder Lee Kuan Yew, it represents the successful marriage of Western democracy to traditional Asian values.

There is, however, agreement that the Singaporean state, closely entwined with the People's Action Party, has been able to achieve the social compliance and stability required to convince other nations that it is a successful place to invest in and trade with. Since its separation from the Malaysian Federation in 1965, and being an entity with no real agricultural hinterland, a very small industrial sector and reliance to such an extent on servicing that over 80 % of its active population work in such industries, Singapore has benefited greatly from strong and continuous government and one party rule to produce the infrastructure and train the workforce necessary to secure such a position of esteem. In part this has been achieved through the efforts of well over 1.49 million heavily restricted and supervised migrant labourers, who constitute one third of the work force, and whose visas exclude basic labour and familial rights. What attracts the interest if not captures the imagination of educationalists is that its principal instrument to effect such a change has been the creation of a system of education that is a catalyst to economic development and at the same time promotes social solidarity and conformity to government institutions.

Singapore's education system has been characterized in terms of three phases: a survival-driven phase lasting from independence to about 1978; an efficiency-driven phase which lasted until 1996 and which culminated in government reforms

known as 'Thinking Schools, Learning Nation'; and finally from then to now an ability-driven phase. These phases of educational reform are now part of the historical narrative accepted by historians and chroniclers in Singapore and each of them was preceded by a series of government reforms. Our understanding of what happened is therefore based on an official account of the model of change; implicit within it is that educational practices change as a result of changes in resource allocations, arrangements of people including power relations, discursive and institutional structures, and the articulation of concerns, problems and difficulties that emanate from the state.

The survival driven phase drew on two sources. The first of these was the colonial past of Singapore, with both British and Malay influences persisting long after independence had been achieved; in the case of Malaysia, direct rule was shorter but was more persistent because of its close physical proximity and its potential source as a market for Singapore's goods. These colonizing influences took a variety of forms: legal and jurisdictional structures which persist to this day; types of discursive forms, identity formations and governmental apparatus, which had both exteriorising and interiorizing effects; patterns of economic activity; and a particular relation and designation to and by other countries in the world. In short, Singapore was understood and in part constructed by other people in a particular way and this worked to frame the way Singapore understood itself.

After independence from Malaysia, the economy was in a weak state. Colonialism had reduced economic activity to trading and small-scale manufacturing. This meant that Singapore was heavily dependent on imported goods and the first government of the new independent state developed a strategy known as Import Substitution Industrialisation. In essence this meant that Singapore would substitute home-grown, small-scale goods for those imported goods but only in so far as the workforce had sufficient training to accommodate their manufacture. In economic terms, this meant that economic activity was limited by the skills shortage of the workforce and the lack of available and suitable technology. Meanwhile pressure grew for the adoption of an export-led strategy; but even here the problem was compounded by the loss of markets to the north after the separation of Singapore from Malaysia. An export-led strategy became the new orthodoxy in Singapore. However, for a long-time after independence from both Britain and Malaysia, Singapore remained a depressed economic sector. It became clear to the government that the restrictions placed on delivery of an export-led economic strategy were primarily the lack of an effective skill-base and the undeveloped nature of the country's human resources.

To this end, the government focused on upskilling (in instrumentalist and economic terms) the current and future workforce. Under colonialism and especially that of the British, education was seen in manifold ways as a means for suppressing and controlling nationalism, whilst at the same time emphasizing an intimate link between economic expansion to the benefit of the colonial power and a national education system. In the survival phase the quest for a form of national identity took a different form with national integration of the various ethnicities being emphasized and the construction of an independent unified national state

being prioritised. This translated, in educational terms, into: equal treatment for the four streams of education (i.e. Malay, Chinese, Tamil and English); the establishment of Malay as the national language of the new state, though fairly rapidly English became the legislative, bureaucratic and schooling first language; and a greater emphasis being placed on Mathematics, Science and technical subjects. Since the concern at this time was one of national survival, economic expansion was seen as an essential part of the creation of a nation state. Furthermore, the assumption was made that in a highly centralized state, the education system could be rapidly transformed to meet these aspirations. Compulsory elementary education was provided for all regardless of race, language, sex, wealth or status (and the dearth of private education providers persists to this day). Bilingualism became both the norm and an essential part of the system, and the learning of English alongside one or other of the ethnic languages fitted the desire of the government to be able to compete in world markets.

The second phase between 1979 and 1996 has been described as efficiency driven. The focus at governmental level shifted from a labour intensive economy to a capital and skill-intensive economy. This entailed the introduction of new structures, new forms of educational governance, and new resource and accountability arrangements. The ease with which these changes were made to the system reflects a particular type of power structure in operation; this is a top-down, government-driven, autocratic arrangement, with few possibilities for resistance. It also indicates a particular emphasis on material structures of incentives and rewards and less of an emphasis on discursive structures, so that the process of developing standardized national belief systems was relatively marginalised.

In protectionist policy regimes, educational policy development is centralised because the nation state seeks to bind together diverse segments of the population by creating curriculum, normative, administrative and in some cases, pedagogical stipulations. Nevertheless, the very cultural and social class distinctions that pervade the society require some diversification of provision, consistent with the neo-liberalism prevalent in many previously protectionist economies, and these were more obviously present at the third stage of educational reform in Singapore. This effervescence points up the tension between the centre and periphery, resolved in Singapore by the introduction of devolved policies of management, governance and accountability. Depending on the degree of decentralisation of the public educational administration to the regions, the same type of friction may still exist between these levels and within the public sector. Depending on the degree of centralisation, in this type of regime, teachers are likely to be subject to similar state professionalisation interventions as in the corporatist regime. Prominent interventions are training, accountability and standardised promotion and benefits (though as in the corporatist regime, these may be cross-cut by patronage). A national curriculum is typical of this regime, though concessions may be made to local and minority variations in content and operational style.

In January 1979 Singapore moved from a system that was designed to create a national identity, integrating the various ethnicities and constructing an independent unified national state to a system of schooling which was designed to produce a

capital-rich and technically-skilled work-force. The Government at the time was moving the economy from an import-led and entrepot economy to an export-led technologically-driven and competitive economy. This phase focused on reducing the variation in performance across schools and it heralded the introduction of students being streamed into different tracks, with little movement between them from an early age. For example, at the level of high school, multiple pathways included: academic high schools, which prepared students for college; polytechnic high schools that focused on advanced occupational and technical training and that could also lead to college; and technical institutes that focused on occupational and technical training for a fifth of the students. To some extent this mirrored the grammar school/ technical school/ secondary modern divide that the United Kingdom had been and was still in the process of dismantling. That the United Kingdom has now begun to move back towards an elite system of public education, albeit by invoking mantras of choice and diversity, is a different story.

At the same time Singapore created a Curriculum Development Institute in order to supply to schools and teachers sets of curriculum materials. These curriculum materials which dovetailed at this time with a national set of curriculum standards and a national assessment system ensured some measure of standardization of curriculum, of assessment and more fundamentally of pedagogy within the public school system in Singapore, though because the emphasis at this time was on the development of human capital and the means for delivering it this was deemed to be a stratified form of provision amongst the student body (based on performance in a series of tests). Each classroom and each teacher at this time received the same type of materials and the same resources for each grade. This standardization was in part driven and also validated by success in international league tables such as TIMMS and PISA. By 1995, Singapore's school system was among the top-performing systems in the world, topping TIMSS rankings in both Mathematics and Science that year.

Between 1985 and 1991 a series of legislative changes to the system were made. At the end of the primary school phase all pupils were placed in streamed classes that were commensurate with their learning pace, ability and disposition to learn. This always involves a compression of a number of distinct qualities into a composite categorization of the student; students who may be able to learn at a fast pace are treated as the same as students with a poor attitude towards learning. Gifted education programmes were introduced in 1995. In addition English became the principal medium of instruction, this practice being driven by globalisation pressures. Changes were also made to teacher supply and training, with the imperative being to attract teachers of a high quality, though high quality was not defined as pedagogical expertise but as academic (in the narrow range of subjects studied at university level) expertise. Teacher training courses were reconstituted to ensure a supply of high quality teachers into the profession. In 1992 the Vocational and Industrial Training Board (VITB) was reconstituted as the Institute of Technical Education (ITE) and its operation and mission was redefined. These new post-secondary institutes of education were populated by students who had not achieved very much at primary school and had subsequently been channelled to the new Normal Technical Secondary stream of schooling. The vocational and academic

streams were being clearly differentiated from an early age, and in addition, curriculum and pedagogic programmes were devised which were thought more appropriate for these types of children. Evidence from other countries round the world suggests that separate and segregated systems of vocational and academic education also have attached to them attributions of low and high status. Singapore sought to dispel this by injecting large amounts of resource into the vocational schools, and developing well-paid apprenticeship schemes.

The third and final phase has come to be known as the ability-driven phase and this suggests a paradigm-shift in thinking about education. In 1997, the Singaporean government launched *Thinking Schools*, *Learning Nation* (TSLN), marking the start of its ability phase and emphasizing a shift in focus, so that the emphasis was now on each student reaching his or her potential. This meritocratic initiative was in a sense a reaffirmation of some of the policies and practices in the education system that preceded it, such as the development of gifted and talented programmes of learning, the introduction of streaming from a young age and the clear separation of vocational streams from academic ones. However, what marked it out as a distinct educational phase was the degree of autonomy now given to teachers and schools. The logic engendered by the focus on the ability of the student was that schools and teachers should be given more flexibility and responsibility in how they could teach and manage their classrooms. School clusters were introduced to create forums for school leadership development and this allowed the sharing of good practice in teaching and learning.

The thinking behind this initiative is somewhat paradoxical as its central tenet was to move away from (for the sake of efficiency) a centralised command position in the system and allow the possibility of failure. The centralised, standardised, top-down system, the emphasis on examination success and consequently rote-learning, the practice of tracking and the passivity of students in the learning process, all of which were seen as pivotal in the development of the nation and its economic success, were now seen as impediments in a post-industrial and globalised scenario. This has involved a shift from an efficiency-driven system to an ability-driven system, and it points to continuities between the reforms in the shape of streaming and setting. Brown and Lauder (2005) have suggested that the break in the policies of Singapore reflects two distinct scenarios: a neo-fordist model and post-fordist model. In the first case, there is an emphasis on measures whose purpose was to increase productivity, privatise national services and monopolies, reduce the power of organised labour, cut and reform welfare provision, make labour markets more efficient by increasing competition, and provide flexibility; all of this based on the view that the market was a more efficient allocator of resources than the state.

This can be compared with a post-fordist policy which emphasises the state's direct sponsorship of high skills, retention of workforces, long term investment in human capital and in the infrastructure which supports them, and even the promotion of new forms of service and industry. Both of these scenarios attach a high value to education, though they understand their commitment to it in very different ways. The neo-fordist model believes in applying the principles of the market to the education system, promotes a standards and accountability agenda, and advocates

choice and entrepreneurship. Key policies that fit are voucher systems, measures of parental choice, a variety of schools and setting up competitive systems to reward success, such as league tables of performance. The post-fordist model focused on human capacity, development and performance, encouraging creativity, innovation and working together. This destatisation process, where power and influence moves from elected representatives to an array of other actors, is characteristic of this third, and perhaps post-fordist, phase in the history of educational reform in Singapore.

Clusters of schools were created with former head teachers heading up these clusters. The old top-down inspection system was replaced by a model of excellence and self-evaluation. No single accountability model was prescribed for all schools. Each school was now allowed to set its own goals and objectives and annually assess its own performance against nine pre-set functional areas (five enablers and four sets of academic results). Every 6 years there would be an external inspection by the School Appraisal Branch of the Ministry of Education. Streaming which, as has been noted, was an essential feature of the Singapore education system was replaced with subject-based banding. This had a similar pedagogical effect, but allowed more flexibility than the previous system and avoided some of the problems associated with being labelled as a bottom stream or top stream child, even though, the degree to which individual children varied across subject-based bands was limited. At the end of the primary school, children were required to sit a primary school leaving examination in English, Mathematics, a mother-tongue Language, and Science. As a result of these examinations children were allocated to an express, academic or technical course in secondary education, reaffirming the principle of early specialisation, though a limited amount of movement was allowed between different pathways.

After 10 years of general education, students now go to post-secondary education, at junior colleges (31 % of students), polytechnics (43 %) or institutes of technical education (ITE) (22 %). Academically inclined students are allowed to take A-levels during this period and then go to university. Students are also allowed to take diploma courses in technical or business subjects at polytechnics. Many polytechnic graduates who have done well also go on to university. Students with GCE O- or N-levels can take skill-based certificates in technical or vocational subjects at institutes of technical education. Outstanding ITE graduates can also go on to polytechnics or universities. About 25 % of each cohort goes on to university in Singapore (the number of places is projected to rise to 30 % in 2015).

8.10   Curriculum Comparisons

Most mass systems of education do not have established curriculum review cycles. Consequently, curriculum reviews tend to be ad hoc, unplanned, dependent on the political cycle, and a response to a particular problem as it is conceived by government ministers. The point of entry for a reform in most countries is at the top of the system or the apex of the power structure, with the general direction of flow being

fragmented and multi-directional. It is possible to suggest that reforms usually lose their shape and structure during the exploration, development, recontextualisation, implementation and institutionalisation phases of the reform process. In most countries institutionalising processes are undeveloped.

Most reforms of education systems now emphasise assessment driven, goal directed and fact based forms of learning. And in addition, most education systems have adopted similar construals of curriculum standards, and likewise are driven by summative processes of assessment, influenced in many cases by the imposition of external tests such as PISA. In the last chapter of this book, I examine the various elements of this consensus, and the relations and connections between them, and I do this by suggesting a new model of curriculum.

Chapter 9
A New Model of Curriculum

This last chapter of the book focuses on the various elements of a new model of curriculum, and the relations between them. It is unashameably practical and normative in intent, and, in defence of this reversion to these modes of being, I turn to Aristotle's discussion of the practical syllogism in his *Nichomachean Ethics* (Aristotle 1925, though this of course is not when it was written). In his *Nichomachean Ethics*, he developed a notion of the practical syllogism, which is an argument with three propositions. These are: a major premise which attempts to state a universal truth, a minor premise which attempts to state a particular truth, and a conclusion which is derived from these two premises. This conclusion is usually expressed as an activity, and thus has the distinctive quality of acting as a norm, or, as Aristotle suggested, it is designed to influence the receiver so that they conform to what is expected of them. The prescriptions and norms set out in this chapter emanate from the detailed philosophical work conducted in the previous chapters, which has resulted in universal and particular truths being developed about curriculum, learning and assessment matters. These truths following Bhaskar (2008: 47) are alethic, that is, they are 'a species of ontological truth constituting and following on the truth, or real reason(s) for, or dialectical ground of, *things*, as distinct from *propositions*'. From these, it has proved possible to develop a set of practical propositions[1].

A curriculum is an intended programme of learning and has three components: a set of curriculum standards which articulate the intended student achievements (what they know, what they can do and what dispositions they have acquired) at set points of time (these are the learning objects); a set of pedagogic standards (these are teaching or learning approaches); and a set of summative assessment or evaluation standards. This suggests a series of questions for curriculum designers:

- How should the notion of a standard be understood?
- What items of knowledge should be included in a curriculum and what items excluded?

- What reasons can be given for including some items of knowledge and excluding others?
- How should those items of knowledge be arranged in a curriculum?
- What is the relationship between disciplinary or academic knowledge and pedagogic knowledge and what form should it take?
- What types of arrangements in schools are suitable for delivery of the curriculum?
- What should be the strength of the insulations between different types of children, teachers and learners, teachers and educational managers, different types of knowledge, different items of domain specific knowledge, different types of skills, different educational purposes, different teaching episodes, different parts of the policy-cycle and different organisational units?

It is the last of these questions that is pivotal to an understanding of the curriculum. Consequently, there is a need to think through the implications of understanding the world of education in a Bernsteinian manner (cf. Bernstein 1985, 1990, 1996, 2000). By describing a curriculum in terms of the strength of the relationships between its different parts, here there is a ready-made framework for analysing the different manifestations of the curriculum as they are enacted in different parts of the world. However, in the act of describing people, institutions, systems and curricula, and the relations between them, analysts are engaging in a value-laden activity; a description cannot be atheoretical, and this is because the process involves identifying and highlighting some features of the person, institution, system or curriculum at the expense of others. Labelling, for example, acts as a way of establishing strong insulations between people, roles and functions, institutions and human activities. The designation of the object, and its attributes, also impacts on the types of relations that the object has with other objects, and indeed the strength of those relations. Furthermore, in the act of describing something or someone, this in itself gives the object emergent powers. Whether, it exercises these powers depends on the history of that object and its relations with other objects over time. Indeed, as Bernstein (2000) suggests, the stronger the insulations between objects the more naturalised the properties of the object become.

This implies that a critical approach to the world and to curriculum-making is required; critical in the sense that any attempt at describing and explaining the world is fallible, and as a result, those ways of ordering the world, its categorisations and the relationships between them, cannot be justified in any foundationalist sense, and are always open to being critiqued and subsequently replaced by a different set of categories and relationships. Justin Cruickshank makes this point in the following way: '(c)ritical philosophy is therefore critical because it accepts neither the view that there are fixed philosophical first principles that guarantee epistemic certainty, nor the idea that first-order activities are self-justifying' (Cruickshank 2002: 54). Cruikshank is arguing here for what he describes as an internal critique. Reality itself can never be known as such and thus any mirror image of the world is bound to be insufficient. However, this picture theory of the world, with its designation of a correspondence relationship between the ontology of the world and its epistemology,

can be replaced with a model of internal critique, so that, existing frames of reference, current or even past ways of describing the world, can be shown to be flawed and, therefore, potentially could be replaced by other approaches. However, each of these alternative approaches is in turn subject to the internal critique, and therefore there is no epistemic certainty about the correctness of the ontological framework that is being proposed.

9.1   Standards

What might be surprising about the curriculum model that has been developed in this book is the emphasis on standards, given that the whole thrust of the argument being made here has been an immanent critique of what has come to be known as a standards and accountability agenda, which now dominates conceptions of curriculum round the world. The idea of a standard however, can be used and is used in a number of different ways, and indeed, can be used in a different way to how it is used in a standards and accountability agenda.

In the curriculum model favoured in this book, standards play a prominent part and are defined as what a child should know, be able to do and which dispositions they should have acquired, after a programme of learning. Standards are statements of expected achievements. There are three types, knowledge, skill-based and dispositional, and they need to be distinguished. Knowledge of something is the traditional form a set of curriculum standards takes, to which can be added knowledge of how to do something (i.e. skills) and dispositional knowledge. Dispositional knowledge refers to relatively stable habits of mind and body, sensitivities to occasion and participation repertoires. These dispositions include characteristics of the person that persist across time, for example, a positive self-concept as a reader, a desire and tendency to read, and an enjoyment of or interest in reading.

Curriculum standards are not the same as pedagogic standards (those arrangements in schools that are made to allow learning to take place, and this includes formative processes of assessment) or assessment/evaluative standards (how we can evaluate whether those curriculum standards have been met at set points in time). What this means is that the foundations of any curriculum are those curriculum standards which a nation has decided are the most appropriate forms of knowledge, skills and dispositions for learning in schools, and not teaching or assessment standards. Teaching, learning and assessment approaches derive their credibility from these curriculum standards. It is therefore important that the curriculum standard is not compromised in any way by whether it can or cannot be used as a testable construct or teaching approach.

However, now and in the past, the notion of a standard is and has been used and understood in different ways. A set of standards can be expressed at a high level of generality and abstraction and organised in a hierarchical order, so that there are progressively more complicated versions of each of the main ideas at the various key stages (usually articulated in terms of more than the previous stage). This rendition of

a standard has a number of deficiencies. First, the level of generality and abstraction of this type of curriculum standard means that these standards can only act as a general guide to stakeholders (i.e. teachers, head teachers, examination constructors, policy-makers, parents and the like). Second, this restricts the type of progression that can operate in the programmes of study. The end-result of this is that they are rarely used, and serve as adornments, rather than practical, useable technologies.

A second rendition comprises a set of curriculum standards written as statements of achievement and at a level of concreteness that can be easily and reliably converted into useable products. These capture the essence of the aims and objectives (sometimes written as competencies) of the educational process (and of course of the written curriculum, which is an attempt to capture this framing of the process). There is an element of reductionism in this version. Progression between the different levels is understood as having a number of dimensions and not just extension. In other words, there are different forms of relations between the different levels (This might involve some knowledge sets, skills and dispositions not being introduced until the second or third key level, such as formal reading in a curriculum). These forms of progression are: prior condition, maturation, extension, intensification, abstraction, articulation and process.

There are some problems with this particular version. First, it supports a belief that curriculum standards can be expressed as a series of general ideas, which incorporate learning episodes that fit neatly with the apparatus of key stages or levels. This belief is flawed because there are different forms of progression and more importantly, because a curriculum is value-impregnated. This means that the values (of a nation, region, jurisdiction or system) determine the contents of a curriculum, the relations between the different parts, and the strength of the boundaries between the different elements. Second, and related to this, there is a danger that the users of the curriculum standards will find it difficult to work with standards that do not fit with simple and uncomplicated patterns of organisation. And, thirdly, there is a danger of a disjuncture between the curriculum and the pedagogic standards that are being used.

A third rendition is where the standard is written so that there is a high level of generality of the statements, with at the same time a more flexible conception of progression, understood in terms of a multiplicity of progression modes, a non-linear (in relation to any key stages or levels) progression pathway, and the possibility that some skills, knowledge sets and dispositions may not feature at all at some of the key stages. The problem with this version of the standards and accountability agenda is that the very generality and abstractness of this type of standard may make it difficult to both implement and use.

A fourth rendition is where assessment standards and curriculum standards are treated as equivalents. This has a number of problems: a reduction to what can be measured, a neglect of some standards that cannot be easily measured, and a possible distortion of the curriculum.

A fifth rendition of a set of standards is where they are understood as levels of knowledge, skill and disposition reached by a cohort of persons (usually age-related or stage-related) which can be determined through objective testing and are either

atemporal (so that comparisons between these levels can be made across time periods) or specific to particular time periods (consequently comparisons of achieved levels over time cannot be made). The principal reason why it is difficult to make such comparisons is because the knowledge, skill and dispositional corpus changes over time, as do the relations between its parts, and the way it can be expressed in an examination, with the consequence that these comparisons become extremely difficult to make, if not impossible. However, there are two implications of this approach. The first is that these knowledge sets, skills and dispositions become detached from their locus, and as a result what is being standardised is not the original curriculum knowledge but a version of it that fits with the particular testing regime in place. In addition, this leads to various washback effects so that those knowledge, skill and dispositional curriculum standards or learning objects become the same as or are congruent with the examination or testing technology.

None of the approaches set out above are satisfactory. What I want to suggest in this book is a version of a standard which fits with the idea that it is possible to specify intentions in a curriculum and that these can refer to future states of being of the individual learner. The standard (expressed in language) then refers to the knowledge, skill or dispositional states of a person, and this referential act is neither exclusively foundationalist nor coherentist in form. This avoids the tendency of foundationalism to lead to arbitrariness and the problem of circularity with coherentism.

9.2   Progression

The same issues apply to the important notion of progression. Curriculum standards are written for the curriculum at different levels of achievement. Most forms of progression between levels or grades in curricula round the world are based on a notion of extension, i.e. at level one a student should be able to do this or that, at level two the student is expected to be able to do more of this or that, and at level three the student is expected to be able to do even more of this or that. However, there are other forms of progression between designated knowledge sets, skills and dispositions besides extension. Indeed, some knowledge sets, skills and dispositions cannot be appropriately placed at some lower-level or even some higher-level grades. For example, many countries round the world have chosen not to start formal reading processes until at least 7 years of age, and thus reading does not feature in the curriculum standards at pre-primary levels in these countries.

Modes of progression can take the following form. The first type is prior condition. In the acquisition of particular knowledge, skill and dispositional elements, there are pre-requisites in the learning process. An example might be mathematical where knowledge of addition is a pre-requisite of multiplication. A second type relates to maturation. A maturational form of progression refers to the development of the mind of the child. There are some mental operations that cannot be performed by the child because the brain is too immature to process them. A third type refers to the notion of extension. An extensional form of progression is

understood as an increase in the amount, or range, of an operation. Greater coverage of the material is a form of progression, so a child now understands more examples of the construct, or more applications of the construct, and can operate with a greater range of ideas.

A fourth type is a notion of intensification; and this refers to the idea of deepening or intensifying the construct or skill. Whereas extension refers to the amount or range of progression, intensification refers to the extent to which a sophisticated understanding has replaced a superficial understanding of the concept. This refers to the complexity of the operation, and in relation to the knowledge constructs, skills and dispositions implicit within the standards, there are four forms that allow differentiation between them at different levels or grades and therefore indicate progression. These are behavioural complexity, symbolic complexity, affective complexity and perceptual complexity. There is also a type of progression, abstracting, which involves moving from a concrete understanding of a concept to a more abstract version. A further measure of progression is an increased capacity to articulate, explain or amplify an idea or construct, i.e. the child retains the ability to deploy the skill and in addition, he or she can now articulate, explain or amplify what they are able to do and what they have done. A final form of progression is processual, and this refers to the way the learner accesses the curriculum standard. An example could be moving from an assisted performance to an independent one.

The curriculum standards are written so that students are expected to show progress in their learning between each level in the designated subjects. However, the type of progression is different in and between the different knowledge constructs, skills and dispositions. These forms of progression are therefore likely to operate at different points and in different ways in the curriculum standards.

9.3   Pedagogic Standards

The curriculum standards do not specify how the knowledge, skills, and dispositions should be taught. As a consequence the teacher needs to rework the curriculum standards into programmes of learning or action learning sets. Pedagogic approaches and strategies range from didactic to imitative to reflective and meta-reflective action learning sets. To develop a pedagogic approach there is a need to: specify the circumstances in which it can be used in the specific learning environment; specify the resources and technologies needed to allow that learning to take place; specify the type of relationship between teacher and student, and student and student, to effect that learning; specify a theory of learning – how can that construct (i.e. knowledge set, skill or disposition) be assimilated; and develop a theory of transfer held by the teacher – that is, how can the learning which has taken place in a particular set of circumstances (i.e. a classroom, with a set of learners, in a particular way, with a particular theory of learning underpinning it, and so forth) transfer to other environments in other places and times.

As I suggested in Chap. 5, there is a range of teaching and learning approaches or action learning sets. The first is an observational model. Here the teacher performs the action which the learner is required to imitate in the classroom, and then later in the context of application. Three types are noted: a live model involving a demonstration or acting out of the behaviours to be learnt; a verbal instructional model where this comprises descriptions and explanations of behaviours; and a symbolic model.

The second is a coaching model. Here the focus is on a series of steps: modelling by the expert; coaching whilst the learner practices; scaffolding where the learner is supported during the initial stages with that support gradually being withdrawn as the learner becomes more proficient (coaching here involves the teacher in identifying for the learner deviations from the model in the performance of the learner, and then supporting the learner as they make attempts to correct this performance); articulation by the learner of that process; reflection on those processes and comparison with the expert's reasons for action; and exploration where the learner undertakes the various activities without support.

The third model is mentoring. This supports the informal transmission of knowledge, skills and dispositions. It is usually conducted face-to-face and involves a relationship between two people, one of whom is considered to have greater knowledge, wisdom or experience. A fourth model is peer learning. This is defined as learning from and with the learner's peers. The other forms of learning comprise unequal relations between the teacher and the learner. With peer learning, the assumption is made that the learning relationship is between equals, and thus a different form of learning is implied.

A fifth model is simulation. A simulation is a reproduction of an event or activity, conducted outside the environment in which that event or activity usually takes place. Simulations can be produced through computer games, role-plays, scenarios, presentations and affective and conceptual modelling. The purpose of this learning process is to simulate a real event, and this is to allow the person or persons taking part in that simulation to explore it, to experiment within it, to understand the process, to begin the process of internalisation, to experience albeit in a limited way the emotions and feelings that would normally accompany the experience in real-life, and fundamentally, to allow learning to take place through trial and error and making mistakes in safe situations, which do not have the consequences they would have in real-life situations.

A sixth model is concept formation. This process of learning focuses on the re-forming of conceptual schema that the learner has about the world and in the particular case here, about those conceptual matters relating to schools, classrooms and teaching-learning processes. Learning is complex and potentially rich and rewarding, where the learner is presented with a mass of information, ideas, schema and opinions from a number of different sources. What the learner does is shape this mass of information, and this shaping can take a number of different forms: partial shaping, complete shaping, discarding with no replacement, confusion, on-going, going backwards and forwards and so on. So the learner has to absorb some of the ideas they are presented with and discard or partially discard others.

A process of reflection is based on the belief that deep learning (learning for real comprehension) comes from a sequence of experience, reflection, abstraction, and active testing. Reflection is a form of evaluative thinking. It is applied to ideas for which there is no obvious solution and is largely based on the further processing of knowledge and understanding and possibly emotions that human beings already possess. It is thus a second-order internal activity, which can in certain circumstances be transformed into a learning strategy.

Meta-cognitive learning refers to learners' awareness of their own knowledge and their ability to understand, control, and manipulate their own cognitive processes. However, most meta-cognitive processes can be placed within three categories. The first is meta-memorisation. This refers to the learners' awareness of their own memory systems and their ability to deploy strategies for using their memories effectively. The second is meta-comprehension. This refers to the learners' ability to monitor the degree to which they understand information being communicated to them, to recognise failures to comprehend, and to employ repair strategies. And the third is self-regulation. This term refers to the learner's ability to make adjustments in their own learning processes.

A ninth model is problem-solving. The learner finds out for themselves rather than being given answers to problems. The learner is required to engage in a series of interrogative processes with regards to texts, people and objects in the environment, and come up with solutions to problems. The learner may offer inadequate, incorrect and faulty syntheses and analyses. However, this is acceptable because the learning resides in the process rather than in the end product. Problem-solving learning involves the learner in judging their own work against a curriculum standard and engaging in meta-processes of learning (i.e. an understanding about processes of one's own learning; the development of learning pathways; the utilisation of formative assessment processes; the development of personal learning strategies; and the internalisation of the curriculum).

And finally, there is practice. Practice is the act of rehearsing a behaviour over and over again, or engaging in an activity again and again. This reinforces, enhances and deepens the learning associated with the behaviour or activity.

In each action learning set, formative assessment processes (but not summative forms of assessment) are essential parts of any teaching and learning programme. An *Assessment for Learning* process (based on a model developed by Paul Black and Dylan Wiliam) can be presented as five key strategies and one cohering idea. The five key strategies are: engineering effective classroom discussions, questions, and learning tasks; clarifying and sharing learning intentions and criteria for success; providing feedback that moves learners forward; activating students as the owners of their own learning; and activating students as instructional resources for one another; and the cohering idea is that evidence about student learning is used to adapt instruction to better meet learning needs; in other words, that teaching is adaptive to the student's learning needs.

9.4   Summative Assessment or Evaluation Standards

A summative assessment or evaluation standard summarises those knowledge sets, skills or dispositions which a student is required to have, and which are expressed in such a way that they can be tested in a controlled environment, such as an examination. They are different from and should not be confused with formative assessment processes, which are central to teaching and learning programmes. The principal problem with the way assessment or evaluation standards are used round the world is that testing a person's knowledge, skills and aptitudes is likely to have washback effects on the original knowledge or skill set. Instead of the assessment process acting exclusively as a descriptive device, it also acts in a variety of ways to transform the curriculum standard it is seeking to measure.

Washback effects work on a range of objects and in different ways. So, for example, there are washback effects on the curriculum, on teaching and learning, on the capacity of the individual and more fundamentally on the structures of knowledge, though these four mechanisms are frequently conflated in the minds of educational stakeholders. Micro washback effects work directly on the person, whereas macro washback effects work directly on institutions and systems, which then subsequently have an impact on individuals within those institutions and systems. Finally, a student may have to reframe their knowledge or skill set to fit the test, and therefore the assessment of their mastery of this knowledge or skill is not a determination of their competence, but a determination of whether they have successfully understood how to rework their capacity to fit the demands of the examination technology. As a result teaching to the test occurs and the curriculum is narrowed to accommodate those learning outcomes that can more easily be assessed.

The reason for separating out curriculum standards from assessment standards is now clear. If assessment standards are treated in the same way as curriculum standards or learning outcomes, then this is likely to have a detrimental and reductionist effect on the curriculum and more importantly on the type and content of learning that takes place. However, there are different needs within a system of education, and one of those needs is that at certain points in time national, state and district educational bodies need to have information about how well the system is doing. This is a very different process from improving learning with an individual student.

Summative assessment or evaluation standards are not the same as curriculum standards and have different purposes, such as auditing, monitoring, and inspection. An audit concentrates on checking what actually happens against a set of prescribed norms. Here the evaluative element may be auditor comments when the activity falls below or exceeds those norms. Monitoring focuses upon the systematic surveillance of a series of events and includes the collection of information at regular intervals, often to provide feedback. Again, monitoring is part of evaluation but its more usual applicability is for accountability purposes, especially in relation to fiscal, process and programme accountability. Though monitoring devices are far from neutral, both in terms of the choice of collection of data, the manner of collection,

and the uses to which collected data are put, this type of evaluation is distinctive in the sense that it most often takes the form of an in-depth study of a specific programme or activity at a certain point in time.

Like monitoring, inspection can be described as a top-down approach to check that codes of practice are adhered to and that minimum standards are achieved. For education researchers, an inspection report is most usually used as an external data source, along with monitoring data, for evaluating a programme or activity, and judging the underlying rationale and logic for its strategic planning and operations.

There are two focuses for school evaluation, students and institutions. A student evaluation methodology focuses on student outcomes and again requires the development of a mechanism or methodology for its application. It comprises the following: a set of curriculum standards; a set of evaluation standards which have been derived from the set of curriculum standards; a way of determining student outcomes at different points in time derived from the evaluation standards (i.e. tests, observations, performance judgements, etc.); and a determination of who is being judged (i.e. students, teachers of those students, schools, districts, states, nations), and consequently the development of a different comparative methodology for each of these groups.

On the other hand, if the information collected about individuals in a system of education is used to make judgements about schools, districts, states or nation states, then there are two possibilities: raw scores – student scores are aggregated to allow comparative judgements to be made about these schools, districts, states or nation states; and value-added scores – value-added data analysis mathematically models the input of particular institutions or systems, such as schools, in relation to the development of individuals that belong to those institutions or systems. There are three current meanings given to the term. The first of these is a measure of progress made by the individual where the prior attainment of that individual is taken into account. The second is a measure of progress where prior attainment as well as a range of other pupil and school factors outside the control of the school is given due consideration. The third is a measure of progress where these background factors are controlled for but no control is exercised over prior attainment. Measurements such as these produce different results if different factors are taken into account. Most acceptable value-added analyses use a form of multi-level modelling, and this involves initial decisions being made about: background factors to be included in the modelling exercise; interaction factors for the model; the levels of hierarchy in the model; and the coefficients that it is assumed will be random at each level. Statistical relationships can as a result be calculated for relationships between different variables within the model.

As a result of these processes, a value can be attached to the input of the educational institution as it has impacted on the progress of the individual who has attended it. Indeed, because multi-level modelling is sophisticated enough to operate at different levels within the system, a value can be attached to the input of the unit being judged. Thus the modelling involved requires the researcher to make a number of decisions about which inputs to include and which relations to determine. The accuracy of such modelling depends on the belief that the educational

researcher has in the reliability and validity of the data that is used, in the decisions they make about which variables to use in the modelling process, and also in the ability of the researcher to develop appropriate indicators or quasi-properties to reflect the actual properties of individuals and educational institutions and their covariance in real-life settings. Combining student scores (as outcome measures) and process observations in its turn requires the development of a methodology, or, to put it another way, a reliable and valid process to make comparative judgements between students, schools, districts, states or nation states.

9.5   Curriculum Integration

Robin Fogarty (1991) has identified ten models of curriculum integration and these range from strongly classified and strongly framed curricula, as in the traditional approach, to weakly classified and weakly framed networked approaches to curriculum planning. Between the two extremes: traditional or fragmented and networked approaches, she identifies eight other points on the continuum: connected, nested, sequenced, shared, webbed, threaded, integrated and immersed.

A fragmented curriculum has clear boundaries between the different subjects and thus this first type cannot reasonably be thought of as integrated. Subject delineations are clear-cut, they are taught in separate blocks on the timetable, they have their own formal knowledge structure, and content is treated as distinctive and belonging to the specific area. In a connected curriculum, reference is made to other content areas, connections are sought and suggestions are made as to how knowledge in another domain can supplement and contribute to knowledge in the specified domain. A nested curriculum has some similarities; however, a clear distinction is made between generic skills and specific content. This type is only partially integrated as the content of the subject area is still treated as specific to a curriculum area; however, some common skills are identified which cross the boundaries between different content areas and these are taught across the curriculum.

Further along the continuum is a reference point, which can be described as sequenced. Here deliberately planned topics are arranged to be taught at the same time so that learners moving between different subject areas are taught the same concept albeit that reference is made to a different application and a different discipline in two or more different contexts. The next point on the continuum is where the curriculum can be thought of as shared. Here, a particular topic is chosen which has a number of different disciplinary strands. Teachers from different subject disciplines are partnered and teach different aspects of the topic. A webbed curriculum is very much like a shared curriculum; the difference being that there is a greater degree of integration. The curriculum is divided into themes, and each theme is taught in a different way by the subject teachers. Thus the integrity of each discipline is retained, and the methods and approaches that are distinctive to these disciplines are taught even if the generic subject matter is the same. Next to it on the continuum is a threaded curriculum, where the emphasis is on the process of learning.

The content is subordinated to the teaching of these skills and a curriculum is devised which cuts across the traditional disciplines and focuses on common skills. A threaded curriculum in turn gives way to an integrated curriculum. Here disciplinary boundaries begin to dissolve, as teachers work in inter-disciplinary teams to plan units round overlapping concepts and themes.

Almost at one end of the continuum is immersion. Here, integration becomes the responsibility of the learner as they focus on a particular topic or theme, and they borrow from different disciplines ideas, theories, skills and the like. There is little evidence here of any adherence to the methods and protocols embedded within particular disciplines. The disciplines themselves are treated as impediments to the development of knowledge and this strong classification is transgressively dissolved. This finally, gives way to a networked curriculum. Each of these forms of integration can be positioned along a continuum with a fragmented curriculum being strongly classified and framed, in contrast to networked approaches to curriculum planning which are weakly classified and weakly framed.

These forms of integration cannot be used to analyse systems in their entirety, though they are relevant to particular educational environments within national systems and can be discerned from curricular documents. Two general formations can be identified: strongly classified and strongly framed curricula, with strong subject boundaries between elements, and weakly classified and weakly framed networked approaches to curriculum planning, with weak boundaries between elements.

9.6   Implementation of the Curriculum Standards

The implementation of the curriculum standards has five elements: developing a standards document for parents; planning a sequence of lessons; goal-orientated teaching; scaffolding in teaching; and individual student progression.

Parental engagement with the school is one important factor in their child doing well at school. Developing a standards document for parents and sharing it with them is an example of this. Parental involvement in their child's education is a broad concept and should not be understood exclusively as: a set of documents, or one-to-one conversations and meetings between teachers and parents, or helping children with their homework, or parents taking part in school-based events. These are examples of parental involvement. Developing material about the curriculum standards for parents is a positive school initiative to engage parents in their children's education.

Lesson planning is a process that increases the teacher's ability to help their students learn a body of knowledge in a way that is in accord with the discipline from which it is taken, and national values and aspirations, in line with the curriculum standards; and adapted to make it accessible and suitable for their students, who are not yet acquainted with it. Planning is an essential pedagogic activity, and is underpinned by a notion of anticipation, that is anticipating what will happen during the lesson that is being planned.

Lesson planning by teachers has the following elements: firstly, there is their performance as a teacher, i.e. how they use the standards; the pacing or sequencing of the lesson; what type of classroom relations (between teacher and student, and between student and student) they establish within the classroom; and the most apposite pedagogic relations. Secondly, there is the most appropriate arrangement of resources, in relation to: texts, artifacts, written material, electronic resources, displays, and their availability, the curriculum standards, and those enabling and amplifying technologies for learning, e.g. computers, microscopes, chemicals, etc., within the classroom. Thirdly, there are spatial and temporal arrangements within the school and during the lesson. Finally, there is a need for a learning theory which specifies: how learning can take place in the particular learning environment; the resources and technologies needed to allow that learning to take place; the optimum type of relationship between a teacher and a student (in a formal setting where the intention is that learning relating to a standard(s) should take place), or between a student and another student, or between a student and their parents, to effect that learning; and a theory of acquisition and transfer of knowledge and skills.

Effective lesson planning is time-consuming. Furthermore, if this lesson planning is carried out merely to fulfil a bureaucratic demand, either from the school or from the local authority, then it is likely to be an unproductive exercise. If, on the other hand, the planning of the lesson is seen by teachers as an essential part of determining the arrangements for learning in their classroom, and for allowing the teacher to better anticipate classroom events, then it is likely to be beneficial.

Goal clarity is a component of productive learning environments. To that end, teachers need to provide their students with statements and explanations about the intended aims and objectives in a lesson or series of lessons. How and when this should be done during the lesson is a more contentious issue. Goal clarity has three teacher-focused aspects: explaining to their students about how they are expected to perform the tasks assigned to them; providing opportunities for students to grasp what is expected of them, and evaluating whether or not the students gain experience as self-directed learners in the completion of the task.

Goal-oriented teaching requires the teacher to undertake specific actions to ensure goal clarity and focus on task completion at three stages of the lesson: at the beginning, setting learning goals and providing students with a model of the metacognitive strategies to start the task; in the middle or during the lesson, monitoring and assessing their goal progress, motivating students to look for explanations by means of exploration; and supporting them when they struggle, for example, by suggesting relevant learning strategies and giving them personalised feedback such as how to adjust those strategies; and at the conclusion, providing students with an overall assessment of their goal progress, motivating them to extend their efforts, to persist and to keep adjusting their strategies, and to develop their own goals once they have met those they are working on.

A generic model of teaching and learning can be characterised as a scaffolding process. Scaffolding essentially means an aid that is developed and offered to the learner by a more experienced person in support of the learning process with a focus

on learning outcomes or curriculum standards. It has a number of characteristics: it is a temporary support; it is offered to the learner in relation to specific tasks that they are asked to perform, those tasks being derived from the learning outcomes; the learner is unlikely to complete the task without it; and the scaffold is provided to the student by the teacher in their capacity as 'expert' in relation to the satisfactory completion of the task.

Scaffolding involves the following processes: modelling, i.e. offering behaviour for imitation; feedback, i.e. providing information on a performance as it compares to a standard; instructing, i.e. requesting specific actions; questioning, i.e. requesting a verbal response that helps by producing a mental operation that the learner cannot or would not produce alone; cognitive structuring, i.e. providing explanations; and task structuring, i.e. chunking, segregating, sequencing, or otherwise structuring a task into or from components (cf. Wood and Wood 1998). While almost any learning aid can be a scaffold, scaffolding in teaching takes place only when the teacher provides specific help that meets the following criteria: contingency, i.e. the teacher's support is attuned to the students current state of understanding; the student accomplishes the task with the teacher's situated help, and the student performs the task independently; fading, i.e. the level and amount of support is gradually withdrawn from the student; and transfer of responsibility, i.e. the student takes increasing control of their own learning in the performance of a task.

The efficacy of scaffolding is influenced by the teacher's thoughtful combination of techniques and tasks, and the extent to which the teacher provides their students with multiple chances to engage with the relevant concepts and 'high-order' thinking processes. Teachers need to appreciate the different levels of scaffolding (i.e. intense, moderate, and minimum) and become skilled in applying them accordingly, providing more support when a particular student struggles with a specific task and reducing help as they collect evidence that the student is now proficient in that task. Technology-based scaffolds are regarded as valuable to support procedural tasks and to offer suitable cues for meta-cognitive processing. They also help by freeing up some of the teacher's attention in the classroom, allowing them to give more attention to their students' reasoning. This allows a greater degree of personalisation in the learning process.

Student progression relates to a curriculum standard or at least to a set of related curriculum standards. The teacher specifies the standard(s) and the relationships between the standards and discusses them with their students. The student is given: the opportunity to articulate the standard or set of standards in relation to how they are expected to progress; a written and contextualised indication of their performance specifying weaknesses, impediments and successes in relation to the achievement of these standards, and the means for improvement.

This mechanism involves a number of processes: identifying the standards and interpreting their meaning; providing a description with the student of their mastery of those standards, which should allow the identification of weaknesses in the student's mastery and the means for ameliorating these weaknesses; record keeping for further identification of the student's current capability; reflection on this and the

identification of the means for improving; a focus on the curriculum standards, and a meta-reflective record of progress in the curriculum. Some consideration should be given to the type of record used, the media and storage of recording, and the logistics of use. Individual student progression is built on a formative approach which implies: instruction with the intention to further develop learning; a series of teaching decisions made on the basis of the teacher having gathered and studied evidence of their student's achievement in relation to a curriculum standard or set of standards, and the collection of evidence suggesting that the student's learning developed following feedback.

9.7   The Essential Components of a Curriculum

The development of a curriculum therefore requires a number of sequential steps. The first of these is that the aims and objectives of the educational programme need to be set out and from these are derived the essential forms of knowledge, skills and dispositions which a society considers to be appropriate for living in the society as it is now and as its citizens would like it to be. From these aims and objectives, a set of subject areas are derived and a set of relations between those subject areas established, for example, Language, Literature, Mathematics, Physics, Biology, Chemistry, Foreign Language, Physical Education, History, Geography, Sociology, Art, Music and Drama. This is an example of strong boundaries between different subjects. An example of weak boundaries between different subjects is as follows: Language Studies, Science, Mathematics, Humanities, Arts, Physical Education and Foreign Languages. Ten models of curriculum integration can be identified and these range from strongly classified and strongly framed curricula, as in the first approach, to weakly classified and weakly framed networked approaches to curriculum planning, as in the second approach. Between the two extremes: traditional or fragmented and networked approaches, there are eight other points on the continuum: connected, nested, sequenced, shared, webbed, threaded, integrated and immersed.

Bearing in mind the decisions made about curriculum subjects and their integration, curriculum standards (i.e. the learning objects) are derived. These are discipline-specific and written in such a way as to indicate to the learner and the teacher what the learner is required to know or be able to do, or have the disposition for, at the end of the programme of learning. The next stage is to identify the most appropriate processes for the delivery of these curriculum standards. This is the identification of the pedagogic standard, and it involves choosing between a variety of teaching and learning approaches. The areas that choices have to be made about are: the pedagogic mode (the type of relationship between the teacher and the students), the learning mode (the type of learning approach that underpins the work of the teacher), the resources and technologies needed to allow that learning to take place, formative feedback mechanisms by the teacher (the types, approaches and purposes), how learners are arranged in the classroom, timings of different activities

during the lesson, the tasks that the learners are expected to complete, formative learning approaches (including assessment for learning approaches), and how the learning can be transferred to other environments. The important point to note here is that the pedagogic approach or standard is derived from the curriculum standard and not from any summative assessment or evaluation standard or approach.

The final stage is the development of summative assessment or evaluation standards. These are derived from the curriculum standards, which in turn were derived from the aims and objectives of the whole programme. They should not be confused with formative assessment processes, as they are constructed in different ways and have different purposes. It is important that any systemic evaluative or assessment process should not impact in any direct way on the learning processes that take place in classrooms. These are the elements of a productive learning curriculum model.

Notes

Chapter 1: Introduction: Curriculum, Learning and Assessment

1. An exception to this is Finland. Darling-Hammond's (1997, 2008; and Rothman 2011) argument is particularly convincing because she compares the strategies Finland had adopted within the last two decades with those the United States government pursued in the same time span with exactly the opposite effects. The United States education system effectively moved from a world-class standard to a poorly ranked one that perpetuates socio-economic inequalities and has an extensive wastage of teachers at an initial stage of their career. While Finland 'has shifted from a highly centralized system emphasizing external testing to a more localized system in which highly trained teachers design curricula around the very lean national standards' (*ibid.*: 37) accompanied by equitable funding, the United States has deregulated and partly privatized their school system, downgraded teachers' capacity for innovation and problem solving, and effectively standardized the curriculum by enforcing frequent external and high-stakes tests upon schools and students that rewards and sanctions students, teachers, and schools. Darling-Hammond (2008: 40) goes onto suggest that: '(t)he focus on instruction and the development of professional practice in Finland's approach to organizing the education system has led, according to all reports, to an increased prevalence of effective teaching methods in schools'. Furthermore, efforts to enable schools to learn from each other have led to what Fullan and Hargreaves (1996) call 'lateral capacity building', the widespread adoption of effective practices and experimentation with innovative approaches across the system. The reforms initiated in Finland over a period of 25 years are modelled on partnership and professional development models of education reform.
2. Basil Bernstein argued that the two distinguishing markers of a curriculum were classification and framing. He had the following to say about the first of

these: 'I started with classification because classification, strong or weak, marks the distinguishing features of a context. For example, some children when they first go to school are unaware or unsure of what is expected of them. They fail to recognise the distinguishing features, which provide the school/classroom with its unique features, and so particular identity. Such a failure in recognition will necessarily lead to inappropriate behaviour. On the other hand, some children are extensively prepared and are aware of the difference between the family context and the school context. In this case they are able to recognise the distinguishing features of the school, or class, even if they are not always able to produce the range of behaviour the school expects. Inasmuch as some children recognise the distinguishing features of the school, relative to the children who do not, those that do are in a more powerful position with respect to the school. It is likely that those who do recognise the distinguishing features of the school are more likely to be middle class children than lower working class children. The basis of such recognition is a strong classification between the context of the family and the context of the school. In our example the strong classification between the family and the school is a product of the symbolic power of the middle class family. This power is translated into the child's power of recognition with its advantageous outcomes ….. We can therefore set up a relationship between the principles of classification and the recognition rules for identifying the specificity or the similarity of contexts. As the classification principle is established by power relations and the relays of power relations, then recognition rules confer power relative to those who lack them' (Bernstein 2000: 104–105).

3. Young (2006) suggests that pedagogy and curriculum should be treated as distinct and that the curriculum should be knowledge-based and disciplinary-focused.

4. This is the most controversial element of a curriculum. Most countries round the world argue that summative forms of assessment, such as tests and examinations can be used formatively for the direct improvement of the learner's performance. Summative forms of assessment can thus have a dual function: to provide accounts of achievements at individual, group, school and national levels, as well contributing to the development of individual learning programmes. The argument being made in this book is that if summative forms of assessment are given this role, inevitably both functions are compromised.

5. A differentiated curriculum can be achieved in a number of ways: different schools for different types of children, different classes for different types of children and within the same classroom different exercises and tasks and different spatial and temporal arrangements.

6. The teaching profession in England since 1988, when the Education Reform Act was passed, provides an example of an occupation which has experienced changing relations with the state, professional fragmentation and a reconceptualisation of its ideological ethos. Before 1988 the occupational group had a degree of autonomy from the state, and this meant that it was able to shape its future direction. This referred to the particular ideal of service it subscribed to,

the degree and extent to which it focused on common activities, the specific nature of the discourse community that was established, the distinctive episte-mology of practice to which it worked, and the control it exercised over the development and maintenance of its specialised body of knowledge. If these five infrastructural elements are reformed in response to the needs of the state and through the policy cycle in which the state takes a dominant role, then this constitutes a diminution of control that the occupational group can exercise over its core business. Indeed, the decline of the professional authority of the teaching profession in England since 1988 has been extensively documented (for example, Smyth 2001). This would suggest in turn that the teaching body in England should now be characterized as a state-regulated rather than a licensed occupation.

7. Bhaskar (1998) has described the process of immanent critique as central to his critical realist philosophy.

8. The term curriculum is contested, with some understanding it to refer to a pro-gramme of teaching and learning, and others understanding it as a collection of learning activities and tasks.

9. This is challenged by Edwards (2015), amongst others.

10. In relation to social constructivism, cf. Glasersfeld E. von (1988, 1991, 1996, 1997, 2008).

11. In relation to social realism, cf. Maton (2014); Maton et al. (2014); Maton and Moore (2010).

12. In relation to epistemic realism, cf. Putnam (1990).

13. In relation to inferentialism, cf. Brandom (1994, 2008, 2009, 2011).

14. In relation to critical realism, cf. Scott (2010), Bhaskar (1979, 1989).

15. cf. Haack (2008) for her philosophy of foundherentism, which is an attempt to combine foundationalism and coherentism.

16. cf. Absolum (2006); Assessment Reform Group (2002a, b); Black et al. (2003); Black and Wiliam (1998a, b, 2004); Chappuis (2005); Clarke (2005); Dietel et al. (1991); Gardiner (2006); Glasson (2009); Hall and Burke (2003); Harlen and James (1996); Hattie (1999); Johnston (2004); Leahy et al. (2005); McTighe and O'Connor (2005); Martin-Kniep (2005); Meisels et al. (2003); OECD/ CERI (2005); Stiggins (2005, 2007); Stiggins and Chappuis (2005); Sutton (2000); Torrance and Pryor (1998); Weeden et al. (2002); Wiggins (1998); and Wiliam (2006).

17. cf. Bruner (1960, 1966, 1971, 1983, 1996).

18. cf. Vygotsky (1978, 1987, 1991, 1999).

Chapter 2: Curriculum Frameworks

1. Bobbitt (1918: 42) described the curriculum and its purposes in the following way: 'The central theory [of curriculum] is simple. Human life, however varied, consists in the performance of specific activities. Education that prepares for

life is one that prepares definitely and adequately for these specific activities. However numerous and diverse they may be for any social class they can be discovered. This requires only that one go out into the world of affairs and discover the particulars of which their affairs consist. These will show the abilities, attitudes, habits, appreciations and forms of knowledge that men need. These will be the objectives of the curriculum. They will be numerous, definite and particularized. The curriculum will then be that series of experiences which children and youth must have by way of obtaining those objectives.'

2. Tyler (1950: 44) argued that: 'Since the real purpose of education is not to have the instructor perform certain activities but to bring about significant changes in the students' pattern of behaviour, it becomes important to recognize that any statements of objectives of the school should be a statement of changes to take place in the students.'

3. Stenhouse (1975: 5) suggested that the curriculum should: 'provide a basis for planning a course, studying it empirically and considering the grounds of its justification. It should offer: (A) In planning: (1) Principle for the selection of content – what is to be learned and taught. (2) Principles for the development of a teaching strategy – how it is to be learned and taught. (3) Principles for the making of decisions about sequence. (4) Principles on which to diagnose the strengths and weaknesses of individual students and differentiate the general principles 1, 2 and 3 above, to meet individual cases. (B) In empirical study: (1) Principles on which to study and evaluate the progress of students. (2) Principles on which to study and evaluate the progress of teachers. (3) Guidance as to the feasibility of implementing the curriculum in varying school contexts, pupil contexts, environments and peer-group situations. (4) Information about the variability of effects in differing contexts and on different pupils and an understanding of the causes of the variation. (C) In relation to justification: A formulation of the intention or aim of the curriculum which is accessible to critical scrutiny.'

4. Stenhouse (1975: 142) argued strongly for a process model of curriculum development: '(t)here are a number of contrasts in this model of curriculum theory and practice as compared with the product model. First, where the product model appeals to the workshop for a model, this process model looks to the world of experimentation. The idea is that of an educational science in which each classroom is a laboratory, each teacher a member of the scientific community … The crucial point is that the proposal is not to be regarded as an unqualified recommendation but rather as a provisional specification claiming no more than to be worth putting to the test of practice. Such proposals claim to be intelligent rather than correct.'

5. cf. Kant (2007 [1781])

6. Paul Hirst (1969: 242) in relation to his forms of knowledge argued that: '….. the development of the mind has been marked by the progressive differentiation in human consciousness of some seven or eight distinguishable cognitive structures, each of which involves the making of a distinctive form of reasoned judgement and is therefore, a unique expression of man's rationality.' This

foundationalist view of knowledge can be challenged in two ways. In the first place, there is no evidence to suggest that the theory of mind espoused by Hirst is anything other than an expression of how human beings have in the past divided up knowledge; indeed, to provide a transcendental reason for such a foundationalist view of knowledge would involve a claim about our capacity to know what rationality is. This is not provided by Hirst; indeed, what he suggests is that the development of the human mind has been progressively differentiated so that it now embraces a number of logically distinct cognitive structures; the implication being that these cognitive structures are simply the result of the mind's evolution as it responds to changing cultural conditions, and that therefore such structures could have been different. It should be noted however, that Hirst is in effect 'naturalising' his curriculum rationale by asserting that even though the human mind has evolved, this is how human beings currently are constituted.

The second way his foundationalist view of knowledge can be challenged is by examining his proposition that though these distinctive cognitive structures are all expressions of rationality, even if they each have their own logical structure, nevertheless these structures are sub-sets of a wider sense of rationality. Hirst has been criticised for suggesting that all his forms of knowledge are different expressions of a universal sense of rationality, whereas some of them at least seem to have no direct relationship to it. Hirst distinguishes between the forms in four ways. Each of the forms has a number of concepts and ideas attached to it, which the initiate or learner has to understand in the precise way that they are used by members of the discipline. For example, a religious form has a particular understanding of the concept of a deity. These concepts and ideas are understood as existing in a particular relationship to each other so that experience is made sense of, and this network of relationships which are particular to each form, therefore has, in Hirst's terms, a distinctive logical structure. Thus the discipline of history has a different logical structure from the physical sciences and the one cannot be understood by using the concepts and logical structure of the other.

Each discipline or form has developed particular ways of testing its knowledge against experience: 'Each form, then, has distinctive expressions that are testable against experience in accordance with particular criteria that are peculiar to the form.' (Hirst 1972: 15). Finally, allied to this, is that each form has developed particular skills and techniques, which are different in the forms by virtue of their particular logical structures; and Hirst suggests that there are both distinctive disciplines or forms of knowledge, and fields of knowledge such as theoretical and practical arenas in which knowledge is both developed and applied (cf. Scott 2008).

7. As we will see in this chapter and in chapter ten, progression in a curriculum is more complicated than Adey's (1997) three dimensional model seems to imply. There are eight distinct types. The first type is prior condition. In the acquisition of particular knowledge, skill and dispositional elements, there are prerequisites in the learning process. An example might be mathematical where

knowledge of addition is a pre-requisite of multiplication. A second type relates to maturation. A maturational form of progression refers to the development of the mind of the child. There are some mental operations that cannot be performed by the child because the brain is too immature to process them. A third type refers to the notion of extension. An extensional form of progression is understood as an increase in the amount, or range of an operation. Greater coverage of the material is a form of progression, so a child now understands more examples of the construct, or more applications of the construct, and can operate with a greater range of ideas. A fourth type refers to a notion of intensification. Related to the idea of extension is the idea of deepening or intensifying the construct or skill. Whereas extension refers to the amount or range of progression, intensification refers to the extent to which a sophisticated understanding has replaced a superficial understanding of the concept. A fifth type refers to the complexity of the operation. In relation to the knowledge constructs, skills and dispositions implicit within the standards, there are four forms of complexity that allow differentiation between the standards at the five primary levels or grades and indicate progression. These are behavioural complexity, symbolic complexity, affective complexity and perceptual complexity. There is also a type of progression, abstracting, which involves moving from the concrete understanding of a concept to a more abstract version. A further measure of progression is an increased capacity to articulate, explain or amplify an idea or construct, i.e. the child retains the ability to deploy the skill and in addition, he or she can now articulate, explain or amplify what they are able to do and what they have done. A final form of progression is pedagogical, and this refers to the way that the translation of the curriculum knowledge standard, for example, into a pedagogical knowledge standard also means that progression has to take account of this translation. An example could be moving from an assisted performance to an independent one.

8. cf. Apple (1979, 1982, 1988, 1995, 1996, 2000).
9. cf. Giroux (1979, 1981, 1983, 1988, 1989, 1992, 1994, 1997).
10. Michael Young (2014) has developed a notion of powerful knowledge, and what he means by this is that there is a body of knowledge which can be identified and taught to all children in school. This process is furthermore an inclusive one.

Chapter 3: Theories of Learning

1. There is a range of learning theories that have been developed and are not included in the four-part schema being used here, such as cognitivism, humanism and gestalt. The reason for focusing on these four models is that in epistemic terms they represent the four basic positions that can be taken with regards to learning.

2. This phrase, crisis of representation, was coined by George Marcus and Michael Fischer (1986) to refer specifically to the uncertainty within the human sciences about the means of describing social reality. The origin of the claim is that no interpretive account can ever directly or completely capture social reality. Broadly conceived, the crisis is part of a more general set of ideas across the human sciences that challenge long-standing beliefs about the role of encompassing, generalizing (theoretical, methodological, and political) or representing the world. They reported that: '(t)hose times were sufficiently dominated by the hopes for (or reactions to) images of massive, revolutionary transformations of society that grand, abstract theoretical visions themselves remained in vogue. While retaining its politicized dimension as a legacy of the 1960s, social thought in the years since has grown more suspicious of the ability of encompassing paradigms… Consequently, the most interesting theoretical debates in a number of fields have shifted to the level of method, to problems of epistemology, interpretation, and discursive forms of representation themselves, employed by social thinkers.' (*ibid.*: 9)

3. Roy Bhaskar (1998: 73) defines emergence as 'the relationship between two terms such that one diachronically, or perhaps synchronically, arises out of the other, but is capable of reacting back on the first and is in any event causally and taxonomically irreducible to it, as society is to nature or mind to matter'.

4. cf. Baum (2005); Ferster and Skinner (1957); Malott (2008); Mills (2000); Lattal and Chase (2003); Plotnik (2005); Rachlin (1991); Skinner (1938, 1945, 1953, 1957, 1969, 2002); Staddon (2001); Zuriff (1985).

5. cf. Byrne (1998); Davis and Sumara (2006); Harvey (1990); Holland (1987); Holland et al. (1986); Johnson (2001); Kauffman (1992); Morrison (2002); Prigogine (1980); Stacey (1996); Waks (2007); Waldrop (1993).

6. cf. Belle (1999); Bronfenbrenner and Morris (1998); Brown and Cole (1997); Cole and Engestrom (1993, 1995); Cole (1996); Engeström (1987, 1990); Nicolopolou and Cole (1993); Vygotsky (1978); Zarbatany et al. (1990).

7. cf. Bruner (1960, 1966, 1971, 1983, 1996).

8. cf. Latour (1987); Law and Hassard (1999).

9. Fenwick and Edwards (2010: 9) suggest that: 'Actor Network Theory's (ANT) unique contribution is first, to focus on the individual nodes holding these networks together, examining how these connections, came about and what sustains them. These include negotiations, forces, resistances and exclusions, which are at play in these micro-interactions that eventually forge links. Second ……. Actor Network Theory (ANT) accepts nothing as given, including 'humanity', 'the social', 'subjectivity', 'mind', 'the local', 'structures' and other categories common in educational analyses. What we usually take to be unitary objects with properties are understood as assemblages, built of heterogeneous human and non-human things, connected and mobilized to act together through a great deal of ongoing work.'

Chapter 4: Knowledge and the Curriculum

1. Schopenhauer (1997) referring to the principle of sufficient reason identified four modes: becoming, knowing, being and acting. The first of these, the principle of sufficient reason of becoming, argues that a new state must be preceded by another state and the former follows the latter regularly. The second of these, the principle of sufficient reason of knowing, argues that for an epistemic judgement to be made, there must be sufficient grounds. The third mode is the principle of sufficient reason of being, where this posits the idea that every spatially and temporally determined object is conditioned by other objects positioned in space and time. Finally, there is the principle of sufficient reason of acting, where every human action is caused by the exercise of will power of a human being.

2. In a previous work (Scott 2010) I identified six forms that objectivity can take:

    The first of these is ontological objectivity (O_1). Something can be said to be objective if it exists regardless of whether it is known, perceived or understood by any human being. Conversely something can be said to be subjective if it is assumed that something cannot exist without the active perception of a knower. This definition refers to an ontic state, and the object exists regardless of any person's capacity to know it, or any attempt by a person to access it. This is a strong version of objectivity, and can be contrasted with a notion of objective judgement, which has an epistemic element and thus a truth value. An ontological theory of this kind may be true, but this is not the same as being able to show that it is true. That objectivity pertains to something other than a judgement or belief is a highly contested concept, but it is useful to distinguish between ontological and epistemological versions of objectivity because everyday usage has in part this meaning. A weaker version of O_1, referred to as metaphysical objectivity (Elliott 1998), is the appropriateness of a conceptual system for allowing access to an independent reality, so that, if the conceptual system is believed to be adequate, then it can be said to be objective, or, if it is believed to be inadequate, then it can be described as subjective.

    A second version, alethic objectivity (O_2), is where something can be said to be objective if the truth conditions, those conditions that allow a person to make true or false statements, are met. This doesn't imply one and only one possible set of conditions, but only that objectivity is realised or not realised in relation to a specific set of truth conditionals. Conversely, something can be said to be subjective if those conditions that allow truthful statements to be made are not met.

    Objectivity (O_3), or positional objectivity, is where an account of an object is said to be objective if all traces of the knower which are relevant to the perception of the object are eliminated. Conversely, an account can be said to be subjective if traces of the knower, i.e. values, positional practices, interests, etc., are implicated in the description of the object.

    Again, a fourth version of objectivity (O_4), or extrinsic objectivity, is where something can be said to be objective if it refers to and provides a description of the world which does not encompass subjective states of mind. Conversely, something can be said to be subjective if it focuses on a person's internal world, which is not directly accessible through observation by another person.

    Objectivity (O_5), or method objectivity, is where something can be said to be objective if a correct method for accessing the external world is used. In this case a correct method implies value-neutrality, though it doesn't imply that the object under investigation cannot be the values held by an individual or given to her by another individual or even the values that an institution has ascribed to it. Conversely something can be said to be subjective if an incorrect method for accessing and describing the object under investigation is used.

And finally, objectivity (O_6), or warranted objectivity, is where something can be said to be objective if agreement is reached by more than one knower that it is either true or real. If no agreement about whether the object is true or real can be reached, then the assertion that the object exists or that it takes a particular form is said to be subjective.

Though many of these definitions of objectivity have as their direct opposite a notion of subjectivity, not all of them can be placed on this continuum. Further, though objectivity under some of these definitions is understood as desirable, and subjectivity is understood as undesirable, this doesn't apply in every case. Some of these operate at the epistemic level, others at the ontic level, so it is possible to refer to epistemological objectivity and ontological objectivity and distinguish between them. Using objectivity as a criterion is therefore determined by how it is understood, with the user choosing between these different versions, in terms of their background theory. Thus, O_4 is underpinned by an epistemic perspective which prioritises behaviour over intention; and O_3 in turn is underpinned by a view of the researcher-to-researched relationship as value-free. (Scott 2010: 56–57)

Chapter 5: Learning Environments and Transitions

1. Bandura (1977: 43) suggested the following about learning by observation: 'Most human behaviour is learned observationally through modelling: from observing others, one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action'.

2. Muijs and Reynolds (2011: 80) suggest that: 'Coaching is a process of motivating learners, analysing their performance, and providing feedback on their performance. Great teachers help the pupils while they are solving problems independently or in a group, which will motivate and support them. One form of coaching is called cognitive coaching. Cognitive coaching is designed to make pupils more aware of their own thinking processes, which will help them to be more reflective about their learning. This will build up their problem-solving skills, by giving them tools they can use in a variety of situations. This type of coaching helps pupils think about the way they are solving problems. It involves them in self-reflection, internalizing and generalizing (Costa and Garmston 1994)'.

3. Again Muijs and Reynolds (2011: 39) explain one of the principles behind goal clarification, without seemingly being aware of their technicist orientation: 'The lesson should have a clear structure, so pupils can easily understand the content of the lesson and how it relates to what they already know. Many researchers recommend starting the lesson with a review and practice of what was learnt during the previous lesson, for example by going over homework, as this will allow the teacher to find out to what extent pupils have grasped the content of the previous lessons, and therefore to what extent this content will need to be retaught. The objectives of the lesson should be made clear to pupils from the outset …. During the lesson, the teacher needs to emphasise the key points of the lesson, which may otherwise get lost in the whole. A certain amount of repetition will certainly do no harm here. At the end of the lesson,

the main points should once again be summarized, either by the teacher or, preferably, by the pupils themselves, such as through asking them what they have learnt during the lesson. Subparts of the lesson can usefully be summarized in the same way during the course of the lesson…. This emphasis on explaining the goals of the lesson – not just what was to be done during the lesson, but how that related to what pupils could learn longer term – was found to be typical of effective teachers … (Bohn et al. 2004)'.

4. Muijs and Reynolds (2011: 210) give an example of a mentoring relationship in relation to gifted and talented children (a much disputed notion): 'An enrichment activity that shows some promise is mentoring. The gifted pupil will be linked to an expert or a person experienced in a particular field from outside the school. This is particularly suited to to pupils who have shown strong independent learning abilities and are highly motivated to work on a particular project or programme. The mentor, apart from being knowledgeable in his or her field, will have to be enthusiastic about the subject, have good communication skills, and be willing and able to work with young people. Mentors can be parents, former pupils or people from the community, such as members of the local arts organisations. When these conditions are met, a mentoring arrangement can be a highly enriching experience for the pupil.'

5. cf. Topping (2001a, b, 2004), and Topping and Ehly (1998).

6. Lateef (2010: 348) suggests that simulation is 'a technique for practice and learning that can be applied to many different disciplines and trainees. It is a technique (not a technology) to replace and amplify real experiences with guided ones, often "immersive" in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion.'

7. Corry (1996) explained the basis for Gagné's theory of instruction in the following way: 'As previously explained Gagné's theory of instruction is commonly broken into three areas. The first of these areas that I will discuss is the taxonomy of learning outcomes. Gagné's taxonomy of learning outcomes is somewhat similar to Bloom's taxonomies of cognitive, affective, and psychomotor outcomes (some of these taxonomies were proposed by Bloom, but actually completed by others). Both Bloom and Gagné believed that it was important to break down humans' learned capabilities into categories or domains. Gagné's taxonomy consists of five categories of learning outcomes – verbal information, intellectual skills, cognitive strategies, attitudes, and motor skills. Each of the categories leads to a different class of human performance. Essential to Gagné's ideas of instruction are what he calls "conditions of learning." He breaks these down into internal and external conditions. The internal conditions deal with previously learned capabilities of the learner. Or in other words, what the learner knows prior to the instruction. The external conditions deal with the stimuli (a purely behaviorist term) that is presented externally to the learner. For example, what instruction is provided to the learner. To tie Gagné's theory of instruction together, he formulated nine events of instruction. When followed, these events are intended to promote the transfer of knowledge or information from perception through

the stages of memory. Gagné bases his events of instruction on the cognitive information processing learning theory. The way Gagné's theory is put into practice is as follows. First of all, the instructor determines the objectives of the instruction. These objectives must then be categorized into one of the five domains of learning outcomes. Each of the objectives must be stated in performance terms using one of the standard verbs (i.e. states, discriminates, classifies, etc.) associated with the particular learning outcome. The instructor then uses the conditions of learning for the particular learning outcome to determine the conditions necessary for learning. And finally, the events of instruction necessary to promote the internal process of learning are chosen and put into the lesson plan. The events in essence become the framework for the lesson plan or steps of instruction.'.

8. David Kolb (1984) extended his theory of reflection to encompass different types of reflectors. These were: accommodators, divergers, convergers and assimilators.

9. cf. Livingstone (1997).

10. The empirical base for this chapter emanates from a research project formally located within the National Teaching Fellowship Scheme Project Strand Initiative, funded by the Higher Education Funding Council for England (HEFCE) and managed by the Higher Education Academy. This account of the methodology of the project comes from Scott, D., Hughes, G., Evans, C., Burke, P-J. and Watson, D. (2014) *Learning Transitions in Higher Education*, Palgrave Macmillan.

The principal aim of the research project was to investigate students' transitions from undergraduate study or employment to Master's level work, *and* develop and promote policy and resource arrangements derived from the investigation by improving formative assessment and feedback processes in higher education institutions. The intentions at the beginning of the project were fourfold: to develop knowledge of these transitions and the particular problems associated with them; to understand how this relates to current forms of formative assessment and feedback provided on the programmes undertaken by these students; to develop models of effective feedback processes; and to develop models of effective transitions. This was a research-development-implementation-evaluation project.

The four transitions chosen for investigation were: *Pure to Applied Discipline*: this transition refers to students who, having taken a first degree in a non-applied subject such as physics or philosophy, then undertook a higher degree with an applied orientation. Movement is from a disciplinary base with an agreed set of methodologies and approaches to a new practice-orientated setting. *International Context to UK National Context*: this refers to the gap between an international student's expectations about learning, curriculum, pedagogy and assessment and UK higher education approaches to learning, curriculum, pedagogy and assessment. *Work Intensification*: this transition focuses on the addition of part-time study responsibilities to full-time work. Students may encounter a number of problems in making this transition,

including those related to time, energy, and commitment. *Non-academic and Non-standard Background to Academic Setting*: this transition refers particularly to current policy issues relating to widening participation agendas. Students undergoing these single or multiple transitions are now common in UK higher education institutions.

The research team formulated a series of questions at the beginning of the project, which, in answering them, it was felt would allow the development of greater knowledge and understanding of the issues being studied: How do transitions relating to disciplinarity, internationalism, work intensification and non-standard backgrounds currently operate? What learning problems do students encounter during these transitions? How do feedback and formative assessment processes currently operate in relation to these transition processes? How could these transition processes be remodelled so that they better meet the needs of students undergoing them? In what way could feedback and formative assessment processes be remodelled so that students are better able to progress their learning and more effectively meet the demands made on them by the transitions they choose to go through?

In order to answer these questions, the project team organised the project into five stages or phases of activity: a review of literature was undertaken, focusing on the five themes which were central to the project: (i) a practice-orientated transition; (ii) an international transition; (iii) a work intensification transition; (iv) a widening participation transition; and (v) formative assessment processes.

Four groups of students were recruited to the project from the core institution: (i) a group of PGCE students (n = 15) with degrees from a range of pure disciplines undertaking applied education studies courses in preparation for a teaching career; (ii) a group of full-time international students studying on the MA or MSc programme who had not had residence in the UK before (n = 16); (iii) A group of part-time home students (n = 15) who were full-time UK teachers or education professionals, some with a significant gap between this period of study and a previous period of study and who were all enrolled on the first year of an MA or MSc; (iv) a group of students (n = 15) from non-standard backgrounds either full- or part-time, and therefore in either their study year or their first study year across the range of courses on a Master's programme. The students from the four groups were interviewed between two and four times during these 11 months (at the beginning of their programmes, and 11 months in); and programme tutors were interviewed to determine the extent and type of formative assessment currently taking place, and appropriate documentary material was collected. In addition, the students were asked to complete a journal during these 11 months, to share their evaluations of their learning and assessment approaches with the project team.

In the second year of the project, four small-scale intervention projects in a range of higher education institutions were completed. Each project had a series of stages or phases of activity: (i) an area of practical concern was identified; (ii) an intervention was designed, in relation to one of the themes of the project;

(iii) the intervention was made; (iv) the effects of the intervention were investigated (i.e. the site-based project was evaluated); and (v) amendments were made to the original resource deployments and teaching/learning processes implicit in the intervention.

A small number of consultative interviews were arranged with invited groups of students. These were scheduled at the end of the project. The data-set was then analysed and written up. Project dissemination activities included: developing a set of guidelines for helping learners overcome the transition from undergraduate or equivalent work to Master's-level work by reviewing assessment and feedback practices; a project website; peer-reviewed publishing; *and* interim and full reports at appropriate stages in the project.

The data-set consisted of a series of interviews (of different types and conducted at different moments during the project), observations, evaluative data from a series of site-based projects, a range of diary entries and a set of literature reviews. Most commonly in educational research the interview method is used. Interviews yield different kinds of data depending on the different uses they are put to and the different ways they are structured. As a starting point, all interviews comprise a verbal stimulus from an interviewer in order to elicit a response; however, the different purposes mean that different approaches to the collection, management, and analysis of such responses will be used. At a general level, interviews sit in various positions on a continuum of qualitative-quantitative approaches to research. At one standardized end are highly structured interview surveys that pay close attention to the task of collecting large amounts of data, in as focused a way as possible, through the use of proforma like ringing codes, the use of numerical values, tick boxes and so on. The purpose here is to control and restrict the types of responses and for those being interviewed to respond directly to a pre-determined interview schedule. At the other end, there are semi- and unstructured interviews that encourage interviewees to respond open-endedly and to frame the encounter so that it is conducted in the interviewee's terms. Interviews vary, then, in relation to the degree of structure, interview purposes and length, depth and range, relationships between interviewer and interviewee, and the locations in which interviews take place. More importantly, however, interviews vary in accordance with the philosophical starting points that underpin them. What this means is that the interview method in its different formats fits different epistemologies and methodologies, and indeed, the design of the research reflects this, rather than interviewing per se.

It is thus possible to suggest that there are connections and relations between research frameworks, strategies and the use of particular methods. So, for example, structured interviews are usually survey-based and are designed to explore certain pre-determined areas using questions that are designed in advance, and are prepared in accordance with one or more specifically stated research hypotheses or set of questions considered in a descending ladder of abstraction from broad hypothesis to specific question. They are standardized to the extent that the question, its wording, and

sequence in the interview are fixed and identical for every interviewee who is usually referred to as the respondent. Using a relatively large sample of the total population and drawing upon statistical techniques in order to draw inferences that might be applied to the whole population, the use of the term *respondent* is not, therefore, accidental since a core issue is to use a design that transfers large amounts of data for analysis with minimum contamination of the data by the interviewer and involves a more passive role for the interviewee. The focus is therefore on the use of instruments to ensure the reliability and validity of the data and are thus more closely aligned to the scientific method. This makes probing and clarification more problematic, though not impossible. Philosophically, the core underpinning is empiricism, and the end points of such approaches are to supply facts about the educational world, that are, in combination, reliable, valid and independent of the settings in which the interviewer(s) collected the data.

Towards the other end of the interview continuum are approaches which are less standardised, and seek in-depth understandings of the experiences of individuals and groups, commonly drawing from a small sample of people, frequently selected purposively, and with a de-emphasis rather than a necessarily whole-scale rejection of generalisability. In general terms, this was the favoured approach of the research team. The terms usually applied to such interview forms are *unstructured* and *semi-structured*, although, it has been suggested that this may be misleading, in the sense that unstructured interviews *are* structured in accordance with a systematic research design, and in addition, structured by the actions, purposes and intentions of the researcher. In short, the idea of unstructured data is firstly, misleading and secondly, positively fallacious.

The key issue and purposes for such interviews are requirements for the interviewer to define the interviewee as a person who is actively constructing their world, and to draw upon the interview text to develop insights into these worlds. In our case, and in relation to the particular project from which data was extracted to support the arguments and substance of our book, we were concerned to show how students embarking on and going through a series of learning transitions understood and reported on their experiences. Again, the use of the term *informant* rather than respondent is not accidental, since it signals a specific kind of relationship between the interviewer and the interviewee, in which there is awareness by the interviewer of the ways their orientations and experiences will affect the collection and interpretation of data, and that the relatively open framework for information gathering will result in new themes and issues emerging in the course of data collection. The sense here is of emerging themes that are grounded in the data collected from interviewees rather than pre-determined prior to data collection.

During the interviews, conducted at different points during the 2 years of the project, and using different formats (i.e. individual, follow-up, sequential, group), we focused on a series of key issues in relation to our research focus: students' reasons for applying for the various programmes; their impressions of the application process; induction; programme material, including programme

handbooks, module material, on-line material, actual and virtual libraries; cultural, geographical and social differences; tutoring and teaching experiences; writing experiences; crises of confidence; learning trajectories, i.e. intensivity, pathways, conceptual connections, logistical arrangements; assessment processes; processes of auto-evaluation; oral and written feedback; peer support; and specific issues relating to the various transitions, such as the relationship between disciplinary knowledge and practice-based knowledge, or cultural epistemologies and technologies, or work intensification and compression of time (cf. Scott and Morrison 2005).

Diaries are among a wide and often complex array of documentary materials of interest to educational researchers, and formed a key part of the data-collection activity in our project. In its own right, diary-focused research is also a distinctive research genre that straddles qualitative and quantitative research. Diary keeping is not confined to participants in the research, but also may form an important part of the collection and recording of data by the researcher. In this case and in this project, the former was considered to be more important than the latter. Moreover, diary keeping is also seen as an essentially social act, even though historic or romantic associations with the term might be to view diaries as intimate or personal.

For us, and, in relation to the qualitative forms of research we conducted, where our primary concern was to understand the way our groups of students constructed and reconstructed their lives during a series of transitions they chose to go through, diaries are more than procedural tools for managing and documenting experiences. Important though these are, diaries are also integral to the production of the data record by participants in the research, which is a feature of all qualitative accounts of educational experience. The potential contribution of diaries, however, will always need to be seen as complex; differences in meaning and use, for example, may depend on a range of cultural contexts and situations.

Researchers sometimes draw distinctions between logs, diaries and journals. A log might be seen as a truncated record or aide-memoir, whilst a diary might be viewed as containing more personal and detailed information. As has been suggested, these distinctions are probably more useful analytically than in practice, since the umbrella term *diary* can comprise substantive, methodological, and analytic elements. Diaries can be used to serve a range of critical purposes for the researcher.

As for all personal accounts, diaries exhibit the strengths and weaknesses of information that is solicited from research informants. Yet in educational research, where there may have been a tendency to privilege the oral and the observed – what people say they do and what they are observed doing – diaries provide an interesting counterpoint. Whether this is because we tend to assume that the spoken account is more authentic or spontaneous, diaries have specific uses in picking up the minutiae of educational experience.

Whichever form is taken, four key assumptions need to be born in mind. *Firstly*, diaries rest on the view that research informants are in a particularly

advantageous position to record aspects of their lives and experiences. This is to do more than extol the value of self-report; rather, diarists are social actors who can make visible, through diary writing, inside information that might not be visible or available to the researcher. *Secondly*, diaries allow researchers access to evidence that might not otherwise be available on logistical (researchers cannot be everywhere), or ethical (researchers ought not to be everywhere), or pragmatic grounds (researchers need to be elsewhere). *Thirdly,* combined with other forms of data collection and analysis, diaries are based on a premise that the researcher can collect, collate, aggregate, and analyse diary data in order to produce a wider and/or deeper picture of what educational experience means to individuals and to groups. *Fourthly,* diary accounts have the potential to produce large amounts of data. Researchers need to convince themselves, as well as the diarists, that such pursuits are worthwhile, and to reach agreement with diarists about which aspects can be open to public scrutiny, and how such data will be analysed.

In their diaries, students were encouraged to write about: their reasons for applying for the various programmes; their impressions of the application process; induction programmes; programme material, including programme handbooks, module material, on-line material, actual and virtual libraries; cultural, geographical and social differences; tutoring and teaching experiences; writing experiences; crises of confidence; learning trajectories, i.e. intensitivity, pathways, conceptual connections, improvement or becoming more skilled; logistical arrangements; assessment processes; processes of auto-evaluation; oral and written feedback; peer support; and specific issues relating to the various transitions, such as the relationship between disciplinary knowledge and practice-based knowledge, or cultural epistemologies and technologies, or work intensification and compression of time (cf. Scott and Morrison 2005)

Each of the five site-based projects was organised into a number of different stages or phases of activity: an area of practical concern was identified; a possible intervention was designed, focusing on a practical concern; an intervention was made; the effects of the intervention were investigated (i.e. the site-based project was evaluated); amendments were made to the original resource deployments and teaching/learning processes implicit in the intervention; and a description and explanation of the process was made. In practice therefore, we were including an action research element in the project.

The project team analysed the data throughout the project by using progressive focusing methods, identifying new themes and refining the research questions. The development of theoretical categories and models was determined by pre-focusing on the area of study, by theoretical schema already developed in the area, and, more particularly, by engagement with the data themselves. Data from each cohort was analysed separately as well as in a cross-cohort and cross-institutional phase, in which themes and issues were compared and contrasted to draw out underlying patterns and common findings. To assist in the management and analysis of data, NVivo qualitative data analysis software was used, but not exclusively. This enabled some

transparency in the process of analysis and further facilitated collaboration between project members. Emergent themes for each case study were tracked from coding, and for theory development. Ethical procedures were developed and implemented, with appropriate institutional approval, at different phases of the project.

11. Porpora (1998) suggests that there are four meanings given to the notion of a structure. The first of these is 'patterns of aggregate behaviour that are stable over time' (*ibid.*: 339). The second is 'law-like regularities that govern the behaviour of social facts' (*ibid.*). The third is systems of human relationships among social positions' (*ibid.*); and the fourth is 'collective rules and resources that structure behaviour'.

12. A large number of identity-development theories can be identified. For example, Marcia's (2010) theory involves four stages: identity diffusion, identity foreclosure, identity moratorium and identity achievement. This ignores those theories that prioritise multiple-identity development.

13. Ecclestone and Hayes (2007: 1) argue that: 'Few educators, parents and policy-makers will question the idea that we face a crisis of unprecedented proportions in mental health and emotional problems, alongside claims that the materialism of Western societies, bad parenting and the pressures of schooling and modern life make childhood 'toxic' for the majority of children. Some might agree with neuro-scientists that poor parenting damages emotional receptors in the brain permanently, requiring 'repair' through 'nurturing interventions' in nurseries and primary schools. The vast majority will agree that schools generally need to do more to develop and enhance children and young people's emotional well-being'.

Chapter 6: Accountability

1. 'Internal quality assurance (IQA) refers to each institution's or programme's policies and mechanisms for ensuring that it is fulfilling its own purposes, as well as the standards that apply to higher education in general, or the profession or discipline in particular. External quality assurance (EQA) refers to the actions of an external body, possibly a quality assurance agency, which assesses the operation of the institution or its programmes, to determine whether it is meeting the agreed standards. EQA systems include accreditation, assessment or audit.' (International Institute for Educational Planning, UNESCO)

Chapter 7: Globalisation Mechanisms

1. cf. Scott et al. (2015).

Chapter 8: International Comparisons

1. Leaton-Gray et al. (2014) produced a report for the International Baccalaureate
   Organisation (IBO). The methods that were used to compile the report were as
   follows. This report examined the development and revision of curricula in juris-
   dictions, regions and countries round the world. In addition, it provided exam-
   ples which could further inform the International Baccalaureate Organisation's
   (IBO) own curriculum development processes. In sampling countries and juris-
   dictions round the world, the project team did not assume that a country's prac-
   tices in curriculum development and reform are evenly effective or applicable.
   They instead identified countries and jurisdictions that they thought likely to be
   productive locations for learning in relation to curriculum development and
   reform. This reflected their concern that the focus needed to be on how practitio-
   ners, including curriculum developers, learn from the work and experience of
   each other, rather than on the apparently exemplary practice itself. Because they
   identified the countries and jurisdictions as productive locations for learning, the
   effectiveness of our investigation depended to some extent not on the practices
   adopted in the countries we studied, but on the quality of the learning derived
   from them. The focus here then, was on generative practices rather than on gen-
   eralising educational practices across very different contexts.

   The project team selected jurisdictions and/or productive practices (**c** refers to
   a criterion and these criteria are numbered): that demonstrated strong outcomes
   derived from their educational policies and initiatives (c_1); where the education
   system was managed in the context of shared responsibility between national
   government, regional or state government and local initiatives, because these con-
   texts were likely to demonstrate some of the complexities of curriculum reform
   processes (c_2); where the education system was managed in the context of high
   levels of social and/or cultural diversity (c_3); where education confronted issues of
   the linguistic diversity of its student cohort (c_4); from both European (c_5) and non-
   European jurisdictions; that reflected examples of recent developments in curricu-
   lum reform (c_6); and with high levels of practical applicability (c_7).

   The countries/jurisdictions chosen were (with their applicability to the crite-
   ria indicated): Finland (c_1; c_2; c_5; c_7); Massachusetts, United States of America
   (c_1; c_6; c_7); Scotland (c_1; c_4; c_5; c_6; c_7); Ontario, Canada (c_1; c_4; c_6; c_7); The
   Netherlands (c_1; c_5; c_7); Mexico (c_2; c_3; c_4; c_6; c_7); Germany (c_1; c_2; c_5; c_7); England
   (c_1; c_3; c_4; c_5; c_6; c_7); Chile (c_3; c_4; c_6; c_7); Singapore (c_1; c_3; c_4; c_6; c_7); New
   Zealand ('The Best Evidence Synthesis Programme') (c_1; c_3; c_6; c_7); Victoria,
   Australia ('Schools for the Future') (c_1; c_2; c_6; c_7) and Queensland, Australia
   ('Focus on Schools') (c_1; c_2; c_3; c_7).

   The project team did not develop profiles for the last three of these countries/
   jurisdictions; however, we did examine important reform programmes in each of
   them: *The Best Evidence Synthesis Programme, Schools for the Future*, and
   Focus on Schools. The reason for not developing these profiles is that our focus
   is on the mechanics of, and processes associated with, particular reforms; and

not on formal and whole scale national processes of reform in these three countries/jurisdictions. Analysing the patterns of curriculum reform in these countries and jurisdictions allowed them to understand better the various processes involved in reforming, changing, and amending the curriculum. They were also fully aware that the focus of the observations was the formal curriculum and that this is very different from the way the curriculum is enacted.

The first phase of the investigation comprised the collection of information about the characteristics of curricula in these countries and jurisdictions. Information sources were: relevant government-endorsed curriculum documents; secondary source material (i.e. books, academic and professional articles), which describes the characteristics of the curriculum; and secondary source material (i.e. books, academic and professional articles), which offers a critical perspective on those characteristics of the curriculum relevant to the project. In addition, they collected information relating to the characteristics of curriculum reforms in the sample of countries. The sources for this activity were similar to those above.

The project team collected information about thirteen countries/jurisdictions in relation to the following issues: types of control and administrative organisation in relation to curricula and curricular reform processes; general aims, purposes, goals, key skills, knowledge structures, dispositions and principles of curriculum and curricular reform processes at national level; starting age, minimum school leaving age and duration of mandatory schooling; educational phasing and access; school structures, access, internal grouping and progression; progression within phases; range of subjects studied at primary and secondary levels, and minimum curricular content; curriculum materials; relations between curriculum standards, pedagogic standards and assessment standards; curriculum arrangements (pedagogic approaches and strategies; relations between knowledge domains; knowledge, skill or disposition orientations; knowledge framing; progression and pacing; relations between teacher and taught; relations between types of learners; spatial arrangements; temporal arrangements; formative assessment and feedback processes; criteria for evaluation); national standardised assessment systems and national examination or certification frameworks; control and supply of school textbooks; histories of curriculum reforms; contents of curriculum reforms; level and extent of subject experts' involvement; phases of development of curriculum reforms; contents and purposes of each phase of development; and curriculum alignment and articulation.

The final phase comprised an investigation into the characteristics of the IBO's own curriculum development, and how these related to world-wide curriculum developments. Information sources were: IBO curriculum documents that relate to the reform processes discussed above; secondary source material (books, academic and professional articles), which describes the characteristics of the IBO curriculum; secondary source material (books, academic and professional articles), which offers a critical perspective on those characteristics of the proposed reforms; and a telephone interview with an IBO curriculum expert.

2. cf. Ball 1987, 1990, 1994, 2007, 2008, 2010.

3. In the 2012 PISA exercise Finland was placed twelfth in the overall rankings of mathematical literacy with an average score of 519. The difference in performance between the highest (95th percentile) and the lowest (5th percentile) achievers – a measure of educational equity – was 281 points (the OECD average is 302) higher than it has been in the past. About 12 % of its students were below level two (functional mathematics equivalent), 15 % were at level 5 or 6 (the highest achievers), with OECD averages being 23 % and 13 % respectively. Since 2003 there are 8 % fewer higher achievers and 6 % more lower achievers. Over the last 9 years, mathematics performance in PISA decreased by 25 points. In reading Finland was placed seventh among participants with an average score of 524. The difference in performance between the highest (95th percentile) and lowest (5th percentile) achievers was 309 points (the OECD average was 310). 11 % of its students were below level 2 (functional reading equivalent), 14 % were at level 5 or 6 (the highest achievers), with OECD averages being 18 % and 8 % respectively. Since 2000 there have been 5 % fewer higher achievers and 4 % more lower achievers. Reading performance decreased between 2000 and 2012 by 22 points. In Science Finland was placed fifth among participants with an average score of 545. The difference in performance between the highest (95th percentile) and the lowest (5th percentile) achievers was 306 points (the OECD average was 304). 8 % of its students were below level 2 (functional science equivalent), 17 % were at level 5 or 6 (highest achievers), with OECD averages being 18 % and 8 % respectively. Since 2006 there has been 4 % fewer higher achievers and 4 % more lower achievers. Science performance decreased between 2006 and 2012 by 18 points (OECD 2012, 2013).

   All in all Finland has performed less well than in the past even if one makes allowances for the assessment-driven systems of a group of Asian countries, and there has been a widening of the gap between the best and worst performing percentiles. As of yet no official explanation has been offered although the hypotheses offered by Simola et al. (2002: 260) some time ago that the system of devolution of responsibility itself could well begin to increase social exclusion ought to be investigated. More recently, Finland has taken part in two other international examinations. In the Progress in International Reading Literacy Study (PIRLS) for the first time in 2011, overall, Finland was placed joint 4th out of 45 countries in 4th grade reading on the 2011 PIRLS tests with an average score of 568. 18 % of its students reached the advanced international benchmark of 625 (99 % reached the low international benchmark of 400). Participants did as well on informational, as well as on literary, reading. In the Trends in International Mathematics and Science study (TIMSS) for the first time in 2011, Finland was placed joint 9th in 4th grade mathematics among 57 participating jurisdictions with a score of 545. 12 % of its students reached the advanced international benchmark of 625 (98 % reached the low international benchmark of 400). The international median was 4 % and 90 % respectively. Finland was placed 15th in 8th grade mathematics among 56 participating jurisdictions with a score of 514. Four per cent of its students reached the advanced international benchmark of

625 (96 % reached the low international benchmark of 400). The international median was 3 % and 75 % respectively. Finland was placed 3rd in 4th grade science among 57 participating jurisdictions with a score of 570. 20 % of its students reached the advanced international benchmark of 625 (99 % reached the low international benchmark of 400). The international median was 5 % and 92 % respectively. Finland was also placed 7th in 8th grade science among 56 participating jurisdictions with a score of 552. 13 % of its students reached the advanced international benchmark of 625 (99 % reached the low international benchmark of 400). The international median was 4 % and 79 % respectively.

4. The FNBE issues curriculum frameworks that schools need to take account of when they create their own, complementary, curricula. The subjects that students must study are as follows.

1. Pre-Primary Education: language and interaction; mathematics; ethics and philosophy; nature and the environment; health; physical and motor development; and art and culture.

2. Basic Education (Comprehensive Schools to Year Nine): values and underlying principles; general education and teaching objectives; and language programme; depictions of operational culture, learning environment and working approach; possible instructional emphases, language immersion, or foreign-language instruction; possible integration of instruction; implementation of cross-curricular themes; educational objectives and content in different subjects by year group, or, in instruction of mixed groups, by study modules; instruction in optional subject subjects; objectives for pupil behavior; cooperation with pre-primary education and other basic education; cooperation between home and school; cooperation with other parties; pupil welfare plan and organization of related cooperation; principles of curriculum formulation; guidance and counselling activities as a support for studies, and arrangements for an introduction to working life; organization of club activities; provision of remedial education; instructions of pupils requiring special support; instructions of pupils belonging to different language and cultural groups; pupil assessments based on descriptions of good performance and criteria for final assessment; principles of academic progress; certificates and reports; information strategy; and evaluation of activity and ongoing development (Ministry of Education and Culture 2013a, b, c). Subjects include: mother tongue and literature; the other foreign national language; foreign languages; mathematics; biology and geography; environmental studies; physics and chemistry; health education; religion and ethics; history and social studies, music, visual arts, craft, psychical education, home economics, optional subjects decided locally by schools. The renewed core curriculum will be completed by the end of 2014. New local curricula that are based on this core curriculum should be prepared by the beginning of school year 2016–2017 (Ministry of Education and Culture 2013a, b, c).

3. At Upper Secondary level (Years 10–12) (Ministry of Education and Culture 2013a, b, c) upper secondary schools must create program documents that

contain the following: mission statement and value priorities; main character-
istics of the operational culture, the study environment and working methods;
counselling and guidance plan; integration and cross-curricular themes; dis-
tribution of lesson hours; language programme; objectives and core contents
by subject and course; principles of independent study; information strategy;
co-operation with students' parents or guardians; co-operation with voca-
tional institutions and other upper secondary schools; co-operation with other
educational institutions and bodies; education for students in need of special
support; education for language and cultural groups; student welfare services;
assessment of students' learning; and continuous development and evaluation
of operations. The curriculum must include descriptions of all courses. The
objectives and core contents of applied courses must also be determined
within the curriculum. In cases where the upper secondary school provides
foreign-language education, distance learning or an opportunity to complete
general upper secondary school diplomas in art and physical education, this
must be specified within the curriculum. The subjects at Upper Secondary
are: mother tongue and literature; the other national language; foreign lan-
guages; studies in mathematics and natural sciences; studies in the humanities
and social sciences; religion or ethics; physical and health education; arts and
practical subjects.

5. The timeline of the Process of Review (CfE) in Scotland was as follows:

2002 – National Debate on Education – A consultation to determine what was
working well and what needed to change in school education. Teachers and
educationists decided that there was a need to offer more engaging and rele-
vant experiences to ensure that Scotland's children and young people were
equipped for life and work in a globalised society.

2003 – Curriculum Review Group established – The Curriculum Review Group
was established by Scottish Executive Ministers to identify the key principles
to be applied in the curriculum redesign for ages 3–18. It looked at evidence
of 'best practice', research evidence, international comparisons and global,
local, economic and social changes.

2004 – A Curriculum for Excellence – A Curriculum for Excellence was pub-
lished in November 2004 as a result of the work of the Curriculum Review
Group, together with the Ministerial response. This provided explicit aims for
education in Scotland and principles for curriculum redesign. The Curriculum
Review Programme Board was established.

2005 – Research and Review Process – Research was commissioned and practi-
tioners drawn from different sectors of education and from around the country
were seconded to *Learning and Teaching Scotland* (LTS) to review existing
guidelines and research findings, hold focus groups with practitioners and
begin the process of developing simpler, prioritised, curriculum guidelines.

2006 – Progress and Proposals published and Building the Curriculum series
begun – The Progress and Proposals document set out key features of the new
curriculum. The Building the Curriculum publications (numbered 1–5 and

published over the coming years) provide guidance on how different aspects of the curriculum would contribute to the aims of Curriculum for Excellence.

2007–2008 – Draft experiences and outcomes published – The draft experiences and outcomes were published in stages. Teachers and all those with an interest in children and young people's learning were encouraged to reflect on the draft experiences and outcomes and feed their comments back through an extensive engagement process. Findings were also fed back from trialling activities and from focus groups.

2008 – Analysis of feedback and responses – Feedback was analysed by the University of Glasgow and actions were identified to respond to the issues raised. There was then a process of refinement, further development, consultation and quality assurance.

2009 – Publication of the new curriculum guidelines – Following further quality assurance processes, the new curriculum guidelines were published for implementation.

2009–2011 – Planning and implementation – Schools planned throughout 2009–10 for implementation of the new curriculum in 2010–11. Education Scotland continues to support the profession, local authorities, schools and teachers in developing Curriculum for Excellence.

2013–2014 – New National Qualifications – Students will sit the new National Qualifications for the first time in place of the old Standard Grades and Access Courses. The Higher and Higher Still qualifications (S5-S6) are still under review.

6. It is made clear through the structure and wording of the outcomes in the Programmes of Study that the standards offer a focus for the four ELA aspects of Reading, Writing, Speaking and Listening and Language, with a key focus on the fact that the five general outcomes are interrelated and interdependent. There is a clear focus in the general outcomes on what are considered the underlying skills for effective communication across modes of communication, i.e. reading, writing, speaking and listening. Text is considered to include oral communication and visual media, as well as written text. There is also a recognition that these forms are often used in combination with one another and in conjunction with print. Although it may appear that there are many subheadings for certain General Outcomes, there is in general a balance within the number of specific outcomes within these. Some core areas have a greater number of specific outcomes and some grades are more or less proportional to progression and cognitive development. Here are some of the features of the language and communication standards at Grade Five level.

Outcome 1: Explore thoughts, ideas, feelings and experiences
This outcome centres around exploratory language, and it recognises that this type of language is most often oral. As pupils move through the grades the aim is that they develop the ability to use exploratory language to achieve other ELA learning outcomes, e.g. to enhance comprehension by focusing students' prior knowledge and experience before reading, listening and viewing. There are four subheadings for Outcome 1.1 and each has no more than three specific outcomes for any one

grade. There are three subheadings for Outcome 1.2 and each has no more than one specific outcome for any one grade. Oral, print and other media texts are included in each of the subheadings and represented within each of the specific outcomes demonstrating the focus on breadth and interconnection between forms of communication. Within the specific outcomes at each grade there is clear reference to personal response and to prior experience, to making connections between prior knowledge and new information, and through these statements the theoretical underpinning of the curriculum is transferred to the students. Outcome 1 also has the subheading: Setting Goals. For the learner this prompts a focus on the continued development of this aspect of ELA for lifelong learning.

Outcome 2: Comprehend and respond personally and critically to oral, print and other media texts.
The aim is to enable students to build skills of comprehension. The underpinning of how a reader/listener comes to an understanding of what they read or hear is embedded in the focus on students being able to monitor their own understanding, through preview, summary, prediction and asking questions. There are five subheadings for Outcome 2.1 and no grade has more than four specific outcomes. There are three subheadings for Outcome 2.2 and each has no more than five specific outcomes. For younger age groups the number of specific outcomes is one or two. There are three subheadings for Outcome 2.3 and each has no more than three specific outcomes, and for most grades there are two specific outcomes. There are three subheadings for Outcome 2.4 and each has no more than two specific outcomes for any grade. Within this outcome there is scope through from response to text into creating original text, but with an emphasis on comprehension and response to text created by other authors. Creating their own text is only covered in 2.4.

Outcome 3: Manage ideas and information
This outcome is intended to build on the focus on viewing and representing, and students learn to enhance the clarity and effectiveness of communication by considering author, purpose, audience and source. In creating their own texts students are encouraged to review how ideas and information are managed. There are three subheadings for each of Outcome 3.1, 3.2 and 3.3. There are two subheadings for 3.4. There are no more than three specific outcomes for any grade for any subheading, and often only one specific outcome.

Outcome 4: Enhance the Clarity and Artistry of Communication
In the scope of this outcome there is an emphasis on relating to other outcomes. This outcome focuses on applications of conventions of grammar, language usage, spelling and punctuation/capitalisation. This outcome offers support for students to understand how language works and how to use specialised vocabulary. There are five subheadings for Outcome 4.1. There are no more than three specific outcomes for each and for most grades only one. There are three subheadings for 4.2. There are no more than four specific outcomes for each, and the specific outcomes are balanced to reflect skills across the grades e.g. only one specific outcome for grammar and usage for K but four for grades 3–5. There are

four subheadings for 4.3. There are no more than two specific outcomes for this present and share focus for any one grade. For most there is only one specific outcome per grade.

Outcome 5: Respect, support and collaborate with others
Here the emphasis is on language building community, and the students' learning to develop their collaboration skills. Students are using language to share perspectives and ideas, as well as to develop understandings and adjust viewpoints. There are four subheadings for Outcome 5.1. There are no more than two specific outcomes for any one grade. There are three subheadings for Outcome 5.2. There are no more than two specific outcomes for any one grade.

At secondary level, learning aims are expressed as general outcomes. These are scaffolded. For example on entry to senior high, General Outcome 3.2 *Follow a Plan of Inquiry*:

Students will listen, speak, read, write, view and represent to create oral, print, visual and multimedia texts, and enhance the clarity and artistry of communication Develop and present a variety of print and non-print texts. Improve thoughtfulness, effectiveness and correctness of communication. Develop and present a variety of print and non print texts. Improve thoughtfulness, effectiveness and correctness of communication. Respect others and strengthen community Students will listen, speak, read, write, view and represent to respect, support and collaborate with others.

By grade 12:

There are two basic aims of senior high school English language arts. One aim is to encourage, in students, an understanding and appreciation of the significance and artistry of literature. A second aim is to enable each student to understand and appreciate language and to use it confidently and competently for a variety of purposes, with a variety of audiences and in a variety of situations for communication, personal satisfaction and learning.

The suggested literary texts show a predilection for North American and Canadian writers, but with a good level of reference to wider and classical cultures.

Chapter 9: A New Model of Curriculum

1. This is an extract from Scott et al. (2011). Richard Andrews is the principal author of this extract:

The Language and Communication Strand
The standards as they are expressed in the various national curricula under consideration can be grouped under six strands, and include a set of dispositions which are equally important at all levels: reading, writing, speaking and listening, multi-modality, knowledge about language and communication, and language and communication dispositions.

Scope therefore refers to whether the actual curriculum includes or excludes these knowledge, skill and dispositional elements, and the weighting given to

each. Language and communication support all the purposes and activities in the curriculum, but specifically competence in spoken and written language. At the same time, all six strands are related. Reading and writing are reciprocal, and a curriculum should ensure that such reciprocity is exploited in teaching and learning. Similarly, speaking and listening go together. From the perspective of the productive language skills, speaking and writing can be closely linked; just as reading and listening are both receptive skills (though they also require a good deal of active reading and active listening). It is also possible to exploit the connections between reading and speaking (as in reading out loud) and writing and listening (for example, attending to the process of writing in groups, or listening to each other's drafts).

Pre-Primary Standards for Language and Communication
The curriculum standards at this level are grouped under six strands, and include a set of dispositions which are equally important at all four key stages: reading, writing, speaking and listening, multi-modality, knowledge about language and communication, and language and communication dispositions. Pupils would be expected to: acquire confidence at expressing themselves, dialoguing and engaging in conversation in their mother tongue; improve their capacity to listen, widen their vocabulary, and enrich their oral language in a variety of situations; understand the main functions of written language and recognize some of the properties of the writing system; access culture through a wide variety of printed or electronic sources; and develop the sensitivity, the initiative, the imagination and the creativity for expressing themselves through artistic languages (music, literature, the visual arts, dance and theatre).

At this level, multi-modality can operate in the classroom in a variety of ways; through combining words and images in children's reading books, in documentary texts, through play and drama, and by the addition of music and other sounds to language activities. Reading covers both literary and documentary types of text. It is closely allied to writing, reading aloud (speaking), speaking and listening. The links between text and image are emphasized, and written texts should be used to allow talk about experiences and feelings as well as about language. It includes knowledge, skill and dispositional elements. Writing is important to encourage as a means of communication as well as a tool for organising thinking. It is best linked to reading (so that they are seen as reciprocal), speech and other modes of communication (particularly the visual). Speaking and listening are natural elements of communication and can be used for learning in pairs, small groups and in larger gatherings. They are a way of expressing feelings and thoughts in a number of different genres, and are linked with oral traditions and with writing and reading. From the early years, it is important to develop a meta-awareness about language and communication, so that gradually a vocabulary can be built up that will help with understanding and the improvement of communicative skills in later years. And finally, there are a series of dispositions which are persistent qualities associated with language and communication.

Primary (1) Standards for Language and Communication

The curriculum standards at this early primary level are grouped under six strands, and include a set of dispositions which are equally important at all the key stages: reading, writing, speaking and listening, multi-modality, knowledge about language and communication, and language and communication dispositions. At the end of this stage of primary school, children should have developed the cognitive capacity to enable them to begin to discuss topics in more depth, to build basic arguments, to take more interest in the world and to become more aware of themselves.

Students at this age are broadly expected to: initiate dialogue and discussion on topics that interest them, and build considerate development of that discussion towards consensus; be competent in the written language and be aware of how it relates to other modes of communication; continue to access culture through a wide variety of genres and media; and continue to develop sensitivity, imagination, initiative and creativity through the verbal and other arts, working toward a greater degree of precision in performance and execution. This stage of development aims to consolidate the progress made since the start of formal schooling, and also to recognize the advances made in cognitive development, self-awareness and the identification of different modes of communication. Young children at this stage are more aware of themselves and their position in families and in relation to the rest of the world. They begin to take an interest in the wider world and in moral issues that arise. Their awareness that thought and imagination operate internally, whereas much communication is social and external, is an important step forward in understanding the importance, function and range of communication.

Reading covers both fictional and documentary types of text. It is closely allied to writing, reading aloud (speaking), speaking and listening. The links between text and image are emphasized, and written texts should be used to allow talk about experiences and feelings as well as about language. It includes knowledge, skill and dispositional elements. There will be an increasing emphasis on documentary texts to complement the reading of fiction, poetry and playscripts. This non-fictional material includes information texts, maps, guides, menus and other 'real world' texts. Writing is important to encourage as a means of communication. It is best linked to reading (so that they are seen as reciprocal), speech and other modes of communication (particularly the visual). Speaking is a natural part of communication and can be used for learning in pairs, small groups and in larger gatherings. It is a way of expressing feelings and thoughts in a number of different genres, and is linked to writing and reading. It is closely allied to listening. This stage shows increasing awareness of language, and a concomitant increase in vocabulary to talk about language. While discussion about language and other forms of communication will continue to arise naturally from the use of language, there are opportunities for more formal attention to how language works in short periods of the language and communication curriculum. And finally, there are a series of dispositions which are persistent qualities associated with language and communication.

Primary (2) Standards for Language and Communication
The curriculum standards at this level are grouped under six strands, and include a set of dispositions which are equally important at all the key stages: reading, writing, speaking and listening, multi-modality, knowledge about language and communication, and language and communication dispositions.

By the end of primary school, children should have developed the cognitive capacity to enable them to begin to discuss topics in more depth, to build basic arguments, to take more interest in the world and to become more aware of themselves as independent learners. As children reach the end of primary schooling, it is expected that they will have developed a wide range of competencies in the use of language and that they will be able to appreciate both literary and documentary texts. They will be aware of the range of modes in which communication can take place, and use such a range in their compositions, as well as reading and interpreting them.

In particular, they will: be aware of how discussion and argument operate in school and outside school; be competent in writing and in a range of other modes, suiting style and form to audience; continue to access a wider range of culture and media, including international as well as national texts; and feel confident in making presentations of their research and other work to a range of audiences. This stage of development aims to consolidate the progress made since the start of formal schooling, and also to recognise the advances made in cognitive development, self-awareness and the identification of different modes of communication. Young children at this stage are more aware of themselves and their position in families and in relation to the rest of the world. They begin to take an interest in the wider world and in moral issues that arise. Their awareness that thought and imagination operate internally, whereas much communication is social and external, is an important step forward in understanding the importance, function and range of communication.

This is a stage of development where children can move forward independently of their teachers, once they have learnt sufficient study skills and when they feel confident in a range of modes of communication. Research skills can be developed in this phase, plus a keener awareness of types of text and their main characteristics. Increasing responsibility for the part that children can play in a community, and further understanding of how communities work, both help to further learning. The child learns to operate individually and collectively, for example, in reading privately and aloud.

Reading covers both fictional and documentary types of text. It is closely allied to writing, reading aloud (speaking), speaking and listening. The links between text and image are emphasized, and written texts should be used to allow talk about experiences and feelings as well as about language. It includes knowledge, skill and dispositional elements. There will be an increasing emphasis on documentary texts to complement the reading of fiction, poetry and play-scripts. Documentary material includes information texts, maps, guides, menus and other 'real world' texts. Writing is important to encourage as a means of communication. It is best linked to reading (so that they are seen as reciprocal),

speech and other modes of communication (particularly the visual). The range of writing includes various forms of literary composition and sub-forms, such as haiku, rhymed and unrhymed verse, and ballads in poetry; or autobiography and biography in narrative writing. Documentary writing will continue to expand, differentiating between information-writing and argument-writing. Examples of writing at this stage include the composition of biographies of people they admire, as well as autobiographical writing that draws upon memory and imaginative re-creation. The skills of drafting and editing come more to the fore as writing is tested out with audiences (peers, teachers and others) before completion.

Speaking is a natural part of communication and can be used for learning in pairs, small groups and in larger gatherings. It is a way of expressing feelings and thoughts in a number of different genres, and is linked to writing and reading. It is closely allied to listening. In addition to the development evident at the previous stage, speaking is now expected to move toward presentation in a wider range of social situations. Listening needs to be directed in some cases, i.e. listening with a particular purpose needs to be nurtured. In addition, the importance of listening continues to grow as ideas are considered and viewpoints expressed. The range of speech genres that are learnt can be extended through engaging with life out of school as well as within it. For example, within school activities can include debates, schools councils or mock elections; beyond school, children can take part in raising money and running campaigns for good (charitable) causes.

This stage shows increasing awareness of language, and a concomitant increase in vocabulary to talk about language. While discussion about language and other forms of communication will continue to arise naturally from the use of language, there are opportunities for more formal attention to how language works in short periods of the language and communication curriculum. It is at this stage that knowledge about language increases in importance. The meta-languages for communication should be used more frequently in class to raise awareness. And finally, there are a series of dispositions which are persistent qualities associated with language and communication.

Secondary Standards for Language and Communication
The curriculum standards at this level are grouped under six strands, and include a set of dispositions which are equally important at all the key stages: reading, writing, speaking and listening, multi-modality, knowledge about language and communication, and language and communication dispositions. The early part of secondary education is crucial for extending the range and experience of young people's use of language; and for understanding and using communication as an integral part of a wide set of social practices. To these ends, the standards for these years must be high and must be comparable with those set internationally. Young people going through the secondary school system should be equipped with the linguistic, communicative and social skills to enable them to contribute positively and effectively to their society, and also to the international world.

In particular, the standards for these years include requirements for students to: be able to read and write sufficiently well to engage in social practices and to express themselves individually; contribute creatively to discussions, debates and other forms of spoken interchange in school, family and society; know about how language and other modes of communication work, and to be able to reflect on these processes; and develop the communicative skills necessary to becoming an effective citizen. The advances made in this stage will equip students for two principal future purposes: public examinations on the one hand, and the wider world of social obligation, citizenship and the world of work on the other. A widening repertoire of spoken, written and other genres, plus multimodal combinations, will enable students to feel empowered and responsible in society. The added dimensions of composition and interpretation in modes other than writing, reading, speaking and listening, along with increased knowledge about language, will prepare students for life in the twenty-first century.

Reading covers both fictional and documentary types of text. It is closely allied to writing, reading aloud (speaking), speaking and listening. The links between text and image are emphasized, and written texts should be used to allow talk about experiences and feelings as well as about language. It includes knowledge, skill and dispositional elements. There will be an increasing emphasis on documentary texts to complement the reading of fiction, poetry and play-scripts. Documentary material includes information texts, maps, guides, menus and other 'real world' texts.

Reading should continue to broaden its range to include classical and historical literary works in national traditions. It should also extend to a wider range of 'real world' documentary texts, such as minutes of meetings, reports, opinion pieces and newspaper articles. Reading matter further extends to include magazines, newspapers, online media (if available), poetry, play scripts, and popular as well as classical fiction. There could be much variety in the way reading is introduced and taught, including formal exposition in class, small group exploration of texts, contribution to wiki-like texts online, reading for information, and reading for other purposes, like searching for evidence in support of an argument.

Writing is important to encourage as a means of communication. It is best linked to reading (so that they are seen as reciprocal), speech and other modes of communication (particularly the visual). Students will explore more specialized texts during this phase, and use writing to reflect more deeply on matters that arise from social experience and from their reading of literary and documentary texts. During this phase, there is the opportunity to embrace the written world of discourse as manifested in all aspects of society. For example, students should be exposed to the role writing plays in the creation of scripts for performance on TV, radio, film and in the theatre, as well as in public forums. They should be taught advanced word-processing skills in order to improve their capacities as writers of a wide range of texts.

Speaking is a natural part of communication and can be used for learning in pairs, small groups and in larger gatherings. It is a way of expressing feelings and thoughts in a number of different genres, and is linked to writing and reading. It

is closely allied to listening. The role of speaking in secondary education and beyond must continue to be significant. Its value is that it reflects more sensitively than writing the range of regional and local diversity in the society. It is also a direct way of exploring, understanding and resolving (if necessary) difference. A wide range of spoken encounters is possible, even within school. For example, school events can be arranged and assisted by students who take responsibility for certain aspects. Campaigns and other forms of advocacy and persuasion can be encouraged.

Speech can be used as a rehearsal for writing or a follow-up to it; or as part of a multimodal composition like a play or film. Occasions could be made possible in the classroom where listening is the prime activity. Transmutation of heard texts into writing, speech or other modes of communication can arise directly from listening activities. Listening can also be a part of multimodal communication, as in a film, TV programme, or advertisement. Sound in general – as in sound effects, or ambient sound – can contribute to the overall communicative experience of art forms and other forms of communication. They will wish to develop their own identities through spoken interaction with others: family, friends, those in authority and others. They will do this with the understanding that opposition is natural and can help clarify one's own position; but that speech is also a conduit through which resolution and consensus can be built. Listening at this stage takes on an obligation as a citizen: to listen carefully to views put forward, to reflect on them, and to respond accordingly. Listening can also play a role in the reception and enjoyment of literary texts; and it is integral to radio, film, television and other media.

As the modes of communication separate themselves from each other, there is more scope for a considered application of more than one mode in acts of communication. At the same time, the particular qualities and affordances of each mode become clearer. To understand that more permanent modes of recording, like digital archiving (if available), writing, print, drawing and other forms of composing, can be seen as more permanent forms of communication than temporary and ephemeral forms like speech, gesture and movement, is an important insight to develop. Examples of working multimodally include: the making of a short film; the creation of storyboards for sequential narration; the creation of stories, advertisements and other genres in sound; the editing and mixing of soundtracks; and the creation of performances and presentations.

This stage shows increasing awareness of language, and a concomitant increase in vocabulary to talk about language. While discussion about language and other forms of communication will continue to arise naturally from the use of language, there are opportunities for more formal attention to how language works in short periods of the language and communication curriculum. This stage reveals increasing knowledge about language so that students can talk or write about language use with insight, using it not only for its own sake, but also in order to improve their own language and communication skills. And finally, there are a series of dispositions which are persistent qualities associated with language and communication.

In addition, it is important to develop and implement a cross-curricular language and communication programme. This has three elements: trilingual provision, use of digital technologies, and developing communication skills. Schools should seek to build learners' linguistic competence in order to develop effective communication. To achieve this goal, schools should implement a policy of language education across the curriculum. In order to strengthen the learning of content subject matter, subject teachers can support the learning of subject-specific academic language. Academic language includes phraseology, subject-specific terminology and the language needed to perform specific functions common to many subject areas, such as analyzing, comparing, explaining causes and consequences, solving problems and organizing. Subject teachers also need to make visible and draw learners' attention to the components and characteristics of academic language, and help learners to measure their progress in learning this language. In addition, language scaffolding which includes useful phrases for dialogue/writing are provided for learners in an organised and systematic manner in order to foster rich student use/output of content and language.

Competence in the use of digital technologies involves the confident and critical use of technology for work, leisure and communication. It is underpinned by basic skills in Information and Communication Technology (ICT). Learners develop their ICT skills across the curriculum by finding, creating and manipulating information, collaborating and communicating information and ideas, evaluating and then refining their work, and by using a wide range of equipment and applications.

The educational programme aims to develop citizens who are able to communicate effectively with different audiences. Developing the skills which are needed to achieve this should be accompanied by fostering and promoting an environment in which communication in a range of forms is encouraged and valued and where learners feel confident in expressing themselves. Throughout the curriculum, learners should be encouraged to communicate with their fellow learners, teachers and wider audiences using a range of media including written, visual/pictorial, digital, enactive – role-play, simulation and drama – and oracy. Oracy (speaking and listening) will play a major role through dialogue, discussion, debate and exposition in pairs, small groups, large groups and as a class.

Examples of speaking and listening activities, for example, are: participation in a debate on a theme to explore issues, to state an opinion, to listen to the opinions of others, to ask and answer; questions to hypothesise, to reach conclusions and present conclusions; participation in role-playing games, taking the role of agents, engaging in dialogue, discussion and debate; dialogue and discussion while working cooperatively in pairs and small groups on problem solving tasks and historical, geographical and social science sources; and presenting compositions/findings to fellow learners, either as a whole class or in working groups, developing the skills and confidence of presenting orally to an audience what they have learned. These examples can be multi-modal and use a variety of media and be presented and communicated accordingly.

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