An investigation into the impact of an integrated curriculum on learning in the primary school

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In partial fulfilment of the requirements for the Degree of

Doctorate in Education

Durham University

School of Education

May 2016

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Abstract

This thesis investigates cross curricular models (integrated curricula) and explores claims by advocates of such models that they enhance learning. A Case Study describes a primary school's journey in developing its curriculum and pedagogy and highlights the questions that were asked and which relate to the theoretical accounts of knowledge and integrating curricula outlined in the study. It traces the origins of cross curricular studies to Dewey and the pragmatist view of knowledge and in the UK to the Plowden Report (1967). Exploring some cross curricular models, it indicates that they may do little to enhance learning as links between subjects can be spurious with the focus often on developing skills rather than knowledge, skills and understanding due to the constructivist origins on which these models have been based. Links between curriculum and pedagogy are investigated and it is suggested that developing a deeper understanding of knowledge and its concepts demands a more active approach to learning. Questioning the absence of any theory of knowledge by many modern curriculum designers, it also explores the social realist approach to knowledge which justifies bringing knowledge back into the school curriculum. It claims that the complex connections between subjects at a conceptual level make integration possible and will demand a more active learning process resulting in a deeper understanding of knowledge. Skills are developed through the logical demands and modes of enquiry of the school subjects and not through skills based models in which they are taught context free. A comparison is made between a cross curricular topic through a traditional approach and an approach through a conceptual lens which involves a deeper study of the individual subjects, brings a sharper focus to the study and allows generalisations to be made.

Acknowledgements

I would like to thank my tutor, Dr. Julie Rattray and also Dr. Richard Smith for the guidance they have provided during the time of my writing this thesis.

My thanks also go to the staff of Dubai English Speaking School and in particular, Mrs. Claire Hagestadt who championed the development of the curriculum as the school continued its journey.

Thanks also to my wife, Georgina, sons, Lewis and William and friends who have encouraged me on my own journey of development.

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1. Introduction

1.1 Reasons for the study

The case study and account of theories of knowledge, the relationship between pedagogy and curriculum and theories of curriculum integration and its perceived effects on learner understanding came about as the case school, an English curriculum primary school in Dubai, UAE, set about a journey of development when the researcher was appointed Head Teacher of the school in 2005.

As the school developed its curriculum and pedagogy with the help of in service providers, certain questions were raised about the assertions that were made about the need to 'break down barriers to learning' which were provided by the discrete subjects of the curriculum.

1.2 Background to the study

Cross curricular study or curriculum integration has become increasingly popular in English Primary Schools in the latter part of the twentieth century and at the beginning of the twenty first century. Although the National Curriculum (DfES 1999) has set out the knowledge to be learned in discrete subject areas, there is nothing in the statutory documents that prescribes how that knowledge be organised in the way it is taught. The Primary Strategy (DfES 2003) gave teachers the flexibility regarding how the programmes of study were to be taught. As a direct result of the Primary Strategy, curriculum models like the International Primary Curriculum which allowed for cross curricular links, increased in popularity in English primary schools.

It is claimed by those who advocate cross curricular approaches that because life itself is not compartmentalised into separate units, so education should not be presented in discrete subjects for if it is, how can children begin to solve real world problems and understand the world which is becoming increasingly more complex (Beane 1996)? There are calls for skills to be learned rather than knowledge to be acquired, because knowledge can be called up in an

instant through the internet. It is not only a single subject approach that is criticised, but also the teaching of knowledge in favour of skills. George (1996) refers to the subject based curriculum as ‘worthless’ (p.118) as the curriculum is now being seen by integrationists as a means of teaching skills which can be transferred from one domain to another. The debate becomes more complex as it has unfolded along dichotomous lines: on the one hand there are cross curricular, skills-based constructivist approaches associated with technical instrumentalism (Young, 2008) and on the other there is the single subject approach that is associated with traditional methods of teaching (in turn associated with *transmission* of knowledge) and defended by neo – conservative traditionalism (ibid.).

Curriculum integration has become popular among educationalists in England since the 1960s when the Plowden Report called for individual learning, flexibility in the curriculum, the use of the environment, learning by discovery and the importance of the evaluation of children's progress - teachers should 'not assume that only what is measurable is valuable' (Plowden 1967:202).

The Schools Council called for curriculum reform as well:

> 'Teachers ... have often tended to emphasise the content of their subjects instead of their importance as ways of experiencing and knowing the real world' (Schools Council 1981:19).

And:

> The curriculum needs to fit the child (Schools Council 1981:26).

However, some attempts to make studies cross curricular and child centred resulted in in near anarchy in the William Tyndale school in London, where an emphasis on ‘romantic liberalism’ (Gillard 2011) and too much emphasis on discovery and not enough on teaching, caused disputes among staff and resulted in a public inquiry into the school in 1975 and 1976.

However, the supposed ills that have befallen education according to the popular press are misdirected. Lady Plowden has written:

> We wrote that we 'endorsed the trend towards individual and active learning' ... yet we gave a warning: 'we certainly do not deny the value of learning "by description" or the need for practice of skills and consolidation of knowledge'. ... Teachers must select those of our suggestions which their knowledge and skill enable them to put into practice in the circumstances of their own schools (Plowden 1987:120 cited in Gillard 2011).

There has been much interest recently in both Britain and abroad in a focus on developing skills and less of a focus on knowledge. Personal learning and thinking skills are now part of the Key Stage 3 curriculum and there is the Campaign for Learning, (an independent charity established in 1997 to champion lifelong learning), which aims to develop the ability to learn to learn in which learning dispositions and generic learning skills are to be nurtured. The review of the curriculum by Sir Jim Rose in 2010 (QCDA 2010) talked of '*essential skills for life'*. The Cambridge Review (2009) talks of the goal of teaching being to promote independence and autonomy (James and Pollard 2008) which involves self-regulation and responsibility for learning by the learner. McGuinness for the DfEE (1999) outlined a framework for developing and delivering thinking skills which has influenced government curriculum planners.

Despite Lady Plowden's advice to 'consolidate knowledge' (Plowden 1967), as a result of these developments there has developed a dichotomy between a skills based approach to the curriculum and the more traditional subject based approach with many advocates of teaching thinking and learning skills, rejecting the subject based curriculum and seeing subject matter as a means to an end (Kysilka 1998). Many primary schools now have their integrated day, secondary schools have interdisciplinary enquiry and the Schools Council published examples

of good integrated approaches just after the Plowden report was published (Stenhouse 1968) to provide a stimulus to the move towards integration. The International Primary Curriculum is one example of a curriculum designed around thematic units of work with the intention of developing creativity and skills. The Rose Review (QCDA 2010) called for cross curricular approaches where possible. Many cross curricular approaches use knowledge instrumentally in favour of developing skills and learning experiences while advocating the need for skills and knowledge.

1.3 Purpose of the Study

The purpose of the study is to unpick the nature of the progressive call to make studies cross curricular and to enhance understanding of these approaches in the context of an overseas British Primary School's development in this landscape of compliance to British government documentation and initiatives such as the National Literacy and Numeracy strategies and the recommended four part lesson in 1996 and the resultant questioning of them.

There is a dearth of literature about the impact of cross curricular approaches on pupil learning, despite many claims that is has an impact on motivation and understanding and the study will seek to address this shortage of knowledge about integrated studies. It will explore the moves for curriculum integration in English schools from the 1960s and will draw on literature from this period up to the present. The study will examine the rationale for, and impact of, an integrated curriculum on the level of pupil understanding and on the resulting change in pedagogy in the classroom.

In doing so, it will explore the following issues: what is the advantage of moving towards a more integrated curriculum? Does it lead to more enhanced learning as some advocate? Is a subject curriculum necessarily based on low level content which does not engage the intellect of the learner (Erickson, 2001)? Among other writers, Beane (1996) is a strong advocate that an integrated approach to school subjects leads to a more holistic education which enables the

development of skills and is more meaningful to students. Such approaches have led to a tension with the traditional subject centred approach which tends to focus on the acquisition of knowledge. The debate has further polarised between constructivism, aligned to the progressive camp, and objectivism, aligned to the subject centred camp which will be discussed in chapter 3.

There is a tension between 'traditional' teaching methods and curricula that promote instruction and finding the right answers and a process curriculum that might promote higher level, open ended thinking by using constructivist learning. There has developed a dichotomy between progressive schooling which involves integrated curricula, engaging schooling and the development of cognitive skills and the traditional subject centred curriculum which is concerned with the acquisition of knowledge and unfortunately failed many children, particularly from lower socio economic groups. However, is there such a dichotomy in reality? Cannot the subject centred curriculum be interesting, engaging and meaningful, allowing the acquisition of skills as well as knowledge? Is the real problem one of pedagogy and, if so, why is pedagogy in one model more engaging than in another? Can we seek a solution to this dilemma by exploring the ideas of Bernstein who suggests that weak framing (changes in the ways of knowing in the pedagogical relationship) is equated with weaker collection (curricula - that is to say as we move from specialised collection codes to more integrated codes)?

An investigation into the advantages of a subject based curriculum or an integrated curriculum raises questions about the purpose of education itself and the role of curriculum in the educative process and in the culture of education. For example, if we reject the subject based approach, are we rejecting the value of knowledge in favour of skills or dispositions where knowledge becomes a means to an end? Lewis (2006) summarises the importance of an institution's curriculum when analysing the decline in liberal education in Harvard University but his words equally apply to any school or college:

> The college curriculum - the academic program students follow to earn their degrees - is more than a rule book of requirements and regulations. It is an expression of what a college believes education means. As such, a decision to change the curriculum can precipitate a war of ideas about the purpose of a college. (p.22).

The curriculum thus raises questions about the purpose of education itself and it is worth briefly considering how the school curriculum emerged from philosophical and psychological needs.

The nature of the relationship between experience and knowledge has been a philosophical question since the time of the humanists and has shaped the school curriculum. Erasmus's knowledge of '*rerum*' ('things' by which he meant truths about human affairs and empirical knowledge) being dependent on '*verborum*' ('words') meant that instruction preceded experience or that the world should be approached with a mind ready to deploy the relevant concepts (cited in Woodward, 1964). It was a new kind of knowledge associated with Bacon, derived from common experience and lacking a commitment to empirical fact meant that direct contact of the senses with the external world i.e. experience as sensation, became a key concept. Bantock (1980) suggests that it is the nature of this relationship that has been a key philosophical question since the seventeenth century and still is. Is there a world 'out there' or is it a creation of the mind? Humanists had appealed to reason in order to 'discover the regularities of the external world' (1980, p.12) and during the Enlightenment thinkers such as Kant emphasised the importance of thinking for oneself based on evidence and for the mind to gain a degree of autonomy and to become directed towards what manifested itself as an objective truth. It was the development of autonomy to which the school curriculum began to concern itself – 'to assist in the process by which children are helped to make up their own minds' (ibid. p30).

Psychological and philosophical views of the mind came to determine what was to be taught in the school curriculum. Knowledge as seen to be the aspects of reality 'graspable by mind' (ibid. p.18) and the world as revealed to the senses interplayed with concepts of the mind to develop a new curriculum involving the nature of the mind on the one hand and the concept of experience on the other.

However we plan curricula, we must be aware as Brown (1994) advises that to design instruction we need to call on different theories of learning and development, such as those of Dewey, Piaget, Bruner and Vygotsky. It is due to the theories of some of these educationalists that some curriculum planners are calling for a more integrated approach to curriculum organisation and the teaching of learning and thinking skills. We must also be very clear about a theory of knowledge, for this is at the very heart of education. The pragmatist approach to knowledge has given rise to the so called progressive education in which knowledge is seen as constructed by the learner. The mind is no longer seen as a repository for knowledge.

We have at the same time in England and Wales an increasingly instrumental curriculum in which skills have a more important role to play than knowledge. This national debate between the traditionalists and the technical instrumentalists has also polarised the debate between the integrated and subject based curriculum, with the traditionalists being seen to support the subject based curriculum and the instrumentalists favouring a progressive and integrated curriculum in order to teach skills needed to provided people to fill much needed jobs in the economy. These tensions encapsulate the questions about the purpose of education in a modern society. Is education for the benefit of the students or society, - or both?

There is a further dichotomy in English Primary education at the beginning of the twenty first century. Since 1988, the government has introduced a national curriculum and its associated testing resulting in a results driven and accountability agenda. Can this be balanced with the

need to also develop a creative curriculum, cross curricular approaches and its seemingly associated creative and constructivist learning methodologies?

We will also discuss the link between curriculum and pedagogy which has become blurred in some educational settings as theoretical, abstract knowledge from the disciplines of knowledge has not been differentiated from the everyday knowledge that pupils bring to school with them by those who support a skills based curriculum which often focus on learning through experience. There is also the need to examine how the curriculum affects pedagogy. Bernstein's assertion that weaker codes, (integrating the separate subjects in the curriculum), leads to weaker framing will be discussed in chapter 3, section 3.

Moreover, are there any obstacles to integration? The answers to this question might lie on the one hand in a philosophical and epistemological discussion about the nature of knowledge, and on the other in a sociological analysis of the control of knowledge in our society.

The thesis will explore the motives for the school developing its curriculum and explain its growing suspicions with generic skills and a skills based 'creative curriculum'. It will explore the link between curriculum and pedagogy and will describe how the school developed its curriculum based on an existing model that is concerned with understanding and acquiring knowledge and skills. The following points will be explored:

- criticism of some current curriculum models in primary schools
- questioning of the instrumental approaches of government curriculum documents
- rejection of skills based curricula and the importance of knowledge being part of the curriculum
- the reasons for dichotomies between the 'progressive' curriculum and 'traditional' curriculum
- philosophical and sociological theories of knowledge to justify the curriculum

- the structure of knowledge in different fields to rationalise curriculum integration
- theories of Learning: What theory of learning/education is to be used to justify a particular type of curriculum
- models of integration that can lead to deeper learning

1.4 Methodology

The methodology used will be a case study using 'thick description' (Geertz 1973) to tell the story of how the school developed its curriculum and the ensuing effects this had on learning activities.

The thick description will tell the story of the school developing its curriculum. It will report the facts in the context in which they are set and will clearly relate the intentions of the participants. The Case will be theorised from epistemological and sociological perspectives in order to move to greater levels of understanding.

It therefore explores the motives for the school wishing to develop its curriculum, the curriculum's links to pedagogy and the school's growing suspicions of generic skills and the skills based 'creative curriculum' and how the school developed a curriculum based on an existing model that is concerned with understanding and acquiring knowledge and skills.

1.5 Situational analysis

1.5.a School context

Dubai English Speaking School, (DESS), is a well established school in the heart of Dubai serving the educational needs of the 'English Speaking People of Dubai', (School Charter 1967). It was established in 1964, originally by a group of expatriate business men who wished to provide a primary education for their children. By the time the research was carried out the school was a well established primary school following the National Curriculum of England and Wales with pupils in Year 2 and 6 sitting the associated SATs tests. There was a 5 form intake of 24 in each class, making the total number on roll 840. The make up of pupils' nationalities was c.75% British nationals with the remaining 25% comprising 42 other nationalities. The majority of pupils who left after Year 6 went on to English curriculum

secondary schools to study the Key Stage 3 programmes of study, followed by GCSE and A level courses. The majority of teachers were British with teaching qualifications from the UK, the exceptions being the Arabic teachers who taught Arabic language to all pupils and Islamic studies to Muslims.

1.5.b Organisational structure

Unusually for entities in the UAE, The school does not have an owner. It was established by Emiri Decree in 1967 and was overseen by an elected Board of Governors, made up from the British expatriate community. The board appoints a Head teacher who is in charge of operational affairs.

In 2005 when the writer was appointed Head of the school there was a Deputy Head Teacher who oversaw Key Stage 1. The newly appointed Head had been the Deputy Head in charge of Key Stage 2. He quickly appointed a Senior Management team consisting of the existing Deputy Head and three Assistant Heads. The Deputy Head line managed the three Assistants who were given responsibility for leading the Curriculum, Teaching and Learning and Assessment as well leading Year Group teams and Subject Leaders (see organisational chart Appendix 1).

1.5.c Policy climate

The case study provides details of the developments in an English curriculum overseas primary school between 2005 and 2014 and in particular, the curriculum developments from 2010 to 2014. Although the school was not bound statutorily to abide by the British laws pertaining to education, it had decided, along with many other English curriculum schools in Dubai to follow the National Curriculum. The school followed all British legislation regarding education as if it were bound by it like any state funded primary school in England.

The developments took place at a time when the wider context in which English primary schools operated was one of government control of curriculum and teaching through the National Curriculum which determined what was to be taught, (since 1988) and the Literacy and Numeracy Strategies (since 1998 and 1999 respectively) which determined how literacy and numeracy were to be taught.

Since the Thatcher government introduced the National Curriculum through The Education Reform Act of 1988. The original curriculum was almost entirely content based with little input from teachers in its formulation. Although there had been some changes to the curriculum it remained content based: The 'Three Wise Men Report' (Alexander et al 1992) recommended specialist teaching in the upper years of Key Stage 2 and more emphasis on the subjects of the National Curriculum. However in the first major review of the National Curriculum, Dearing Review of the National Curriculum in 1994 (Dearing 1994), concluded that the curriculum had become too unwieldy and recommended a reduction in the content of the curriculum and that one fifth of teaching time should be available for use at the discretion of schools. The Excellence and Enjoyment document (DfES 2003) made it clear that schools could:

> Take ownership of the curriculum, shaping it and making it their own. Teachers have much more freedom than they often realise to design the timetable and decide what and how they teach (p.4).

This document gave the school the impetus to seek different ways of delivering the curriculum. At a conference of local Head Teachers in 2003, the International Primary Curriculum was introduced by Fieldwork Education on the basis that schools following the National Curriculum now had the freedom to diversify whilst still teaching the discrete subjects.

There was much dialogue in the ensuing years both within school and among English curriculum schools in Dubai about curriculum development. Terms like cross curricular approaches, the Creative Curriculum and skills based approaches to the curriculum were commonly spoken about and it is in this paradoxical context of, on the one hand prescribed good practice (how to teach as outlined in the Numeracy and Literacy Strategies) and prescribed content of the National Curriculum and on the other hand the freedom to decide what and how to teach as outlined in the Excellence and Enjoyment document (DfES 2003).

2. Methodology

2.1 Introduction

In this chapter I outline why a case study was chosen as a suitable methodology for the research in a particular overseas educational setting in a British Primary School in Dubai, United Arab Emirates and identify the case as an 'intrinsic' (Stake, 1995) case study with no attempt being made to generalise the findings to other cases. The conceptual design of the research is explained as issues were identified and refined during the course of the research. In doing so, I identify some differences between quantitative research and qualitative research in which there is a search for complexities and understanding through description and I suggest that understanding can replace more traditional forms of validity, reliability and objectivity which are associated with positivism. I also suggest that understanding is a more appropriate term than validity. Triangulation is identified as a means of bringing understanding to the case by confirmation of description, data and interpretation. The nature of reflexivity is analysed and I acknowledge problems in the case of my own position. Finally, I explain how data was gathered, analysed and interpreted.

2.2 Determining the approach - The Case Study method

The research explores the development of an integrated curriculum and its effects on pupils' learning. It is a qualitative piece of research which uses 'thick description' and case study methods to relate the story of the school development. There is little attempt to generalise, with interest being on capturing the complexities and particularities of the single specific case and, as it was pre-selected, it will thus fit into the definition of Stake's 'intrinsic case study', (1995, p.3). This is one of Stake's categories of case study; the others being: an instrumental case study, (investigating a particular case to gain insight into a theory) and collective case studies which are groups of case studies undertaken to gain a fuller picture. Yin, (1984) and Merriam (1988) cited in Cohen et al (2000) also identify the following types of case study:

descriptive (narrative accounts, - Yin and Merriam);

interpretative (developing conceptual understanding to explain initial assumptions, - Merriam);

explanatory (testing theories, - Yin);

evaluative (explaining and judging, -Merriam);

exploratory (as a pilot to other studies, - Yin).

A definition of a case is offered by Stake (ibid.) and Punch and Oancea (2014). According to Stake (ibid. p.2), a case needs to have 'specificity and boundedness' and be a 'specific, complex, functioning thing', – an object rather than a process-, and Punch and Oancea (ibid.) recognise five characteristics of a case:

- A case is a 'bounded system' and the researcher needs to identify the boundaries of the case as early as possible – a child, a class, a school or a community
- A case is a case of 'something' which must be acknowledged to give focus, clarify aims and to determine how analysis can be carried out
- There is an attempt to preserve the wholeness, unity and integrity of the case and there thus needs to be specific focus which the research questions help define
- A case is conducted in real life contexts and produces an in depth account
- There may be multiple sources of data and data collection methods including observations, interviews and narrative reports

Cohen et al (2000) add that because a case deals with 'real people in real situations' (p.181), a more clear understanding can be produced than through abstract theories.

The objective of this study was to gain as full an understanding as possible of the case recognising its complexity and context and the main method used in this case study were observation of classes and of meetings. The developments in the school, including curriculum

developments were unique to the school and although other schools might be able to learn from our experiences, direct replication would be unlikely.

To focus on the particularities and specifics of the case might mean there is little chance to generalise which has been a criticism of the case study strategy but it is the purpose of the case study which will determine whether we want to generalise or not. In Stake's intrinsic case study in which a case may be worthy of a study in its own right, there will no intention to generalise but to understand the case in its entirety and complexity. However, we might identify in the research question anything that might be common to other cases which might lead to some generalisability which could be done through conceptualising and developing new propositions, or refining existing propositions, to those available in the literature, (Punch and Oancea op. cit.) It maybe that hypotheses come out of the research rather being inputs and that they link concepts to other analogous situations. Indeed, Cohen et al (2000) also make this point adding that 'a case study can enable readers to understand how ideas and abstract principles can fit together' (p.181). The case study can be a valuable research approach from which we can learn things from the particular case in its own right, which can conceptualise understanding for further study and which can utilise the 'tacit' knowledge of the participants in the study. Given the independent and individual nature of the school and the uniqueness of its development in the areas of teaching, learning and curriculum, a case study was therefore an appropriate method to understand and record that uniqueness without attempts to generalise findings.

2.3 Designing the research

The research was planned by first identifying a question which arose from a professional issue and a method for answering it was chosen, rather than beginning with an inquiry paradigm and developing a research question from it which are two methods which can be used to decide on how to begin a piece of research, (Punch and Oancea 2014). Following on from this logic, a research question was decided upon which then determined what methods

would best serve to answer it. The substance of the research thus had a logical priority over the methods and although a structure was introduced at the planning stage, the conceptual framework emerged from the field during the course of the study and the research question was constantly refined as Miles and Huberman (1994) suggest it should be.

The design of research requires conceptual organisation. Stake identifies *issues* to guide conceptual structure and recommends using issue questions as primary research questions to focus on complexity and contextuality and to draw attention to problems and concerns. However, we must be careful not to allow the phenomenon expressed in the issue to become more important than the case, for the issue will then become the research question.

In making an early identification of the issues, Stake advises that we distinguish between *etic* issues brought in by the researcher from the outside and *emic* issues which are the issues of the actors and emerge during the study from the inside. So the question which a researcher started with can evolve during the study and a tension can develop between the case and the issues.

The conceptual structure was thus provided for the case as issues were identified during the course of the school's journey:

- Why should integrated curricula increase understanding, motivation and engagement?
- Why have integrated curricula become so popular?
- Are the discrete subjects in a school curriculum, barriers to learning?
- Why are integrated curricula models associated with skills based learning?
- How does curriculum affect pedagogy (and vice versa)?
- What is the relationship between skills, knowledge and understanding in a school curriculum?

These issues were developed as the research continued and became:

- How can the organisation of the curriculum increase understanding in learners?
- How is pedagogy affected by the curriculum?
- How can a curriculum ensure that skills, knowledge and understanding are all ensured?

These issues were all related to the overall case which was to investigate the impact of integrated curricula on learning in a primary school.

2.4 Thick description, explanation and understanding

Stake (1995) identifies three differences between qualitative and quantitative research

1. Between explanation and understanding as the purpose of the inquiry
2. Between a personal and impersonal role for the researcher
3. Between knowledge discovered and knowledge constructed

With reference to the first difference, he asserts that in quantitative research, researchers look for explanation and control whereas in qualitative research they look for understanding the complexities. Acknowledging the interconnectedness between explanation and understanding, he emphasises that they are 'epistemologically different' (ibid. p.38). The distinction can be highlighted in the types of issue questions that the researcher identifies which can be causal, (looking for an explanation), or can search for understanding and can be a description without causal explanation. Qualitative research can use description and sometimes 'thick description' (Geertz 1973) to try to convey to the reader an empathetic understanding of the case and to understand human experience as chronologies rather than cause and effect. Punch and Oceana (2014) suggest that description focuses on what is the case whereas explanation focuses on why something is the case. However, in order to understand why, we need a good description and 'thick description' becomes a form of understanding. They see explanation as a complex philosophical concept. When it comes to human behaviour, explanation needs to take into account motives and intentions as well as social norms which can lead to a form of inquiry which is more interested in intentions, meaning and interpretations than in causes and laws.

This difference can be seen in the distinction between 'nomethic' explanation and 'idiographic' understanding as the purpose of the inquiry. A nomethic view seeks universal laws and is deductive, whereas, the idiographic view of inquiry is sensitive to local, case based meanings and directs attention to the specifics of a case. It sees knowledge as local and situated and understanding and interpretation are as important as description and explanation. The research paradigm is one of constructivism in which realities are socially based and depend on the individuals or groups holding those realities.

Whether we use description, explanation or understanding depends on the particular situation and the aims of the study which should clarify why as well as what. Qualitative researchers perceive what is happening and represent happenings with their own direct interpretations in order to search for understanding.

Qualitative researchers need to be in the field, making observations, subjective judgments and analysing whilst being aware of their own position and consciousness and defining dependent variables from their experience, (Stake's second point, above). By interacting with actors in the field and interpreting what is observed, the researcher 'comes to offer a personal view', (Stake 1995 p.43). In qualitative research the role of the researcher is one of ongoing interpretation in order to pursue complex meanings through thick description and 'experiential understandings' (Stake ibid p.43), rather than an explanation of cause and effect which is the focus in quantitative inquiry. Qualitative researchers interpret their experiences from their involvement and 'pass along an experiential, naturalistic account for their readers to participate themselves in some similar reflection' (Stake ibid. P.45). Subjectivity is not a failing but a key to understanding and misunderstandings should be eliminated by having effective methods and with the research being validated through triangulation. Thus, interpretation which might be seen as a weakness by some, according to Cohen et al (op. cit.) can be seen as a key feature and a strength of case study if understanding is realised through thick description.

This case study is about a substantive issue and is designed to explain a phenomenon through description. I have used thick description to enhance understanding by describing what is happening and using my own direct interpretation and narratives (Stake 1995) to describe the perceptions of the actors, that is to say, children and teachers. I have described the school's journey of development in which curriculum and teaching and learning were developed.

2.5 Reliability and validity.

The question of validity in qualitative research is bound up in this dialogue between subjectivism and objectivity, (and hence relativism) and the question is whether objective reality can ever be captured since we only understand something through its representations? If we accept that 'ontological objectivity', is impossible, (Eisner 1992) do we then need a transaction between objective conditions and personal frames of reference in order to make sense of the world, as Eisner suggests, or can there be a 'most objective' view as suggested by Phillips (1989 p.61) in which the most rational viewpoint prevails that has been subject to rigorous scrutiny to give it 'respectable warrant' (ibid. p.66)?

Stake's third point, above, addresses the question of subjectivity and asserts that qualitative researchers believe that knowledge is constructed; that is to say, human beings construct their understandings from their experiences and have their own versions of realities, or three worlds:

- an external reality of which we know nothing except our interpretations of how it stimulates us in certain ways. An external reality exists and views held by other people, especially respected people are held credible.
- an experiential reality formed out of those interpretations. The first reality exists and corresponds to our notion of it. Nothing can register independent of our constructed experience.
- a universe of integrated interpretations, our rational reality.

All three realities exist and it is the aim of research to construct a more clear second reality and a more sophisticated third reality in which understandings reached by individuals will be unique but will have much in common and will bear up under scrutiny. Stake's purpose for explaining these realities as a constructivist view of knowledge, is that the qualitative researcher provides the reader with raw material so that they can make their own generalisations through the researcher's description, or 'thick description' and justifying narrative description in the final report. As we have seen, thick description becomes a form of understanding, taking into account motives and intentions and an 'idiographic' understanding is the purpose of the inquiry, in which knowledge is seen local and situated as a search for 'truth' in the foundationalist sense is rejected and criteria are derived from community consensus. It sees knowledge as local and grounded with understanding and interpretation being as important as description and explanation. Texts can validate themselves, 'providing us with a deepened, complex and thoroughly partial understanding of the topic' (Guba and Lincoln 2008 p.276). Hammersley (1990), who Denzin and Lincoln refer to as a '*quasi foundationalist*' (2008 p.405), tells us that the purpose of ethnography is to map the '*perceptions and interpretations of participants*' (1990 p.55) and that the criterion of assessment is '*the extent to which the people's perspectives and/or behaviour and context are accurately represented*' (ibid. p.55).

We can thus see that traditional forms of validity, - internal and external validity, reliability and objectivity which are positivist views of the criteria for disciplined inquiry and which are consistent with the foundational view of knowledge, (Denzin and Lincoln 2008 p.404), have been replaced with new notions of validity in which 'understanding' is a more appropriate term and whereby, in place of objectivity, the researcher has to uncover other people's perspectives. Validity, therefore attaches to accounts not to data or methods, according to Cohen et al (2000). It is meaning that subjects give to data and inferences drawn from the data that are important.

2.6 Triangulation

Believing that there are multiple perspectives of the case that need to be represented also means that it is difficult to establish the best view. As researchers, we have to generate comprehensive and accurate description as well as the interpretations we want and therefore protocols are needed to ensure, we have 'got it right' which are called' triangulation' (Stake op. cit. p.107) and which validate the research in order to make subjectivity a key to understanding.

As we present thick description, we give information to the reader and sooner or later present interpretations and conclusions. When doing so, we must ensure that we describe the evidence and let readers make up their own minds and as we present evidence we often add our interpretation, and choose interpretive expressions that leave the reader comfortable with our interpretation. Each time we go through this process, triangulation may be needed. As we strive to bring understanding to the case, important data and claims will be triangulated. (Important here depends upon the degree to which a statement helps clarify meaning and to bring understanding).

Stake offers a summary of this process and the need for triangulation at different stages in it, below.

Data Situation	**Need for triangulation**
Uncontestable description	Needs little effort toward confirmation
Dubious and contested description	Needs confirmation
Data critical to an assertion	Needs extra effort toward confirmation
Key interpretations	Needs extra effort toward confirmation
Author's persuasions, so identified	Needs extra effort toward confirmation

Table 1: Triangulation. Source Stake (1995 p.112)

2.7 Reflexivity

The replacement of traditional versions of validity with new notions of the concept which are more subjective and culture bound present problems to researchers of how to acknowledge its reflexive character.

Reflexivity has been described as follows:

> Reflexivity is the process of reflecting critically on the self as researcher …. It is the conscious experiencing of the self as both inquirer and respondent. (Guba and Lincoln, 2008 p.278).

Ball (1990) takes this definition further by stating:

> Ethnography not only implies engagement of the researcher in the world under study; it also implies a commitment to a search for meaning, a suspension of preconceptions, and an orientation to discovery. (p.32).

Participant observers must understand the culture of the people they are researching and interpret the world in the same way as they do.

It is acknowledged that researching one's own institution has advantages as well as disadvantages. The advantages identified by Punch and Oancea (op. cit.) of convenience, gaining access and consent, the relevance of the research and having 'insider' knowledge must be offset against the disadvantages of bias and subjectivity, potential to present biased results because of vested interests, problems of generalisability and ethical issues involving consent and confidentiality.

McGhee et al (2007) also suggests that awareness of self will limit researcher effects on the data. This awareness of self includes the researcher's social identity, location, previous experiences and previous learning, the latter of which might mean that a perspective might be gained which is not derived directly from the data. This should be acknowledged by 'turning back' in order to bring one's initial reaction to conscious awareness. It is also part of the process of reflexivity to assess power relations in the research process and researcher accountability in the collection and interpretation of data, (Sultana, 2007). This should occur at the beginning of the research process and is integral to producing ethical research as it might influence what can or cannot be done in the context of the institution being researched and can affect knowledge production. The power relations and social relations place the researcher and the actors in different locations and hence findings will be interpretive and partial. By being aware of how others view the researcher the researcher will be able to engage in the research process in a more meaningful way, (Sultana ibid.) and congruence will be brought to the research process as the researcher separates and integrates his different roles, - as leader, educator, researcher and scholar, - by being reflexive, (Burgess, 2006).

The subject of the different roles of the researcher is taken up by Dwyer and Buckle (2009) who assert that being an 'insider', that is to say one who shares the role or the experience under study with the participants, gives the researcher some legitimacy and allows a more complete acceptance by the participants. It might, however, create subjectivity that could be detrimental to data analysis and collection as the researcher might respond to participants and analysis of data from a perspective other than that of the researcher. Being accepted by the participants might have advantages but might impede the research as a participant might make assumptions and fail to explain their experiences fully. The insider researcher might, due to his own enthusiasm for the subject under study, project his own needs onto the participant and prevent them from considering certain aspects of their experience. However, detailed reflection on the subjective research process with an awareness of biases and perspectives will reduce some of the concerns with the researcher being an insider if he is

committed to accurately representing the experience of the participants by being genuinely interested in their experiences and in being open and honest. The authors (Dwyer and Buckle) warn that we cannot fully occupy an insider position because our perspective has been shaped by our position as a researcher and therefore, we must remain reflexive at all times.

As the researcher, I was also the Head of the school and as an insider, might have had greater understanding of the issues but I may also have been prone to less objectivity than an outsider. As Head of the school, I was leading the developments that are related in the case and acknowledge the advantages and disadvantages presented by Punch and Oancea (op. cit.) and recognise that I may have gained a perspective not wholly derived from the data, due to my interest and reading of literature around these issues, as McGhee (op. cit.) warns against. It was important for me to be reflexive at all times due to my role as participant, leader and researcher and I was aware that when teachers spoke to me about their perspectives on the curriculum developments, they may not have given objective replies due to my position as Head Teacher.

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2.8 Data gathering

Most of the data gathering in this case study was through observations which were naturalistic, that is to say, they did not stimulate the behaviour of others. The observations were not structured and were thus more 'natural' and 'open ended' (Punch and Oancea 2014, p.197) and concepts for describing and analysing data emerged during the analysis with the observations thus becoming more focused over time allowing the larger picture to be kept in mind (Punch and Oancea ibid).

The essential parts of data gathering, according to Stake (1995) are: definition of the case, list of research questions, identification of helpers, data sources, allocation of time, expenses intended reporting.

He suggests as part of a set of guidelines for conducting a case study, that the researcher should identify the case and its boundaries, arrange access and a plan of action, anticipate key problems and define the role of the observer. Sources of data should then be identified, and the researcher must seek to understand what audience members know, sketch plans for a final report and identify possible multiple realities or how people see things differently. The next step is to gather the data from its sources, which in this case were from meetings of staff, observations of classes and meetings with teachers. The data should then be interpreted and more data gathered to replicate or triangulate it. The data should then be reviewed under various interpretations, links sought between programme arrangements and outcomes and tentative conclusions drawn. Deliberately seeking to find disconfirmation with the findings will add rigour. The final part of the process is to describe extensively the setting in which the activity took place, consider the report as a story and seek ways in which it might be incomplete and revise the reports after they have been tried out on representative members of the audience groups.

When gathering data which took the form of observations of pupils and attending meetings of teachers, as the researcher, I chose what to observe and why, based on the research questions and I made interpretations and inevitably drew my own conclusions or assertions and it was important to acknowledge that in doing so, conclusions can be speculation or theory drawn from understandings within us which result from our personal experiences or assertions from other researchers.

Although as researchers, our interpretations are likely to be emphasised more, we should try to preserve multiple realities and different views of what is happening as qualitative data have meanings directly recognised by the observer, (Stake ibid).

As an observer, the qualitative researcher should keep a record of events to provide a 'relatively *incontestable description'* (Stake op. cit. p.62) for further analysis and future

reporting and he should describe the physical context to give the reader a sense of 'being there', particularly so, in intrinsic case studies. The data collection was made with both interest in the, (situation) and the meaning of that behaviour as seen by the people under study as suggested by Punch and Oancea (op. cit.). The level of reactivity is affected by the role of the researcher as participant or non participant and how much intrusion there is in the situation during data collection.

My role as researcher was also as Head of the school and the person leading the developments that are reported. I was a participant in the research and also an observer, both as Head and researcher. I was also a teacher of one of the Year 6 classes that pioneered the curriculum. Observations were made which were naturalistic, not designed to affect the behaviour of teachers and pupils. It was made very clear that the purpose was to watch the pupils and to try to analyse their learning due to the curriculum that was introduced and teachers were asked if I could visit their classrooms. I was also invited by teachers into their rooms to observe the new curriculum in action.

A large number of observations were made of different year groups teaching the concept based curriculum. These were mainly from Year 1 and Year 5 and from the Year 6 which I taught during the course of 2011-12. I took photographs of children's work and classroom displays and make notes of examples when children showed an understanding of concepts. When teaching a Year 6 class, I discussed with the other teachers who were teaching parallel classes what I had observed and sought confirmation from their observations of pupils' behaviour.

The other primary source of data gathering was from meetings. These ranged from meetings of middle and senior leaders that I chaired and which were arranged in order to discuss the curriculum and its perceived effects on pupils' learning, to annual meetings of middle leaders

off site to discuss curriculum to regular meetings of year groups that I observed, again having asked if I could attend.

2.9 Analysis and interpretation

Analysing data doesn't begin at any particular point in the research. It is a process of making sense of what is observed and is an integral part of the efforts to make sense of things and create understanding.

The two ways in which researchers reach understanding are through direct interpretation of individual instance and through aggregation of instances and both can come into play in intrinsic case studies. Aggregation involves putting together information from different instances in order to aggregate impressions and is more associated with quantitative research. The qualitative researcher will concentrate on the particular instance then provide description to allow the readers to draw their own conclusions. Although there may be aggregation in case studies, they are not represented by variables and categories brought in from the outside and are rarely expressed in statistical terms. When the case is intrinsic direct interpretation and narrative description will take precedence over aggregation of data. Any meaning is presented as the researcher's interpretation and is subjective because that is the only way he can make sense of the case.

The qualitative researcher tries to make sense of observations and understand the case and any aggregated data will be secondary to this.

Both categorical aggregation and direct interpretation depend on the search for patterns, consistency, or correspondence, which is fundamental to the search for meaning. In trying to understand the case, we analyse episodes with a sense of correspondence and we try to find the pattern through direct interpretation, and ask what it meant. We should also re-examine

instances, triangulate them and question our first impressions and challenge ourselves as to whether data is adequate for the assertions we make.

2.10 Conclusion

I have described the research paradigm being used as a constructivist one using thick description to explain the developments in the school and render understanding. As the research does not intend to generalise its findings, it can be called an intrinsic case study, although understandings might be conceptualised for further study.

The research was designed by identifying a question which was refined during the course of the research as certain other questions and issues arose. Thick description is used to explain the case study which becomes a form of understanding concerned with intentions, meanings and interpretations, rather than causes and laws. The inquiry is therefore an ideographic one with attention focused on the specifics of the case.

Traditional notions of reliability and validity have been replaced by 'understanding', objectivity has been replaced by the researcher uncovering perspectives and triangulation is achieved through confirmations of observations. I have also addressed reflexivity and my own positionality as participant and observer as Headteacher of the school. Finally, I have explained how data can be analysed through narrative description and how the researcher can seek patterns through direct interpretation.

3. Literature review

3.1 Knowledge and the school curriculum

At the heart of debates about the school curriculum, are debates about the nature of knowledge itself for it is knowledge and its disciplines that are represented in traditional school curricula, albeit that they are not *directly* reflected the school curriculum. The bridging process between the two was called by Dewey 'psychologising' the discipline and by Bernstein 'recontextualising' (or 'pedagogisation'). Some modern designers of the curriculum have failed to allow concepts of knowledge to underpin the school curriculum which is becoming increasingly instrumental and skills-based (Muller 2009) and the notion of knowledge is seen as empty often referring to information easily accessible in the modern world through things such as the internet (Young 2009).

Although many government curriculum documents refer to both knowledge and skills as being important, (DfES 1999), in reality the curriculum is moving away from a knowledge based approach towards a skills based approach, as shown for example in the 2007 curriculum reforms for Key stage 3. Outside of the 'core' subjects of English, mathematics, science and ICT, there is little prescription for the so called foundation subjects and no prescribed time allocations. Many commercially produced curriculum models focus on skills rather than knowledge, for example the IPC and Quigley's (2011) skills based curriculum. This can be seen in the UK in the debates between the 'getting back to basics' approach advocated by some right-wing politicians and which represents support for the traditional conservative view which sees the curriculum as a given and the responsibility of schools to transmit that given knowledge, and the technical instrumentalists. The motives for the traditional view tend to be to promote a respect for authority and traditional values rather than it being based on any epistemological notion. In contrast to this are the 'technical instrumentalists' (Young 2008) who are motivated by the needs of the economy and thus education and knowledge, as it is taught in the school curriculum is a means to an end. In other words knowledge becomes instrumental. Polarisation of these debates has been

enhanced by other educational issues which have attached themselves to each side. Alongside the traditional conservative view of the curriculum is a support for the subject based curriculum which is associated with the transmission of knowledge. Associated with the instrumentalists are notions of cross curricular work and the progressive educational ideas of Dewey, rooted in pragmatism and constructivist theories of knowledge and ideas of child psychology associated with Piaget and Bruner. The philosophical dilemma which underpins this dichotomy, therefore is that on the one hand knowledge is taken as a given *'unrelated to the intellectual interests of the knower'* (Alexander, 1995) in which divisions are arbitrary and on the other, knowledge is 'related to the knower', (ibid.) which might give rise to relativism. Although the National Curriculum is based on a single subject approach, it identifies a number of 'key' skills such as communication, working with others, improving own learning and performance, problem solving and thinking skills (DfES1999) and allows schools the freedom to follow a cross curricular approach. This would appear to reveal a lack of curriculum theory on the part of the government, although the new curriculum (DfE 2013) dispenses with the key skills and indicates that knowledge domains are arbitrary.

Our interests here are with the influence of these two polarised views on the school curriculum. If these two opposing views of knowledge are at opposing ends of a spectrum, there are many views of knowledge in between, many of them overlapping with their assertions. To justify having knowledge in the school curriculum, it must be rooted in some reality.

3.1.a Theories of knowledge

There are different views of knowledge but the view of knowledge which predominated throughout western societies from the time of the Ancient Greeks was that of an absolutist conception of the forms of knowledge. This view went unchallenged in educational arenas until the twentieth century. There is now a tension in epistemology as to whether knowledge is absolutist and reflects a reality independent of the individual who has the knowledge or

whether knowledge is a socio-historical construction that only justifies concepts of a particular time. Knowledge is now often seen as a social construct which is dependent on socio-historical determinants. However, this has led to social relativism in which one belief can be seen to be no more valid than another (Young 2008).

Differing interpretations of knowledge have had an impact on what is taught in schools and it is therefore necessary to be clear about the main theories of knowledge:
Absolute knowledge, in which bodies of propositions have influenced the traditional view of curriculum. In this view, knowledge can be seen as timeless (a feature of Western civilisation) but this can re-ify existing disciplines and downplay practical skills.

Another view of knowledge is that it is a socio-historical construct. This has led to discussions about the arbitrariness of the school subjects and the adverse effect of subject curriculum on education. In this view, knowledge encompasses skills, attitudes, values as well as 'knowledge about'.

The rejection of claims to objective knowledge has had an impact on the school curriculum: teachers traditionally believed in standards of objectivity but because knowledge claims are now seen as relative to social conditions, suspicion is thrown upon that objectivity (Pring 1972). However, to say that truth criteria are open to socio-historical relativism is not adequate enough. Is reality a social construct that does not exist outside of the knower? The different views of knowledge had a direct effect on the school curriculum. The 'traditional curriculum' which centred around the transmission of knowledge through school subjects reflected the absolutist view of knowledge but a progressivism began to influence school curricula through pragmatists such as John Dewey and pragmatism according to Pring, (1972) was a by product of relativism.

There ensued a traditionalist - progressive debate which has engaged educational thinkers since the early part of the twentieth century when Dewey's ideas about curriculum were practised in schools in the U.S.A. This debate has become polarised between constructivism, integrated curricula on the one hand and school subjects and objectivism on the other. However, this debate can be seen as being not about knowledge but about how different *organisations* of knowledge can be held to represent conflicting models of society and this dichotomy has no real relationship to what schools are like or to how teachers teach (Moore 2000).

3.1.b Knowledge, realism and constructivism

These two conflicting views of knowledge provide a polarised debate about the school curriculum and educational thinkers in the twentieth and twenty first centuries: On the one hand is the view that knowledge is a reflection of the real world which is separate from individual minds on the other hand there is a view that knowledge is a socio-historical construct. This has led to discussions about the arbitrariness of school subjects and people who take this constructivist view of knowledge see that traditional school subjects have had a negative effect on young people's education since it has been associated, rightly or wrongly, but for no significant reason, with rote learning and memorisation. Young (2010 a) argues that if knowledge is seen as an expression of power relations then the curriculum is a political instrument for maintaining power relations. As knowledge expanded in the nineteenth century, the subject based curriculum became a key institution for the socialisation of the young. University subject departments and school subject associations became the social basis for guaranteeing the objectivity of knowledge and this social organisation of knowledge was taken as a given and 'underpinned the neo conservative defence of the traditional curriculum' (Young 2008 p. 32). This was associated with inequalities of access to knowledge and forms the basis of attacks on the subject based curriculum underpinned by attacks on epistemology (ibid). At the heart of curriculum debates then, is the nature of knowledge.

3.1.c Constructivism and relativism

Social constructivism is based on the theory that all beliefs and even facts are constructions out of our own sensory experience and that there is no independent reality. This theory purports that whether a belief is knowledge depends on the contingent social setting in which that belief is produced, what Boghossian (2007) calls a 'social dependence' conception of knowledge. Social constructivists emphasise the contingency of the facts constructed to show that they needn't have obtained if we had not chosen them, so there is a dependence on contingent social needs and interests when knowledge is socially constructed. All facts are mind dependent because only human minds are capable of describing the world. An objectivist will accept facts are mind dependent or description dependent such as money or a king because nothing could be thus unless it was described so by humans. Consequently in justifying believing something is true, evidence is constructed in ways that reflect our needs and interests. And in explaining our beliefs we must invoke our contingent needs and interests. Constructivism can thus, slide into pragmatism when dealing with rational explanations. Because different social groups have different social values and interests it might turn out that it is pragmatic and hence rational for us to believe one thing and pragmatic and hence rational for another group to believe another thing.

The field of constructivist thought is complex. On the one hand, all bodies of knowledge are conceptualisations of our world yet depend on our world and are thus are neither absolute nor arbitrary (Snook 1993) and on the other, all human beings have some cognitive ability to 'construct' meaning (Phillips 1995). It is helpful to distinguish between the constructivist domains of the public subject domains or the 'cognitive contents' (op. cit. p.6) of minds.

One of the implications of constructivism which non-constructivists take issue with is that constructivism leads to relativism and to 'equal validity' (Boghossian, 2007) in which one epistemic system and the beliefs created by it are as valid as another. The relativist then would not admit that there are absolute truths. However this is self refuting because this

statement is stated as an absolute truth in itself. The alternative, that the relativist intends his view to be only relatively true, allows others to ignore him for then it just becomes a report of what he finds it agreeable to say.

3.1.d Realism

In the classical view of knowledge facts about the world are independent of us and hence independent of our social values and interests. To objectivists, facts are obtained independently of us as human beings, for example, dogs, cats, electrons. A good example of this is how children learn language to confirm concepts. While children need to be taught the labels for concepts through language, they don't need to be told how to distinguish between the concepts themselves. For example a child can see a picture of a cat in a picture book and the next time she sees a cat she will recognise it as a cat rather than a flower. Thus humans have an 'inborn aptitude to categorise the world' (Deutscher 2010 p.12) which is not dependent upon social needs or interests. The objectivist does not have to claim that all facts obtain independently of us as humans, for the fact constructivist thinks philosophically that no fact can obtain independently of societies and their contingent needs and interests. Similarly the evidence that we might use in our justification for believing that something is true is independent of the contingent needs and interests of a community. Finding the evidence to justify a belief may be tied in with our social needs and interests but the fact that it *is evidence,* is not. It is important to emphasise that social factors may play a part in our pursuit of knowledge and we should not deny the relationship between knowledge and the contingent social circumstances in which it is produced.

3.1.e Relativist attacks on claims to objectivity in the forms of knowledge.

Traditional epistemologies were foundationalist in the sense of knowledge being built on an unchallengeable foundation. There were disagreements about what the foundations were: the Empiricists such as Locke believed human experience was the foundation whereas the Rationalists such as Descartes claimed it was human reason in which beliefs were scrutinised

in the light of reason. It is generally agreed now that there is no absolutely secure starting point for knowledge because nothing can be known with such certainty that cannot be revised in the future. This does not mean that there can be no truth or objectivity but it has opened up debates about the nature of objectivity. Although we can never be truly objective, views that are scrutinised, examined, challenged, criticised and debated by a community of inquirers can be said to have been viewed objectively and it can be objectivity produced through procedures which provides an objective test (Eisner 1992). Phillips (1993) citing Popper, Conjectures and Refutations (1968), views objective truth as being like the summit of a mountain, shrouded in clouds. The climber may have difficulty in getting there but the summit is still there just as an objective truth might exist. Phillips adds that it makes little sense to try to understand a situation, if we believe any version of that situation is as good as another. The answer is to accept the viewpoint as the 'most objective' (Phillips op.cit. p.60) as being the one that is most rational and to deny this is to 'undermine the very point of human enquiry' (ibid. p.61).

Although the view that bodies of knowledge are socio-historical constructs may be criticised by traditionalists as an extreme view, it must be acknowledged that a body of knowledge cannot be absolute, culture free or classless. These are the two extremes, the latter of which means that knowledge is divided into 'timeless subjects' (Snook, 1993 p.95) and the former meaning that the content of the curriculum can be decided by teachers. In this view skills and attitudes and values as well as 'knowledge about' take precedence and this has led a focus on teaching children rather than subjects.

Neither of these views is adequate in designing the school curriculum. There are a growing number of scholars, (Young, Muller, Moore, Maton and Rata) who believe in a social realist theory of knowledge based on the work of Vygotsky, Durkheim and later Bernstein. However before I go in to this theory more we need to explore the nature and evolution of the disciplines of knowledge to understand how they have socio-historic elements.

As human beings we see things and theorise to shape what we see then test our perceptions to verify them. The world we know is the world we perceive and although the world exists independently of us, knowledge arises as human beings attempt to control, explain and shape their world. Our knowledge depends on our perceptual equipment and as human beings we are not time bound, culture bound, class bound. Our conceptual equipment varies from person to person, place to place and age to age. This does not lead to relativism, it simply means that as individuals or groups of humans we have different interests and view things differently. The world has different properties which humans connect to. Different human interests and different properties in the world lead to different aspects of human knowledge. For example a hunter will see animals in a different way than a biologist. Snook sums up our relationship with the world and our acquisition of knowledge:

> The disciplines are conceptualisations of **our** world (and hence are not absolute) but they also depend on our **world** (and hence are not arbitrary) (1993 p.99).

As knowledge developed and procedures evolved in different activities these procedures for acquiring knowledge became the concern of different groups of people whose interests became connected to the knowledge and whose power depended upon it. This means that as well as an epistemological concern when discussing knowledge, there are also sociological concerns and a tension between the two exists. The disciplines and the school curriculum are rooted in historical struggles and their existence has as much to do with power and influence as epistemology. Thus the disciplines of knowledge and the school curriculum are socially based and context bound and embedded in academic traditions and communities.

Knowledge then, is social but this does not mean it is constructed by humans out of contingent social needs and interests. If we see knowledge as socially constructed and an expression of power relations, there is no objective basis for truth claims, so all differences can lead to a relativism that sees knowledge as the expression of experience by different

groups. The world exists independently of us and knowledge is produced as humans interact with their world. There is now a growing body of literature which recognises that knowledge 'has its own constitutive principles of autonomy from other social interests' (Young and Moore 2010 p. 27). Knowledge is emergent, is constantly developing and is the product of social conditions that do not wholly determine it, as knowledge becomes independent of the context in which it is produced (Young 2009 p.197). For example Boyle was a member of the upper classes and built a laboratory on his estate in which he discovered a law about the changing volumes of gas under pressure. However, in order to understand this, one does not have to understand anything about Boyle's social circumstances. The social basis of knowledge is unquestionable but it retains an epistemological basis for the kinds of autonomy specific to it (Moore 2000). Social realists claim that knowledge must be distinguished from experience and gets its objectivity from external validity as it transcends its social origins and makes connections with other contexts.

On the one hand we have relativists who reduce knowledge to people's lived experiences and on the other we have a realist approach to knowledge. If we do not distinguish knowledge from experience, there is no need for schooling. Children need to be able to enter the world of critical reasoning in order to understand reality and the world, both social and natural. The failure to distinguish knowledge from experience has resulted in numerous failed attempts by progressives to construct an experience based curriculum, according to Rata (2012).

How then does knowledge have an element of realism? The answer to this can be found in the idea of progression, or differentiality, of knowledge and in the theory of verticality as expounded by Bernstein.

A brief visitation to the history of knowledge in the medieval and early modern period will be helpful here. The birth of modernity in European thought can be traced to the seventeenth century and the Cartesian revolution based on the axiom that 'true' (not absolute) knowledge

was characterised by knowledge progression. This has been challenged firstly by Vico in the early eighteenth century who was said to be the first constructivist. In simple terms Vico's argument was that we can only fully know something not only because we know what it is but because we know how it came to be (i.e. through historical or genetic reconstruction). If we did not create it we cannot know it because it has no human history so the criterion of truth is if we have made something and truth becomes a human artefact. It was the scientific revolution of the seventeenth century which produced a challenge by the 'self styled Moderns', Muller (2006), to the existing worldview and the breaking of the dominance of the Trivium, (grammar, logic and rhetoric) – 'the Word', (Bernstein 2000) over the Quadrivium, (arithmetic, astronomy, geometry and music) – 'the World' (ibid.) which had dominated the Medieval universities. The Trivium created the inner, or the truly Christian self and in turn created a particular form of the outer (the World). The inner then was a necessary precondition for understanding the world which would be valid, true and acceptable in terms of the discourse of Christianity. Muller (2009) traces the distinction between the Humanities and the newly emerging Sciences to the distinction between the Trivium and the Quadrivium. In the sixteenth and seventeenth centuries the secular humanists deposed the scholastics as the custodians of the Trivium and therefore of the University and history, ethics and poetry were added to the Trivium. These humanists protected their traditions from the emerging mechanical and scientific knowledge with clear separation continuing between the 'liberal' and the 'mechanical' arts. With the development of scientific knowledge came the notion of progression towards a truth that was not determined by man or God, but could be discovered by man through rational methods. Man no longer had to rely on God for answers and his future was freed from the constraints of Christianity and the classical Aristotelianism which had become a dogma for a priori truth.

The idea of progression towards some universal truth was questioned by different groups, including the European romantics and in modern times by post modernists, relativists and constructivists. However it is the notion of progress and its role in a particular structure of

knowledge that redefined the debate and set it in the context of verticality or subsume-ability due to the intervention of Bernstein (1999) in his essay on vertical and horizontal discourses. Bernstein saw knowledge structures in the vertical discourse as being of two kinds: hierarchical and horizontal and they differ according to the degree of verticality each has. Verticality is concerned with how theory develops through integration towards ever more general propositions. It is an internal language of description and is strong in the natural sciences which are structured hierarchically, but weak in the social sciences which have horizontal structures. The importance of this intervention is summed up by Muller (2006):

> … encoded into Bernstein's principle of verticality are the terms of debate in the philosophy of science since the romantic revolt of the eighteenth century (p.13).

The idea of scientific knowledge progressing by the evolution of more abstract and generalising propositions thus gives it its realism. Hierarchical knowledge structures develop through the integration and subsumption of previous knowledge. The structure of laws are related to each other in order of their 'explanatory integratedness, that is, in strict order of their approximation to the truth' (Muller 2009 p.21). It is this integratedness that defines Bernstein's verticality. The non-realists like Kuhn (whose impact in the realist-constructivist debate was emphatic after his work on scientific revolutions in 1962), were wrong at least in respect of hierarchical knowledge structures. Kuhn, asserted innovation in science occurs by revolution or paradigm change but in denying knowledge progress in science, Kuhn is depicting all knowledge as being structured like Bernstein's horizontal knowledge.

An analysis of the structures of certain kinds of knowledge such as Bernstein's can thus help in understanding a particular theory of knowledge but there are many theories of knowledge which, as we have stated, overlap in certain areas making the field a very complex one involving not just abstract knowledge but also knowers and how they generate new

knowledge. This will have important implications for teachers in the pedagogic process as they reflect and generate new knowledge themselves.

If we have justified realism in scientific knowledge, what about the other forms of knowledge that make up the school curriculum? Bernstein's theory thus has dichotomies which we will see Maton (2006) try to resolve in an educational setting by enabling cumulative learning in horizontal structures. However, in the polarised debate which I have discussed above it does not distinguish between the different forms of knowledge: that is to say the 'know that' and the 'know how', as well as personal knowledge. The 'know that' knowledge or propositional knowledge refers to knowledge about facts and figures and refers to bodies of public knowledge external to the knower although as we have seen there is such a thing as 'fact constructivism' (Boghossian, 2007). In contrast to this fixed body of knowledge is the 'know how' knowledge, that is to say, procedures and skills or procedural knowledge. This becomes linked educationally with skills and competencies. Personal knowledge is tacit knowledge and an intuitive way of knowing that cannot be rationalised. It is more than the everyday knowledge which Bernstein talked about and the 'profane' knowledge of Durkheim. This is latent knowledge or sub conscious knowledge which might lead to a high level of understanding.

In the traditional subject curriculum in which all knowledge was seen as absolute and given, knowledge was seen as a commodity to be learned and Young (1971) claimed the 'curriculum as fact' as he termed the traditional curriculum, reflected the prevailing assumptions of practitioners. He seemed to be critical of teachers who taught socially developed knowledge but Pring (1972) warns us that what is socially developed has standards that cannot be socially ignored and he suggests that knowledge had its own existence independent of individuals who perceived or experienced it. Pring uses a very effective analogy to illustrate this. The socio historical development of language has allowed us to understand the concept of viscosity but this has only been socially possible because part of the world is viscous.

In other words, knowledge claims can be independent of how we conceive the world and thus provide limits of what we can know about the world. (Moore 2007). There is thus a realism about knowledge

> which can be differentiated from the meanings we construct to make sense of the world in our everyday lives; it is not created by learners or even by learners with their teachers; it is acquired (Young 2009 p.196).

The importance of identifying these different kinds of knowledge is that with the traditional, subject based curriculum, objectivity of knowledge was taken as a given but the alternative is that it is the result of power struggles between groups who would legitimise their knowledge and exclude others. This is the educational dilemma identified by Young (2008) and neither alternative is acceptable. There is still a tension between the objectivity of knowledge and its social and historical context which Hegel recognised. Hegel identified the self grounding of reason and knowledge and the difficulties of not being able to rely on tradition and divine revelation. This is still with us today in relation to the curriculum. Modernity for Hegel was self grounding and we are still grappling with it today.- for example what should be taught in school history? We cannot go back to tradition or god as to what to teach, we only have reason, knowledge and history. The Enlightenment thus changed everything, (Young 2008).

This is why Young determines that there should be a realism in knowledge claims whilst recognising their socio-historical origins from which it can take its objectivity and its claims to truth, although not in an absolute sense but being the closest we can get to a search for truth in much the same way as Popper suggests, (op.cit.). This kind of truth is therefore fallible and is pursued by communities of enquirers who are open to it being disproved (Young 2010 a). Social realism also demands that knowledge should be seen as distinct from experience 'which is all that experience has to draw on' (Young op.cit. p.14). The implications of this for the school curriculum are that it should not simply offer additional experiences to young

people. It also differentiates ‘everyday concepts’ from ‘theoretical concepts’ which is associated with the first distinction and draws on the work of Vygotsky. Everyday concepts are those that children bring to school with them and can be used as a pedagogical resource and theoretical concepts are those that can be learned through the school subjects. A further differentiation is that of domain differences that are not arbitrary but the product of historical processes and yet have an epistemological basis. From a realist perspective knowledge is also differentiated from the meanings we construct and is acquired by learners.

Indeed Moore and Muller (2002) argue that realism can close the dichotomy between positivism and constructionism or between progressive and traditional curriculum. They investigate Bernstein’s assertion that theory comes before research and in particular the engagement of research with an empirical problem in which it does not simply represent reality but enters into a relationship with it. They refer to Bernstein’s theory of languages and knowledge structures and investigate the relationship between an internal language of description and an external language which exists to develop a theory, help data extend theory to generate empirical possibilities and to thus provide the conditions for knowledge advancement (in the sociology of education) and which questions what they call the ‘anti theoreticism’ of progressivism which has been reinforced by post modernism and which in turn, has raised ‘relativism to a point of principle and lodge(s) knowledge exclusively at the level of experience’ (p.628).

Social realist writers have thus developed the ideas of curriculum and knowledge since the early part of the twenty first century and justify the learning of the theoretical concepts in the school subjects and the differentiation between experience and everyday knowledge on the one hand and this theoretical knowledge on the other.

Knowledge acquisition is at the heart of education and structures of knowledge need to be understood when making decisions about education and curriculum.

> The teaching and learning of knowledge, and the forms of language whose variations embody that knowledge, are defining features of education. To ignore knowledge is to diminish the promises, practices and social, cultural and economic consequences of education. More specifically, to ignore the implications of different structurings of knowledge is to be satisfied with universalist solutions that will continue to fail some learners in some communities, workplaces and societies (Freebody et al 2008).

The 'bad press' which knowledge has gained as it has become associated with passive transmission and rote learning can, and must be challenged and leads us to the next question raised: What is the link between curriculum and pedagogy? Why should teaching knowledge lead to staid and didactic teaching?

3.1.f Conclusion

I have discussed the polarised positions of the traditional curriculum and the technical instrumentalists and suggested that in order to justify any position, educationalists, or those who make decisions about the school curriculum, need to have an understanding of a theory of knowledge. I then explained that neither the traditionalists whose knowledge was based on absolute beliefs nor the constructivists who claims were open to socio-historical relativism could provide an adequate alternative for the school curriculum.

I have further explained that although knowledge is social it has a reality independent of the knower and becomes independent of the context in which it was produced. I have explored the idea of realism through the work of social realists and in particular the idea of scientific knowledge progressing towards more generalising and abstract propositions and have suggested that in other subjects in the school curriculum, there can be some similar cumulative learning according to Maton (2009). Whilst accepting that all human minds construct meaning, there is a realism about knowledge which can be acquired and we need to

differentiate between the cognitive domains of knowledge and the constructivist domains. Social realism accepts that knowledge has its roots in socio-historical conflicts but uses this as a basis for its objectivity and makes a distinction between school knowledge and everyday knowledge and experience. It also suggests that the socio-epistemic nature of the school subjects need to be understood before making decisions about the curriculum.

I have also suggested that in the polarised debates that have been explored, there is no distinction between 'know that' knowledge and 'know how' knowledge (procedural knowledge) that becomes linked educationally to skills and competencies.

We can thus justify a subject or knowledge based (not as fixed, absolutist knowledge) curriculum rather than a skills based curriculum and the nature of this curriculum will be discussed in more detail later in the thesis, alongside the place of procedural knowledge, or skills. As the curriculum developed in the case study school the focus came to be on conceptual and factual knowledge whilst not ignoring the procedural knowledge which was to be developed through the teachers' skills.

3.2 Dewey and the progressives

Much of the cross curricula/integrated curricula that schools engage in today have their roots in the progressive ideas of John Dewey and his theory of knowledge which treated knowledge as instrumental. It is therefore appropriate to examine Dewey and his theory of knowledge to see if it answers any of the questions that were raised as the school sought to develop pedagogy and curriculum and to make sense of some of the principles that have guided progressivism and the resulting integrated curricula.

3.2.a Dewey's beliefs.

As a pragmatist, Dewey criticised what he called the 'spectator theory of knowledge', building on the ideas of William James who claimed that 'knowledge of sensible realities thus

comes to life in the tissue of experience' (1997 p.106) and who, as an empiricist, rejected 'a priori' claims to knowledge. James explained experience as:

> a process in time, whereby innumerable particular terms lapse and are superseded by others that follow upon them by transitions which, ….. are themselves experiences… (ibid. p.111).

and goes on to distinguish 'knowing as verified and completed and the same knowing as in transit and on its way' (op.cit. p.115) in order to explain whether knowledge can exist before experience and if not, how there can be 'objective reference' (ibid. p.115).

Like James, Dewey rejected the 'spectator theory of knowledge' in which the knower was passive, like a spectator at a football match who does not affect the course of the game. To Dewey, the knower should be an active part of the process of knowing. In the football analogy, the knower would be part of the game, affecting its course and learning from it.

Dewey's beliefs about education was that education was a social function in that attitudes and dispositions should be developed which were necessary for the progressive life of a society and this cannot take place by the conveyance of beliefs, only by sharing in its associated activities. Man was disconnected from the primary subject matter of study in cultural products and education should be primarily about the continuous reconstruction of experience. As society has grown more complex, more skills are needed which are dependent on ideas from past experience and 'social life' becomes 'formulated for the purposes of instruction' (Dewey, 1916 p.181). Finally the bonds which connect the subject matter taught in schools with the 'habits and ideals' (ibid. p.181) of the social group, have become loosened and subject matter exists independently of any social values and study becomes the act of mastering it for its own intrinsic value. So, the subject matter of study in cultural products, especially the literary products of man's history, is not connected to the present environment

and their value is to increase the meaning of things with which people interact. Indeed, Dewey criticises the traditional role of schools in transmitting bodies of information from the past and in transmitting this subject matter, pupils must be simply receptive and docile. This subject matter is imposed from above and outside and is foreign to the capacities of young people.

> They (subject matters) are beyond the reach of the experience the young learners already possess (Dewey 1997 p.19).

Dewey thus wants to connect the learner with subject matter which does not represent 'infallible wisdom' (op.cit. p.182) but rather, can further new experiences. It should grow in the experience of the learner. Information acquired in school is educative only if it grows out of a question with which the learner is concerned and fits into his personal acquaintance. In other words, it must become part of his direct experience. Dewey sums up his meaning:

> The fundamental unity of the newer philosophy is found in the idea that there is an intimate and necessary relation between the processes of actual experience and education (op. cit. p.20)

The body of facts and truths statements and propositions are assumed to be knowledge is only so, for Dewey, if it has a place in the outcome of an inquiry or a resource for further inquiry. Traditionally disciplinary knowledge has been acquired by the learner depending upon his response to the teacher communicating it, or transmitting it. Dewey does value science or rationalized knowledge but knowing this specialised knowledge, if it is remote from ordinary experience, renders it abstract. It is experience that makes us aware of the difference between the 'certainty of subject matter and **our** certainty' (ibid. p.188). The young should thus assimilate scientific insight into their direct experience but experience must continue along an 'experiential continuum'. The experience must be immediately agreeable, have an influence

on future experiences and result in a plan for subject matter, methods of instruction, equipment and social organisation in the school. In further identifying which experiences may be of educational value, Dewey insists that experiences must involve the principles of continuity. (i.e. every experience takes something from those that have gone before and modifies the quality of those that come later) and interaction which recognises the interplay between objective (e.g. the learning environment) and internal conditions (i.e. the needs of the learner. Traditional education tended to ignore the internal factors that affected the experience). These two principles interact with each other so that successive experiences are integrated and what is learnt in one situation becomes an instrument in understanding and dealing with other situations. It is the role of the teacher to ensure a problem grows out of the present experience and that this arouses a quest for information and for the production of new ideas which in turn become the grounds for further experiences in which new problems are presented.

Dewey rejects knowledge of the past as an *end* of education but emphasises it as a *means* to understanding the present. Dewey's instrumentalism is further evidenced by his call for the school curriculum to take into account the needs of the community in order to improve life. The essentials of the curriculum are concerned with the experiences in which the widest groups share so that democracy can flourish. Education has social responsibilities to help people live together in societies and to develop social insight and interest rather than simply teaching the masses the three R's in order to help them find employment.

Experiences and their social application should be used to introduce scientific subject matter and its facts and laws. This will not only allow students to understand science itself but will also help them understand the economic and industrial problems of modern society. But this initiation into the subject matter of facts and ideas is only educative if teaching and learning is viewed as a continuous process of reconstruction of experience.

Another key component of Dewey's educational theory is inquiry. I have spoken about the importance of experience, above, as a cornerstone in Dewey's theory of knowledge and will now deal with inquiry as a major part of his theory.

Inquiry, he says allows 'logical forms (to) accrue to subject matter' (1938 p.101) and this enables an avoidance of the three mistakes that are characteristic of the history of objective subject matter:

- ✓ Tried and tested reflective conclusions are no longer dependent upon subjective states and processes

- ✓ Logic does not reduce the logical forms (of knowledge) to transcripts of the empirical materials that 'antecede' them. The forms originate '**out of** experiential material and when constituted introduce new ways of operating with prior materials, which ways modify the material out of which they develop' (ibid. p.103).

- ✓ Logical theory is liberated from the unobservable, transcendental and "intuitional" (ibid. p.103).

Thus, men are liberated from methods of inquiry which experiences of past inquiries show are incapable of reaching their intended goal. For an inquiry to be an inquiry, there must be an indeterminate situation that becomes problematic in the process of being subject to an inquiry. The problem, continues Dewey, through inquiry partly transforms the indeterminate situation into a determinate situation. The problem must arise out of an actual situation and not be self set or else it will not have the substance of a scientific activity. Both facts and ideas operate in the inquiry; the former locate and describe the problem, whereas the latter direct further operations of observation and bring new facts to light and organise facts into a coherent whole. The 'ideational or conceptual subject matter… stands for possible ways and ends of resolution' (ibid. p.117). The subject matter of logic is thus determined operationally.

In pursuing an inquiry, the inquirer is involved in the process of knowing, he is in transaction with it, rather than standing outside it like a spectator and it is the problem that determines what subject matter is used to make the indeterminate situation determinate.

In Dewey's theory of knowledge he was committed to overcoming certain dualisms (divisions, difference or antitheses) which were assumed in other theories of knowledge: divisions between different social groups, between men and women which meant the absence of fluent intercourse thus resulting in indifferent life experiences, each with isolated subject matter, aims and values. Dewey's theory assumes continuity. It was in his Theory of Inquiry in which Dewey (1938) attacked epistemological dualism with its (Inquiry's) emphasis on the situational, transactional, the open ended and the social (Schön, 1992).

The dualisms that Dewey is concerned with are:

- Empirical (everyday, practical affairs) and higher rational knowing (reality in an intellectual sense). Socially this dualism corresponds to the intelligence used by lower socio-economic groups as opposed to that used by the educated classes. Philosophically it corresponds to the particulars (experience) and the universal (general principles and laws which are above the concrete details). Educationally, the learner has lots of specific pieces of information, as in Geography, for example and also learn laws and relationships as in mathematics but these represent independent worlds.

- Knowledge as a body of truth, ready made, objective and knowing as something subjective, an internal process. The educational equivalent to this dualism is subject matter and method. Socially this has to do with authority in society and individuals being free to advance.

- Activity and passivity in knowing. Rational knowledge is kept apart from the senses, a distinction between laboratory exercises and ideas in books. Socially it reflects a division between those who are controlled by concern with things and those who are free to '*cultivate*' (Dewey 1916 p.335) themselves.

- Intellect and emotions. The emotions are private and are disconnected from intellect. In education we offer rewards and penalties in order for a student to apply his mind and rely on examinations and prizes rather than appealing to interest.

All of these dualisms culminate in the dualisms of knowing and doing, theory and practice, between mind as the end of action and the body as its means. All this is reflected in class divisions and produces the educational evil of reliance on examination marks, rewards and punishments.

Dewey is concerned with replacing these dualisms with continuity and his experimental methods

> of getting knowledge and making sure it is knowledge, and not mere opinion – the method of both discovery and proof – is the last remaining great force in bringing about a transformation in the theory of knowledge (op.cit. p.338).

Dewey's theory of knowledge is pragmatic as he sees real knowledge as being that which allows us to adapt the environment to our needs and to adapt our aims and desires to the situations in which we live. People's experiences and problem solving were essential for democratic education and any knowledge which was not part of this process was unimportant.

Given the points raised above, questions arise: How do we make up inquiries or how do they present themselves? How do we continue children's experiences into the formal subjects? We need a theory of experience according to Dewey.

In rejecting an objective approach to knowledge acquisition, Dewey sees the pragmatist approach to knowledge and learning as essentially an active engagement in practical problems as opposed to, in his view, a passive acceptance of academic facts. Knowledge was about an active engagement with problems of growth and was involved with practical activities based on experience. However, there is still a need to learn about aspects of the school subjects that are not available through experience and practical activities. All of a young person's education cannot be left to experience as education must be about 'the opening of children's minds to what goes beyond the present and the particular', (Carr 1988, p.155). Should knowledge be valued simply for its practical uses? Is not the theoretical knowledge of the disciplines in which the knowledge and the knower are separated, important in a child's education? And can the problems which the child encounters as a result of his experience enable the child to be initiated into the theoretic fields of knowledge and not just science but also literature, art, and history?

Indeed, Dewey saw all culture in reductionist and instrumental terms – as growth and problem solving thus denying the importance of scientific theory or works of art. In rejecting any knowledge which could not be put to use, improve social conditions or solve problems, it would seem to suggest that the science of Einstein was not important, not to mention the plays of Shakespeare. For Dewey, unapplied knowledge was 'cold storage' knowledge and was thus not relevant for truly educative processes.

However, human beings need to draw on knowledge of past generations, encoded in books and language to help them solve problems. They need the knowledge of past human experiences which has contributed to human success and cultural development. A child cannot only learn through his own solutions to his own problems. This attachment to present experiences and problems meant that history and literature were unimportant except in that they might throw some light on the present. Consequently, social studies is more important

than history and scientific and experimental approaches replace traditional subjects. However, we can question Dewey's 'cold storage' view of knowledge by distinguishing between knowledge and the methods used to transmit it. Learners do not have to be passive recipients of knowledge and be spectators at a football match. They can be involved in their acquisition of knowledge in an active way depending on the teacher's pedagogy. If part of the learning process involves questioning, discussing and constructing individual understanding and meaning the learner is *actively* engaged in knowledge acquisition.

The Deweyan theory rejects the view of education as initiating young people into the achievements and values of their ancestors in the human story and is in contrast to the view that the theoretical abstract knowledge of the disciplines will help young people to understand their world objectively and can be enlightening and transformative.

We can see how this approach can lead to curricula in modern schools which reject a focus on the abstract knowledge of the disciplines and can thus favour a project based approach in which knowledge of the school subjects become secondary to making sense of experience and in which learning skills, takes precedence.

3.2.b Principles underpinning progressivism

To understand how psychological factors began to influence philosophy and then the school curriculum, so they could predominate over the internal logic of the disciplines, it is necessary to examine briefly the development of the curriculum alongside the main philosophical movements since the medieval period. Tracing the development of the curriculum from medieval times, Bantock (1980) shows how humanist knowledge was based on the authority of the written word and how knowledge of words, 'verborum' came before knowledge of things 'rerum' in other words how instruction preceded experience. However with the beginnings of a breach in 'pure bookish humanist orthodoxy' (p.9) exemplified by Vives's 'Truth stands open to all' (p.9) knowledge was no longer stored in ancient scripts but could

result from the contact of mind and world. This became part of the empiricism of the seventeenth century and gave rise to a philosophical question that is still an issue today - was there a world out there or was it a creation of mind? During the enlightenment the mind began to achieve autonomy and reason began to replace memory as the source of educational endeavor. Experience and observation were to be the ways of learning new knowledge. Bantock identifies the 'centrality of mind' (p.18) in the designation of what is to be taught as the main focus on educational thinking and experience as the new determining factor in the delineation of the curriculum. Concepts like autonomy, reason and evidence became important and are matched by an acceptance of the forms of knowledge. But a 'revised curriculum' which developed out of the 'interplay of mind and world' (p.19) evolved. Practical educators like Rousseau believed that children could be educated from observation and experience of everyday things. However, Bantock questions how the mind might be led to structure experience and the 'meaning' of what is to be structured and so there is a complex relationship between the psychological powers of the mind and the interrelationships presented by world, although this seems to have been ignored by the practical educator. This brief historical interlude may highlight how mind and experience became important factors in the evolution of the curriculum and how the principles of progressive education came to be concerned with what was useful. Learning from life's daily exigencies was important and did not include mastering the disciplines which is what a more traditional and liberal education with its concern for excellence and autonomy of mind (free from everyday daily exigencies) was concerned with. Interest and need are the guiding principles of the practical or the progressive educator and there is thus an emphasis on motivation. In rejecting the disciplines of knowledge, it is a short step for modern educators to organise project or topic work and focus on a skills based approach to learning with its focus being on experience.

However, to build a curriculum based on experience fails to differentiate knowledge into the everyday and the conceptual knowledge of schools (Bernstein, 2003), or the 'profane' and 'sacred' (Durkheim 1995, cited in Young 2008) and means that the pupils will see the world

only in relation to their own interests. It also means there is no separation of curriculum and pedagogy because experience is not being used as a pedagogical tool but rather it becomes the basis for the whole curriculum. This is the first dualism, above, that Dewey was concerned with and ignores the differentiation of knowledge and the need to separate curriculum and pedagogy. Indeed, Bantock refers to progressivism as a methodology which exploits psychological discoveries concerning learning conditions. Wineburg and Grossman (2000) see the growth of interdisciplinary study as a pedagogical means of providing students 'synthetic frameworks' to understand the vast expansion of knowledge in the first part of the twentieth century and a response to fears of too much specialisation.

In studying an interdisciplinary topic, if we do not focus on the concepts of the various subjects, we run the risk of superficiality and teaching meaning only in relation to one's immediate interests and this is one of the concerns with pragmatism: - that truth and knowledge only have practical value.

3.2.c Conclusion

Much of cross curricular study is rooted in the beliefs of John Dewey, a pragmatist who rejected 'a priori' claims to knowledge and saw the value of knowledge as to how is was constructed through experience, rejecting the 'cold storage' view of knowledge in which the knower played no active part in its acquisition. Subject matter for learners should not represent infallible wisdom but should further new experiences and should be valued only if it was the outcome of an inquiry or the source of a new inquiry. Knowledge of the past as an *end* of education is rejected by Dewey and is seen as a *means* of understanding the present. Inquiry is a fundamental part of Dewey's beliefs and this involves the inquirer in a process of knowing so that he can know what subject matter is needed to make an indeterminate situation a determinate one.

Dewey was concerned with certain dualisms and it has been suggested that a curriculum based on experience alone fails to separate curriculum and pedagogy as experience becomes the basis for the whole curriculum rather than a tool. The idea that knowledge can be an objective body of truth but that learners can be actively engaged in its acquisition through teaching methods that demand questioning, enquiry, research and discussion to construct understanding and meaning has also been discussed.

Dewey's reliance on knowledge acquisition involving only practical experiences based on experience has been questioned and it has been suggested that a young person's education should transcend the parochial contexts of their lives. Further, Dewey's assertion that unapplied knowledge is not relevant for education has also been questioned because past knowledge can be used outside of a child's own experiences to enlighten him.

The development of how mind and experience become factors in the evolution of the curriculum and how progressive educationists became concerned with what was useful has also been analysed and a connection made between the ideas of Dewey and those of Rousseau who also advocated an education based on observation and experience of everyday things. Drawing on Bantock's suggestion that the progressive educator has ignored how the mind might be able to structure experience and the meaning of what is to be structured, I have claimed that in rejecting the disciplines of knowledge, it is a short step to focusing on topic work with an emphasis on skills.

3.3 The sociological arguments for integration

The development of the curriculum should necessarily based upon theories of knowledge and child development, (psychology of the learner) but there are also social and political factors which lead to change and/or ensure the status quo. Among others, Bernstein (2003) tells us that the school curriculum reflects the distribution of power in society and Kelly (1982) adds that when there are strong subject boundaries in a school curriculum, the organisation of the

institution is in the hands of the Head Teacher and Heads of department. Both of the authors cited agree that a change in the nature of the curriculum from subject specialist to integration will affect the pupil teacher relationship and the kind of pedagogical activities pursued. Indeed Young, (1998) suggests that in the nineteenth century the traditional school curriculum was a 'key institution for the socialisation of young people'. The relations between the school subjects underpinned the neo-conservative defence of the traditional curriculum, whereas on the other hand, because the traditional curriculum was associated with inequalities of access, this has underpinned attacks on the subject based curriculum from post modernists and progressives (Young 2008). Consequently, curriculum integration might be opposed by power groups in school and in society

3.3.a Disciplines and subjects

I have already discussed how a tension arose between the epistemological concerns and sociological concerns as the interests of different groups became connected to knowledge and the power it brought with it, how the subjects of the school curriculum have as much to do with power and influence as epistemology and how the subjects of the curriculum are socially based and context bound, embedded in academic traditions and communities.

The disciplines of knowledge do not directly translate into school subjects, but the general view is that school subjects do derive from the intellectual disciplines in the forms of knowledge. However, it is not so that once a discipline has established an academic base, there is a field of knowledge from which a school subject can take direction (Goodson 1995). Because some school subjects do not have a discipline base, they might therefore represent autonomous communities. Goodson gives the example of Geography as a school subject started by low status groups at school level and which, like science, has brought about a university base for the subject which results in a professional body of teachers with subject loyalty and students being initiated into a tradition. Because subjects and disciplines are in a

constant state of flux and are not timeless, changes in society will create new organisations for knowledge.

If we accept that the school curriculum is a social construction and should not be treated as a given, then it opens up scope for study which has been quite minimal in the history of education apart from some sociological studies since the 1960s and 1970s which saw the classroom as the place where the curriculum was negotiated and realised. However since the government intervention in the 1980s and 1990s, due to the perceived fall in standards associated with progressive teaching methods, subject integration and child centred pedagogy, and the concern with 'back to basics', school subjects have been reasserted as a '*given*'. Goodson, (1989), suggests that studies of the curriculum need to begin with a definition of the written curriculum and include studies or school process, texts and the history of pedagogy, since it underpins the basic intention of schooling and guides the institutionalised structure of schooling. He adds that the first step should be to focus on the 'impregnable fortress' of the school subject, (p .134).

3.3.b The sociology of knowledge

The tension that grew between the philosophy of knowledge and the sociological view of knowledge due to the procedures for acquiring knowledge and the power and interests that became dependent upon them and which I discussed above, permeates contemporary accounts of school knowledge in sociological studies. Bernstein asserts that classification of knowledge 'reflects both the distribution of power and principles of social control' (2003 p.202) and any attempts to change this organisation of knowledge will be resisted by the dominant groups (e.g. universities). High status groups acquire knowledge that is academic rather than technical and curriculum divisions can be seen as barriers to social change and to access to learning for some groups in society. They are also associated with elite institutions. The contents and relations of the subjects of the curriculum and the disciplines were the dominant form of the social organisation of knowledge. 'Codes' (curricula) developed which were

enshrined in institutions and academic organisations. 'These specialist forms of social organisation remain the major social bases for guaranteeing the objectivity of knowledge' (Young 2008 p.32). These organisations and the knowledge enshrined in them were taken as a given but they became associated with the inequalities of access to education of the lower socio economic groups and thus of the academic specialisation and the subject based curriculum which they represent and endorse.

The curriculum is associated with social change and is thus socially constructed (Moore 2000). Curriculum is important in society because what we know in many ways determines our identity and our identity as learners is determined very early in our educational lives (see Bernstein 2003, below). Thus school history is very much a social history and is never based only on educational theory.

3.3.c Attacks on the objective nature of knowledge

The sociology of the 1970s made claims that knowledge was socially constructed, was an expression of power relations in society (Young 1971) and that the curriculum was thus a political instrument used to maintain power relations. This led to a relativist view of knowledge in which tests for truth claims rested in society rather in an epistemological base. In this view of knowledge, there was no objective basis for validity, rather, differences in knowledge were seen as differences of experiences of different groups.

The school curriculum has developed since the enlightenment not only for epistemological reasons, but also because of controlling groups in society. It has been said to be the 'cultural product of societies' (Dewey 1938 p.19). If knowledge is socially constructed and is an expression of power relations in a society and in the school then the curriculum is a political instrument for maintaining power relations.

If structure of knowledge is an expression of the distribution of power then there is no objective basis of whether some types of knowledge can make stronger truth claims than others. All differences can be defined by powerful and powerless which leads to a relativism that sees knowledge differences as expressions of experiences of different groups (Young 2010 a p.11).

In the sociology of knowledge, new ideas about the nature of knowledge have developed and persisted and epistemology 'debunked' because they (new ideas) have 'social functions in society' (Moore and Muller, 1999), not for intellectual reasons, necessarily. Knowledge has been reduced to the interests of knowers which has led to relativism and has no implication for the kind of knowledge to be included in the school curriculum. "Voice discourses" reject epistemologies because, their proponents claim, only experience can be counted to rely on if something is true. They claim that powerful groups in society assert that their experiences should count as knowledge. Debunking dominant knowledge claims is a way for young intellectuals to assert themselves. This 'new sociology of education' (Young, 2008), is important for our purposes because it challenged the academic curriculum of the grammar schools, public schools and universities which had been constructed to preserve the status quo of dominant classes in society and which failed working class children. Although the legitimacy of knowledge and its association with the social position of those who produce it, is quite a complex phenomenon, nevertheless sociological critiques of knowledge (post modernism, Marxism and phenomenology) have served to reduce knowledge to experience according to young (2008). The social constructivist approach to knowledge has failed to provide the intellectual tools for advanced thinking as social knowledge and experience have become part of the curriculum. I will later put this into context when discussing Bernstein's vertical and horizontal discourses.

3.4 Bernstein's theories

3.4.a Classification and framing

One of the most influential writers on the sociology of the curriculum was Basil Bernstein who saw the school curriculum as a carrier of the power relations in society. Bernstein, (2003) asserts that the classification of knowledge reflects the distribution of power and principles of social control. (By classification, Bernstein meant the relationships between contents, not to what is classified). The traditional school subjects are an expression of these power relations with the dominant groups controlling the knowledge that is transmitted through the curriculum. Bernstein's classification and framing developed Durkheim's ideas of boundaries as the key social category separating types of symbolic meanings. Boundaries play a key role in developing learner and teacher identities. Boundaries are the social basis of people's identities and in the case of schooling of the identities that students develop as learners. Without such boundaries, learners can be trapped in their experience. (Young 2010 a).

A more integrated code will weaken these power relations and therefore a less stratified curriculum will be resisted as it undermines the privileges of the dominant groups (e.g. the universities which control the school curriculum). Integration to Bernstein means the subordination of a subject to some relational idea that blurs the boundaries between subjects. Resistance to changing classification strength is not for epistemological reasons but more out of socialisation into subject loyalty, a reflection of the sacredness of educational knowledge. The specialist subjects of the collection code develop deep rooted educational identities. As with weakening the code, institutionalising new forms of knowledge are regarded as attempts to break existing monopolies because,

> knowledge under collection is private property with its own power structure and market situation (Bernstein 2003, p.213).

These controls apply to both Durkheim's 'sacred' and 'profane' knowledge. To all but the most successful students, a deep understanding of a subject is never achieved and for the majority, socialisation into knowledge is socialisation in to the existing order.

Weak classification and framing will characterise social organisations in which the creativity of the individual is valued more than state regulation. In these organisations, negotiation of knowledge between teacher and learner, rather than transmission of knowledge is paramount. Thus weaker classification and framing allows for recontextualisation or transformation of knowledge, approaches to which, the social organisation of the school can otherwise conceal from the learner and thus affect what type of leaner or citizen the pupils can become.

Although there might be resistance to weakening of the collection code and moves toward a more integrated code, there will be advantages other than allowing people to break out of the existing social order. Weakening of the code will allow a movement towards a common pedagogy because the variations in pedagogy which we see under the collection code will not be allowed. Discretion of the teachers will be reduced in the integrated code whilst the discretion of the pupils will be increased. Teachers have become facilitators and schools have moved away from education in depth to education in breadth, as knowledge integration became a feature of many schools' curricula.

However, the situation becomes more complex because underlying these pedagogic principles are different ideas about the purpose of education, theories of knowledge and cognitive development.

3.4.b Integrated codes

Bernstein also offers a sociological perspective on the benefits of an integrated curriculum in enhancing students' understanding of school subjects. By integration Bernstein means that there should be a 'supra-content concept' (1971:2003 p.217) which focuses principles at a

high level of abstraction rather than the common scenario in cross curricula studies in which different subjects focus on a common problem. In an integrated code the deeper principles and the concepts of knowledge through which these principles are obtained, will be studied and the focus will be on the deep structure of each subject rather than the surface structure as would be the case in the collection code. This is so because the relational concepts determine the knowledge which is to be transmitted. Bernstein suggests that right from the early part of a child's formal education, the deep structure of knowledge (i.e. the principles for the generating of new knowledge) will be made available to him through the integrated code. This in turn will affect pedagogy which will now not focus on acquiring states of knowledge but with emphasising how knowledge is created, that is to say ways of knowing in the pedagogical relationship. This will affect the underlying theory of learning which will move from didactic to group or self regulating. We now have relaxed frames in which the rights of the taught are increased and private experience of teacher and learner enter the pedagogical relationship.

The introduction of integrated codes will be resisted because it will involve changes in the structure and distribution of power in schools and in the principles of control. The questions that need to be asked at this point are:

1. Why should we move towards integrated codes?
2. How can we move to the integrated codes with weak classification and weak framing?
3. How much movement has there been towards the integrated codes? These questions can be answered from a sociological perspective and also from the perspectives of epistemology and learning theory.

In answer to the first question, Bernstein himself suggests that changes in the division of labour have created a new concept of skill which is not context bound and relies on general principles from which diverse operations can be identified and that the late twentieth century requires 'conforming but flexible man' (ibid. p.225). It is now common for school vision

statements to talk of creating citizens for the modern world who are multi skilled and problem solvers and the curriculum reforms in England and Wales since 1988 have moved the curriculum more into the technical-instrumental interest with much emphasis on skills. Changes in technology, for example, have created new educational and professional fields such as genetic science and sub atomic physics. Environmental science has also brought together people from different disciplines and new technologies demand new skills. It has been suggested (Van Krieken et al. 2010) that progressivism or constructivist pedagogy have been used to socialise children into the educational code on the basis that weakening codes and frames and designing curricula around everyday experiences will help working class families to succeed.

In advanced industrial societies, which tolerate different beliefs and ideologies, there is a problem of making sense of changing symbolic systems and integrated codes with their stress on the unity of knowledge could be seen as a response to the problem of making sense.

The move to integrated codes symbolises a crisis in society's classification and frames and represents an attempt to alter power structures and principles of control thus, 'unfreeze the structuring of knowledge and change the boundaries of consciousness' (Bernstein ibid. p.226),

Bantock (1980) also sees the move towards seeking integrative devices as a response to developments in society. As society became more pluralist, educational experiences became more fragmented because of the increasing need for specialisation. Consequently progressivism and its focus on experiences at odds with the supposed artificiality of subject divisions became appealing.

In relation to the second question, 'How can we move towards more integrated codes?' we have seen how Bernstein has highlighted that there will be opposition to integrated codes and

this will not only be from within schools but also from universities which, in effect control the curriculum of secondary schools which in turn control the knowledge structures of junior schools which had to prepare pupils for grammar schools, at least until the abolition of the 11 plus examination. At that point, according to Bernstein, (2003 p.217) junior schools were more free to organise their own curricula in the same way that infant schools always had been. Junior school teachers, although able to specialise in a subject at college, tend to teach all subjects and are free from subject loyalty and socialisation. Specialisation has increased since 1988 and further since 1997 with the Literacy and Numeracy strategies and the notion of core and foundation subjects.

There have also been initiatives such as assessment for learning which have enable teachers to engage in dialogue with learners about their learning and to come to agreement about learning goals. This has undoubtedly led to a change in the pedagogical relationship despite government advice through documents such as the Literacy and Numeracy strategies which advocated formal whole class, didactic teaching.

An answer to the third question, 'How much movement has there been towards integrated codes?' is difficult to give accurately but there has been a definite move from many primary schools towards integrated curricula. The International Primary Curriculum has over 1,800 subscriber schools across the world and a survey by Muschamp et al (1992) reveals that many primary schools favour some form of integration. It must be stipulated at this point though, that many would not see integration in the same way as Bernstein sees it.

So we can see that changes to the school curriculum are not only made due to epistemological reasons but also sociological ones as school subjects are tied in with influence, power, traditions and communities.

I have already discussed how Bernstein's theory of verticality as a knowledge structure can explain how knowledge can have realism through its progression towards more abstract and generalising propositions. There are other parts of Bernstein's theories that cannot be ignored when designing a school curriculum and that is the idea of the differentiation of knowledge.

Bernstein (1999, 2000), provides a theory of the structure of knowledge and provides a theoretical framework which analyses knowledge in terms of discourses and structures and provides some implications for the organisation of knowledge and how it is acquired through the school curriculum.

3.4.c The differentiation of knowledge

Bernstein (1999, 2000) elaborated on Durkheim's sacred and profane knowledge with vertical and horizontal discourses. Bernstein developed Durkheim's idea of boundaries as the key social category separating types of knowledge and knowledge from experience. Two distinct types of knowledge are identified: horizontal discourses refer to knowledge which is segmentally organised and context bound. These discourses correspond to everyday or common sense knowledge which is oral and local.

Vertical discourses refer to school or official knowledge. These are general and explicit and can be expressed in hierarchical knowledge structures as in the case of natural sciences or in horizontal knowledge structures which are segmentally organised into specialised languages with specialised modes of questioning and specialised criteria of production and circulation of texts, in the case of social science and humanities. Horizontal knowledge structures within vertical discourses can have strong or weak grammars. Grammaticality is to do with engaging with the world through concepts by producing an 'external language of description', (L^2), which 'refers to the syntax whereby the internal language can describe something other than itself', (Bernstein 2000, p.132). An internal language of description, (L^1), 'refers to the syntax whereby a conceptual language is created' (ibid. p.132).

Verticality, a term coined by Muller (2006), is concerned with how theory develops and in hierarchical knowledge structures, it does this through integration towards more general propositions. Verticality has to do with the capacity of theory to integrate knowledge at levels of generality and abstraction. Verticality is the 'degree of integratedness and 'subsume-ability' of theory', (Muller 2006) and 'is expressed in bodies of codified knowledge … acquired … in accordance with the principles of recontextualisation and strict rules of distribution associated with specific subjects and academic disciplines', (Young 2008, p.148).

Horizontal discourses cannot generate vertical knowledge because they do not embody principles of recontextualisation and there are no rules that govern the acquisition and production of horizontal knowledge as there are in the production and acquisition of vertical knowledge.

Hierarchical knowledge structures in the vertical discourse (natural sciences for example) are characterised by integrating propositions and theories which operate at more and more abstract levels. Abstraction and integration in the vertical discourse can be achieved by elaborating more refined concepts and where this is most effective, the knowledge structures assume a hierarchical form and where this is least successful, they assume a horizontal or segmented form. In the hierarchical structures of knowledge, there is an integration of language which help with progress of this knowledge **(**Muller 2006**),** whereas in the horizontal structure of knowledge, there is an accumulation of languages which characterises its progress and thus restricts the level of integration and knowledge progress 'in the sense of greater generality' (Muller 2006). In horizontal knowledge structures the number of specialised languages means that here are no principles for linking them, although as with hierarchical knowledge structures, there are principles for recontextualisation and a shared set of rules for explaining phenomena.

In the horizontal discourse knowledge to be acquired is related through the functional relation of the segments or contexts to everyday life, not by the integration of their meanings or a co-ordinating principle. The pedagogic practice may differ according to the contexts and it is common competence that is acquired. In the vertical discourse the integration is made at the level of meanings not in the relation between segments. There is an institutional pedagogy of the vertical discourse and the social units of acquisition of this discourse are constructed by different groups and structured by principles of recontextualisation.

3.4.d The implications for curriculum of differentiated forms of knowledge

The differentiation of school knowledge and common sense knowledge is important when deciding on what sort of curriculum we should have in schools and how that curriculum is to be organised. This is also tied up with the theory of knowledge and arguments between constructivism and realism. Young 2008 sums up this position:

> because the world is not as we experience it, curriculum knowledge must be discontinuous, not continuous with everyday experience (ibid. p.82)

The difficult pedagogic issues that arise from this discontinuity can be overcome by looking at Bernstein's theory of recontextualisation, above.

Social knowledge that people possess before they attend school or acquire outside of school is important for teachers so that they can apply the curriculum to experiences in order to help with motivation, It can thus be a useful pedagogic device but should not be the major part of the knowledge children go to school to acquire. They must be initiated into the theoretical abstract knowledge of the disciplines. If not, knowledge will become located in the experience of the knower and there will be no separation of knower and knowledge. (Rata 2012). It is through disciplinary knowledge that people are able to transcend their context and, understand the present and imagine the future. Social knowledge cannot help people change

society. Children can thus enter the world of critical reasoning - the world of education. This critical thinking is an enlightenment heritage and is necessary for people to explain the world and change it. However, children of low socio-economic status were disadvantaged from acquiring school knowledge because of their restricted language codes (Bernstein 2003**).** Sociologists turned to Marxist interpretations of class inequalities being reproduced by education. The Western educational canon was blamed – that is the Enlightenment and its rational knowledge. Social constructivism provided an alternative in which all beliefs were seen as constructions out of our own sensory experience.

Pring (1972) criticised social constructivism because of its inescapable relativism but a related point is that social constructivism is based on an undifferentiated concept of knowledge. This means that in this epistemology, all knowledge, social, school, opinions, beliefs are treated the same, as they are expressions of social interests and come from a particular standpoint. Therefore from a social constructivist perspective, we cannot differentiate what kinds of knowledge should be included in the curriculum and therefore the curriculum can be used by different groups to promote their interests (Young 2008 p.165).

I have already discussed how social knowledge cannot enable young people to transcend their social contexts. The school's role is to enable this, 'not to enlarge the experiential world of the family' (Rata 2012 p.119). Children need to be introduced to the cognitive process through school knowledge in order that they can think objectively and to separate themselves from the subjective world of their own experience and thus move into the world of critical reasoning and educational achievement. Relativists, including social constructivists, deny the distinction between social knowledge and theoretical, school knowledge and because in social constructivism ideals, there is an over reliance on social experience as the content of knowledge, such knowledge is not only a pedagogical resource which can be used as a starting point for studies, or to motivate pupils, it becomes a part of the curriculum and curriculum collapses into pedagogy (Rata 2012, p.104). This becomes the co-construction of

knowledge by teachers and learners and thus the blurring of the distinction between curriculum and pedagogy has major implications for the type of knowledge taught in schools. In Bernsteinian terms, there is a failure in these instances to recognise that vertical knowledge cannot be derived from horizontal knowledge. Trying to integrate horizontal and vertical discourses 'denies students the epistemic access to each kind of knowledge, and as a consequence, it denies students social access to this knowledge. This is at the heart of the problem with … constructivism' Wheelahan (2007).

Differentiation of knowledge and experience is thus essential or else there is no need for schooling. Rejecting the differentiation argument has resulted in successive failed attempts of progressive educators who have tried to construct an experience based curriculum (Young, 2008).

A recognition of the difference between pedagogy and curriculum would help depolarise the constructivist – anti constructivist debate (Rata 2012). Realist approaches to knowledge which recognise the socio-historical construction of knowledge whilst avoiding the relativism and reductionism that arises when epistemology and sociology of education are seen as opposed rather than complementary can limit the traditional/progressive debate, (Moore 2000). Indeed, the social realist theory of knowledge developed from the work of Bernstein recognises that knowledge is the basis of education and that the production, recontextualising, teaching and learning of knowledge is what makes education what it is. It recognises that knowledge changes and is shaped by socio-historical determinants but that these can give it its objectivity, (Young 2008)**.** Knowledge is an object that emerges from social practices and is irreducible to them and this in turn can shape those practices.

Liberating, engaging and interesting schooling experience is not only wanted by constructivists (Rata 2012).

3.4.e Implications for curriculum of verticality and horizontality

Bernstein's theory helps reveal the effects of the structuring of pedagogic and intellectual discourse for social relations, organisation, disciplinary and curricular change, (Maton 2006), and has produced concepts to define learning and interactions in social contexts which can enhance more active learning opportunities for children. Bernstein thus provided a different way of viewing knowledge and its modes of change over time.

However, Bernstein appears to have presented a dichotomy when producing his vertical/horizontal discourse theory and the hierarchical/horizontal knowledge structures. How can there be any sort of integration between the two knowledge structures with one being a 'coherent, explicit and principled structure, hierarchically organised', (the natural sciences) and the other being a 'series of specialised languages, with specialised modes of interrogation and criteria for the construction and circulation of texts' (social studies and humanities) (Bernstein 2000, p.161)? Where do particular school subjects and learning experiences fit into the model? Is all learning in horizontal knowledge structures segmented or can learning in these fields be transferred across contexts and through time in a cumulative sense? Maton (2010) suggests that horizontal knowledge structures can be integrative and subsumptive at least within their own segmented approaches. Bernstein did not address how these forms of knowledge development can be realised in a curriculum or through students' learning experiences and it remains for others to address how curriculum structures and organisation can enable or restrict what Maton (2009) refers to as 'cumulative learning' in which knowledge can be transferred across contexts and through time.

In terms of curriculum development in which boundaries are weakened and there is a move towards more integrated codes, there is a need to look at cognitive skills as well as knowledge which can be learned through each subject. For example in History some of these skills can take on a hierarchical form. Working with primary and secondary sources requires an understanding that is cumulative through time. Also understanding the concept of time is a

hierarchical process in which today and tomorrow must be understood at a young age before moving on to understanding more conceptually complex ideas such as BC and AD.

To overcome the dichotomies in Bernstein's theory, Maton has proposed a framework to theorise the underlying principles of discourse, knowledge structures, curriculum structures and forms of learning. He does this through Legitimation Code Theory (Maton 2009) which involves the dimensions of specialisation and semantics, (semantic gravity and semantic density) and knower structures, (Maton 2006), that can help our understanding of how the structuring of educational knowledge can restrict or enhance learning across contexts by analysing the underlying principles structuring different kinds of theories and knowledge structures.

Bernstein's theory comprises dichotomous ideal types; legitimation codes and semantic gravity can overcome these limitations (Maton 2009).

3.4.f Knower structures

In Bernstein's theory, wherever knowledge is less explicit i.e. in integrated codes or horizontal knowledge structures, the basis for insight, recontextualisation and pedagogy become unclear, so what should they be based on, if not explicit structures of knowledge specialised to objects of study?

To overcome the dichotomies of vertical and horizontal knowledge structures, Maton has suggested that progress and cumulative knowledge building is possible in horizontal knowledge structures if we view intellectual fields differently. He argues (Maton 2006) that an educational field is more than a knowledge structure, it is also a knower structure and these concepts can be applied to both the fields of knowledge production and reproduction (curriculum), bringing the two into a single framework.

By investigating and analysing knower structures alongside knowledge structures, Maton (2006), show that humanities was integrated through classics, not through its knowledge or skills but through the dispositions or 'gaze' (Bernstein 1999) which classics gave to students. In a classical humanist education, an ideal intellectual was produced with certain personal attributes. This produced a social hierarchy because it was associated with certain social and educational backgrounds, (middle class, public school) and is defined by Maton (2006) as a hierarchical knower structure. This structure develops through the integration of new knowers and their recontextualisation into the hierarchy of knowers. The knower structure in the scientific culture was much more democratic and meritocratic, with people of different social backgrounds and is termed by Maton (op. cit.) a horizontal knower structure so that science could represent a series of segmented knowers. By studying knower structures, Maton asserts that they possess a principle for arranging 'actors and discourses into a hierarchy' (op.cit. p.49) and he thus provides another dimension to knowledge formation suggesting that the hierarchising and recontextualising principle might lie in the knowledge structure or the knower structure, or both.

Horizontal and hierarchical knowledge structures and horizontal and hierarchical knower structures thus produce four modalities of fields as knowledge-knower structures which describes the form taken by the intellectual and the educational field. The principles underlying these forms can be analysed in terms of legitimation codes of specialisation where each form is generated by a different code modality.

3.4.g Legitimation Code Theory (LCT)

3.4.g.i Specialisation

LCT can bring together knowledge structures and knower structures and can help advance Bernstein's theories in schools by further developing the underlying principles which structure knowledge and how they can have an effect on what happens in schools. Disciplines with horizontal knowledge structures such as the social sciences and history will, according to

Bernstein's theory, have weak possibilities for cumulative knowledge building (verticality) and weak external relations to data (grammars). Maton (2009) attempts an explanation as to why such epistemologically weak theories are so prominent as disciplines and school subjects. He suggests that an explanation can be found by exploring the place of knowledge and knowers.

As actors are positioned in a structure of knowledge and a structure of knowers, so they establish different forms of relations to these two structures: - an epistemic relation to the knowledge structure and a social relation to the knower structure. Each of these relations will have relatively weaker or stronger classification and framing and so the actors can emphasise the knowledge structure, knower structure or neither as the basis of distinctiveness, authority and status. Conversely, their identities are shaped by these two structures. The actors will have different messages or claims to legitimacy, as to what can be considered the dominant basis of achievement in the social field of practice and these languages of legitimation are analysed to assess their underlying structuring principle or 'legitimation codes' thus providing the means whereby the intellectual and educational fields are maintained or changed. Legitimation codes represent the 'settings' of the epistemic device' (Maton 2006 p.49) and whoever controls this can set the shape of the field in their favour deciding status and achievement in their field. Discursive practices are analysed to determine whether they emphasise knowledge code or knower code, both, or neither and these codes help 'excavate the underlying principles generating forms of knowledge' Maton 2009 p.46.

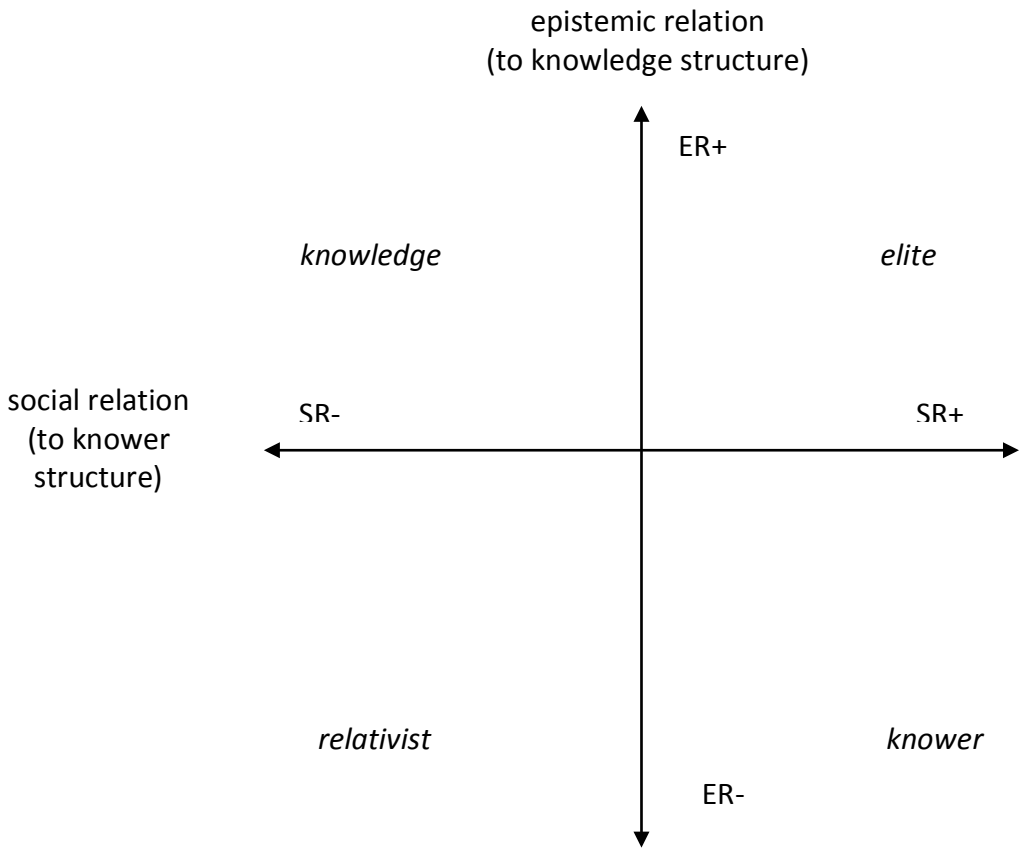


Figure 1: Legitimation codes of specialisation: source Maton 2006

In the four key code modalities shown above, a stronger epistemic relation is associated with a hierarchical knowledge structure.

An insight or claim to legitimate knowledge can be viewed as specialised by its epistemic relation, its social relation, both, or neither as shown in Fig 2, above and explained further below.

- Knowledge code (ER+, SR-) specialised knowledge, skills or procedures as the basis of achievement
- Knower code (ER-, SR+), the dispositions of the subject as a knower are emphasised as the measure of achievement which could be natural, cultivated or socially based

- Elite code (ER+, SR+), legitimacy is based on possessing specialist knowledge and dispositions
- Relativist code (ER-, SR-), legitimate insight is determined by neither specialist knowledge nor specific dispositions

New possibilities, (for example elite codes in which discourses emphasise both knower structures and knowledge structures and relativist codes in which neither are emphasised) can be conceptualised by integrating the analysis of knowledge structures and knower structures within the concept of the legitimation code and this conceptualisation expands the range of phenomena encompassed within the theory by integrating the insights of knowledge codes and knowledge structures (Maton 2006). Thus we can see that 'in vertical discourse, there is always a hierarchy somewhere' (Maton 2010 p.164). Where one field develops through knowledge building, another might develop through knower building.

Thus LCT of specialisation can help us analyse the underlying principles structuring curriculum guidelines, teaching practice and pupils' perceptions and help us to make more sense of the bases for knowledge building but does not help with understanding the basis for transferring learning across contexts.

3.4.g.ii Semantics

In Bernstein's theory, the relation between knowledge and its social and cultural contexts is a key feature and Maton, (2009) develops this idea to suggest that forms of knowledge can be described in terms of the degree to which meaning is dependent on its contexts: this, he calls 'semantic gravity', (op.cit. p.46). When semantic gravity is strong, meaning is more closely related to its context of acquisition or use; when it is weaker, meaning is less dependent on its context. This allows discourses, knowledge structures, curriculum structures and forms of learning as points on a continuum according to the different degrees of semantic gravity they have, thus removing the dichotomy mentioned above. Cumulative learning depends on

weaker semantic gravity, whereas segmented learning is characterised by stronger semantic gravity restricting the transfer of meaning between contexts.

One question that would require an answer and to which there is no clear answer at the moment is do all subjects in the school curriculum have the same requirements in terms of progression and sequence and if not, could this be because their parent knowledge forms are different? The relation of curriculum structure to disciplinary structure has often been avoided, (Muller 2006) and all too often the ways of representing verticality is presented as what teachers do in terms of cognitive demand and the focus is shifted from knowledge to knower with the progressives' curriculum ignoring sequence and progression in pedagogy, (Muller 2006, p.25).

We must be aware that a knowledge structure is not necessarily a curriculum structure and we would not describe the school curriculum as having a horizontal or a hierarchical structure. What then are the relations between knowledge structures and curriculum structures? The concept of recontextualisation demonstrates that a knowledge structure is not a curriculum structure but it highlights that there are issues to be explored in a school context about how already learned concepts can be integrated into present learning, ('cumulative learning' as Maton, 2009, refers to it, see below), particularly in subjects derived from horizontal knowledge structures. Recontextualisation does have limits as Bernstein's account of the pedagogic device on the 'evaluative rule' shows. If the criteria these rules construct, 'bear no relation to their parent knowledge in the realm of production, then schooling will undermine its role as a relay of specialised knowledge' (Maton and Muller 2006 p.28). Further work is needed on the relations between knowledge structures and curriculum structures but there are studies that show how Bernstein's ideas can be developed in the school context.

Morais (2002) has demonstrated in research on science teaching how weak classification and framing are essential for hierarchical rules and knowledge relations as well as for the level of

pacing (conditions where students have control over their time for acquisition) and for relations between spaces. Weak framing of pacing allows learners to acquire explicit evaluation criteria (strong framing) which regulate the extent to which explicit texts are made available to the acquirer. This, (the evaluation criteria), is the most important aspect of pedagogic practice to ensure higher levels of learning by all students. Conditions for weakening the framing of pacing can be produced when pedagogic practice has weak classification between contents of science (i.e. intradisciplinary). The children are introduced to higher levels of abstraction and to more 'meaningful science understanding' (op.cit. p.561). Weakening the framing of pacing and strengthening the framing of the evaluation criteria can also be aided by the weak classification of spaces (student – teacher and student- student) and in turn, a weak framing of the hierarchical rules allows children to discuss ideas and question and thus strengthen the framing of the evaluation criteria. Bernstein asserts that selection of knowledge is a social fact rather than a process related to the inner structure of the subject but it should still be possible to have weak classification between intradisciplinary discourses which emulate the hierarchical structure of scientific knowledge. Intradiscplinarity in science education allows students to acquire understanding of higher order concepts as suggested by Bernstein (2003).

Maton (2009) explores how Bernstein's theories of hierarchical and horizontal knowledge structures can be realised in a school curriculum. He distinguishes between a hierarchical and a horizontal curriculum structure. That is to say where learning builds on previous learned knowledge to take understanding forward into future contexts or whether knowledge learned is bounded from other knowledge and contexts. He calls these two types of learning knowledge, cumulative learning (the former) and segmented learning, (the latter). He shows how educational knowledge may restrain conditions for students to experience 'cumulative learning' (op. cit. p.44) and argues that segmented learning takes place because of a mismatch between aims and means. Although the aim was for students to learn higher order principles with an emphasis on knowledge, skills and procedures, (knowledge code), capable of

application in new contexts, (weak semantic gravity) little guidance was offered and the focus was on student dispositions, (knower code). They attempted to achieve knowledge code outcomes using knower code means. Nevertheless, he has shown that there is potential to overcome the problem of segmented learning by using the concepts of legitimation codes and semantic gravity and to provide a framework for addressing this issue and allow transfer of learning across contexts. Maton claims that these concepts develop Bernstein's model in two ways. Firstly they reconceptualise discourse, knowledge structures curriculum structures and learning as a continuum rather than as dichotomous ideal types and secondly, by exploring the principles generating these different forms. Exploring the role of knowledge structures in education is important and should complement other analyses such as pedagogic practice and different orientations to meaning that students bring with them to school which should be integrated so that concepts are not locked into specific contexts.

It is worth adding that theory can be produced in horizontal knowledge structures. Although it is difficult to discuss verticality in horizontal knowledge structures - the 'exceptionalism' of social sciences and humanities 'will dissolve in the global networks of the knowledge society' (Muller 2006), Moore and Muller (2002) have shown how sociology, a horizontal knowledge structure, has produced Bernstein's theory and hence horizontal knowledge structures in the vertical discourse can produce theory as can vertical knowledge structures.

3.4.h The implications of Bernstein's theories

Bernstein's theory has allowed for a means to characterise the social character of interactions which psychological theories of instruction do not allow for. When structuring school subjects, it is mostly philosophical aspects which take prominence over sociology but Bernstein can offer new ways to think about structuring the curriculum.

Bernstein's theory that a change in the educational code in a valid transmission of knowledge and a change in the organisational context involving changes in power and principles of

control, inspired the curriculum integration of the 1980s, (Paechter 2006). More empowered learners would be produced as students became increasingly involved in the learning process and student owned knowledge. Because of the integrated nature of knowledge in the outside world, interdisciplinary work would alter power/knowledge relations in the classroom and lead to more meaningful and transferable learning. However, in reality, the meaning of integration was not clear and poorly understood and furthermore, curriculum planning did not take into account the nature of power/knowledge relations or the students' strategies of resistance.

Two types of educational boundary are crucial for any curriculum theory - those between knowledge domains and those between school and everyday knowledge. Understanding the epistemological basis of domain differences as opposed to a merely conventional basis is crucial to analyse domain boundaries, learner identities and learner progress and to addressing the debate around multi-, trans-, and inter disciplinary curricula and the limits of modularisation and student choice, (Young 2009). A theory of knowledge differentiation presupposes that domain differences are not arbitrary but in some degree are the product of a process of 'reification and critique' (Young 2009). We must understand the epistemological basis for these differences as well as the conventional bases and that they are not arbitrary. This is essential to understand when debating how the curriculum should be organised. Indeed Bernstein, explores the epistemic basis of knowledge and how recontextualisation is necessary for the transmission of educational knowledge.

The importance of Bernstein's sociological framework is that knowledge has been reclaimed as an object of study, (Young 2008) and this has far reaching implications for the curriculum which at the present time is torn between the technical instrumentalists on the one hand and the neo conservatives on the other both of whom ignore any theory of knowledge to justify what is in the school curriculum.

3.3.h Conclusion

I have explained that curriculum development depends on vested interest groups and that, although the school curriculum derives from the disciplines of knowledge, it is a social construction, organised by dominant groups, can be a barrier to social change and is not a given. Curricula were enshrined in institutions and academic organisations but became associated with inequalities of access to education for the lower classes.

Claims that knowledge was socially constructed and was used to maintain power relations in society led to a relativist view of knowledge in which there was no objective base for validity because if knowledge was an expression of the distribution of power, all claims for validity as the experiences of different groups were equally valid. Knowledge became reduced to the interests of the knowers and epistemology rejected in place of experience as knowledge. This social constructivist approach to knowledge led to a questioning of the subject based curriculum of the grammar schools and social knowledge and experience became part of the curriculum.

Curriculum is important in society because our knowledge determines our identity and our identity as learners is determined early in our educational careers, according to Bernstein, by boundaries (the relationships between contents in the curriculum). Bernstein believed that traditional school subjects were an expression of power relations in society with dominant groups controlling the knowledge in the curriculum. Moving towards a more integrated code will weaken these power relations but will be resisted by powerful groups. It will value the individual more than state regulation and will allow a move towards a common pedagogy.

Bernstein believed that integration should involve a supra content concept which will allow the deeper principles and concepts of knowledge to be studied as pedagogy will emphasise how knowledge is created – or ways of knowing in the pedagogical relationship.

I have said the Bernstein's theory of the differentiation of knowledge is important for curriculum designers who should not ignore the difference between everyday social knowledge and school knowledge. If a school curriculum is too concerned with everyday knowledge, or experience, children will remain rooted in their experiences as their knowledge becomes located in their experiences and they will not transcend their parochial world. Therefore official abstract knowledge, or school knowledge, is important. Social constructivism, based on an undifferentiated concept of knowledge, means that we cannot differentiate what is to be included in the curriculum.

We have also seen how, in Bernstein's vertical discourse, there are two types of knowledge – hierarchical and horizontal. Hierarchical knowledge structures such as natural sciences allow propositions to be integrated at the general and abstract level whereas in the horizontal knowledge structures, the different languages restrict the level of integration and knowledge progress. This has produced a dichotomy and we can question what it means for the school curriculum. Can learning in horizontal knowledge structures in the vertical discourse be transferred across time in a cumulative sense? I have finally offered an approach to this question proposed by Maton whose frameworks of Legitimation Code and Semantic Gravity theorise the underlying principles of discourse, knowledge structures, curriculum structures and forms of learning.

However, questions about whether school subjects have the same requirements in terms of progression and sequence as their parent discipline and how already learned concepts can be integrated into present learning remain unanswered. Nevertheless a study by Morais (2002) has shown how weak classification and framing are essential for hierarchical rules and how weaker framing allows students to understand higher order concepts. Maton's study showed that there is potential in using Legitimation Codes and Semantic Gravity to overcome the problem of segmented learning.

Finally, I have explained the importance of Bernstein to curriculum theory. While his theories of social control through collection codes, inspired attempts at curriculum integration in the 1980s, the meaning of integration was not fully understood. Bernstein's theory of the differentiation of knowledge has brought knowledge back into curriculum debates which should address the difference between social knowledge and experience on the one hand and school knowledge on the other as well as addressing the epistemological basis for domain differences.

3.5 Generic skills and Learning to Learn

This chapter will explore questions in relation to the theory behind Learning to Learn and Assessment for Learning which were introduced into the case school. The nature of these initiatives will be examined in relation to theory, - or lack of it, - in order to justify the changes that were taking place in the school.

The case school had concerned itself with developing pupils' capacity to learn and developing independent learning through metacognition. However, the research in these areas is quite nascent and much work needs to be done by teachers and cognitive scientists to develop better guidance for the teaching profession about fulfilling these ideals. The questions which arose for me, as Head Teacher, when the school introduced this work were: Is there an ability to learn how to learn, what is the value of generic skills in this process and what impact would any change in pedagogy (teaching) have on the curriculum?

The Learning to Learn Campaign has involved a large number of schools in investigating whether a generic or generalised ability to learn can be developed so that children can learn content more effectively. The impact of such a movement would certainly have a major impact on classroom practice and brings into question just what is recognised as good teaching practice in English schools.

3.5.a Pedagogy

In England, there is no defined or recognised pedagogy in the sense of an empirically grounded theory of teaching, although recent research such as Higgins (2011) from the Sutton Trust and Hattie (2008) have identified key features of pedagogy which they deem to be effective - things like having high expectations, giving feedback to learners, making the learning 'visible' through objectives – but there may be a variety of teaching approaches within a particular school or across schools. Teacher training courses tend to typically spend little time on the psychology of the learner, what learning entails and how teaching can impact upon it. The move towards more practical approaches to teacher training through 'Teach First' and 'Schools Direct' will contribute to this. Action Research within the profession which can link theory and practice, making teachers' tacit knowledge explicit, is not widespread and so teachers use a variety of methods to teach. Some might use their tacit knowledge to transmit information to be memorised, others might be influenced by psychological accounts and attempt to find out what pupils know and plan strategies to help them develop understanding through a variety of activities which might include social learning. Whether teaching is based on any sound theory of learning seems to depend purely on chance rather than on specific training and professional development, according to Demos (2005). Many current initiatives in education are based on some theory - some are not - which might have a level of plausibility but which may not be based on educational research and proven in practice. The ideas of some theorists may be used whilst being misunderstood whereas teachers may use other theories or even ideas, without fully understanding them. Some theories themselves may not be sound. Two initiatives which the case study school embarked upon were Assessment for Learning, (AfL) and Learning to Learn (L2L). AfL is based upon theory and we shall see that it can be misunderstood and misused but the L2L based initiative is not based upon an educational theory. Other examples of popular initiatives are Accelerated Learning and Visual, Auditory and Kinesthetic (VAK), which have no theoretical base.

When engaged in the process of teaching, then, the balance that a teacher might make

between the different approaches might come down to personal choice or a response to government guidelines, for example those associated with the Literacy and Numeracy Strategies. It may not be based upon any knowledge about the nature of learning and might beg us to ask Simon's (1981) question of ' Why no pedagogy in England' or more recently, Alexander's (2008) question 'Still no pedagogy?'

The importance of pedagogy can not be understated when tracing the development of the curriculum, as we shall see in the developments in the school. Although in the time of centralised curriculum since 1998, governments initially left pedagogy to teachers, the Labour Government prescribed pedagogy in its Literacy and Numeracy Strategies of 1998 and 1999. Along with these strategies came guidelines on how to teach the two core subjects: four part lessons including whole class introduction, shared work, guided work, and independent work and a plenary. Alexander describes this a 'pragmatic' or 'political' pedagogy (2008 p.89) as opposed to a theory of teaching based on research and theory. However, a more indirect effect of this political pedagogy and of prescribing such stringent and broad rather than deep coverage was that teachers were disadvantaged when trying to personalise learning through such strategies as Assessment for Learning (which unintentionally actually defines good teaching practice or pedagogy, rather than being only about formative assessment. The Project, - King's, Oxfordshire, Medway Formative Assessment Project- which Black and Wiliam led with teachers was not designed in the light of theories of learning but did promote good learning practices). Black and Wiliam (1998) refer to content overload and the resulting need to move through the content at undue pace as a 'tick box' approach to learning. Consequently, we can see how teaching might follow a model of instruction rather than of encouraging thinking, because of this need for coverage. It is not impossible to develop independent learners who take responsibility for their learning under these circumstances but it is more difficult. Developing Assessment for Learning was thus restricted by the need for coverage and the resulting changing of teachers from creative professionals into technicians whose autonomy was undermined by government prescription of content and methods.

There was no recognised, defined pedagogy in English schools which brought:

> together within the one concept, that act of teaching, and the body of knowledge, argument and evidence in which it is embedded and by which particular classroom practices are justified and which could be seen in Northern, Central and Eastern Europe. (Alexander 2008 p.46).

Alexander claims that to define pedagogy as simply the act of teaching, leaving it unconnected to children, learning, assessment and curriculum is a narrow definition. It should be connected, to these as they enable teaching, but it should also be connected to school and policy which legitimates pedagogy and to community, culture and self which locates it. Whereas the core act of teaching is framed by space, pupil organisation, time and curriculum, pedagogy should be defined 'as both the teaching act and its attendant discourse of ideas, values and principles' (ibid. p.69).

There have been a variety of attempts to improve learning across classrooms in England since the 1990s. Some of them have emerged through a combination of practice and theory such as Assessment for Learning which developed from the work of Paul Black and Dylan Wiliam along with mathematics and science teachers, see above, and which identified aspects of teaching and learning activity which were said to improve both teaching and learning by focusing on the learner's needs ensuring that he would not be moved on by the teacher's need for coverage, until he fully understood the concept he was learning. Assessment for Learning thus has a strong evidence base and is closely associated with 'personalised learning', as learners reflect and evaluate their learning. We will see how teachers struggled to introduce AfL into their practice, through perhaps, some misunderstanding but also because of the difficulty in personalising learning for a class of twenty four children. However, I have seen some teachers do this effectively with good organisation, use of effective self and teacher assessment and an understanding of the next steps in children's learning.

3.5.b Learning to Learn

The concept of Learning to Learn (L2L) can be confused with thinking skills, problem solving skills and critical thinking, all of which are aimed at improving people's ability to learn. It has been helped by the Campaign for Learning which has provided a source of ideas and in particular the 5R's – learning dispositions or habits which can be developed by teachers. These were developed by Guy Claxton who tried to root his ideas in research but whose approach was not as focused as AfL and was rooted in different psychological sources. It enabled teachers to develop their own practices for L2L. It involved not just the concept of being able to learn to learn but also of developing certain learning skills, not least of which was metacognition – 'the capacity to monitor, evaluate, control and change how one thinks and learns' Demos (2005 p.7). However, as the campaign for L2L in schools progressed, so the definition of L2L also changed, from something associated with specific tools and techniques to something associated with effective learning habits and dispositions. It built on pedagogic and theoretical traditions of metacognition, Thinking Skills, self regulation, self efficacy and self esteem, (Wall et al, 2010) and focuses on what happens when somebody learns and how one can learn more effectively, involving reflection and strategic thinking in order to develop skills and dispositions for learning with the focus on thinking about learning, (metacognition), (op.cit.) The term 'metacognition' was first used by Flavell (1976) and referred to information processing activities which involve monitoring and regulating these processes. It is more commonly referred to as the ability to monitor and regulate one's cognitive and reflective processes and is therefore a crucial part of learning as individuals become more aware what they are learning, how they learn and how they can improve their learning. Learning to Learn meant reflecting on one's learning in order to further learning and metacognition is also a main feature of AfL in which the learners engage in self regulated learning, another construct that comes under the umbrella of metacognition, Wall et al (2010). There is some scientific and practical evidence for the place of metacognition in learning (op. cit.) and the idea that learners can take responsibility for their learning by choosing strategy and direction and involving peers is now widely accepted and acknowledges that learning is a

knowledge construction process that learners have to undertake themselves, (Black et al 2006).

The ideas of the Learning to Learn campaign embraced the concept that L2L was a construct that could be applied generally across all areas of learning in a school. This idea that L2L is a general skill that can be used in a variety of specific contents has been rejected by Black et al (2006) and Dearden (1976) but rather, along with DEMOS (2005) they see L2L as a 'family of practices that enhance one's capacity to learn'. Nevertheless, it is difficult to separate learning to learn from the learning process and we should encourage children to think about how they learn, (metacognition) and the process of learning, not ignoring the social elements of learning identified by Vygotsky, both of which can be taught and can help children to take responsibility for their learning. The Learning to Learn campaign in schools was organised by the Campaign for Learning (CfL) and introduced into schools in different phases and evidence suggests that pupils involved in the L2L project have developed positive habits and dispositions for learning, (Wall et al 2009).

Attempts to promote better learning and teaching through AfL and L2L including metacognition in the pursuit of developing independent learners who, through metacognition could become less dependent on the teacher and take more responsibility for their learning in terms of outcomes and evaluation themselves, embody sound practices.

3.5.c Generic skills

The the idea of generic learning skills such as problem solving, research, enquiry, communication, social and interpersonal skills, co-operation and team work with the aim of developing learning ability was closely associated with L2L. Such skills have a place in a curriculum designed to develop children's ability to learn but often they have become what a curriculum is to be grounded in and take the place of school subjects because they do not date like 'knowledge-based specifications' (Alexander 2008 p.148). This should not be allowed to

happen as it elevates having such a skill above knowledge, understanding and procedural knowledge such as analysing and evaluating which can be learned through school subjects. Without such knowledge, a skill becomes meaningless.

However, such initiatives like L2L with its emphases on generic skills that can used across all domains of learning have become associated with a skills based approach to curriculum development and with this comes a dichotomy between teaching these skills and learning knowledge as Alexander (op.cit) has highlighted. I would like to suggest that the generic skills that have been mentioned above can be used as part of teaching methods and are not exclusive of learning knowledge through the school subjects. Skills have to be taught and learned in some context so why can this context not be a school subject? However, all too often it is the need to develop the skill which can be applied in any content area that takes precedence. The reasons seem to be that 'knowledge is changing so fast that we cannot give young people what they will need to know, because we do not know what it will be' (Claxton 2013 p.1). However, later in the same article Claxton does acknowledge that the content of the curriculum is important, and that whilst learning that content we should help them 'to develop into more confident, curious and capable learners'. (ibid. p.2). The reality, though, is that curriculum content often becomes secondary.

One increasingly popular teaching guide is that produced by Chris Quigley (2011) which allows the KS1 and 2 skills as prescribed by the National Curriculum to be taught in six half termly themes or topics. The NC skills can easily be mapped into the topic areas in order to ensure coverage, once the content has been divided up into year groups to ensure each area is visited once in order to meet the statutory requirements. Indeed Ofsted encourage such interdisciplinary links and a focus on teaching learning skills in recommending positive curriculum innovation (Ofsted 2008). It also not uncommon for schools to develop these skills by having L2L lessons or thinking skills lessons thus teaching these skills in a context free manner unrelated to the knowledge content of the curriculum. Christodoulou (2014) asks

a very relevant question when discussing children's ability to communicate scientific facts and literary facts: 'But is there one all-purpose communication strategy that will develop expertise in both? The answer is no' (p.76). She goes further, referring to Willingham (2009), who says that being able to think critically about the causes of the Second World War does not mean somebody can think critically about a chess game. In other words, background or contextual knowledge is essential when learning skills. Christodoulou also offers a solution to the dichotomy between skills and knowledge: knowledge is a pre-requisite to skill. We should not teach skills in isolation or in an abstract manner, rather skilled performance comes from using knowledge which has been committed to long term memory. To develop this idea further, the various domains of knowledge not only have factual and conceptual knowledge that are unique to each but they have ways of knowing, enquiring and understanding and thus can provide the necessary 'skills' or 'abilities' for solving problems and understanding the world both in the past and the future. As Hirst (1969) says, acquiring knowledge involves

> mastering many logical operations and principles, applying the criteria of different types of judgements and so on (p.148).

Like Alexander (op.cit) and Christodoulou, (op.cit), Young (2008) questions whether such skills can be learned free from contextual knowledge. He also criticises increasingly instrumental curricula that fail to differentiate everyday experiential knowledge from the theoretical knowledge pupils can only acquire at school.

The idea of genericism has become more stated in government curriculum documents as an instrumentalism in the face of globalisation and knowledge economies and seems to be having more impact. Oates (2011) recognises that whilst other countries have developed curricula which allow for accumulation of knowledge and concepts, the English National Curriculum of 2007 (only affecting secondary schools), reduced the amount of concepts and knowledge to be learned and included generic statements within subject areas, such as

working with others, improving own learning and performance, problem solving and thinking skills to include information processing skills, enquiry skills, creative thinking skills and evaluation skills.

All schools must also promote the outcomes of the Every Child Matters report (2003):

- be healthy;
- stay safe;
- enjoy and achieve;
- make a positive contribution;
- achieve economic well-being.

The conclusion form this discussion of generic skills is that a curriculum should be based on knowledge in order to build understanding ***and*** skills. This leads us to the next question which was raised as the school engaged in its own development: What is the place of knowledge in the school curriculum?

3.5.d Conclusion

I have discussed the attempts by the Learning to Learn campaign to affect pedagogy in England where there is no defined pedagogy and where linking teaching to learning theory might rely purely on chance and teachers might adopt the ideas of some theory whether it be based on research or not.

Attempts to politicise pedagogy through the literacy and numeracy strategies ran in opposition to attempts to develop sound pedagogy based on practice and research, namely Assessment for Learning as the need for coverage meant there was little time to focus on the learner and metacognition.

Learning to Learn was a further attempt to develop pedagogy and learning by developing metacognition. Although I have rejected it as a construct that can be applied across all areas of learning, it does comprise practices which are beneficial to learners.

A skills based approach to learning which is associated with Learning to Learn through its own association with generic learning skills has been rejected as being unrealistic without contextual knowledge which is necessary as a pre requisite for skill acquisition which is in fact the procedural knowledge of the disciplines.

3.6 Pedagogy and curriculum

We have already seen that Simon (1981) and Alexander (2008) agree that there is no recognised pedagogy in England, based on sound theory which brings together teaching and a body of knowledge as there is in other European countries. The attempt at a 'political pedagogy' (Alexander 2008, p. 89) through the introduction of the Literacy and Numeracy Strategies in 1998 and 1999, it has been argued, was concerned with coverage and did not encourage a pedagogy which might result in deep learning. There is thus a connection between curriculum and pedagogy. Alexander (op. cit. p.47) has said that because of the emphasis in educational discourse in England on curriculum, pedagogy has become subsidiary to it and Young (2009) has expressed concern that curriculum and pedagogy must be separated in order to differentiate a child's everyday concepts and experience from the theoretical knowledge which is taught in schools. That is to say, pedagogy might involve the teacher taking into account the child's social knowledge and experience as a pedagogical resource but the curriculum should not. It (the curriculum), is concerned with the formal knowledge of the school subjects. Hirst (1974 a) is also concerned that 'objectives' and 'methods' (p.6) should not be confused in a progressive curriculum. If, for example, we wish children to be able to solve problems, this should be identified as an objective and not be confused as a method with too much emphasis on it in the curriculum. We should organise the curriculum in terms of content and methods in order that children are able to solve

problems. Similarly, and echoing Young (2009), Hirst warns about the need to separate experience as a pedagogical device from being a curriculum objective. Using experience may be one element of teaching. Young (2010 a) defines the curriculum as the conditions for acquiring new knowledge whereas pedagogy is activities involved in the processes for acquiring knowledge. The difference is summed up by Young (2010 a):

> Pedagogy necessarily involves the teacher in taking account of the non-school knowledge or experience that her/his students bring to school. In contrast, the curriculum, designed to stipulate non-school knowledge, does not (p.18).

The matter of curriculum and pedagogy can become confusing depending on how we define the curriculum. If we take Rugg's (1936) definition, that the curriculum is 'everything the students do', then learning experiences and teaching methods are part of the curriculum. The English National Curriculum of 2000 (DfES1999) identified Key Skills which should permeate the curriculum but they should nevertheless be identified and used only when it is needed by a particular group of children. Male (2012), suggests that 'approaching the subject disciplines through skills actually enhances children's learning of the subjects' (p.63). Whilst developing skills in communication, ability to work co-operatively, metacognition, problem solving, analysis, evaluation and inquiry may be important, they can be developed through particular teaching approaches and this must be identified in the curriculum as such. However, the kind of problem solving, inquiry and evaluation may be different in the different subjects. We must be mindful of the fact that each subject with its own logical demands offers something unique but there are also similarities between the disciplines as well as differences. Pedagogy is also needed to enable students to grasp the methods of thinking in a subject and to move to an abstract level of understanding. But because there are similarities and differences in the subjects at the level of basic ideas, concepts and principles, the logical demands do not only come from teaching methods. Because the subjects also make similar and sometimes different logical demands, if it were only teaching methods that

determined the logical demands, this can lead to demands for training in logical thinking and critical thinking free from subject domains. If the subjects were taught as Bernstein (2003) suggests by using a 'supra subject concept', the focus changes from learning the surface structure of a subject to learning the deep structure and how new knowledge is generated and it is this that will affect pedagogy. It is not the learning experiences (which Male 2012, refers to as the curriculum) which might involve solving problems and finding things out that determine the teaching approaches, it is the structure and methods of enquiry of the subject. Certain 'skills' as identified in the National Curriculum document (2000) and other curricula around the world may be learned as part of the logical demands made by the subjects and which will be realised through teachers' pedagogy. So, if subjects have different functions, it follows that there should be,

> distinct ways of learning in order to permit these functions to come into their own (Taba 1962 p.186)

Although curriculum and pedagogy are linked, and depend on each other, we must keep the two conceptually separate (Young 2010 b). The curriculum should be based on subject knowledge developed by communities of researchers and as these are not present in schools it should be left to teachers to take responsibility by using their own expert knowledge for ensuring concepts in the curriculum are understood by children. When curriculum designers include experience in the curriculum, they blur the boundaries between curriculum and pedagogy. Experiences can be a good staring point for studies and as such are a good pedagogical resource but they should not be part of a curriculum. Subjects then, should form the basis of the curriculum but they also have a pedagogic role in that they allow children to move from their 'everyday knowledge' that they bring to school with them to the 'theoretical knowledge' of the subjects and the disciplines of knowledge. Indeed pupils' cognitive development presupposes other areas of development. Having a critical attitude depends upon having relevant knowledge.

Taba (1962) recognises that organising the curriculum and teaching so that learning leads to 'disciplined thought' can be problematic. However she also recognises that there are 'special methods of thought and inquiry inherent in the various disciplines' (p.179) which can be mastered if the curriculum is organised around the basic principles of the disciplines. This would mean different methods of teaching but we should be mindful that each subject, if teaching allows for an introduction to their own methods of inquiry and logic, will make different demands on pupils which are not determined only by methods of teaching. Each form of knowledge:

> ...involves the development of creative imagination, judgement, thinking communicative skills etc. in ways that are peculiar to itself….. (Hirst 1974 c p.38)

If differences in the demands made were solely due to teaching methods, it follows that any subject can develop the same type of thinking, the same skills of analysis or creative thinking and thus generic skills can be taught context free. This has been rejected earlier.

If the statement of content in a curriculum sets out what is to be learned as a list of propositions, simple didactic teaching methods might suffice to fulfil the requirements of the curriculum. Restructuring the content by setting it out in terms of themes or projects might prevent teachers from using didactic, 'chalk and talk' type teaching methods. However, care must be taken to ensure that learning is significant by identifying specifically what is to be learned. The structure of the curriculum does not need to mirror the disciplines of knowledge but whatever structure or organisation is used, the concepts and principles of knowledge must be learned. These are related to each other in the subjects and disciplines and are acquired through pedagogy and so education is concerned not only with what we know but our manner of knowing. This idea is summed up by Rata:

> Children who do not acquire the cognitive processes and dispositions of abstraction and objectification, that ability to separate from the subjective world of their own experience, are restricted from moving into the world of critical reasoning and, hence, from the world of educational achievement (2012 p.119).

And Hirst (1974 a):

> Only by instructing, conversing, correcting, indicating and so on can pupils by practising, listening, discussing, experimenting, come to understand, think, act and feel for themselves at levels quite beyond those of their prior personal interests and the demands of daily life (p.8)

The question of how the nature of the curriculum affects pedagogy is related to the question of what knowledge is most worthwhile for students to acquire and to the characteristics of the disciplines of knowledge from which the school subjects derive. Disciplines have a bank of factual information which should be learned. For example the Battle of Hastings took place in 1066, 6 plus 4 equals 10, two molecules of hydrogen and one of oxygen make water. Disciplines also have a method of inquiry, a strategy for acquiring knowledge and understanding principles and concepts which result in the development of 'skills' and disciplined habits as well as the acquisition of a fund of information. There has often been a conflict between these two characteristics of a subject, although it is recognised in the Rose Review (QCDA 2010) that 'knowledge, skills **and** understanding' (own emphasis), are important.

It is often the case that one has been emphasised to the detriment of the other. If factual information is only important, it raises the question, what facts should children learn? If, on the other hand, establishing 'disciplined habits necessary for the discovery of new knowledge' (Downey 1960 p.64), questions are raised about whether a particular subject

induces a certain type of mental discipline or skills such as critical thinking, problem solving and the capacity to understand methods of inquiry. Does the content determine what these processes are? If the structure of a subject does, then no matter how it is taught, a 'disciplined intelligence' (Taba 1962 p.60) can be achieved by studying a subject and cross curricular planning can be rejected.

On the other hand, it can be argued that the educational impact is brought about not by the subject itself but by the teaching and learning activities brought about by the teacher. This view can be interpreted in an extreme way in that some argue therefore that school subjects have no specific functions and a skills based approach to schooling is justified because any subject or topic can have an impact on cognitive processes such as problem solving or critical thinking. However, if we accept that each discipline has its own method of inquiry and that each subject can therefore develop different cognitive processes and 'thought systems' (Taba, 62 p.174), then the disciplines, reconstituted in schools through subjects and pedagogy, are important in intellectual development but not by a 'passive mastery of content' (ibid. p174). This suggests, therefore that pedagogy, methods of teaching and learning are important in developing an understanding of the subjects and their principles and concepts but obversely, to gain a full understanding of the disciplines, of deriving fundamental ideas and applying them in new contexts, a different method of teaching than didactic transmission of facts is needed. Being exposed to the kind of thinking in a particular subject might not be enough for pupils to grasp the methods of thinking in that subject and so creative and active teaching methods may be needed.

In order to understand generalisations and principles of knowledge, pupils need to be engaged in activities in order to construct their own personal meaning and as the focus changes to understanding the deep structure of knowledge, rather than its surface features, and pedagogy will now emphasise how knowledge is created, that is to say ways of knowing and creating new knowledge in the pedagogical relationship (Bernstein 2003). This might involve inquiry,

questioning, discussing, analysing and summarising. These activities should be carefully organised by the teacher for the learners to understand the concepts and principles of knowledge and then to arrive at generalisations. According to Erickson and Lanning (2014), it is only when understanding is at the conceptual level that transfer can take place.

The distinction between curriculum and pedagogy was seen by Dewey (1916) as a dualism. He saw the tension between knowledge as a body of truth, ready made and objective, and knowing which is subjective and an internal process as being represented in education by subject matter and methods. Another dualism for Dewey was that of activity and passivity in knowing. Dewey's theory of knowledge is that knowledge which is traditionally taught in schools is static. It is other people's knowledge,– the propositions and statements are seen as knowledge 'independent of its place as an outcome of inquiry and a resource in further inquiry' (1916 p.187). To be real knowledge it must have a connection to the on going experience of the learner. For Dewey, the experience of the learner should not only be the context for beginning formal education but the continuity of experience, the 'experiential continuum' (Dewey 1997 p.28) was also necessary so that 'present experiences' can be selected 'that live fruitfully and creatively in subsequent experiences' (ibid. p.28). However, Dewey acknowledges that to put this into practice is challenging and that a coherent theory of experience is needed (Dewey 1997).

The question of this dualism between curriculum and pedagogy is taken up by the social realists, notably Rata (2012) and Young (2009). Recognising the difference between social knowledge and experience, and the more formal knowledge of the school disciplines, (as Dewey does), Rata suggests that if there is an over reliance on social knowledge as the means and content of the curriculum, this knowledge becomes a pedagogical resource and the main resource for the curriculum, so pedagogy and curriculum become blurred. This has important implications for what is taught in schools and it is the conceptual knowledge which can be made known through the school subjects which helps people to explain their world

objectively for 'that knowledge has its own constitutive principles of autonomy from other social interests' (Moore and Young, 2010 p.27). This approach to the school curriculum and specialised knowledge had become associated with didactic teaching methods and criticism of it has become associated with those who advocate a learner led approach to the curriculum. Dewey talks of 'Formal instruction' that 'easily becomes remote and dead – abstract and bookish' (op. cit. p.8) and the notion of education 'which identifies it (formal instruction) with imparting information about remote matters' (ibid. pp.8-9).

Building on the work of Durkheim, who differentiates between sacred and profane knowledge, and Bernstein who differentiates everyday knowledge and experience (horizontal discourse), from formal school knowledge (vertical discourse), Young claims that if learners do not have access to formal school knowledge, and do not learn to explain the world objectively, they can remain 'fixed in their experiences' (Young 2010 a p.17). The difference between knowledge and experience is seen by Young as essential as justifying formal schooling. Without this differentiation, there would be no need for formal schooling as it would be difficult to say what to include in a school curriculum, or indeed, to say what formal education is for and the rejection of the differentiation arguments is why progressive educators like Dewey have failed to successfully construct an experience based curriculum. The everyday knowledge that children bring to school with them should be used as an educational resource and the theoretical concepts in the school curriculum are acquired and learned by pupils through pedagogy. Vygotsky also identifies the difference between everyday concepts and theoretical (scientific) concepts. The role of the school was to provide students with access to the theoretical knowledge through pedagogy which helped in extending their everyday concepts and then enabling then to re-engage and transform their everyday concepts. Everyday concepts should thus be a pedagogical resource - a means of introducing the more abstract concepts of the formal disciplines through school subjects.

The dualism that Dewey saw as problematical is seen by others with a different theory of knowledge as necessary. If there is an objectivity to knowledge and if there is a world outside of the individual that is not as we experience it, then curriculum knowledge must be discontinuous, not continuous with experience. Bernstein suggests, (2000) that the issue of discontinuity is a pedagogical issue.

Erickson (2001, 2002, 2007) suggests that learning of concepts in an interdisciplinary way can mean a more active style of learning and a construction of meaning. This is not inconsistent with a theory of knowledge in which the traditional school subjects are valued. Contrary to Dewey's comments quoted above, that instruction can become 'remote and dead' (1916 p.8) that is not the case. Young people have to construct their own understanding of concepts and principles. The pedagogy involved does not, as has been sometimes thought, have to be confined to transmission from the teacher's mind to the learner's. Interesting and active lessons can be planned when teaching the traditional subjects with a pedagogy that involves questioning, inquiry and learners constructing their own meaning. Indeed Pring (1989) makes this point when debating the role of child centred approaches to education. These, he suggests, have their origin with Dewey, pragmatism and his mistrust of theories of knowledge based on objectivity. Pring points that when studying a school subject, there are different forms of enquiry, characterised by different ways of proceeding but the danger in the pedagogical process is to present the product of others' enquiries as inert ideas. He admits that much more is now being done to discuss more practical and enquiry based approaches to learning:

> Subjects too, properly tamed, can come into the broad church of child-centredness (Pring 1989 p.98).

Indeed, Dewey himself says that,

> As a mode of conduct, is as accessible to objective study as are these other modes of behaviour (1938 p.102)

Whilst constructivism is associated with a theory of knowledge that is not realist or objective and involves students being responsible for building their own understandings in the disciplines of knowledge of mathematics and science, teachers cannot assume that all students will have the same set of understandings or that the teacher's way of understanding will be shared by the students. Moreover, in the field of science, certain conceptions or misconceptions can influence learning and this leads to what Edwards and Mercer (1987) refer to as the 'teacher's dilemma'. In a truly constructivist classroom, von Glaserfield suggests that teachers should drop talk of student misconceptions, for the implication is that there is a correct set of conceptions. An example of the 'intellectual dishonesty' (Driver 1983) that certain scientific principles will emerge from carefully teacher planned classroom experiments is offered by Driver and Duit (1995) who talks of the need to guide students towards conceptions in science. The example they give is of a 12 year old student's investigation of melting ice. The student believes that ice covered in wool will melt faster than ice covered in aluminium foil. When she sees the unexpected happen – i.e. that the ice in the foil melts faster, her personal conceptions are too strong to be changed by what she experiences. This then is Edwards and Mercer's dilemma: teachers have to inculcate knowledge whilst eliciting it. But the real dilemma for constructivists is that the subjects in the school curriculum have an epistemological foundation that is not constructivist. In the experiment above, it would be hard for a student to construct meaning other than that ice melts faster in foil because that is an objective fact independent of us as human beings. This is why Phillips claims that constructivism as a 'controversial epistemology has become the basis for a strong pedagogic policy' (1995 p.11). Active learning, enquiry and questioning, both individually and collaboratively, are valid in all classrooms and are necessary when designing an interdisciplinary, concept based curriculum in which traditional school subjects are taught, as I will discus s in chapter 3.8.

I will not talk here of social constructivism or how knowledge is built in societies, (see earlier), nor of the many varieties of constructivism which are complex and overlap each other but I am only concerned with the cognitive construction of knowledge as an active process which von Glaserfield affirms:

> The notion that knowledge is the result of a learner's activity rather than that of a passive reception of information or instruction, goes back to Socrates and is today embraced by all who call themselves constructivists (1991 pp. xiv-xv).

Phillips, (1995) asserts that:

> Undoubtedly humans are born with some cognitive or epistemological equipment or potentialities (the nature and degree of which the experts in developmental psychology still dispute…) (p.5)

and applauds the influence of constructivists on the active participation of the learner in pedagogical activities but we must be aware of the complexities of practice.

3.6.a Context

If the goal of learning is to be able to 'learn deeply' so that learners can 'retain and transfer learning', (Oates, 2011 p.130) and we have seen, through Bernstein's (2003) assertion that the deep structure of a subject can be understood by learning through a 'supra concept', we must also take note of context, as an important part of pedagogy as noted by Stigler and Stevenson, (1999).

The contextualisation of key concepts is the key to deep learning and motivation, (Stigler and Stevenson, ibid. Black and William, 1998) and can be the 'curriculum vehicle' (Oates, 2011)

for concept based and knowledge based curriculum content. Using different contexts for learning can help unlock understanding of a particular concept and consequently different contexts should be used for each child, if necessary.

3.6.b Transfer

Transfer is important in our debate because there is an assertion that transfer occurs when generalisations are applied across a range of contexts which can be aided by a particular model of curriculum integration.

The idea of transfer of learning is important in education. The question of transfer is one that is still widely debated and there are different views about whether it is possible. Barnett and Ceci (2002) outline the historical background to the transfer debate as follows: One of the most influential theories which persisted until the early twentieth century was that of 'transfer of training' and which can be traced back to Wolff's *Rational Psychology* of 1734. This was based on the idea that the mind was made up of separate faculties, which could be trained by acquisition of subject matter. One view was that certain subjects, particularly the classical languages and mathematics could result in a disciplining of the mind making its different faculties employable in other fields. That is to say, a discipline once acquired could be transferred to other purposes. Training in one field prepares the mind for another. Classical training, for example, could develop the mental processes necessary for understanding the law. This doctrine of formal discipline was partly justified by an experiment by Judd who taught boys the theory of refraction which meant objects underwater appeared to be in a different position than the eye might suggest due to the refraction of light rays. When the targets underwater were moved to four inches below the surface rather than twelve inches, in the original experiment, the boys who had training in refraction had a greater success at hitting the target than those who didn't. The idea of general transfer however, came to be questioned as research showed that transfer only took place when mental processes involved in the two disciplines were analogous. Thorndike and Woodworth, for example in 1901,

showed that improvement in one mental function rarely brought about improvement in another and in 1906 Thorndike showed that transfer was only possible if there were identical elements in the transfer context as in the original learning context.

So the idea of general transfer was replaced by the idea that a wide variety of subjects were needed, each with their own mental attributes (e.g. history for judgement, science for observation). Thus a broad curriculum was desired - a 'circle of knowledge', (Bantock, 1980 p.23).

Taba, (1962) believes that transfer can occur, depending on the level of generalising that takes place and by emphasising the 'cognitive principles' (op. cit. p.125) either in understanding the content or methods of learning used and therefore depends on both how and what is learned. She, (Taba), and others such as Erickson believe that transfer is possible if students understand the concepts and principles of knowledge and can make generalisations that involve applying principles in different ways. This can be done across a range of subjects when a theme or topic is studied through a conceptual lens. Here, subjects are used in an 'inter-disciplinary' way but the integrity and individual nature of each subject is maintained. It is important in this model that learning is organised whereby students discover principles and are given practice in applying them. The factual knowledge of the subjects serves as a tool to develop an understanding at a conceptual level which can lead to an understanding of generalisations showing an understanding of knowledge outside of the specific context in which it was learned. The teacher's role is to help in developing a method in applying the principles and enable the learner to discover generalisations and to understand the different level of abstraction that the principle represents and to be given opportunities to apply them. Here, the student learns the fundamental ideas of a subject and applies them, which cannot be possible through didactic teaching methods. It is not the facts, - the content-, of a subject which develops the higher cognitive processes. Transfer of learning, - learning a general idea (principle) which can be used to recognise problems as a 'special case' of the original idea -,

is dependent upon what Bruner calls 'understanding the structure of the subject matter' (1977 p.18). Here, the learner must recognise the applicability, or not, of an idea to a new situation and for this, he must understand the 'nature of the phenomenon with which he is dealing' (ibid. p.19). To understand the fundamental principles of a subject means not only learning something specific that can generalised but also developing a model for understanding other things like it. This, of course, has implications for both what is taught in a curriculum and how it is taught, for it depends upon inquiry and towards solving problems independently. The inter disciplinary context for doing this which is mentioned above, will be expanded upon later (see Chapter 3.8 'Towards a model of integration for understanding knowledge). Understanding the underlying principles of a subject is also recognised by Bernstein (2003) in which he calls for a 'relational idea' or 'supra content concept' (p.217) which 'focuses on general principles at a high level of abstraction' and the 'deep structure of the subject' (ibid. p.217). This form of integration through a supra content concept will focus on how knowledge is created and 'emphasise various ways of knowing in the pedagogical relationship' (ibid p.217).

Erickson and Lanning (2014) further elucidate the link between curriculum and pedagogy: To understand generalisations and principles, students need to enquire so that they can construct personal meaning and arrive at generalisations through the guidance and facilitation of the teacher. Transfer, they say, can only occur at the conceptual level of understanding.

However, we must ascertain what is meant by transfer more closely, because there are different kinds, and studies about learning transfer have often focused on different types of transfer which has caused some of the disagreements about whether it is possible. We can also define what is meant by transfer:

Barnett and Ceci (2002) refer to it as 'human transfer of thinking and reasoning from one context to another' (p.613) and recognise it, like Taba, above, as being of educational

importance suggesting that transfer is the standard used to justify human and financial investment in education. Similarly, Haskell (2001) defines transfer of learning thus:

> Transfer of learning is our use of past learning when learning something new and the application of that learning to both similar and new situations…. Transfer of learning …. is the very foundation of learning, thinking and problem solving (p.xiii).

Both Barnett and Ceci and Haskell suggest there is little evidence from research that transfer of skills from the academic context to people's future worlds is evident. This poses a major dilemma: if that were the case, it would suggest that human beings learn little in school, yet the human progress suggests that there has been much learning that has been transferred from one context to another. It is Bransford and Schwartz (1999) who suggest that the idea of transfer is reconceptualised so that it includes the ability to learn in new environments, to facilitate on going learning, an expansion of previous knowledge when dealing with new situations in new contexts. Learning should be viewed as an ongoing process rather than a series of 'discrete acquisition events' (Hager and Hodkinson, 2009 p. 620). If this is so, the notion of transfer misleads our perception of learning because it omits the crucial importance in the learning process of changing contexts and the terms transfer and acquisition are but two metaphors used to talk about learning which is a human construct with different meanings in different cultures. Hager and Hodkinson (2009) suggest that learning should be viewed through different conceptual lenses, and if so, transfer and acquisition are central to only two of the lenses – the propositional lens, (concerned with learning facts, concepts and propositions), and the skill learning lens. Both of these learning lenses are concerned with learning a product, thing or skill that is independent of the learner, moving this to another place and learning something that is independent of the context in which it is learned. Thus, the metaphor transfer and acquisition are appropriately applied to this type of learning which the authors claim is only a partial understanding of learning.

However if a combination of the other lenses, - the human practices lens and the learning as transformation lens, - is adopted, it is easier to understand learning when a person moves from one context to another. For a person to move from one location to another e.g from school to work, it is not a matter of knowledge transfer but about learning. That is to say, skills, knowledge and understanding are embodied in a person as a social being and learning is a process of on going change. A person who moves from one context to another is not a vessel containing knowledge or skills. Experience is also important in this on going process which allows knowledge and skills, which can have an independent existence outside of the person, to be reconstituted within the person.

Barnett and Ceci (ibid) address the problem of transfer and provide a taxonomy for transfer whilst making the point that one reason why there may be different conclusions about 'analogous transfer' may have been the presence or absence of an understanding at a deep level. For example, Judd's students were taught a principle whereas Thorndike and Woodworth's students had no deep principle to transfer. They also show examples of how experiments investigating 'formal discipline' have shown success, in some cases only and they report that formal schooling does show some transferable benefits but there is no firm conclusion that the benefit is cognitive or motivational. In order to make sense of the inconsistencies in the transfer experiments, they suggest a taxonomy distinguishing different dimensions: near and far (relating to the similarity of the training and transfer situations) on the one hand and the dimension specific and general on the other. That is to say, specific facts or procedures may be applicable to specific situations only, whereas deep principles can be applied more generally. Far transfer is transferring from school to contexts outside of the academic environment and can be either specific or general and general skills can be transferred to a near or far context so there needs to be a clear distinction between the two dimensions. Barnett and Ceci also provide a useful taxonomy of the dimensions for measuring the contexts of transfer: knowledge domain, physical context, temporal context, functional context, social context and modality and a continuum for each from near to far. For

there to be evidence that education builds reasoning skills that transfer to students' future worlds after school, it needs to be far among all of the dimensions and evidence of this is lacking on all three dimensions of knowledge domain, physical context and temporal context. However, the taxonomy is useful for measuring how far learning can be transferred in the Primary school involving children at an age when transferring to contexts outside of school might not be always possible. Chen and Klahr (1999) did find evidence of far transfer of principles in the knowledge domain, temporal context, physical context and modality in experiments about scientific variables with Elementary School children. This finding is a confirmation of the claims of Brown (1990) that even very young children can transfer learning on the basis of deep structural principles, when they have access to domain specific knowledge, dependent on the context in which they learn. If children are required to extend their knowledge about causal mechanisms which they have already understood, they can transfer readily, she claims.

3.6.c Conclusion

We have seen how Young (2010 a) and Hirst (1974 a) both believe that curriculum and pedagogy are separate concepts and that experience should be treated as a pedagogical resource rather than it being at the heart of the curriculum. Male, (2011) suggests that learning approaches can determine the teaching approaches and that through this approach, skills enhance learning. We have seen from Taba (1962) and Hirst (1974) that the subjects in the school curriculum make similar and also different demands and it is the procedural knowledge in the school subjects that are sometimes referred to as skills in school settings. The different demands and functions of the disciplines means that there can be different ways of learning and that the differing methods of thought and inquiry can be mastered by focusing on teaching the principles, rather than facts in a given discipline. The differing demands are not only due to teaching methods or due solely to the nature of the disciplines but are due to both. In order to gain a full understanding of the disciplines, (conceptually, not of the facts), active and creative pedagogy is needed so that learners can construct their own understanding

and meaning. As the focus changes to understanding the deep, rather than the surface structure of the disciplines, pedagogy changes to create new knowledge through inquiry, questioning and discussion and generalisations can be formed at a conceptual level which can be transferred.

Dewey's dualism of curriculum and pedagogy is seen as essential by Hirst, (1974 a) and the social realists and instruction does not have to be remote and dead, as Dewey suggests.

Erickson (2001, 2002, 2007) suggests that interdisciplinary study, through a conceptual lens, (similar to Bernstein's supra content concept) can lead to a more active form of learning which demands an awareness of the learner of what he is learning, through questioning and discussion. I have argued that active learning is not only for 'constructivist' classrooms where teachers have to both inculcate and elicit knowledge. As realism exists outside of the learner, we should accept that all of us have some cognitive ability to make meaning, rather than accept passively, that which is told to us. Consequently active learning is something which we should all be able to engage in without constructing knowledge. We do in fact construct our own understanding and meaning.

Finally, I have examined some of the literature on transfer and shown that transfer is possible in young children. Erickson also suggested that this is possible when children make generalisations by studying at the conceptual level, across different disciplines.

3.7 Epistemological explanations for integration

3.7.a Recent trends: Areas of learning and disciplinary knowledge

The curriculum is often referred to as the subjects that a school teaches its pupils. However, it can be seen as much more than this:

> … the real curriculum is the entire planned learning experience... Waters, (2006)

If we take this much broader view of curriculum which many curriculum designers do, then the curriculum defines the goals of education which can encompass skills, competencies as well as subject knowledge. The ambiguities between progressive and traditional, integrated curricula and subject based curricula, neo conservative and technocratic and indeed the confusion between pedagogy and curriculum which has been highlighted earlier can all be seen in the canvas on which curricula have been designed and implemented in Britain in the twentieth century. However, this has been done without any epistemological theory or theory of pedagogy influencing governments since 1988 when the National Curriculum was introduced.

The perceived dichotomies between a subject centred approach, (associated with the 'traditional' curriculum and a child centred approach, associated with topics and 'progressivism') have been questioned by Pring (1989) and Alexander (2008) who suggests that the opposition of child and subject are 'less tenable' (p.139), owe much to Dewey and should not be taken as an educational truth. The dichotomy is less tenable as we have a greater understanding of 'natural' and 'cultural' lines in human development because of the work of Vygotsky: Firstly, a child needs knowledge, skills and understanding to become 'culturally socialised and competent' (ibid. p139) and to be concerned with this is not acting against a child's interests and secondly, the development of a child cannot be seen independently of the culture in which the child has been grown up and which 'has evolved the very concept of childhood that is adduced to defend the notion of child centredness' (ibid. p.139).

Despite the introduction of the National Curriculum in 1988 (Education Reform Act 1988), the increased trend of primary schools in the UK (and elsewhere) has been to move away from the traditional subject based curriculum to more integrated or cross curricular models. This has been discussed in context of a move towards the more progressive, child centred

ideas of education, given impetus in the UK by the Hadow Report, (HMSO 1931) and the Plowden Report 1967. The role of Dewey and the 'progressive' movement in the USA also had an influence on the move towards more integrated curricula in UK schools. In emphasising the social context in which scientific developments were made and in which works of art and literature were produced, Dewey criticises traditional pedagogy for overlooking this. He says that history should start with some present situation and problems and recommends focusing on economic and industrial history rather than political or military history. This emphasis on the social context of all subject areas leads directly to an interdisciplinary approach and in turning the school curriculum into serving some problem, cross curricular themes can be justified which are now praised by Ofsted (Ofsted 2008) and thus given impetus in school curricula. Indeed Dewey himself says that the teacher should not be pre-occupied with subject matter 'but in its interactions with the pupils' present needs and capacities' (1916 p.183), thus allowing real learning to take place. The idea of an engaging pedagogy whilst teaching discrete subjects will be discussed later in Chapter 3.8.

There is no need, as we shall see, for cross curricula organisation to lead to a skills based approach to learning whilst ignoring conceptual and factual knowledge but in reality it does become so, as opportunities are taken by educators to increase motivation and relevance.

The original National Curriculum document 1988 (Education Reform Act 1988) set out the Programmes of Study as discrete subjects which was confirmed by the Dearing review of 1994, (Dearing 1994) although this new curriculum had a reduced amount of content to cover. Nevertheless, research by Boyle and Bragg (2008) shows that from 1997 many schools taught discrete subjects but with 'a medium to high level of cross subject teaching' (p.17) particularly in KS1 but also in certain subjects – history and geography mainly, but also other 'foundation subjects'- in KS2. This was reduced somewhat by the introduction of the Literacy and Numeracy Strategies in 1998 and 1999 and redressed a little with the new curriculum in 2000 which suggested that opportunities for connections between subjects should be planned.

The government continued to provide schools opportunities to move away from discrete subjects to cross curricula teaching. The Primary Strategy (DfES 2003) gave schools more flexibility in designing their own curricula and as a result, initiatives like the International Primary Curriculum and the RSA Opening Minds programme (RSA Opening Minds) began to gain popularity amongst schools.

The National Curriculum sought to address the perceived lack of understanding of the school subjects which could provide the rigour lacking in thematic approaches. However, it did not prescribe that the subject matter be taught discretely. There is a perception among current curriculum designers that children need to see the connections between one subject and another in order to fully understand the world and its 'interconnectedness and realities' (Male 2012 p.94). This is also recommended by Ofsted (2008). Male adds that understanding of the world can be enhanced by looking at it through more than one lens.

Although never adopted by the government, (Coalition Government 2010 – 2015 and Conservative government elected in 2015), Sir Jim Rose's review of the curriculum gives some indication of the kind of thinking that predominated with curriculum reviewers as it bore similarities with the Cambridge Primary Review, (2009) and recommended cross curricula learning after garnering the opinions of 596 respondents from 56 professional associations, including National Association for Primary Education (NAPE), local authorities, unions, universities and practitioners in the call for evidence: 43% of respondents wanted more opportunities for cross curricular/theme based/topic work. In his Review of the curriculum, Rose states that cross curricular teaching will 'strengthen' the six areas of learning into which he proposed to organise the curriculum and which were to replace the discrete subjects of the National Curriculum. He proposed six areas of learning which transcend subjects and which were similar to the 'domains' proposed in the Cambridge Review and indeed similar to 'Areas of Learning' proposed by HMI in 1985.They were:

- Understanding English, communication and languages
- Mathematical understanding
- Scientific and technological understanding
- Historical, geographic and social understanding
- Understanding physical development, health and well being
- Understanding the arts

Although these proposals have not been adopted by the present government (Conservative Government 2015), it nevertheless provides us with a model of curriculum that is be based on immediate environment and in which the teaching of core skills arise out of that experience and it can 'create relevance and meaning for the children whose parents …. lack the skills to support learning'. (Coe 2010 p.397). The flexible use of areas of learning will thus enable child centred teaching and learning based on children's experience and their environment, (ibid.) However, we have already seen that an education based on experience only keeps pupils rooted in that experience and an introduction to school knowledge through subjects is important.

Areas of Learning 'are not equated with particular subjects (for example, a pupil may gain scientific or mathematical experience from art or aesthetical experience from mathematics)' (HMI 1985). For example, the physical aspects of geography maybe located with scientific studies, whereas the human aspects of geography may be more closely associated with history or social studies.

The broad areas of learning and the cross-curricular approach advocated by Rose must not prevent the measuring of progress in a rigorous manner. We must also accept that in order to evaluate progress and assess learning, the tools for doing so are the subjects with their distinct concepts, skills and structures.

Although written many years earlier, this premise is emphasised by Rose when investigating the classroom organisation and practice with Woodhead and Alexander (1992):

> pupils must be able to grasp the particular principles and procedures of each subject and, what is equally important, they must be able to progress from one level of knowledge, understanding and skill to another within the subject (Alexander, Rose and Woodhead, 1992).

> But a modern curriculum must be far more than its individual subject parts; hence the majority of primary schools organise at least some of their work as cross-curricular studies (Rose 2009 p.26).

> There will be times when it is right to marshal worthwhile content into well planned, cross-curricular studies. This is not only because it helps children to better understand ideas about such important matters as: sustainable development, financial capability, and health and safety but also because it provides ample opportunity for them to use and apply what they have best learned from discrete teaching, for example, in mathematics, English and ICT (Rose 2009 p.27).

The above quote from Rose has a hint of instrumentality about the use of knowledge and seems to suggest that sustainable development, financial capability, and health and safety are more important than subject knowledge. We can also ask why areas of learning provided a better opportunity to 'use and apply' what they have learned than a single subject?

Disciplines are important, not only because they provide factual knowledge about the world but also because they have their own distinct methods of inquiry and structures for enquiry and understanding the knowledge. When the disciplines are used as the basis for school

knowledge there may be opportunities to re-draw their boundaries but it is important that children learn the subjects which includes their concepts, principles and methods of inquiry. With areas of learning, we run the risk of teachers trying to '*make connections*' (ibid. p.33) between subjects that are forced and not clearly understood.

If we are to integrate successfully, we must understand the areas of knowledge and any integrative principles there are. We must also be aware, as Bernstein, (2003:1971) points out that some teachers will resist the move towards integration as power relations are upset and professional identities may be changed.

In order to validate any sort of curriculum we must be clear about a theory of knowledge and having clarified this we must be confident that it will allow integration of subject matter. This has been discussed in the previous section and to re-emphasise - knowledge has an objective basis yet its divisions are not arbitrary.

3.7.b What is the purpose of integrated curricula?

Advocates of cross curricular work, or curriculum integration argue that this approach offers a creative approach to develop children's knowledge, skills and understanding, while motivating them through interconnected topics, themes or ideas. Crossing subject boundaries allows for activities or that engage pupils' imagination and encourages active enquiries. Cross curricular learning can offer a creative way to develop knowledge, skills and understanding, while providing motivations though stimulating topics. It can provide opportunities for investigations and allow children to be more actively engaged in their learning and because ideas and concepts are learned across and within subject boundaries, education becomes more relevant and meaningful, (Hayes 2011, Vars 1991). Barnes (2011) says that cross curricular methods can be effective in teaching and reaching ethical conclusions, building motivation, interest and raising standards. Beane (1996) adds that problems of significance cannot be solved from within one discipline and that more independent learning can be encouraged as

pupils can become involved in planning their learning, more transfer and retention is possible and higher standards can be promoted. Transfer of learning and greater understanding result, he claims. Because knowledge outside of school is not compartmentalised into separate subjects, integrating school knowledge makes education more meaningful and holistic and it is seen as a way of transferring learning skills from one situation to another, making the curriculum more relevant to them and allowing them to make connections between different areas of knowledge. The range of skills that are now being identified in many countries' curricula may be general, such as critical thinking, problem solving, communicating and investigating or may be more specific such as analysing, synthesising and evaluating. The National Curriculum (DfES 1999) lists six 'Key Skills', - communication, application of number, information technology, working with others, improving own learning and performance and problem solving -, and five 'Thinking Skills' – information processing, reasoning, inquiry, creative thinking and evaluation, although these are not identified in the National Curriculum of 2015. There is a growing belief by some, that in order to foster the thinking/learning skills of the new curricula, some form of integration is needed as the subject based curriculum is perceived somehow as 'worthless' George (1996 p.118).

The idea of relevancy is tied in with the progressive view of the curriculum advocated by Rousseau and later Dewey. Education has to be immediately useful with interest and need being guiding principles but this can result in a curriculum of bits and pieces without any conceptual coherence or sequential learning.

The arguments continue that the everyday world is not divided into separate subjects but this is not an argument against a subject based curriculum. As Bantock (1980) reveals, when we transcend our daily existence, we enter a specialised world. Buildings are there for a reason (historical or geographical), they are designed in a certain way, (architecture, aesthetics) and in studying a topic like 'Our Town' we must avoid the superficial by focussing on the concepts of the subjects. Subject boundaries have been tested over time and provide the

context for analysing and asking questions about the world whether this be as discrete subjects or through subject association. Although recognising the unique 'skill set, disposition and core knowledge of each subject' (Barnes 2011 p.54), Barnes does not believe teachers need to 'know everything about a subject' but rather, they should be familiar with the 'distinctive lens each subjects provides on the same reality' (ibid. p. 54). He then refers to cross curricular pedagogy as having different demands from single subject pedagogy, requiring a creative and intuitive approach to help learners who encounter real problems and need skills and knowledge of several subjects to solve them. Here, we see the conflation of curriculum and pedagogy. Why should pedagogy change because we are looking at a problem through different lenses? The same methods of teaching can take place within a single subject where a real life problem can also be explored. Although as we shall see, there are perfectly good epistemological reasons for making links between subjects, we must be careful that the links enhance the understanding of the individual subjects and not be more concerned with using the subjects to solve a problem or increase motivation which allows knowledge to become instrumental.

Typical arguments against cross curricular work are that it lacks the rigour of studying single subjects and the acquisition of knowledge and skills entailed with this. Furthermore cross curricular links between some subjects are more natural than between others. Much of the topic work of the 1960s has a 'bad press', being associated with mindless colouring, and copying.

I have commented earlier, (Chapter 3.5), that a wholly skills based approach to the curriculum is inappropriate as skills cannot be developed context free. I have also claimed that the acquisition of knowledge is a necessary part of a curriculum as it is in this initiation into knowledge that involves developing means of enquiring, ways of knowing and understanding which enable the development of 'skills'. That is not to deny the development of certain generic skills such as communication and metacognition which can be developed along with

skills mentioned above associated with being initiated into the domains of knowledge. These can be developed when acquiring knowledge through the kind of pedagogy a teacher chooses to use. In suggesting that moving from a single subject approach to a cross curricula approach can offer a means of enquiry and the development of skills, people confuse what is taught with how it is taught, that is to say, curriculum is confused with pedagogy. The association of a traditional curriculum with didactic methods of teaching and passive transmission are unfortunate and probably stem from the 'traditional' model of education that existed in the UK which failed large parts of the population and which have now given knowledge 'a bad press'. But this association of learning knowledge as simply learning facts, usually through memorisation and rote shows a misunderstanding about the nature of knowledge which schooling has fostered by reducing 'knowledge to 'subjects' and teaching to mere telling' Alexander (2008 p.141). People criticise the intellectual legacy of classical Western education rather the problems educators have had in transmitting it. I will discuss later, in Chapter 3.8 how a knowledge based curriculum can develop engaged, active learners who acquire knowledge, skills and understanding.

3.7.c The theoretical nature of integration

Pring (1971) outlines three possible ways in which integration may occur: The enquiry based approach of Dewey (see above); the strong thesis in which all knowledge is unified where growth in any area of knowledge would affect growth in any other area; the weak thesis where there are certain 'broad fields of experience' within the humanities, say, where boundaries of disciplines are transcended. However, where the unity lies not in the concepts or methods of verification but simply in the subject being studied, this can lead to meaningless topic work or project work as outlined below. For knowledge to be truly integrated historical judgements, for example, or economic concepts in the field of study would have to be somehow changed or modified or else we have an inter-disciplinary approach. If we cannot synthesise knowledge, we do not have integration. Although Pring (1971) questions the '*complex connections*' between domains that Hirst refers to in the

Schools Council Working Paper No. 12 (1967), there have been few attempts to examine those complex connections despite Pring referring to them as the 'foremost philosophical question to be asked about curriculum integration' (ibid.p.198).

Hirst, (1969), warns of the dangers of too much specialisation in the secondary school curriculum resulting in many pupils being ignorant of the major forms of human understanding. The domains of knowledge that he identifies, (i.e. the disciplines or forms of knowledge – mathematics, the physical sciences, human sciences and history, literature and the fine arts, morals, religion and philosophy) are distinguishable from each other by criteria of truth and validity and have elements which are 'irreducible' (ibid. p.151) to any of the others, but they have many concepts that are interrelated and which overlap from one domain to the other. This means that the objectives of education 'are elements within integrated developing structures of understanding' (ibid. p.152). Hirst also recognises that new interdisciplinary areas of study can deepen understanding in each discipline.

There are examples in the literature (Gibbons 1979), of how understanding one domain can enhance understanding in another. For example mathematical concepts may be needed to understand physics and historians may use sociological concepts and vice versa. In the two examples given by Gibbons one domain served as the domain in which the enquiry was set and one domain was the instrumental domain. Concepts and propositions in the domain of enquiry are idealised to combine in arguments the concepts and propositions from the instrumental domain.

Indeed, there are many concepts that are shared by different forms of knowledge, for example 'time', 'space', (Hirst 1974 b) and many more:

> …the relations of concepts and propositions across the divisions of knowledge are legion (p.91).

A school might devise a unit called ‘Economic Awareness through History’. This might explain economic concepts through historical contexts. For example the introduction of machinery into the textile industry: How the Spinning Jenny would lead to many hand spinners becoming redundant and then how the introduction of weaving machines meant the same for hand loom weavers and this can be generalised to mechanisation leading to unemployment and changes in societies and economies since the beginning of the industrial period.

The school curriculum can be organised in many different ways as it should not necessarily mirror the categories of knowledge. There are also interrelations of the forms of knowledge and the logical relations between objectives should be mapped before choosing the structure for the curriculum (Hirst 1974 b). Thus we might have a subject based curriculum or one in which there is cross curricula work. The key thing here is that the curriculum should be knowledge based and unity should be based on concepts or methods of verification (Pring 1971).

Whilst curriculum formats can be arbitrary, the parts of the curriculum will in some way be compatible with disciplinary structure and this imposes constraints on interdisciplinarity because ‘not everything goes with everything’ (Muller, 2009 p.217) and the disciplines are not arbitrary. Muller suggests that a curriculum should have ‘conceptual coherence’ assuming a hierarchy of abstraction and conceptual difficulty. But if we organise a curriculum around segmented activities, there will be inadequate learning of knowledge and sequence.

The philosophical question of whether we can fully integrate and synthesise knowledge which might result in new knowledge claims requiring the validation, although important, is not at the crux of whether making connections between knowledge domains can enhance student

understanding and make learning more motivating. Whether we have full integration inter, or multi disciplinary study is something we will discuss below.

There are many different models of curriculum integration which can range from the incorporation of processing skills and metacognitive skills within the discipline based curriculum to the dismantling of disciplines as we know them. The former of these has been highlighted by Fogarty, (1991) and raises the question of what curriculum integration is. If learning generic skills across separate discipline boundaries, constitutes a form of integration as Fogarty suggests, then we must be careful to protect the subject matter so that thinking/generic skills are not developed whilst looking at shallow or low level content. Alternatively, if links are made between subjects, teachers must make lessons meaningful and interesting so that subject content is not taught in isolation from other subject matter. This in turn, begs the question of why this should be so? Cannot a history lesson be exciting, interesting and meaningful without connecting it to other subject areas?

I would like to suggest an answer to this question with regard to the education of young children of primary school age. The theory of integration goes something like this: if children study a theme, investigate a question through the lenses of different subjects their understanding is enhanced because they are more motivated due to the theme being studied in different contexts. If literacy development is linked to this theme, then literacy can become more real life and meaningful which will result in an interest level and a standard above that of learning subjects in isolation. Indeed this idea of increasing understanding when subject barriers are broken down is discussed by Bernstein (1971), who tells us that learners gain a greater depth of understanding of concepts through integrated codes. The question that must be asked is 'Why is this so?'

Therefore, if we are to seek cross curricular links and opportunities to integrate, we must be aware of why we are doing so. It would seem that one of the main reasons is motivation. –

giving children a hook to stimulate their interest. However, we must heed Hirst's warning that this is not enough to justify links between subjects which may be forced, and may result in the type of ineffective project work that was to be seen in some schools in the 1960s and 1970s. Any integrated approach must be rigorous and ensure the skills and knowledge in key subjects are learned whilst at the same time increasing understanding. We can return to Bernstein here, to help us understand how a move towards a more integrated code will result in a greater understanding of a school subjects.

Bernstein suggests focussing on a 'supra-content concept' (2003 p.217) which focuses principles at a high level of abstraction and by which the deeper principles and the concepts of knowledge through which these principles are obtained, will be studied with the focus on the deep structure of each subject rather than the surface structure. Bernstein suggests that right from the early part of a child's formal education, the deep structure of knowledge (i.e. the principles for the generating of new knowledge) will be made available to him through the integrated code. This in turn will affect pedagogy which will now emphasise how knowledge is created, that is to say ways of knowing and creating new knowledge in the pedagogical relationship. In turn the theory of learning will move from didactic to group or self regulating and more relaxed frames will be the result in which the learner's rights are increased and private experience of teacher and learner enter the pedagogical relationship.

To move to a more integrated code in order to develop a deeper understanding of subjects, is a very persuasive argument for integration but we must be careful that the type of integration we pursue is capable of this or at least brings some other benefits to the students. Often, teachers have responded to the move to integrate in ways that offer little benefits to the learning of their pupils. There is such diversity in the way integration has been introduced into schools and such an array of models of cross curricula or integrated curricula. As with the current reforms of the governments in the UK, there is no theory of curriculum that supports an integrated approach or indeed any other approach to the curriculum.

The use of concepts to enhance understanding is confirmed by Ausubel (1960). His study shows that relevant subsuming concepts (organisers), based on the assumption that cognitive structure is hierarchically organised through concepts under which 'less inclusive sub concepts and informational data' (p.267), are subsumed. His study shows that an advance organisers mobilise subsuming concepts that the learner already knows which makes new material more meaningful and also the advance organisers provide what he calls 'optimal anchorage' promoting 'initial incorporation and later resistance to obliterative subsumption' (p.270). Appropriate subsumers can be introduced to the cognitive structure prior to learning taking place and these can become advance organisers for the reception of new learning. Although this may seem rather obvious as a process for learning, Ausubel insists that it is a principle rarely followed in teaching activities or in textbooks in which the more common process is to present material organised as subject matter and which in turn is psychologically inconsistent with the process by which meaningful learning takes place, that is to say with 'the hierarchical organisation of cognitive structure in terms of progressive gradations of inclusiveness' (p.270). So students often have not acquired an adequate body of relevant subsumers before they are required to learn new disciplines.

The importance of learning subsuming concepts is best summed up by Ausubel himself:

> In the absence of clear and stable concept which can serve as anchoring points and organising foci for the incorporation of new meaningful material, students are trapped in a morass of confusion and have little choice but to rotely memorise learning tasks for examination purposes. The traditional historical introduction to new and primarily non-historical, subject matter concepts possibly enhances student interest, but lacks the necessary substantive content to serve this organising function (ibid. p.270).

A curriculum, then, should focus on a statement of content, including concepts principles and key knowledge, (Oates 2011) and deep learning can occur when this is contextualised by individual schools and teachers. Deep learning will allow learners to retain and transfer learning (Black and Wiliam 1998).

When we are engaged in interdisciplinary or integrated modes of study we must ensure the concepts of the different disciplines are involved or else our studies will result in mindless copying or meaningless topic work which occurred in some schools in the 1960s and 1970s. Knowledge, skills and understanding are all important in educating young people and although these are all mentioned in UK curriculum documents, there are still examples, as we shall see below, where skills predominate and learning can become low level.

I have discussed the importance of concepts in enhancing understanding of knowledge and the possibilities of making connections of the different domains of knowledge. A knowledge based curriculum is not at odds with weakening boundaries between knowledge domains.

I will now explore some of the different curriculum models and discuss their strengths and weaknesses in the context of the sociological and epistemological background that I have so far provided.

3.7.d A taxonomy of curricular approaches

There are many approaches to integrating subjects in a cross curricular way and a summary of them is offered below:

Connected – ideas in each content area are related to each other (Fogarty 1991)

Sequenced - topics within a discipline are rearranged to coincide with those of another discipline (Fogarty 1991)

Shared - disciplines and units are planned to focus overlapping ideas or concepts (Fogarty 1991)

Webbed - disciplines use themes to teach specific concepts, within the disciplines (Fogarty 1991)

Threaded - the curriculum is designed around thinking or study skills and the content becomes the vehicle for these skills to be learned (Fogarty 1991)

Integrated – units of study are planned around overlapping concepts or ideas in the disciplines and are implemented in common teaching time (Fogarty 1991)

Networked – learners reorganise ideas within and between the separate disciplines (Fogarty 1991)

Complete integration - students determine the curriculum out of their life experiences (Hayes-Jacobs 1989); the focus is a life centred approach (Drake 1993).

Hierarchical - achieving progress in one discipline by using aspects of another. One subject is used as a tool to enhance understanding in another (Barnes 2011)

Multi disciplinary a single theme is used to develop a high level of understanding in more than one discipline (Barnes 2011); a theme is addressed by each separate discipline and the integrity of each discipline is retained, Drake (1993); related disciplines are brought together to create a new course by finding relationships between disciplines (Hayes-Jacobs 1989).

Inter disciplinary - aimed at progression in two or more subjects together with creative thinking and connection making between the subjects (Barnes 2011); identifying skills and ideas that are common to all disciplines and address these through the disciplines, Drake (1993); specific courses are constructed to bring together all the subjects in a school's curriculum (Hayes-Jacobs 1989).

Opportunistic - allowing children to dictate the direction and depth of disciplinary learning in a number of subjects related to a theme or experience, (Barnes 2011)

Double focus -promoting a balance between experience based and disciplinary opportunities for learning (Barnes 2011).

There is a complex tapestry of cross curricular or integrated curricular models but we can pull out of this some generic ideas which might offer some thoughts on how to proceed through

this maze. The various ideas can be presented on a continuum with the separate subjects at one end and a fully integrated curriculum on the other.

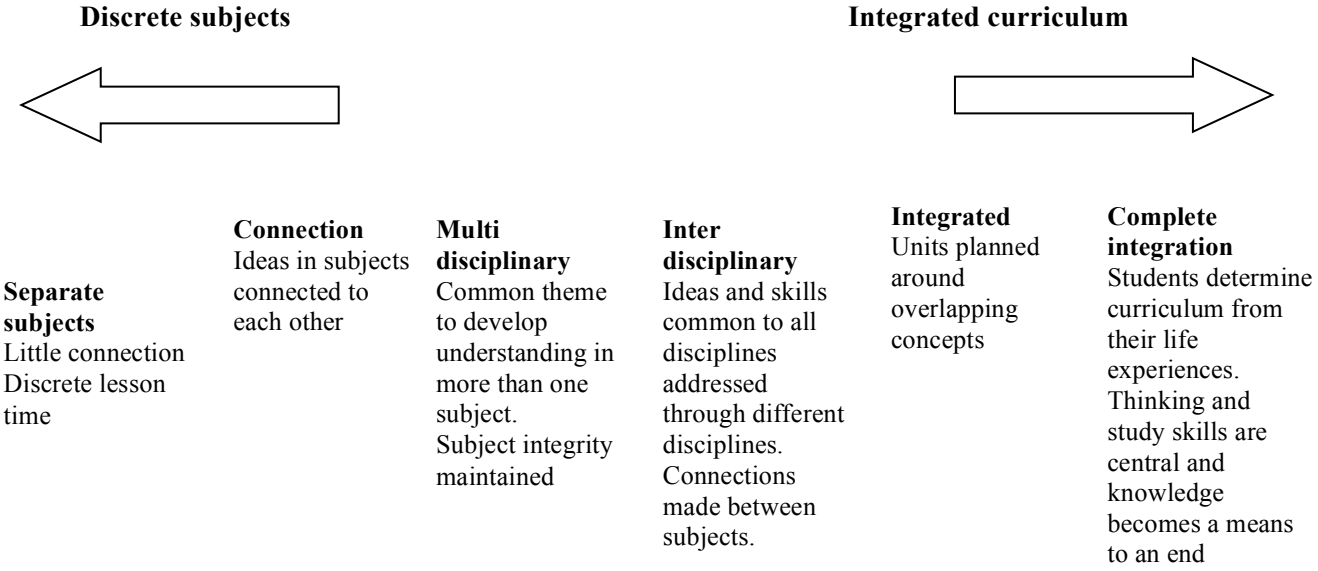


Figure 2: The curriculum continuum: source Kysilka (1998)

As we can see, there are a variety of approaches and definitions and little consensus among educators as to the definition of curriculum integration. There is also much ambiguity among educators as to its significance for teaching and learning.

The following are some examples of integrated approaches, enquiries or themes which should offer greater motivation, relevance, deeper understanding of knowledge a holistic awareness of issues studied and the opportunity to develop skills that otherwise would not be possible in a discrete approach. We must be careful when planning integrated studies that some or all of these are possible or we run the risk of doing the students a disservice by, for example, returning to 'topic work' without focusing on teaching knowledge.

3.7.e Examples of cross curricular/integrated work

The way the school subjects are organised in a curriculum should not in reality affect the teaching of knowledge, if we identify what we want children to learn. We can also identify how we want children to learn which might mean the acquisition of skills. However, there are

many examples of how knowledge is ignored when the curriculum is organised through themes, topics or projects.

Case, (1994) shows an example from the Canadian State of British Colombia Year 2000 document. The thematic unit is on forests and the list of subjects and their contribution to the theme is below:

Art - make paper

Social studies - write letters to editor about environmental issues

Language – listen to stories by and about Emily Carr

Music – dance to the Four Seasons by Vivaldi

Nutrition – write a guide for the library about edible plants in the forest

Science – make a class terrarium

Mathematics – use natural objects from the forest to develop concepts such as estimation

Case concludes that although each activity is related to forests, there is no integration in a way that promotes increased understanding in one area due to understanding in another. For example Emily Carr, making paper and edible plants have nothing in common and the contrived connections do not integrate subjects in an educationally significant way.

A further example is given by Kysilka (1998) in which 'traditional' content is changed to more 'appropriate' (p.205) content. In the example she gives content from disciplines is 'blended' to enhance the understanding of a particular theme or organising concept. For example the theme might be 'Celebrating Cultural Diversity 1700 -1900'. Science, mathematics and social studies teachers develop lessons related to the contributions of various cultures to science knowledge and how science beliefs challenged religious and political structures. Language, arts and music teachers might study how language, arts and music reflected the thoughts of people at the time and became a means of documenting the social/political 'atmosphere' of communities. Thus, subject boundaries are broken down and

it is not the disciplines per se but applications of content that are important. Traditional content is replaced by a 'much broader, richer and connected set of lessons ... which try to emphasise how all these areas were affected by and contributed to the diversity of people who lived within the existing world of the time' (ibid. p.205).

The question we may ask of Kysilka is - should the principle of integration override the requirements of the disciplines and has due consideration been given to what aspects of the disciplines can be brought together? It is Taba (1962) who makes this general point when emphasising the need to balance many factors when discussing integration. In Kysilka's model, above, some knowledge has become instrumental and this must raise questions as to what sort of mathematics or science is actually learned in such an enterprise.

Barnes's models of interdisciplinary and multi disciplinary, above, are concerned foremost with enhancing understanding in one or more subjects through a common theme or learning experience. In his interdisciplinary model there are opportunities for making connections between the subjects involved. Different disciplines might offer different interpretations of the same event or problem and the result of the study might be a presentation or group solution in which creative responses are sought and creative teaching might occur. However in some examples that he gives of good cross curricular learning there is a focus on competencies and skills rather than knowledge. His multi disciplinary approach does safeguard the subjects whilst studying each through a single theme.

Cross curricular work is becoming increasingly popular in English schools but it does not always focus on knowledge. It is becoming increasingly common for English schools to organise their curricula into projects in order to teach transferable skills. The RSA's Opening Minds Programme and Chris Quigley's (2011) curriculum has helped with this approach which allow subjects to be taught as projects and which is endorsed by Ofsted (2008). In

these approaches we see a focus on skills rather than knowledge and is an example of how the opportunities for cross curricular work negate knowledge in the curriculum.

3.7.f Three strategies for interdisciplinary study

One study that has been mindful of the different structures of knowledge is that of Nikitina, (2006). She has distinguished between three approaches to interdisciplinary teaching according to the guiding epistemology of the interdisciplinary work. This work can offer some ideas as to the obstacles involved in interdisciplinary studies and the advantages there can be. Her study involved high school students and university level studies but can still be of value when dealing with primary school subjects, if we are to move away from integrating in ways which might not result in more effective learning.

In classifying her 'interdisciplinary strategies' (p.252), (the method of connecting disciplinary material), Nikitina focuses on the disciplines themselves and their role in 'guiding the quest for knowledge' whilst also concerned with finding links between the disciplines. The strategies she uses, each of which reflect the structure of knowledge in each field, are:

- *contextualising* in the humanities – embedding any disciplinary material in in the fabric of time, culture and personal experience. e.g. The History of science would use time and history as the vehicle of integration
- *conceptualising* in sciences - identifying core concepts central to two or more disciplines e.g. change and linearity. Change might link evolution in biology and compression in physics.
- *problem centring* in the applied sciences - using the knowledge and modes of thinking in several disciplines to study real life problems e.g. water pollution that requires more than one discipline to solve. The goal is not so much to deepen understanding for oneself but to apply this understanding to action social change.

Each of the three approaches in her study had different epistemic goals and what might connect ideas in the humanities may not apply in mathematics or science. She was aware that each approach had different epistemological requirements that they imposed on the interdisciplinary process and curriculum.

Contextualising through history meant linking some knowledge to an event in time. For example in teaching the novel Huckleberry Finn, a teacher chose to use the backdrop of Civil War, abolitionism and slavery and another chose to teach the scientific development of the atom bomb against the background of events in Germany in the 1930s and 1940s.

The conclusions that Nikitina drew were that in all the scenarios that used the contextualising strategy, far reaching connections were made between the disciplines because the contextualising strategy tapped into the methodological and philosophical core of the subjects, whilst leaving out aspects such as specific practices, facts and proofs. While studying the scientific development of the atom bomb against the background of events in Nazi Germany, students realised that making the bomb was not just a scientific project but that it was a product of history and moral or immoral personal choices. Science was placed in a cultural and historical fabric but the science of the bomb was also studied.

Similarly, the conceptualising strategy was also designed to take scientific and mathematical thinking beyond the facts and to the level of the underlying concepts. Nikitina claims that core concepts such as change, linearity and scale can bring together algebra, physics, geometry and biology. She adds that with science as an epistemological paradigm, connections met a stringent method of verification replication and mathematical expression and that the goal of this kind of interdisciplinary study is to understand the laws of physics and nature.

Using the problem centring strategy, it was expected that the students would emerge with solid understanding of the subjects involved but also a notion of how to use these subjects for the public good. Problem centring can bring together a wide range of disciplines, learning becomes personally meaningful and highly motivated by the necessity to resolve a social concern however it is acknowledged that there may be 'disciplinary blanks' (ibid. p.266) which would need to be filled by using more of a disciplinary context or by using more conceptualising work.

3.7.f.i Strengths and weaknesses with each strategy

Contextualising might not lead to mastery of disciplinary practices and it might need a deeper engagement in the substance of the disciplines rather than their philosophical foundations but it built broad connections between the disciplines using culture or history as contexts. Although connections might sometimes have been arbitrary and speculative rather than being based on objective proof, in other instances they gained validity through multiple reference and triangulation in individual or shared cultural experience.

Conceptualising can build coherence among facts and practices and can result in rich disciplinary content being studied, however the connections were not as far reaching as students expected them to be, although this could be corrected by discussions about scientific method and the differences between disciplines. Students had been asked to draw connections among scientific concepts that were quantifiable and generalisable, (e.g. linking chemistry, physics and mathematics to study how atmosphere acts as a radiation filter). Students did not always see the connections, transfer was not automatic and teachers needed to talk through the connections with the students.

Problem centring can make broad and far reaching connections but might not result in a deep study of the discipline.

Nikitina's research offers a range of strategies that can be used to plan effective interdisciplinary studies and it offers us caution in that we must be aware of what we want from the studies we get our students to undertake. For example in humanities studies (using a context based approach) we may benefit from a more thorough verification of the connections we make by using some of the rigours of conceptualising approaches. Those involved in problem centred pedagogy might benefit by using a richer historical or cultural context or conceptualised approaches when trying to solve practical problems and Science teachers may want to use a broader context and focus on solving problems in the real world. It would be helpful for teacher when designing integrated studies to focus on each of these strategies and to be clear what the benefits of integration will be.

If we examine for a moment the conclusion that humanities, using a context strategy or social scientist using a problem based approach, might benefit from the rigours of a conceptualising approach, we can refer back to Bernstein's assertion (2003) that using a supra content concept can lead to a deeper understanding of the principles of a subject through its concepts and this can be achieved through a move towards the integrated code. (Integration to Bernstein means the subordination of a subject to some relational idea that blurs the boundaries between subjects). If our purpose is to enhance understanding, then Nikitina's conceptualising strategy is one that has been successful in taking studies beyond the facts and to the level of the underlying concepts and by bringing together different subjects in the sciences can reveal a hidden pattern of relationships. Science of course is a discipline with a hierarchical structure in which overarching concepts can lead to integration at an abstract level, according to Bernstein (1999). In more horizontal knowledge structures in the vertical discourse such as humanities and social sciences, cumulative learning across contexts can be achieved through legitimation code theory.

If we consider Hirst's assertion (1969) that developing an understanding of concepts will mean that students will master the use of concepts and consider truths in the domain and will

appreciate the features of knowledge, we can see in some of the examples that Nikitina reveals, that there is there is a tendency in some examples not towards the details that specialists require but towards a mastery of the basic elements of the mode of thought and an engagement with the discipline at a philosophical level which is the kind of course that Hirst, (1969 p.154) calls for.

In organising the school curriculum along the lines of the forms of knowledge, it emphasises the difference between them but ignores the interconnections between them 'for the impoverishment of them all' (ibid. p.156). A curriculum structure based around topics might not permit the content to be aimed at central concepts and other features of the forms of knowledge that are important and therefore would be hard to justify.

3.7.g Knowledge, the curriculum and learning

The understanding of the disciplines of knowledge is, I have stated, the foremost goal of formal education and we must be careful when planning the curriculum, not to set it out in terms of projects and activities to satisfy the call for relevancy and skills. It is Oates (2011), who states that the national curriculum should focus on content which he specifies as 'concepts and principles fundamental operations and key knowledge' (p.130). He offers us some insights into how to achieve deep learning by unlocking the motivation of learners by allowing individual teachers and schools to contextualise the fundamental concepts. We have already seen through the work of Ausubel (1960) how important 'organising concepts' are in helping children learn.

The importance of concepts is also emphasised by Hirst, (1969) when asking what is involved in acquiring knowledge:

> certainly it involves learning many different concepts, using these in a growing awareness of facts, truths and forms of many kinds, mastering many logical

> operations and principles, applying the criteria of different types of judgements and so on (p.148).

How the domains of knowledge are made known to pupils does not have to be through a discrete subject approach but the concepts of knowledge must be taught and an understanding of the structure of knowledge, the nature of enquiry and the methods of learning in the different disciplines is essential.

When defining the curriculum we discussed the connection between it i.e. the content of the curriculum and children's learning. This needs to be clarified further. If the curriculum defines the goals of education and it is not the purpose of this work to do that here, we can at least define what education is concerned with. Blenkin and Kelly (1983) suggested this was to think beyond the immediate context, to examine issues critically, to think independently and to question what is taken for granted. Children must learn to understand the world around them and this process involves asking questions which will reinforce and embed learning. However, a learning climate of compliance to achieving pre-set objectives and desired outcomes is,

> unlikely to offer pupils opportunities to express the sorts of opinions, reservations, perspectives and questions that act as the spur for so much serendipitous but stimulating classroom interaction and deep learning (Hayes 2010 p.386).

It certainly involves creating understanding and meaning.

What approach might lead to deeper learning and a curriculum which is not 'a mile wide and an inch deep' (Erickson, 2001)? We have emphasised how important the concepts of knowledge are in order to gain a deep understanding but how can integrating subjects help? Erickson, (2001, 2002, 2007) argues that a topic integrated around a macro concept can lead

to a greater understanding of each individual subject and the topic at a deeper conceptual level. Identifying concepts that a particular subject might have will lead to a deeper rather than a surface understanding, (which might be gleaned from studying facts alone) of each subject whilst an overarching concept which provides a lens through which to study the subjects together.

Oates (2011) perhaps sums up the need for a knowledge based curriculum:

> A well-defined and enhanced National Curriculum - based on concepts, principles, fundamental operations and key knowledge can lead to learning processes which are more focused on deep learning (p.143).

The problems we have seen with other curriculum models is that this knowledge is often secondary to 'skills based' learning or the level of learning is not deep in any real sense. Acquisition of knowledge is essential but the organising concepts and principles are crucial to the acquisition and retention of this knowledge and in turn, bodies of knowledge can be tied to the development of these fundamental concepts and principles, (Oates, op. cit.)

3.7.h Conclusion

I have discussed the growth of the interest in schools in integrated curricula despite the introduction of the National Curriculum in 1988 and how there is a dichotomy between the subject centred approach and the progressive approach associated with integrated curricula. Indeed the integrated approach has often led to a move away from learning the concepts of the school subjects toward an emphasis on relevancy, motivation and skills due to the influences of Dewey's pragmatism upon which his progressive notion of education was based. Despite an emphasis in curriculum documents on knowledge, skills and understanding, cross curricular approaches tend to focus on a skills based approach ignoring the concepts and principles of knowledge.

I have then discussed the purpose of integrated curricula which seems to involve motivation, making study meaningful, allowing for creativity, relevance, creating opportunities for investigations, the development of skills and the non compartmentalisation of the real world. However, I have suggested that relevance and immediate interests are associated with the practical ideas of Rousseau and Dewey and is not enough in itself to justify an approach to learning. I have asserted that those who advocate cross curricula approaches in this way, conflate curriculum and pedagogy.

The complex connections between the domains of knowledge have been discussed with reference to Hirst and Pring show how there are some concepts that transcend more than one area of knowledge and that there are logical relations that make inter disciplinary study possible but this must include understanding the concepts of each knowledge domain. It is Bernstein who suggests a form of integration involving 'supra content concepts' which will focus at a high level of abstraction on principles, obtained through the concepts of knowledge, and which will lead to an understanding of the deep a structure of a subject.

I then outline a taxonomy of approaches and question the value of some of them in creating a deep understanding of knowledge, although one approach, - the conceptualising approach, - tested by Nikitina (2006) and involving identifying concepts central to two or more disciplines involved mastering the basic mode of thought at a philosophical level.

I have emphasised that understanding knowledge and its concepts should form the basis of any school curriculum but there are opportunities for integrating the subjects at a conceptual level as Hirst and Bernstein suggest and as Nikitina has shown, is possible.

3.8 Towards a model of integration for understanding knowledge

Many curricula across the world now concern themselves with more than knowledge, usually focusing on skills, understanding and competencies as well. They typically include Key Skills and Thinking Skills which apply across a range of subjects for example, the English National Curriculum (DfES 1999). These are sometimes referred to as generic skills and include things like problem solving, critical thinking and communicating. Male (2012) refers to the coming together of knowledge, skills and understanding as the development of a 'competency' (p.13). Other countries' curricula are also concerned with competencies such as 'Social and Economic Competencies' and '21st Century Competencies' (Singapore). To develop these competencies through knowledge, key skills and personal development, he says, is the key to curriculum design. Such competencies include, self awareness, self management, decision making, global awareness, ICT skills, thinking, communication and learning competencies. Interestingly in England, some of these 'competencies' are referred to as skills – for example, Communication, IT, improving own learning, problem solving and creative thinking. This is a similar approach to that recommended by Rose, (2009) and endorsed by Waters (2012) whereby 'learning matter(s)' (Waters op. cit. p vii - viii) and 'the principles of learning (should be) clear and understood by everyone' (p.viii). The move to establish competency based curricula brings to question why? And what is the value of these models? Priestley (2011) explains this as arising out of a decline in curriculum theory which in turn has resulted in 'technical curriculum policy' (p.227) exemplified by England's National Curriculum which, through prescription of teaching methods as well as content, helped turn the teaching profession into one of technicians who simply had to implement policy and 'perform' (Ball 2003) in response to targets and evaluations thus taking away the 'teacher's soul' (Ball ibid.).

The National Curriculum of 2000 identifies generic ('Key') skills and thinking skills and has risked in its implementation, a focus on these rather than on knowledge. The new National Curriculum which was implemented in 2015 is more concerned with knowledge and concepts but we must recognise that when implementing such a curriculum the differences between

knowledge domains are not arbitrary being the result of historical processes (Moore 2007) and being dependent on our world (Snook 1993). We must also recognise the epistemological basis for a knowledge based curriculum with cross curricular links, as we have discussed (Taba 1962, Hirst 1974 b, Pring 1973, Bernstein 2003), rather than the conventional basis which is often referred to, such as increasing motivation, providing a more holistic education and so forth. In other words, we should not see the curriculum as a given and with which students have to comply because it is fixed and unchanging. Although knowledge has a reality and is external to the learner, because it is not arbitrary, learners do not simply have to comply, they can engage with it and thus there are implications for pedagogy. Knowledge as a historical entity changes and so do rules and contents which do not simply have to be followed like a set of instructions.

Whilst acknowledging the fundamental importance of learning, we must not allow skills or competencies to take the place of knowledge in a curriculum. Knowledge and skills are not at odds with each other if we see skills as something that can be developed through teaching methods to enable pupils to understand the principles, concepts and facts in knowledge domains. We need a knowledge led approach and not a learner led approach to the curriculum (Young 2010 b).

3.8.a How the conceptually integrated model is different from other models

Erickson (2001) suggests that efforts at integration in the 1970s were not successful because the structure of subjects was lost and the abundance of activities in a unit led to a 'potpourri' problem (Hayes-Jacobs 1989). In other models of integration e.g. multidisciplinary in which facts and activities across subject areas are related to a topic such as dinosaurs, students might learn facts and process skills but a conceptual focus to integrate thinking is usually missing. Multi disciplinary in this sense means a number of subjects coordinated to a topic of study whereas, if there is a common focus to the study (provided by a conceptual lens), then the study is integrated. Without the conceptual lens the subjects do not work together to bring

about a deep conceptual understanding. With the conceptual lens, each subject teaches its own specific concepts but develops these through the unit theme.

Whilst many attempts to create integrated approaches to the curriculum have led to topic based approaches with little focus on subject knowledge and hence understanding, others have focused on the subjects of the national curriculum and tried to link them through a theme.

Many cross curricular approaches are multi disciplinary as it is defined above. One such example is offered by Farmery (2011) Table 2, in which the subjects of the National Curriculum are linked by a theme.

The topic chosen is 'Whitby', a fishing port in North Yorkshire. In the curriculum matrix offered, each subject is listed, - literacy, numeracy, science, foundation subjects and PSHE/RE and learning is identified for each subject. Here we have in effect a single subject approach in which the focus is on a common topic. Each subject involves a study of an aspect of Whitby: newspaper articles about the lifeboat man in literacy, whilst in numeracy the children use data handling skills to prepare shopping questionnaires, in science it is floating and sinking and then coastal erosion and for foundation subjects, water pollution and a water safety leaflet in D and T.

There are clear links between each subject area in parts. For example the science topic floating and sinking connects to the biography of the lifeboat man who survived a sinking due to him wearing a cork life jacket. However apart from providing a meaningful context in which to investigate floating and sinking, little knowledge from one subject area aids understanding in another. Certainly the context for learning allows the different subjects to be studied concurrently and skills to be transferred. For example observations are used to provide a variety of reports rather than, as would be the case in a single subject approach

where leaners would have difficulty using the skill taught in one subject in another subject area.

Table 2: Curriculum Balance Matrix: Extract from Year 5 Whitby topic: source Farmery (2011)

	Literacy	Numeracy	Science	Foundation subjects	PSHE/RE
Week 1	Intro. to topic Biog of Henry Freeman	Co-ordinates	Floating and sinking	Location of Whitby History of RNLI	Parts of church (RE)
Week 2	Newspaper Account of Henry Freeman	Data handling shopper questionnaires	Coastal erosion	Water pollution (Geog) Seascapes (Art) Water safety leaflet (D&T)	Feelings of Henry (PSHE)
Week 3	Talk by RNLI Visit to local museum Visit Whitby church Field sketches Shopper questionnaires Produce a film documentary and podcast Collate a Whitby fact file				
Week 4	Recounts of Whitby visit	Data handling results of Questionnaires	Intro. to habitats and food chains	Compare local area to coastal area (Geog) Review of museum Exhibits (History) Development of Field sketches (Art)	Would you volunteer to be a life boat man (PSHE)

This type of approach has the positive effects of providing a common context for study and bringing it alive, thus motivating the children and making learning more 'relevant' (Farmery, 2011, p.71) but there is little to suggest that the concepts of knowledge are better understood.

If the topic were viewed through a conceptual lens, for example, 'Identity', the conceptual theme and focus might become 'Whitby in the present day'.

The individual subjects might now cover the following aspects of the topic:

Table 3: Curriculum Matrix for concept based study: Whitby

Literacy	Numeracy	Science	Hist	Geog	Art
Biography Historical Recount Narrative - Dracula	Number work Focus on no. of Fishing boats Decline in Tonnage of catch Population changes	Landform Coastal erosion	Growth of Whitby - monastery Growth of fishing and decline - whaling Capt. Cook	Population growth Location Decline in fishing industry Whitby Jet industry	Photos of Frank Sutcliffe Patterns on fishermen's Ganseys

In the second example pupils can now focus on how Whitby developed its identity as a town based on geographical, scientific, historical study which focuses their attention at a higher conceptual level. The art serves to add to the pupils' understanding of the character or identity as a fishing port and seaside town. Patterns and connections can be made across the subjects. The study will have more depth and will not allow for the simple regurgitation of facts or researched information. At the same time each subject will retain its own integrity. There is not a little art and a little history but there is geographical, scientific, historical studies in their own rights. The students are guided in their study by different levels of questions which demand factual answers, as would be the case in the first study but they would also be guided by conceptual questions such as 'How did Whitby develop its own character? There would also be what Erickson (2001) refers to as provocative questions, such as 'Why has Whitby retained its identity as a fishing port when other towns, for example Redcar, along the same coast have lost theirs?'

There is now a purpose to the study. The focus becomes the ideas that can be applied in new contexts. Generalisations or 'essential understandings' (Erickson, 2001) can come into the study such as:

> Towns develop their own distinctive characters due to physical and economic factors.
>
> The physical environment affects where people settle in a region.

Land and resources can serve a number of purposes.

In the first example, numeracy involves co-ordinates and data handling (questionnaires), whereas in the second, it involves applying mathematics in real world contexts to explain phenomena such as the decline of the fishing industry and its effect on jobs. The level of mathematical thinking can be as challenging as the teacher chooses to make it, as we will see in the case study school's 'Britain since 1950' project.

Literacy knowledge and skills can be developed across the area of study. Historical recounts, biographies and narratives all related to the theme of the study can be written. It offers the opportunity to 'write across the curriculum'. We have seen many times a teacher's frustration at primary aged children who are taught to write in a literacy lesson but then do not transfer this when writing a historical description or a conclusion to a science investigation. Writing can be seen as ongoing across all curriculum areas. What is taught in a literacy lesson can be transferred to other areas of the curriculum.

The pupils can apply new knowledge as their thinking is integrated around the bigger ideas through the conceptual lens and gain a deeper understanding of the processes of history, the principles of mathematics and the relationship of man and nature.

3.8.b Using supra concepts to integrate thinking at a conceptual level.

In order to integrate in an effective way which enhances students' understanding of knowledge in the way that Bernstein refers to it – that is to say to understand the principles and the concepts of knowledge, in order to study the deep structure of each subject rather than the surface structure, we must understand the structure of knowledge and integrative principles and methodological procedures there may be. This can open up the

> possibility of a more adequate method for integrating knowledge which does not involve the dangers of vagueness or lack of precision (Taba 1962 p.191)

Taba suggests this can be done by identifying the basic ideas or principles in subjects which have relevance to several disciplines in the same area or across areas. This can point to interrelationships between the ideas in different fields and in studying them it should be possible to preserve the character of the idea in the context of each subject and to achieve breadth in understanding the relationships.

Hirst (1974 b) has clarified that there are inter-relational concepts in the separate domains of knowledge and Bernstein's work on the structure of knowledge must also be considered when designing curricula, particularly the distinction between hierarchical and horizontal structures in the vertical discourse.

If, in sciences, there are certain concepts which cannot be understood before other concepts are absorbed then we have a hierarchical knowledge structure but as well as this, in the sciences, mathematics has to be understood to make science intelligible.

A quick reference to Maton's cumulative learning and segmented learning will reinforce how disciplinary knowledge develops over time and the complexity of effective integration of disciplines by reminding us of the structure of knowledge in relation to other educational knowledge and to everyday knowledge, to the sequencing of learning and to the hierarchical arrangement of knowledge through the school curriculum. We should also remember that certain knowledge structures lend themselves more readily to certain pedagogies than others. For cumulative learning to take place, students need to transfer knowledge between contexts and to build knowledge over time and this can be determined by 'semantic gravity' - the degree of context dependence of knowledge which shapes the capacity of students to move between concrete examples and abstract principles. Finally the ways the features of knowledge enable cumulative learning depend on the discipline, as we have seen and students are provided with procedures to follow which embody principles that underpin each discipline's knowledge. (It is legitimation codes that provide a means of analysing the

principles that establish 'what matters' – knowledge codes or knower codes). It is semantic gravity and legitimation codes that provide a framework to allow the transfer of learning across contexts for subjects which might be seen as segmented. The point of this reminder is to emphasise that attempts to integrate school knowledge through the subjects will run into difficulty if the structures of knowledge are not borne in mind. Alternatively integration might result in educational activity which does not result in any improvement in learning.

Erickson (2001) tells us that the purpose of integrated curricula is to cause students to integrate their thinking at a conceptual level by seeing connections between transferable conceptual ideas and the topic under study.

Based in the ideas that have been explored earlier, I justify a form of curriculum that involves inter-disciplinary study to enhance understanding in the individual school subjects, which will lead to more active ways of knowing and constructing understanding and which will allow the principles of knowledge learned to be applied through generalisations to new contexts. This is based on a model of the curriculum advocated by Erickson (2001, 2002, 2007,) which is inter-disciplinary (i.e involving two or more subjects), focusing on a relational idea or 'supra content concept' (Bernstein 2003) leading to a deeper understanding of each subject and an understanding of generalisations arising out of the relational idea and leading to a different type of pedagogy in the classroom as the children have to inquire, ask questions and discuss their learning in ways that can be called 'active'.

3.8.c Developing a deeper understanding of the subjects and the impact on pedagogy

Erickson (2001) suggests that in many classrooms the higher level thinking of students is often missing. The focus of teaching and hence learning is on facts and developing skills. If the focus becomes one of understanding principles and concepts and then understanding generalisations, understanding can be developed which is transferable. That there are key concepts in the disciplines of knowledge which are common to different disciplines is

recognised not only by Erickson (2001) but also by Hirst (1974 b) and Bernstein (2003). Erickson suggests that these macro concepts can be used to organise interdisciplinary study with the focus on learning the concepts and principles in each subject, as Bernstein does. The effect of this, for Bernstein, is that students, even from an early age, can learn the deep structure of a subject and the means for generating new knowledge. For Erickson, the effect is similar: children can search for and construct new knowledge. By using concepts to organise the content of the curriculum, learning the concepts and principles in each subject and treating factual knowledge as a necessary tool for conceptual understanding, children are taught to develop abstract thinking abilities and learn facts which can be 'synthesise(d) to the level of abstract relevance' (Erickson 2001 p.34). This occurs because students' abstract thinking abilities are developed as they relate specific facts to transferable understandings as they begin to build generalisations or enduring understandings.

Integration can occur at a conceptual level by using a conceptual lens or a macro concept which can integrate their thinking. Key concepts and principles are understood and as new information is integrated, they deepen their factual and conceptual understanding. Connections are seen between factual knowledge and transferable, conceptual ideas as disciplines focus learning towards the lens but also teach its subject specific contents. Thus, students can see connections between conceptual ideas and the topic under study and their thinking becomes more integrated as it 'is drawn above the (individual) disciplines' (Erickson 2002 p. 106)

> A concept serves as an integrating lens and encourages the transfer of ideas within and across the disciplines as students search for patterns and connections in the creation of new knowledge (Erickson, 2002).

Units organised around a theme and a conceptual lens are integrated and the real strength of this approach is summarised by Erickson (2002), thus:

> A conceptual lens on a topic of study creates a metacognitive study. There is a purpose for the study that goes beyond the evaluation and memorization of information related to the topic. The conceptual lens sets a target for the study that supersedes the specific target and the moment. The focus for teaching and learning becomes the ideas that can be taken forward and applied in new but related contexts. The topic becomes the vehicle for allowing students to apply new knowledge to past knowledge as they integrate their thinking around the bigger ideas that transfer through time and across cultures (pp. 66-67).

As the focus for teaching and learning becomes the ideas, and facts are used as a vehicle to enable conceptual understanding, the learning is guided around questions rather than objectives. – questions which engage the pupils and move the curriculum away from coverage towards understanding. The resulting change in pedagogy has been highlighted by Bernstein (2003) and also earlier in this thesis. As questions guide the study and conceptual knowledge is acquired, understanding and meaning are constructed as the teacher engages the leaner in more active ways.

Although curriculum documents call for knowledge, skills and understanding, it is the understanding that is often lacking in children's education. Bereiter (2010) cites research from the 1980s in Canadian schools which documented 'pervasive and deep misconceptions in virtually every school subject' (p.373). It is quite common to see misconceptions in school children of all ages and also to see a lack of understanding of certain concepts which hinder further learning. Many children who struggle in numeracy at primary school have usually not understood basic concepts such as doubling, halving and place value before they have been moved on to 'pencil and paper methods' before they are ready for it. Bereiter suggests that this lack of understanding goes right through the school system, citing common misconceptions about Newton's laws in physics undergraduates. The problem, he adds, is a

deep rooted one and will need a change in mindset for teachers who often reduce understanding to activities. We shall see in the case study how the purpose of projects can become the presentation exercise using computer technology that is the product of the work, discussions merely become the airing of experiences and thematic units become incoherent to serve no purpose in extending pupils' understanding. If however, learning is reduced to subject matter, (concepts, principles as well as facts), the teacher has to ensure that understanding follows. Without knowledge, there can be no understanding.

The effects of teaching concepts has been measured by Madsen and Lanier (1992) who demonstrate that 'conceptually oriented instruction' (p.14) raises the level of 'computational competency' (p.14) raising the level of understanding of what computations worked and enabling students to make connections between mathematical operations involving whole numbers, decimals, fraction and percentages.

Any form of integrated curricula must be concerned with the interrelations between the disciplines at a conceptual level and must also maintain the individual character of each discipline. We have seen how many models are concerned with developing skills or competencies as well as knowledge but do not show enough evidence to ensure that the intellectual demands of each subject are met at the propositional, procedural or conceptual level. Often generic skills will be taught without any concern with how they may have different outcomes in different disciplines.

By using a conceptual lens, generalisations from the disciplines relate to the unit theme and also to the individual disciplines under study. When subjects focus on the conceptual theme the subjects work together to facilitate a focused understanding of a common issue.

3.8.d Conclusion

There has been a rise in competency based curricula around the world, including the National Curriculum of England which focuses on generic skills as well as knowledge, although there is inconsistency in what these skills are, which, when combined with knowledge and understanding creates a competency. The focus on these curricula is on 'learning' but Priestley (2011) warns that these curricula are based on little theory which has led to the technical National Curriculum in England and Wales in which teachers are little more than technicians. A knowledge based curriculum can still engage the learners because knowledge is not fixed and arbitrary but is ever evolving through communities of scholars and thus can mean that teachers can engage pupils in active learning rather than passive transmission.

In comparing two models of how a topic on the town of Whitby might be taught, I have shown that when a conceptual lens is applied, the study can be given more depth and direction whilst studying the individual subjects in depth guided by questions. The study has a purpose and knowledge can be applied across subjects and the 'bigger ideas' can be understood. This type of integration relates to Bernstein's idea that a 'supra content concept' will allow the study to focus on the deep structure of a subject and will have an impact on pedagogy, which will now involve discussion and questioning by students. Erickson champions this form of study in which a conceptual lens is provided to organise the study with the focus on learning concepts and principles in each individual subject as well as the study being integrated at a conceptual level which enables pupils and teachers to discover generalisations and construct a deep understanding. This organisation for the study fills the void in understanding which there often is when pupils do not learn to understand concepts because the focus is often on skills and factual knowledge.

4. The Case. Leading change in an English primary school in Dubai

4.1 Introduction to the school

Dubai English Speaking School, (DESS), is a well established school in the heart of Dubai serving the educational needs of the 'English Speaking People of Dubai', (School Charter 1967). When I first began teaching in the school in 1990 it could be described as a school which was underperforming and not much happened in the next seven years in terms of directed development. This underperformance was highlighted in a school review in 1997, conducted by Southworth, Connor and Kirkby.

DESS is a good school with the potential to become an excellent one (School Review 1997).

Pupils came from middle class backgrounds and there were no socio-economic inequalities which often accompany underperformance in many state schools in England. The children of bankers, diplomats and well to do businessmen made up the school population and the school had a wonderful ethos: people liked the traditional discipline of the matriarchal, authoritarian Head Teacher and the history of the state of Dubai was inexorably intertwined with the school itself through the founders of the school who were closely associated with the Ruler, Shaikh Rashid, and who established the school through an Emiri Decree. The school had a great reputation but the terms 'cruising' or 'coasting' would best describe its state in 1990.

There were no written policies for any subject. In place of them were guidelines but only for mathematics. English was taught as each teacher wished to teach it and there were only guidelines on how to teach spelling and handwriting. Introduction to reading was through an old reading scheme but the methods were never reviewed. Science and other national curriculum subjects were simply not taught. There were only subject leaders for English and mathematics and year leaders played the role of co-ordination, mainly to ensure reports were

written to a prescribed quality and messages from the senior leadership were circulated to all members of staff.

It was a school that thrived on its reputation but didn't deserve a reputation for academic excellence. There was no measure of any kind of the standards and most pupils at that time were assured of a place in the local private school for their secondary education. Although this was a selective school most pupils gained a place there since there were not too many more pupils than school places available.

With the arrival of a new Head Teacher in 1997, many of the inadequacies described above were addressed and the school began to move forward. The concept of school development planning was introduced for the first time and was met with approval. The staff were to be involved in an audit to identify areas for development and were enthusiastic. 'This is what we should have done years ago' many said. However, this enthusiasm became tempered and turned into hostility when it became clear that being part of the working parties that were set up after the audit to address the need for changes, would involve more work on the part of the teachers. This would prove to be too much for some teachers who had been there many years and who had little inclination to change.

Teachers were challenged to familiarise themselves with the National Curriculum and the Literacy and Numeracy Strategies which the Blair government had introduced in England in 1998 and 1999. Working parties were set up to analyse the strategies and report back to the rest of the staff. Timetabling was introduced to ensure that teachers taught the discrete subjects of the National Curriculum but teaching remained very didactic and worksheet driven. Many of the teachers welcomed change but others buried their heads in the sand and refused to acknowledge the need to move practice forward. Meetings were held regularly by subject leaders but were met with resistance from many staff. Introducing new ideas was resisted. A visiting advisor in 2000 advised that the teaching of mathematics should move

away from the filling in of work sheets. The reaction of the staff was one of outcry. 'What does she know about teaching mathematics in a school of this standard?' Was heard said in the staff room. Resistance was also met to the introduction of history and geography as discrete subjects. 'Why do we need to teach children about festivals and other celebrations? I don't see what that has to do with history'.

The first set of SATs results in 1998 should have been a warning to all. Only 11% of children gained a level 5 in Maths and fewer in writing. Improvements in results followed as teachers embraced the need for change and many older teachers retired. However, there had been no significant change in pedagogy, and lesson planning was shared between five teachers in a year group with one teacher being responsible for a subject. This, of course, meant that teachers had no ownership of plans and did not personalise them for their own class, so notions of personalising learning were very difficult to introduce whilst this was the dominant culture. The school retained a very didactic approach to teaching the discrete subjects of the National Curriculum with teachers following the QCA produced schemes of work and the Literacy and Numeracy Strategies. Year 4, for example was a typical group of teachers. One acted as year co-ordinator and led planning meetings each week. One person would take responsibility for numeracy planning, one for literacy and the planning for the other subjects was shared out among the other teachers who would produce plans for all to follow. The maths plans were from the internet Hamilton Trust site and each individual teacher would take the generic plan and teach it to his or her class without any amendments. The subject leader would try to address the need for each class to have different plans according to children's needs but found it difficult to make headway. It was a similar case in literacy in which the strategy was followed blindly, week by week regardless of children's needs.

This was very much the school when I became Head Teacher in 2005: the discrete subjects of the national curriculum were taught, pedagogy was didactic and worksheet driven and there was no reflection amongst the staff to develop their personal practice. The following sections

of the chapter will outline the school's development and how it engaged with the rhetoric of the time and introduced cross curricular approaches and took up initiatives such as Learning to Learn (L2L) and Assessment for Learning (AfL) without understanding any theories behind any of them. As the school monitored the improvements in teaching and learning, questions were raised about the validity of some of these approaches. The preceding chapter provides a theoretical explanation in order to better understand the perceived need to introduce cross curricula approaches, constructs such as L2L, AfL and the connections between cross curricular approaches on the one hand and pedagogical approaches on the other.

As the incoming Head Teacher of the school and having taught there for fifteen years, I was well aware of what I saw as its strengths and weaknesses. I had always been eager to improve my practice and achieve the best possible for the children in my class and often introduced ideas from in service courses both internal and external. My background had originally been in secondary education and I moved into primary school after working in a middle school in Sharjah for two years teaching both primary and secondary. I had experience in my different schools as Head of Department, Head of Year, Head of Key Stage and Deputy Head. It was when I was Deputy that I sought to extend my knowledge of Leadership and Management and study for a Masters Degree. The principles of leadership that I learned from this and which I had seen a lack of in other leaders during my career, inspired me to seek a headship and to develop a school based on a vision with high expectations at the heart of it and an appeal to teachers' pedagogical values as to continually reflect on and develop their practice.

4.2 The strategic plan

Upon being appointed Head in 2005, I immediately established a vision for the school with input from a whole school staff meeting and identified, through the same process, a strategic plan in 2006. One of my first actions as Head teacher was to gather the staff together to discuss what sort of school we thought we were. Some of the more established members of

staff used the term ‘prep school’ to describe us whereas others preferred to say we were a national curriculum school. We discussed what we thought the school should be with reference to the values that we, as staff members, thought were important and through this mutual discussion, a mission statement was produced with the input of all members of staff.

When doing this I set out my own educational values and principles: Based upon my experience and my reading for a Masters Degree, I had firm ideas about educational leadership and believed in listening to people to garner their professional views, I would empower people but expected those empowered to accept responsibility, I believed in children being given the best opportunities to attain the highest standards, to enjoy their education through an enriched curriculum and through pedagogy which was stimulating. I valued a school in which relationships were positive and in which staff were intrinsically motivated to do their best for the pupils. The Mission, which embodied these values and those of the staff was written as follows:

> Dubai English Speaking School enables the child to develop as a lifelong, independent learner, providing a balanced and structured curriculum in which the needs of the individual and his/her potential are paramount. High self-esteem is developed in a caring, nurturing and cooperative environment in order to foster the leadership and interpersonal skills needed to be a citizen in modern and changing society.

The school mission called for a ‘balanced’ curriculum and to develop ‘life long, independent learners’ with skills that would be needed for life. There was no mention of knowledge, although the national curriculum document called for knowledge, skills and understanding, (DfEE 1999). What did all this mean in reality? We really were taken in by the language of the time without having understood exactly what it all meant for the education of our pupils and, I suspect, from my discussions at conferences with others, that many Head Teachers

were in a similar position of ignorance, seemingly willing to accept initiatives from central government or elsewhere, without question. The rhetoric of the time was about developing cross curricular links to ensure the transfer of learning and newly appointed teachers from the UK and overseas schools would talk of the need to teach skills rather than content and to make subjects cross curricular to ensure transfer of such skills. This was entirely consistent with what was expected of teachers from Ofsted. In 2008 a small scale study published by Ofsted, (Ofsted 2008), praised curriculum innovation that included interdisciplinary links rather than discrete subjects as a means of improving pupils' achievements and personal development.

4.3 Improving teaching through Assessment for Learning and Learning to Learn

The school strategic plan was thus concerned with developing the standard and style of teaching in order to present opportunities for pupils to reach their potential and, to this end, highlighted professional development as important in its, (the school's) development and introduced Assessment for Learning (AfL). Assessment for Learning is a process for teaching which is based on research (King's Medway Oxfordshire Formative Assessment Project started in 1999 by King's College Assessment Group along with teachers) and which built upon Black and Wiliam's review (1998). The focus of this was to involve teachers and children in the teaching and learning process more. It involved making learning intentions clear, giving immediate feedback, self assessment and discussions about learning between teacher and pupil around success criteria. Drew and Mackie (2011) suggest that Wiliam's (2009) definition of Assessment for Learning will engage pupils in the activities that are associated with active learning – collaborative learning, reciprocal teaching, peer assessment and pupils taking ownership of their learning which will include metacognition and self assessment. Children thus develop an understanding of what and how they are learning, to recognise success and take responsibility for their learning and in doing so, the traditional roles of teacher and learner are transformed. Feedback is crucial and should not be passively

received. Rather, it should stimulate reflection and discussion which support the students' learning and enables them to become better learners.

This was to become important when the school addressed the issue of more active learning when curriculum developments began to demand a different approach to pedagogy. The question of how the curriculum affects pedagogy was first raised by a visiting advisor, Paul Ginnis, who suggested that in order to develop a more active form of learning, curriculum barriers needed to be broken down.

I first introduced the idea of AfL to the senior leadership team and then discussed it with middle leaders and we agreed that it was a productive way forward. I explained its purpose in relation to the school mission which all staff were involved in articulating, in the hope of getting 'buy in' and motivation.

A series of staff meetings was held in order to plot the way forward and discussions were held at middle leader level. The senior leadership and other teachers who were interested, or who felt they had the expertise (there was one teacher who was in the course of completing an National Professional Qualification for Headship, NPQH) led the staff meetings and a monitoring programme was set up to assess the impact of assessment for learning practices. The key features of AfL were explained to the staff and references were made to Shirley Clarke's book (2001) and her research (Clarke 2001).

The first meeting was held in the staff room and white boards were used to aid explanations of key features, starting with making learning objectives clear to the learners. All staff attended and there appeared to be varying levels of engagement. The purpose of making learning objectives clear to the learners was explained and examples given from the sources mentioned above. In the following series of meetings in the autumn term, the different

features of AfL were explained and discussed amongst the staff to ensure sound understanding and a 'buy in'.

However, many did not fully understand the 'spirit' of Afl. Many were happy to engage in its tokenistic elements such as using 'thumbs up and thumbs down' (a process in which children showed the teacher a 'thumbs up' sign if they understood the learning objective when asked by the teacher, usually at the end of the lesson and a 'thumbs down' sign if they did not) in the thought that this engaged them and the pupils in some form of meaningful self assessment. Some staff saw it solely as a means of formative assessment but without understanding fully what formative assessment is or how it should be used. They saw assessment as being polarised between summative and formative. They did not understand or accept that they can be mutually inclusive as I tried to explain and which was articulated in an assessment policy. Some of the year leaders were concerned with using the 'key objectives' published as part of the Numeracy Strategy to be the tool they could use to do formative assessment. Heated discussions took place with two year leaders about why summative assessments should be used as well as formative and I explained that it was the process of formative assessment embodied in Wiliam and Black's ideas about assessment for learning that is important. Therefore, making learning intentions known to the learner, checking progress in the lesson against success criteria by using self and peer assessment and being given feedback by the teacher and understanding next steps are fundamentally important to the process. However, the tokenistic elements of the process became embedded in classrooms across the school without the spirit of the process being recognised. Methods designed to help the process of self assessment became common, for example thumbs up/down and the use of traffic lights. However, the real process of AfL was subverted to these simplistic activities which had little meaning. What we experienced in our school is borne out by Swaffield (2008)

> Practices can fall short of being assessment for learning if, for instance, they are enacted in a procedural, ritualistic manner that belies their pedagogical essence, (p.4)

It is also interesting that Professor James speaking on Teachers TV (2010) has estimated that only in 20% of schools was AfL used effectively beyond the tokenism that we had seen in our school. Videos of AfL in action were shown to the staff to encourage examples of the process being introduced to classrooms and lessons were monitored to encourage this. A series of staff meetings led by members of staff from different positions in the school served to encourage the staff and inform them of examples of what was considered best practice. (That this type of professional development was later seen to be ineffective, is worth noting as one explanation of why AfL did not become embedded across the school). Staff were given references and hand outs explaining aspects of AfL. Staff meetings were presented in terms of where this all fitted into the mission statement in order to get 'buy in' and to motivate the staff.

Staff offered ideas on how to make learning intentions clear and there were many ideas generated beyond the simple case of writing them on the white board. Pictures of goal posts (targets) were seen in exercise books, teachers explained learning objectives and some teachers used rich questioning with the children to engage them in the learning activities and to get them to say what the learning objectives were. Nevertheless, despite these efforts when an observer asked children in a class what it was they were learning, children would often reply by saying what they were doing. Observations of lessons revealed that teachers were not truly engaging in the principles of AfL. That is to say, crucial discussions with the learner were not taking place as part of teachers' practice in the classroom, except in a few exceptional cases.

Pupils' understanding of how successful they were in their learning was another aspect of AfL that was introduced to the staff. Success criteria are another fundamental of children actively engaging with the learning process. The same processes were used by school leaders to encourage the use of success criteria. Some teachers began to use them effectively and developed their own practice through action research and self reflection but for many, success criteria involved a revisiting of the lesson objectives and there was no real attempt to use them with pupils to enable them to understand whether they had been successful in say, producing a piece of narrative writing. The best practice involved children, under the skilful guidance of the teacher, identifying their own success criteria and self assessing themselves against them in order to see how their learning could be improved and by identifying their next steps after feedback from the teacher. This best practice was evident in the school after a long process of development but it was not widespread. It is a practice which encompasses the best features of active learning which, as the curriculum became more integrated, was necessary as inquiry, questioning and constructing meaning were demanded. This is consistent with the views of Drew and Mackie, (2011) who suggest that many of the techniques of assessment for learning will engage pupils in the processes of active learning i.e. pupils becoming more responsible for their own learning through self assessment, collaborative learning, reciprocal teaching, peer assessment and metacognition. One team of teachers who were engaged in an action research project did establish ways of using success criteria effectively and this will be detailed later in the section entitled 'Further developing the Curriculum'. In brief, though, they reflected on their practice and their use of the plenary to review the success criteria. They decided to allow the children revisit the success criteria through out the lesson. The called the success criteria 'Steps to the Stars' in child speak and children became familiar with what they had to do to reach the stars. Evidence was collected which showed that the children benefitted from this approach and understood what it was, that they were learning. There were very good examples of AfL in use but they were not widespread which is consistent with James's assertion, above, that only 20% of teachers used AfL effectively.

The reality was that in the majority of classrooms the tokenistic elements were still used without the real process being embraced. A heartfelt discussion between middle and senior leaders revealed why – there was not enough time in the school day for reflection and the staff were involved with the prescribed coverage of the Literacy and Numeracy Strategies (and had been for most of the young staff for all of their careers) whilst being asked to do something which was in sharp contrast to this - to personalise learning through the best practice of Assessment for Learning which meant children would move their learning on when they were ready. Staff had become reliant on a framework which guided them through teaching children from week to week. Some were unaware of next steps in learning when a child had acquired certain knowledge. So there were hindrances to developing pedagogy which could be described as active learning which we were to discover later was demanded as we developed the curriculum. This contradiction in developing learners whilst focusing on a curriculum demanding the coverage of content and pre determined outcomes is recognised by Swaffield (2008). A development of the curriculum was needed to move teachers away from the restrictions of the Literacy and Numeracy Strategies and their emphases on didactic teaching approaches resulting from the need for coverage.

The focus of the school's strategic plan was to develop its curriculum and pedagogy amidst a rhetoric of cross curricular links and a desire to introduce Assessment for Learning including metacognition. However, the reality was that teachers followed government strategies which depicted week by week units of work and recommended a four part lesson and a particular type of pedagogy. Outcomes were pre-set but not by teachers, by the strategies. Teachers thus became enslaved by them. For example, weekly units of work from the strategies were covered and the next week's units introduced despite whether children had fully understood what had been taught.

The school sought advice from in service providers to help the staff to develop their pedagogy. Paul Ginnis visited the school on three occasions between 2006 and 2010 as an in

service provider and introduced to the senior team and then the staff, the ideas of generic skills and learning to learn.

The focus of the first in service session with the staff was to offer ideas on how to make lessons more engaging, interesting and challenging. Many ideas were offered which involved children taking a more active role in learning, for example, hot seating, marketplace but the session ended with a discussion about the need for generic skills and the need for children to simply learn how to learn. It was met with approval from staff and very positive comments such as 'This is what we should be doing'. Ginnis also suggested that the school should identify what these generic skills were by referencing other schools' L2L skills and educational charities such as Futurelab who challenge schools to develop pupils' critical thinking skills and questioning skills.

The success of this would be measured by identifying certain skills and giving feedback to children about their ability in each generic skill. A 'Learning to Learn Committee' was set up, made up of a group of teachers who were interested in developing pedagogy and taking the L2L agenda forward. They identified certain activities, which could be used in lessons to allow pedagogy to move from the didactic, and discussed what type of generic skills could be focussed on by teachers in order to help children to learn. A handbook was produced for teachers with activities which might produce lessons in which children had opportunities to be actively engaged. The committee also discussed producing a booklet of generic skills that might be taught as part of lessons and which would enable children to develop such skills which would increase their learning ability. Each member of the committee in turn discussed this with their colleagues in their year groups and it was agreed that certain skills would be identified and agreed upon by all staff and a booklet be produced which would allow for a record to be kept of when each skill was visited by a child. The aim was to ensure that each member of staff would focus on developing these generic skills whilst at the same time covering the national curriculum. The generic skills that were identified by the staff were:

creativity, self management, working with others, managing information, thinking, problem solving and decision making and communicating.

Some of the ideas which he encouraged the staff to introduce into lessons were good. There were some excellent lessons which involved highly challenging mathematics in which open ended questions were posed and children encouraged to find solutions to challenging mathematical problems. Some teachers embraced what Ginnis called a split screen lesson in which the learning objectives from the curriculum were set alongside the generic skills that children were to develop during the lesson.

The other aspect of Learning to Learn that Ginnis introduced was metacognition by which learners would talk about their learning (as in AfL) and discuss the success of their learning and what might be required to improve it. Metacognition, a term first used by Flavell (1976), allows learners to learn new concepts faster than those without such capacities and without demanding more of the teacher, thus giving them greater independence in their learning. This is crucial to personalising learning as pupils with abilities in metacognition demand less time of the teacher and can co-construct teaching and learning with the teacher and even transfer the role of teacher to themselves. Pupils who achieve this state of independence can select experiences and outcomes of learning themselves rather than being dependent on the teacher for the mode of the outcome, the evaluation of the learning and feedback. There was a clear link here, between L2L and AfL.

Developing generic learning skills through a L2L approach undoubtedly improved learning and teaching practices. Inculcating habits and dispositions such as resilience, readiness, resourcefulness, reflection and reciprocity is positive in regard to learning but did this lead to developing 'independent life long learners' as the mission intended and which was the motivating factor in introducing these ideas into school?

The focus from the school's point of view was to improve the challenge in lessons and to make them more active by encouraging children to talk about and question what they were learning. However, we were not sure why we wanted this beyond a need to motivate pupils more by enabling them to enjoy lessons – and to challenge the pupils. Any theory that there was behind the idea of Learning to Learn and generic skills was unknown to us. It sounded very sensible. If we develop certain habits such as resilience, and teach generic learning skills such as group work, children will talk about their learning metacognitively and will 'learn how to learn'. We were unaware that the ideas of Paul Ginnis and the Learning to Learn project, supported by the Campaign for Learning were unfounded in theory. Ginnis explained to a listening senior leadership team how his ideas involved children in 'co-constructing learning' with their teacher and how, if children were to become better learners, as his ideas suggest, we would need to break down barriers to their learning, by which he meant timetabled lesson times and discrete subjects. Further discussion introduced the notion of breaking down 'barriers to learning' by dismantling the discrete subject timetable and integrating subjects whilst following a skills based approach to learning. This was very popular rhetoric of the time, and still is. There is no need to teach discrete subjects, break down the barriers to learning that these boundaries have imposed and teaching and learning will improve as children acquire the generic learning skills which they need to become expert learners.

There is no doubt that lessons became more varied than the worksheet approach. They also became more challenging as standards rose as evidenced by improvement in summative assessment results but I was unsure of any theoretical basis for some of what we were doing. There was also some conflict between getting improvement in test results and what was happening in classrooms. As teaching changed by personalising learning as demanded by AfL, this should have led to improved results but did it? Were the constructs that were tested indicative of an improvement in pedagogy. Did Learning to Learn have any impact on these

perceived improvements? Although these questions were interesting there was no evidence to suggest one way or another.

4.4 Initial plans to make cross curricular links

As Head Teacher of the school, I was also interested in developing a 'balanced' curriculum as was identified in the school mission statement. As with the development of learning strategies and its contradiction to the coverage set out in the National Curriculum and the Literacy and Numeracy Strategies, so developing a broad and balanced curriculum conflicted with the government's interference in defining what was to be taught in schools. By focussing on literacy and numeracy targets through the Literacy and Numeracy Strategies, the government ensured that a broad and balanced curriculum, in which the arts and humanities had as much importance as literacy and numeracy, was not, in fact a priority, despite the Primary Strategy (DfES 2003).

Nevertheless, the school development plan included a curriculum review involving senior and middle leaders. Meetings were held about the curriculum and a need to develop it in line with the mission and these meetings inevitably began to centre on the 'creative curriculum'. One year group pioneered a cross curricular approach. Year 2 planned in this way and realised that the coverage demanded by the national curriculum hindered their pedagogy.

A newly appointed senior member of staff had had experience in developing the 'creative curriculum' in a previous school. It became clear her model was in fact a skills based curriculum with many cross curricular links. In an attempt to make sense of the term 'creative curriculum' I carried out some basic information gathering from websites and the term seemed to refer to the following:

Themes, topics skills, diverse contexts, integrated units, modules, strands asking children what they want to learn that reflect interests to develop independent learners who can collaborate. Other factors that were identified were that the needs of the children, not subjects

should drive the curriculum – examples of drivers may be enterprise skills, environmental issues, personal and social development, communities or spiritual and moral development.
It appeared that children's interests were important in deciding topics as well as the 'relevance' of the topic – as natural links could be made between areas of learning. The curriculum can thus change to reflect current issues and interests.

The purpose behind these approaches was to help motivation levels and engagement.

My initial views were that motivation and engagement were matters of pedagogy. Good teaching through innovative lesson planning can engage children. This raised questions about the relationship between curriculum and pedagogy - the 'what' of education (curriculum) and the 'how' (pedagogy), as I saw it.

However attractive all this sounded, it posed more questions than it provided answers. Why should the 'barriers' that are provided by school subjects, limit learning? How is pedagogy affected by the structure of the curriculum? Is a skills based approach to learning, thus making knowledge instrumental, commendable?

Ginnis also introduced the idea of constructivism into the school's thinking, when discussing pupil learning. The linkage of constructivism to 'breaking down barriers' and the apparent polarisation of discrete subjects and traditional pedagogy on the one hand and constructivism and cross curricular links on the other also raised the question of why there should be such a polarisation. Could not there be interesting lessons in which pupils thought independently and constructed their own meaning in a single subject? Was there any theory that supported generic skills, cross curricular approaches, or a skills based curriculum? What theories, in turn, supported a knowledge based curriculum?

Initial explorations into cross curricular models revealed that they focused on skills, motivation and the engagement of learners which begged questions of why should this approach motivate and engage learners more than a single subject centred approach. It also raised the question of why a didactic approach to pedagogy was associated with the traditional subject approach to the curriculum?

I needed to be clear about the place of knowledge and skills in the school curriculum, the value of cross curricular topics as opposed to discrete subjects, the role of constructivism in pedagogy, the value of genericism and the link between curriculum and pedagogy.
Finally, how does the structure of the curriculum affect learning?

Further questions that were raised as I led the school in its development between 2005 and 2010, were:
What theories supported generic skills, cross curricular approaches, skills based curriculum? and a knowledge based curriculum?
Why is there a polarisation between discrete subjects and traditional pedagogy on the one hand and constructivism and cross curricular links on the other?
Why was didactic teaching and passive learning associated with discrete subject teaching?
Why does breaking down curriculum barriers change pedagogy?
Could not there be interesting lessons in which pupils thought independently and constructed their own meaning in a single subject?
What is the theoretical basis for curriculum integration?
Do some models of curriculum integration enhance learning?
What is the purpose of curriculum integration?
Why has curriculum integration become popular?

4.5 Further developing the curriculum

In the first phase of the school development I had introduced the idea of integrating the curriculum in order to make it 'balanced' in accordance with the first strategic plan 2006 - 2011. One year group had been particularly eager to pilot this and began to plan for cross curricular work. Myself and the member of the leadership team who line managed the Year 2 leader discussed the need to make cross curricular links. We all agreed that it would enable us to make the curriculum more broad and balanced and we discussed the educational benefits it would bestow on the children. We agreed that it might make learning more connected as the Dubai Schools Inspection Bureau (DSIB) inspection framework (KHDA 2008) called for and thus improve children's awareness of what they were learning, making it more meaningful (Hayes 2011, Vars 1991), and making children more motivated. Beane (1996) adds that cross curricular study will aid transfer and retention of learning and indeed Ofsted (2008) encourages cross curricular learning.

It became clear from the work that was done by Year 2 that changing the curriculum was going to result in a change in pedagogy. The Year 2 team carefully considered their move towards a more cross curricular approach. At that time the year teams in the school generally followed the QCA schemes of work and it initially meant breaking away from that which had provided a safe structure for the teachers and children to work in. As they began to plan their cross curricular work, they focussed on the term creative which had become associated with the concept of cross curricular work. They discussed the ideas in regular year group meetings and established what creative would mean to them. The Year 2 leader reported to the Head Teacher that at the most basic it would mean not using the objectives from the QCA schemes of work and the content heavy literacy and numeracy strategies and would mean that they should begin to make links between different subject areas. At best, it would allow literacy, and to a lesser extent, mathematics, to permeate the entire learning process. She added that flow was introduced but it paid lip service to creativity, coverage worsened and pedagogy remained stagnant. This process highlighted the need for personalisation and a need to really

engage with Assessment for Learning which had to become central to all learning and teaching, and a need to really define creativity. The next step involved a move away from the prescribed curriculum to the modalities and flow. The question was asked, 'What do the children need to know in order to become creative in their knowledge skills and understanding and the application and transference of it'?

The answers that the staff came up with were as follows: to make connections, to interact with peers, to think and question, to analyse, to envisage, project and elaborate, to become risk takers (as advocated in the Learning to Learn agenda).

Staff struggled with what they perceived as a loss of control and lessons went on longer than planned in order to ensure coverage, over which there was a mild panic among some staff. The team leader introduced the idea of problem solving, - finding answers to key questions-, to turn attention away from coverage. At this point, by coincidence, the team noticed a lack of buy in and interest from the children in the learning process. The children were not engaged and the team asked 'Why?' They thought about turning the key questions around and making them hooks for learning. The year leader, while working closely with the staff, informed the SLT that they were further moved out of their comfort zones as they became even less reliant on documents for their prescribed content. It highlighted the need for pedagogical development by the staff, as new skills were needed for a new kind of teaching. The key principles of assessment for learning were visited repeatedly in meetings, as this required the children to engage more with the learning process and would link theory, practice and creative/active learning. It also highlighted that children were individuals and should not be put into boxes or ability groups within lessons.

What had the Year 2 pilot scheme taught us as school leaders about cross curricular work?
It had mainly pointed out that as the curriculum changed from that prescribed by the government, so pedagogy needed to change. We had done no research about the effects of

connecting different subject areas and this almost became secondary. We simply assumed that because inspection frameworks, asked for it,that must mean it is good practice and enhances children's understanding of each subject area.

4.6 Continuing professional development (CPD)

As the Year 2 pilot scheme had shown a direct link between curriculum and pedagogy, it raised questions about how to further develop pedagogy in order to enhance learning and make the delivery of a new curriculum possible.

Professional development of staff had been identified as important in the first strategic plan 2006-2011 and as a result of an evaluation of the success of that plan and an internal audit on the effects of the CPD policy, a teacher was appointed in 2010 without class responsibilities to lead the CPD in the school. Although many teachers had attended in service courses, both in Dubai and in the UK, evaluation of classroom practice showed that the true principles of AfL were not embedded in practice.

We had focused in staff meetings on developing teachers' skills in order to teach to the principles of AfL but the reality was that not many were doing so effectively and this was entirely consistent with Swaffield's conclusion (2008).

The newly appointed CPD leader was aware of the need to develop practice in line with AfL and how much CPD had been ineffective. We discussed CPD moving away from whole school staff meetings and external courses and thinking more of personalised CPD involving a commitment of staff to their own professional development through self reflection and being aware of their own needs. The focus on their own needs was to relate to the school vision and a realisation that the actions of all members of staff, particularly in classrooms were important in realising the vision. This was to result in the performance management system becoming more developmental and motivational rather than evaluative and was thus

directly linked to the CPD programme. Both of these were to focus on developing teachers' pedagogical skills in order to improve standards and provide improved learning experiences which would be demanded by the developments in the curriculum, as the Year 2 pilot scheme had suggested.

The first part of the process of self reflection was to introduce the idea of action research to the staff.

4.6.a Action research

The idea of action research was introduced into the school as a development tool. The impetus for this came from an audit of middle leaders in the summer term 2011 who were asked to comment on the use of Assessment for Learning (AfL) in their year groups. The audit and lesson observations revealed the following:

- more development was needed to ensure children understood the learning objectives meaningfully
- not all children could understand successful learning (through success criteria)
- oral feedback was not planned into all lessons
- more time was needed for pupils to reflect on their learning through effective peer and self assessment.

Typical professional development thus far had been along the following lines: introduction of initiative by SLT, teachers attend courses or visiting providers present an initiative, teachers working groups set up to encourage its use, monitoring of initiative. The results of this kind of approach usually resulted in this scenario: some teachers took on the initiative because they wanted to and understood how it could improve teaching and learning; others tried to but couldn't actually succeed because they didn't understand the initiative fully; some teachers didn't engage. This is often the result of 'top down' approaches, the inadequacy if which are documented in the literature (Early and Porritt 2009, Eggers and Clark 2000).

The challenge facing the SLT was to persuade staff to improve their practice which was at the heart of the school development plan by reflecting on current practice not because of some 'top down' message from SLT. It was to create a culture of whole school change and improvement to help teachers to develop rather than them being told to. The involvement of the SLT in their own research project encouraged the ethos of 'doing with' rather than 'doing to'.

In September 2011, Mary Dawe from the Institute of Education addressed the staff to introduce the concept of action research as a means of professional development. Teams of staff, (year groups or subject teams), identified a research question related to AfL. Members of the SLT and the CPD leader attended a course led by Professor Jean McNiff, part of which involved discussion about action research in our school. We related our ambitious plan to try to move practice on by allowing staff to reflect and develop their own practice. We, as a leadership team, would also reflect on our practice as enablers of CPD. In fact, as part of our reflection, after spending two days with Professor McNiff, we felt that we had been too top down in our initial introduction of action research and decided to change tack when we returned to school.

The staff meeting about action research after the course was made voluntary. In this we discussed with staff, the basic method of conducting action research in school. Only one team chose not to come to this meeting and they approached the CPD leader soon afterward to find out what they had missed as they didn't want to feel left out.

Teams of staff, (year groups or subject teams), each identified a research question related to AfL.

The research questions which were produced dealt with the following aspects of AfL:

- supporting children to track their own learning journey,
- involving children in reflective practice throughout the lesson (rather just at the end stage of a lesson),
- pupils accurately assessing their own ability,
- pupil conferencing,
- developing questioning techniques to improve teaching and learning,
- standardising plenary sessions to improve AfL,
- improving peer led and teacher assessment practices,
- improving the use of success criteria,
- improving feedback,
- providing opportunities for reflection to improve pedagogy.

Strategic overview of research project

After identifying research questions, each team was asked to present their focus of research in a whole school staff meeting in the first term, 2011-12. The following strategic overview was planned and presented to staff.

Term 1	identify and narrow down research question identify baseline data identify data collection techniques plan for implementation
Term 2	implement research and gather data to use as evidence of influence on teaching and learning
Term 3	analyse findings and share with others reflect on action research discuss where to go now

Table 4: Strategic overview for action research projects

An example of one piece of research is presented below.

Year Group: - Two

Title of Enquiry: - Impact of integrating feedback/constant evaluation IN lesson, moving away from end-point evaluation i.e. involving the children in reflection throughout each lesson.

This project linked to all strands of AfL but was significant in relation to the school audit of AfL in that it directly focused on the important aspect of feedback about learning.

The practice in the year group had been to reflect on teaching and learning post session and not always involve the children beyond a traditional plenary session in which the main points of the lesson were reviewed but significantly there was often not a review of learning by the children other than by the common tokenistic methods referred to earlier such a thumbs up/thumbs down. Thus, the children had little involvement or ownership of identifying the next steps in their learning. The concern of the teachers was that there was little time to review and reflect over the course of a unit of work and that there was little reflection by the learners in their lessons. This had been a concern raised in the audit meeting in the summer term of 2011 and raised questions about how effective AfL could actually be built into lessons. It was clear from meetings with teachers about the action research and through lesson observations by the year leader that there was little reflection by learners and that there was little identification of success criteria or of where and when any awareness of success was being identified. There was also a feeling in the year group of an over reliance on marking and written feedback.

The course of action the year group took was to revisit how they planned lessons and move the identification of success criteria to the forefront of lessons so that children became involved in identifying the success criteria, thus providing a focus for discussion about learning and opportunity for specific feedback. Children became involved in identifying success criteria by providing them with examplars of best work from previous years or from

teacher modelling. This was facilitated in lessons by timely use of questions and use of visualisers.

To help link practice with theory, the year group accessed a range of literature about AfL and collected evidence of their success in the form of photographs, video interviews with children, observations of lessons and photocopies of children's work.

As a result of their research project, the year group planning became more rigorous, homogenous and consistent across the year group with a greater emphasis on stating how to involve children in identifying success criteria and providing opportunities to involve children in discussions about their learning. Children have thus been provided with greater opportunities to have ownership of their learning activities. The result was that children were more aware of the learning objectives (the purpose of their learning), were more reflective about their learning, could identify the next steps (which they had termed 'Steps to the Stars') in their learning and understand the expectations of the teacher more, so that they could aim much higher themselves.

The year group recognised that this good practice should be seen in all lessons and all curriculum areas and importantly, that the process needed to be monitored and constantly improved.

The Year 2 team and all the other teams fed back the results of their research in a whole staff meeting and completed questionnaires so that the effect of the research as CPD and as a school improvement tool could be analysed.

Evaluation

As a senior leadership team, we wanted to analyse the influence of action research on teachers and their pedagogy. A questionnaire focusing particularly on CPD was given to all staff and

each teacher was asked to evaluate their team's project. The questions reflected factors for effective CPD as identified by Earley and Porritt, (2009).

There was a 95% return rate and the replies were overwhelmingly positive with the majority of answers in the 'strongly agree' or 'agree' category indicating that the research was seen as an effective way of improving practice

Professor McNiff herself, on a return to the school in the following academic year, described the process as 'leading the way in the Middle East and beyond'.

The process of enquiry doubtless had an influence on practice and formed the basis of further action research which was encouraged in the following academic year. The feedback from staff about the value of the action research was encouraging and the excitement created when the staff teams fed back to each other had not been seen in a staff meeting before.

The challenge for the SLT was to ensure the findings from each research project were taken up by other teams in order to improve practice and to continue with action research as a school improvement tool with which teachers engaged willingly and this was done in the following academic year when other research projects, for example, The Use of the ipads as a learning tool.

4.6.b Performance management

The process of self reflection meant changing culture and practice. The introduction of the concept of action research was the beginning of this process but in developing pedagogy at an institutional level it, (self reflection) needed to become part of the performance management system and this system itself needed to be developed so that individuals could aspire to achieve the same goals as the school desired. There was thus an appeal to the school vision. The building of the school vision had included the whole staff, firstly in 2005 and then when

it was revisited when the Primary School became more closely associated with the Secondary School which it had opened in 2011. The values that the staff, parents and children felt were important, were the basis of the vision. The vision was physically on display all around the school but we required a 'buy in' to it, - a belief in it - rather than compliance to it (Senge 1990) and it formed the central focus for when the staff were involved in structuring the school strategic plan 2011 - 2015. Out of this staff involvement there were key areas of improvement identified - teaching and learning, curriculum and assessment, particularly its role in the pedagogical process. Encouragingly, these are the three message systems of realising educational knowledge according to Bernstein, (2003). It was these foci that the staff were asked to think of when setting targets for their own development, enshrined in the performance management system. Further input at whole staff level focused attention on ensuring that these targets had an impact on pupils' outcomes.

The intention was to enable a dynamic link to be made between the school vision and individual performance, to build an awareness in individual teachers that they play a key role in developing the school. This involved an appeal to higher order values and would involve a change in relationships in a transformational way. There would be a need for pedagogical discussions amongst staff and between staff and their immediate line managers and there would be a need for these discussions to be honest and open in order to encourage self awareness and critical self reflection, putting pedagogical development at the forefront of school improvement, particularly so as it was so closely linked to curriculum development.

The need for building '*pedagogical capital*' (Munro 2011 p.49), the importance of teacher learning about how children learn (Lofthouse et al 2010), and for school development to be about student outcomes and be '*rooted in classrooms',* Hopkins and Craig (2011) are well documented. We had also discovered that improving pedagogy was an important part of curriculum development.

However the management structures and processes need to function in such a way that teachers are encouraged to reflect, (Smith, 2001).

4.6.c Coaching

Coaching was seen by the myself and the teacher in charge of CPD as a tool to enable this reflection, encourage an engagement with pedagogical improvement and give energy to the performance management system and for teachers to willingly engage in collaborative forms of CPD. If this process was at the heart of school improvement, then coaching could play a key part in making it work.

It was felt that targets should be directly linked to pupil outcomes, school vision and realised through a performance management system which allows for self-reflection and which demands self-improvement from teachers through a process of self-awareness. A successful relationship between an individual and an organisation is achieved when both parties achieve their goals which is a fundamental dynamic in any organisation, (Downey 2004).

It was intended that coaching conversations and meetings held in a coaching style would throw the focus of discussion on the challenges of a teacher's job at a pedagogical level by referring to pedagogical performance management targets, rather than letting the meeting focus on the daily routines that often focus teachers' attention. The focus was to challenge teachers, give feedback, (key focuses for successful pupil learning), move them out of their comfort zones and develop their practice moving them out of set routines that they may have practised for many years and towards evaluating their own performance as well as evaluating it collaboratively with their line manager.

Coaching was introduced to the school as a tool which would '*facilitate the performance, learning and development of another*' (Downey 2004), the tool which would allow teachers to reflect on pedagogical targets and their practice through performance management processes

which, in turn, would become more focused on development than accountability. The focus was to be on unlocking potential and maximising performance.

This is consistent with Evans' (2007) assertion that performance management by itself will not contribute to improved attainment levels; however, individual elements of performance management such as CPD and lesson observations can make a difference. Performance management can facilitate processes which support improvements in learning and organisational performance. It is through CPD that performance management is successful in engaging teachers. Indeed target setting for performance management can provide a more systematic approach to CPD. Coaching, it was thought, could facilitate an awareness about the need for CPD that would result in improved practice.

Coaching was introduced as a tool to change the dynamics of meetings in order to engage teachers with improving their practice. It was designed to aid the shift in culture towards a more collaborative approach and to be central to a CPD culture through which teachers developed their practice and kept evidence of it.

My role as Head Teacher was crucial. Myself and the Senior Leadership Team were to be seen as role models for the coaching. Two cohorts of coaches were identified to train to Level 3 standard and achieve a qualification in coaching based on theory and practical sessions assessed by the British School of Coaching. The Head and the SLT were members of the first cohort, along with some of the school's middle leaders.

The aim was to ensure the language of coaching was the embedded language across the school in formal and informal meetings in order to facilitate an engagement in the staff of the need for self-awareness and improvement and to enable them to see solutions to problems and professional development needs themselves.

There were to be two levels of coaching: –

1. Confidential one to one sessions with generic themes being identified as a result of the experience of the coachee. These sessions were organised to help any member of staff who felt they would benefit from an opportunity to discuss professional problems and to find their own solutions to them. In addition staff who were new to the school and those changing roles were offered coaching sessions to help them through the initial stages in their new positions.

The coachees clearly valued the opportunity to talk confidentially. Below are some responses which show the positive effect of coaching on the school culture:

'I really appreciate the opportunity to share this in a safe environment',
'I'm more confident through sessions with you'
'It's good to focus on my career and how I progress…..I'm going to approach next year with a positive attitude'

There were also the benefits of staff becoming more self aware:

'I'm not thinking about my actions on others - the effects of the difficult working relationships I contributed to '

'(I) Talk to you in a professional manner rather than moaning. I realised I had a great part to play and I had to change'

I was confident that coaching had contributed to resolving difficulties in professional relationships, raising self awareness and challenging teachers to focus on professional issues.

2. The other focus of the coaching programme was for line manager and team meetings to be conducted as far as possible as coaching meetings to engage teachers with pedagogy and to

discuss targets for development and improvement. Creating professional discussions which were honest and open was essential and it was thought this was difficult to have in traditional top down hierarchical management systems. The sort of questions that might be used to begin meetings were, for example: What was more effective about our practice this week? How can we make it better? And the purpose of this was to directly focus teachers' attention on their own targets and engage them with developing pedagogy in a solutions focused way.

It was decided that coaching quality needed to be monitored and evaluated and that the impact of these meetings needed to be evaluated. To this end, I as Head Teacher, began to attend line management meetings between senior leaders and middle leaders to encourage the use of coaching language. In order to move the use of coaching techniques further, it was decided that a protocol for meetings should be drawn up outlining the need to use coaching questions and tools. The language of coaching was thus formalised across the school. What would this mean for the nature of line management and team meetings? It was hoped that it would facilitate a shift in the focus of discussion towards teaching and learning and developing pedagogy.

It was also important to ensure that team leaders and line managers prepared for meetings in this way by insisting on preparation for the meeting using coaching questions and tools. We needed to be sure that these questions and meetings were driving improvement.

Finally, we needed to collect evidence of changes in practice as a result of these meetings. There were informal 'drop in observations', discussions between the Phase Leader and teachers and questionnaires which were given to teachers to ascertain whether the changes that they agreed in meetings were evident in their practice. To measure the impact of this on learning was more difficult in the short term but it was hoped that in the long term, there would be an improvement in teaching.

An example of coaching in a team meeting.

A Year 4 staff meeting had been planned by the Phase Leader to explore how teachers were teaching literacy and it was agreed that this was an opportunity to have a solutions focussed coaching style approach to the meeting with the outcomes agreed by the participants, rather than by the Phase Leader who might otherwise have conducted the meeting in a directive way and made demands of his team which they might not be totally in agreement with.

The questions around which the meeting was structured were as follows:

What are we aiming for?

What are we doing well?

What could I try next?

What do outstanding literacy lessons look like?

What evidence should there be in the children's exercise books to reflect this?

What have you found clear evidence of, of what we are doing well?

What are you going to take way from this meeting in relation to your own practice?

The level of discussion around each point was professional and detailed. The features of outstanding literacy lessons were discussed openly without any prompting or direction from the Phase Leader. Things like clear learning objectives, clear outcomes, differentiation, high expectations, progress against the objective, questioning, identifying steps to the stars, (stepped success criteria), children actively engaged in learning through discussion, self and peer assessment and teacher feedback were highlighted. Encouragingly, these features of outstanding teaching were identified by the staff and presented in a whole staff meeting in the Summer of 2012. It is these features that teachers referred to when setting performance

management targets and what they were referring to now to develop practice. By looking through exercise books collaboratively, without any pre-determined outcome by the team leader, teachers were able to see areas of practice which they may not have included in their own lessons and were able to make the decision themselves to engage with in their practice.

At the end of the meeting, each teacher was asked to identify areas for their own development. A typical response was that this was a great way for staff to think about their practice. The teachers were motivated and eager to develop. A questionnaire was given to the teachers in order to ascertain their views on the effects of the meeting. The questions and responses below indicate changes in attitudes towards this meeting as opposed to other meetings and there were positive replies in relation to its impact.

When asked what they had enjoyed about the meetings, teachers replied that the meeting was non-threatening, that it allowed for reflection and development, there was a chance to compare their practice with others, there was a positive feeling and an open dialogue. The differences between that meeting and others, conducted in a more traditional 'top down' approach were identified as being less threatening, more conducive to the development of good practice, that it resulted in more open, honest and frank discussion and was less directive, giving ownership of next steps to teachers. The teachers were equally emphatic about the impact on their practice. The following were typical responses: it gave teachers the opportunity to evaluate their own practice, to use other people's ideas, take strengths and ideas from others and put them into their own practice.

The focus then was to monitor that teachers were changing their practice and that their identified areas for development were evident in classrooms. This would be monitored by the Phase Leader and Assistant Head continuing their regular informal class visits which were to be followed up by discussions with the teachers about how they had changed their practice and affected learning. The developments in CPD, linked to performance management and

involving self reflection through action research were clearly having an impact on attitudes, school culture and on practice in the classroom which was needed to support the changes in the curriculum that were being identified.

Below are some comments taken from meetings which give an indication as to the culture and ethos in the school:

> People feel more empowered with the new planning format (individualised planning) and there are more professional discussions taking place
>
> We need to review the performance management targets in light of recent observations so that they reflect the development needs of teachers.
>
> The process of self reflection is happening. It's now part of the dialogue.
>
> (SM) is a different person. She has reflected over the summer and has come back having really bought into the way FS2 is operating'
>
> There has been a massive shift in the way line manager meetings are conducted
>
> DESS is a school which gives you opportunities for professional development.
>
> It allows you to move forward and is a great school to be in. If you want to progress your career this is the right school to be in
>
> There are many opportunities to improve
>
> It's a great school for professional development. Some schools just let you continue in the same way as you have done for years. Here you are expected to move forward with your practice.

4.7 Continuation of curriculum development

After the Year 2 pilot scheme in cross curricular work and its clear revelations of the impact of curriculum development on teaching, I discussed the idea of introducing cross curricula work to the rest of the school and asked year leaders and subject leaders to meet with the newly appointed assistant head to discuss ways of linking areas of each subject. The middle leaders in the school had differing views about what sort of integration might be involved.

Some saw it as an opportunity to introduce the 'Creative Curriculum' with its emphasis on skills, children's needs, relevance and motivation which has been documented earlier. This again, raised more questions than it answered and in particular, the place of knowledge in the curriculum.

Others saw an opportunity to do topic work such as dinosaurs or transport. I explained my view that knowledge was important – not the mindless repetition and memorisation of facts that is often wrongly associated with knowledge in school curricula but knowledge to help children understand the world and this can be married to the teaching of skills through teaching methods, or through pedagogy. Teachers were asked to make links between areas of the curriculum but not to force them. Subjects could be taught discretely, if need be. This was the first step on the road to developing a new curriculum. A Curriculum Plan was drawn up in 2010 by the teacher in charge of curriculum involving a curriculum map being drawn, meetings with teaching staff to ensure they all understood the changes, the involvement of all staff in establishing curriculum links for the next academic year, a presentation to parents and a full review at the end of the academic year. We emphasised to the staff that coverage as expected through the QCA schemes was not necessary.

At the same time myself and the other members of the senior leadership team invited Mick Waters, previously Curriculum Director at QCA to meet us whilst he was in Dubai delivering a course to a number of British schools and this was followed up by a course led by the Curriculum Foundation being attended by myself and the Head of Curriculum.

These two events provided the opportunity to understand some of the latest thinking on curriculum development and build an awareness of the trends both in the UK and internationally. They both delivered a similar message in the way curricula are being structured and what the focus should be in educating students in the twenty first century.

We need to be concerned about preparing young people for life after school – not for university but for the life of work and be aware of what sort of professions or jobs, young people might enter. Thus, a wide range of skills is needed such as commitment, team work, organisation, independent thought, flexibility, customer awareness as well as reading, writing, mathematics and speaking and listening. Positive attitudes were also needed which involved being resourceful, self motivated and self confident and knowledge was needed. Knowledge about the main branches of human achievement and about the accrued wisdom of humanity was essential, as was the need to be informed about contemporary issues. Waters also explained the need for a curriculum to enable young people to become Successful Learners, Confident Individuals and Responsible Citizens. (These capacities have been criticised in their modern form, by Priestley (2011) as reflecting a narrow view of the learner, missing important educational purpose and encouraging an instrumental approach to the curriculum in practice). They both concluded by saying it is possible to have skills **and** knowledge, specialist teaching **and** thematic teaching that makes connections between subjects, developing skills **and** deep immersive learning, big ideas **and** events from the past and connections to contemporary issues of our times, good standards **and** well rounded learners, direct teaching **and** child led exploration, Literacy and numeracy **and** a broad balanced curriculum. They added that a good curriculum should draw on the best from each of the different curricula models around the world such as, subject based, areas of learning, skills based and theme based. The Curriculum Foundation also emphasised that a curriculum should be 'relevant, engaging and motivating' which closely aligns with the aims of 'understanding the changing needs of learners'. Both Waters and the Curriculum Foundation referred to the tree of knowledge to represent the important things to include when devising a curriculum. Underpinning the curriculum are generic statements: in the case of Waters it was, Successful Learners, Confident Individuals and Responsible Citizens, whereas for the Foundation it is Creativity, Enterprise and Independence. The roots of the tree represent the skills we want learners to acquire – social skills, thinking skills, enquiry skills, personal skills, learning to learn skills and essential literacy, numeracy and ICT skills. The trunk of the tree represents

the quality of the children's learning experiences and the branches of the tree represent the knowledge that children are to acquire. So it would seem that advice in planning curricula is to include knowledge **and** skills as well as capacities or key competencies.

We also had the opportunity to discuss with Mr. Waters how a curriculum might look in terms of cross curricular topics. He suggested that where this was possible, it should be done to show links between areas of the subject matter but advised that some things are best left to be taught discretely. He said other things should be constantly 'dripping through the curriculum', namely numeracy, literacy and ICT.

Although knowledge and skills are emphasised equally by both Waters and the Curriculum Foundation and in the National Curriculum document (DfE 1999), in my experience most teachers would plan for a skills based approach often ignoring a body of knowledge to be taught. During the Curriculum Foundation course, groups of participants were asked to devise a short scheme of work showing a balance of knowledge and skills and cross curricular links. A typical example was a group of teachers who devised a scheme around the school sports day. Art involved designing posters and programme covers, literacy involved writing newspaper accounts of the sports day events, history involved looking at the Olympic Games in Ancient Greece. There was no indication of processes of art would be learned, or of how the best features of report writing could be taught, or indeed of what specific knowledge would be taught when studying the Olympic Games.

This kind of approach was to be seen my own school. Year 3 studied a component of local history about Dubai and tried make cross curricular links, including it in a theme about water. The importance of water in the development of a settlement could have involved geographical and historical studies about trade routes, sustainability through fishing, strategic positioning for defence, the strategic positioning of the Gulf in Britain's links to India and thus, the involvement of the British in the Region from 1819.

The result was that little was taught about the importance of the Creek in Dubai's history, except that there were some anecdotal recounts of what is it would have been like to be a pearl diver. The focus was on designing a water park but with little reference to Design and Technology in reference to any construction or mechanical knowledge or in reference to any of the procedures of plan, make, review. The designing became a cosmetic exercise in designing rides for a water park, which undoubtedly involved a lot of imagination, perhaps not creativity, and then resulted in a presentation to be made through ICT to the rest of the class. Whilst this may have impressed the school inspectors, my view was that there was little knowledge taught and few skills except that of presentation and collaboration in the methods used in class to plan and work together.

This was an example of how learning is not enhanced by using cross curricula themes and what can happen to knowledge if it is not carefully planned into a curriculum which allow teachers to plan for cross curricula themes and skills. I would continue to discuss the need for including knowledge as an important part of any linking of parts of the curriculum and moving away from the prescribed content of the National Curriculum, which, as an overseas school we were not obliged statutorily to follow.

It was at this time that I engaged with further reading about the curriculum and discussed my ideas with the senior team. Whilst I saw the importance of motivation and hooks for learning, we should ask what is fundamentally important about what we teach and how we teach it. I was still struggling with understanding what the purpose of an integrated curriculum was, beyond immediate motivation and relevance (e.g the Water Park module). My own views were that a knowledge based curriculum was important. Skills could not be taught context free and indeed should be learned if the key methods of each subject were taught correctly. I did not understand why a move towards themes or cross curricular units meant moving towards a skills based approach and in fact there is no reason why it should. Knowledge did not mean rote learning of facts but rather, acquiring a body of facts and understanding

concepts through being engaged in a learning process involving analysis, synthesis, evaluation and other demands that were made by the school subjects. Pedagogy in the school needed to be developed in order to engage the learners in these processes and in the process of engagement through asking questions, self evaluation and collaboration with other learners. Importantly, I introduced the idea of a knowledge based curriculum being concerned with teaching concepts rather than focusing solely on facts as many perceived a knowledge based curriculum.

At about the same time, a senior teacher and myself walked around the classrooms with Paul Ginnis who had introduced to the school the Learning to Learn ideas. He advocated breaking down boundaries – subject and time in order to allow learning to take place 'unfettered'. Although this raised many questions in my mind, as I have already related, the discussions we had whilst walking around the school were important in developing my thinking, although not directly in the way he had hoped. After being in an Early Years class, he was impressed by how the learning was organised around certain questions. Our discussions led us to talking about organising schemes of work around questions – or enquiries and we found ourselves discussing what this might look like in Year 6.

We took a Year 6 history topic from the National Curriculum, - Britain Since 1930 and began discussing how we could make that an enquiry which had cross curricula links and which would enable the pupils to understand some of the changes that had happened since 1930. I was not sure about what educational theory, if any, underpinned such a type of study.

We decided to look at the study through the lens of 'Was Britain a better place in 2010 or in 1950?' We identified aspects of each subject which could contribute to answering the question:

History - social improvements through the welfare state, changes in home entertainment, rights of citizens, particularly immigrants

Geography - developments in transport, building of New Towns

Science – medical developments - penicillin, DNA,

Technological developments – jet engines, space travel

ICT - the electronics revolution - writing code to control machines

Maths - study of statistics – inflation, population growth, crime figures

Art - Art deco and modern art

The next step was to discuss this with the Year 6 team in the context of whole school curriculum development. There was some reluctance to alter existing schemes of work but all were willing to try something different for the final term, knowing that as a school, we were searching for ways to develop the curriculum.

We also discussed at SLT level and then with middle leaders the idea of approaching the curriculum from an enquiry basis like we were going to pioneer in Year 6. This was met positively and again was seen in the context of whole school curriculum development and so in the final term the middle leaders and teachers worked on identifying questions which would form the basis of the curriculum for the next academic year. In essence the questions that were produced did not form the basis of enquiries but they sat alongside a theme which was to be the focus of study and the different subjects that were to be included were identified using the premise that there should room for discrete teaching, cross curricular work and the constant 'drip' of literacy, numeracy and ICT.

At the end of the academic year, the middle leaders and senior team spent a day off timetable to discuss developments for the next year. This year's focus of discussion was to be the curriculum developments that had taken place and would take place in the next academic year. The assistant head, in charge of curriculum led the meeting and talked about the need to make the curriculum meets the needs of the children, to include hooks for learning and to make it relevant and motivating echoing the words of the Curriculum Foundation. I took the

opportunity to also make it clear what I believed was essential in a curriculum, emphasising that knowledge should not give way to skills but that both are important. I also introduced the idea that knowledge meant learning and understanding concepts and asked them to cross reference school curriculum documents with National Curriculum documents and other documents they may have read to ensure they were familiar with key concepts in each subject.

There were still questions that I needed to find answers to:

What is the theoretical basis for curriculum integration?

What is the purpose of curriculum integration?

Why has curriculum integration become popular?

Do some models of curriculum integration enhance learning?

4.8 Integrating subjects through a conceptual lens to enhance understanding

4.8.a The Year 6 Project: A model of integration and its effect

When discussing this with the in service provider, Paul Ginnis, it was exciting because it was felt that the pupils would find it interesting and we were interested in seeing how motivated they would be. Importantly, though it was not just a project involved in developing skills, it was about increasing knowledge and understanding as well. For example, in history, we looked at the social history from 1945: the key landmarks in the development of the Welfare State, (the National Health Service), family entertainment (e.g. television). We also studied the key events regarding immigration, the way immigrants were treated and the development of civil rights. The pupils were asked to discuss at length whether Britain was a better place by the advent of the twenty first century. The mathematics study involved looking at statistics about crime, inflation and population growth. Mathematical questions were asked about the figures that were presented but we soon realised that the pupils' motivation was much greater than it normally was. We put this down to the fact that they were studying a theme, - or macro concept, - across different subjects, that of 'improvement'. We did not call it a macro concept

at this time but it was that which brought their thinking together. Not, only was their motivation increased, they became more willing to find information and answers independently. They willingly sought how to find the rate of increase in percentages for each decade of the figures presented and then competently explained this to other pupils. The role of the teacher became one of guide as well as expert. We began to discuss how we could best conduct ourselves as practitioners and set up workshops in the classroom to which pupils could come and find out how to calculate a particular problem. Teachers were also willing to try out different methods of teaching in other classrooms. For example, the of use Market Place, and encouraging pupils to find things out for themselves.

At the end of the project, the pupils had to make a presentation using IT to answer the question of whether Britain was a better place in 2012 than 1950 drawing on all the knowledge they had acquired during the teaching period. We, as teachers were careful to emphasise, that, although the presentation was important, it was also important to draw on their knowledge as evidence to argue their point. The Year 6 project had shown us that an interdisciplinary approach was possible whilst teaching knowledge and protecting the integrity of each subject. The integrating factor was the theme, - in this case Improvement, - or what became known to us later as the macro concept. It was also significant that the pupils level of learning was far greater than would otherwise have been expected from a more traditional approach, exemplified in the mathematics part of the project when pupils were finding out for themselves how to calculate the percentage rate of increase; far more advanced numeracy than they would otherwise have been engaged with.

4.8.b Subsequent curriculum developments across the school

The next step was to convey the success of this project to the staff and ask them to consider how feasible it was to take this type of approach in their own year groups. This was done at a staff meeting in September of the following school year. We discussed with the staff how a curriculum design might look and it was agreed that each year group would look at Themes

around which to organise their curriculum during that year with a view to having a definite curriculum plan in place for the following academic year. These themes became known in the school as Thematic Enquiries, and have been included as Appendix 2 to show the first steps towards developing a concept based curriculum. This thematic approach served the purpose of teaching the curriculum in a similar way to what had been achieved in Year 6 with the emphasis being on teaching knowledge **and** skills. Curriculum plans were developed over the year for full implementation during the next academic year. Each Theme was identified and the subjects that would be studied around each. As well as this cross reference was made to the National Curriculum to ensure there was coverage of the main areas of knowledge.

At the next curriculum day in the Summer term 2013, when middle leaders had a conference about how to further develop the curriculum, I introduced the idea of a concept based curriculum, explaining that if knowledge is to be taught, it is the concepts of knowledge as well as basic surface facts that are important. Appendix 3 shows the rationale for the concept based approach to the curriculum which was presented to the middle leaders. We agreed to pursue this idea during the course of the next academic year.

The progress we had made on developing the curriculum was that integration of subjects was what the staff wanted but I had steered them away from a topic based approach which might result in the study of things like 'Water' with little emphasis on knowledge.

We also had to discuss with the staff, the corresponding impact this would have on pedagogy and indeed 'coverage' of the National Curriculum. It was agreed that a member of the SLT, myself and the four Phase leaders would meet regularly continue to discuss what was regarded as good pedagogy and how developing pedagogy would be important if we were to develop a concept based curriculum. We reminded ourselves of the work Year 2 had done previously as they piloted a cross curricular approach and how they discovered that curriculum did affect pedagogy. The Year 2 team had identified the need to define the term

creativity and felt that it meant making links between different curriculum areas and allowing literacy and mathematics to permeate the whole curriculum. They also identified the need for pedagogy to become more personalised and for it to include aspects of assessment for learning in which pupils could be metacognitive and learn from more active processes as the focus moved away from 'coverage' of the National Curriculum. So we became aware that if the aims of the curriculum were to be more than a transmission of factual information, then pedagogy must change. The meetings went on periodically throughout the academic year and included other staff. They focussed on making learning an active process and how this could be best effected. At the end of the year aspects of what we considered to be good pedagogy were identified and presented to the staff in a whole staff meeting. This, incidentally, involved showing teachers in action via video and demonstrating aspects of pedagogy that were identified. The main process identified comes under the banner of Assessment for Learning which the school had been developing since 2006 but certain aspects were listed for staff to consider: providing challenge, sharing learning aims or objectives with learners, questioning, understanding what successful learning looks like (for pupils), giving instant and high quality feedback, metacognition and making learning more context based where possible.

I had also revisited the idea of a concept based curriculum during the course of the year and replacing Themes with Concepts. Themes were important for organising the content of the curriculum but a conceptual overlay was necessary to develop understanding. The theme might define a broad area of study and define what subjects are to be studied but the conceptual lens would provide direction for the teaching and learning as seen in the Year 6 project. I explained in a number of middle leader meetings and a whole staff meeting what this meant, reiterating that knowledge is important but not the surface features, the key concepts to increase understanding and how this could be achieved by making cross curricular links as the Year 6 teachers had shown. The Year 1/2 Phase Leader was particularly interested in developing the curriculum along these lines and championed it in the school. She

discussed with her team, the need to 'explode the curriculum' in order to engage the pupils more and make learning more active and interesting and she began to develop a curriculum which was integrated but in which each subject retained its own identity and was not subsumed into a skills based learning module. At the same time I held meetings with her to explore the introduction of a concept based curriculum in which the concepts of knowledge were taught through a pedagogy of 'know' (learn propositional knowledge), 'do' (be involved in the learning process and develop skills needed to do so) and 'understand' (gain a deep conceptual understanding and make generalisations). The ideas that were generated were discussed with other middle leaders and senior leaders who were directed towards the work of Lynn Erickson on the concept based curriculum. They were asked to further familiarise themselves with the ideas behind a concept based curriculum that involved integrating subjects through a conceptual lens in the same way as had happened in the Year 6 project. I provided the staff with hand outs showing how such a curriculum might be organised around conceptual lenses and how each subject should be taught by focusing on conceptual knowledge rather than only factual knowledge.

At the annual curriculum day at the end of the summer term 2013 I led a discussion about a concept based curriculum and how we could implement it for the coming academic year. The main features are explained below and more fully in Appendix 3:

4.8.b.i Conceptual units

Rationale is to create a deeper understanding of subjects and raise standards.

Looking at subjects through concepts forces us to look beyond the facts and to consider generalisations – the big ideas, enduring and essential understandings. i.e. what do I understand as a result of my study? These can be missed or overlooked in a curriculum which is concerned with coverage.

The concepts can help identify topics. Conceptual understanding requires content knowledge and will lead to a deeper understanding. Facts become a tool for understanding transferable concepts and principles.

The difference between a topic centred and a concept centred approach is the difference between memorising facts, (or even not learning facts but pursuing a purely skills based approach to teaching and learning both of which are not adequate), and developing ideas and understanding related to the concepts. Facts serve to support the understandings.

Integrating studies through a conceptual lens such as 'independence' means pupils can integrate their thinking at a conceptual level and deepen their factual and conceptual understanding, seeing patterns and connections between factual knowledge and transferable conceptual ideas.

Each subject does not only teach to the conceptual lens – e.g. 'independence' but also teaches subject specific concepts.

Literacy. More writing across the curriculum and for purpose. Basic skills still taught discretely – grammar, phonics, spellings

Maths. Enables Maths to be taught in context more and across the curriculum. Mental maths, basic number still taught discretely but more opportunities for applying.

Ways forward:

Identify subject specific concepts - subject leaders, SLT

Identify overarching concepts, (conceptual lenses) – Phases

Plan units of study for September – Phases

Useful starting points:

http://ninadavis.me/2011/10/06/the-concept-based-curriculum-ken-robinson-differentiated-teaching/

http://whatedsaid.wordpress.com/2012/05/26/concept-driven-learning/

Macro/umbrella concepts

Introducing a macro concept as the overarching umbrella forces children to integrate their thinking at a higher conceptual level.

The study will now have depth and rigour and they can develop a personal analysis of the issue.

The topic now becomes a tool for understanding conceptual ideas that transfer across time and culture.

By introducing a conceptual lens, there is a purpose to the study that goes beyond evaluation and memorisation of information related to the topic. The conceptual lens sets a target that supersedes the specific topic and the focus becomes the idea/concept that can be applied to new but related contexts.

A conceptual lens will alter the focus of a study and all topics selected for the study will illuminate the concept in relation to the theme.

There will be different subject specific concepts but they will be looked at through the lens.

Example

Topic: Britain since the 1950s

A. If the macro concept is change/improvement each subject will have content which enables the focus to be change/improvement

The topic might become Improvements in British society since 1950

History - pop culture, family life,

Maths – apply mathematical understanding through crime rate statistics, inflation etc

Geography, development of new towns (land use) transport and communications

Art – Modern art, line, colour

Music – contemporary music, rhythm

Literacy – novels from 1950s and 60s

B. If the macro concept is conflict then the focus of this study becomes different.

Britain and its Empire since 1945

History - decolonisation and conflict e.g India, Vietnam, conflict in Ireland

Geography - Land use, needs, resources, territory

Literacy – novels about colonial life, empire.

Art – images of conflict, colour, texture

The topic is related to the broader study framed by the lens.

Children can then understand generalisations across the macro concept and the study is raised to a higher cognitive level.

e.g Empires decline over time as colonies develop their own culture and needs and this leads to conflict.

We were now beginning to move towards having a knowledge based curriculum which would engage learners actively whilst developing skills and understanding. The staff had discussed how pedagogy should be developed in line with the curriculum and features of pedagogy were identified and presented and modelled to staff with performance indicators being established. Through a series of meetings, first with middle leaders and then with the whole staff, observable behaviours were identified which would define beginner, intermediate and expert teaching practice in pre-defined areas.

Each year group planned conceptual units with an overarching macro concept and it was agreed that a curriculum map was to be established. We knew that further discussions were needed to develop the curriculum map and to ensure that this was mapped against the new National Curriculum, 2015. The feedback from the staff was that they liked the concept based curriculum. However, it became clear over the course of the year that more work was needed to develop it. Some teachers still focussed on skills based teaching at the expense of knowledge but there were examples of very good learning at a deeper level than normal. The Year 6 project was further developed with similar results. That is to say, deep engagement by the pupils, a desire to find out more and a freeing of pedagogy by the teachers who were not so concerned with 'coverage'. Another example was a Year 6 study about Migration: History would focus on Anglo Saxons and modern day migration, Geography on interdependence, natural resources, Science would focus on animal migration seasonal change, and the reliance of animals on plants. The generalisations that children would gain an understanding of would be: migrations have occurred throughout history and for a variety of (similar) reasons, migrations have a socio – economic effect on the places to which people migrate.

A Year 2 unit with the macro concept 'Choices' illustrates how the subjects keep their own integrity and integration occurs at a conceptual level through the macro concept:

DT: Know/understand – there is a wide variety of fruit and vegetables available which can be grouped and individually named. Fruit and vegetables have nutritional value and are vital components of the diet of humans in order to sustain life and promote health and growth. Food processing can affect appearance, texture, odour and taste. People have different preferences. Food can be divided into different groups.

Choice – We can choose what we eat. We can choose to optimise health by eating the right combination of foods.

Science: Know/understand – that taking exercise and eating the right types and amounts of food help humans to keep healthy. The positive role of drugs as medicines.

Choice – We can choose what we eat. We can choose to optimise health by eating the right combination of foods, taking regular exercise.

Art: Know/understand – the primary colours and that these can be mixed to create secondary colours. Various shades can then be produced by adding more or less of the constituent colours or black and white. Artists choose and group colours to create a range of effects.

Choice – colour selection can alter the mood of a piece of work

History: Know/understand – to recount an event from the past, developing an awareness of chronology. Cause of the Great Fire of London and the effect it had on the wellbeing and health of the people at the time – rich and poor. Relate the legacy of the fire to modern lifestyles and draw comparisons.

Choice – Examine the limitations in choices available at the time of the Great Fire.

The generalisations that the Year 2 children would learn from this unit were: People can make choices independently or together, we don't always make the right choice, choices can be changed, we are responsible for making our own choices.

We can see from the examples above that each subject retains its own integrity but an integrated study is achieved through studying each subject through a common lens - the macro concept. This also means that the children's thinking is brought together at a conceptual and deeper level than when working only with the surface features of the subject. It is of interest to note that the Year 2 team were very enthusiastic to inform the rest of the school that the level of understanding the children now had was much deeper. They emphasised that in the past, they would not have taught about how colour selection can alter the mood of a piece of art and by integrating the subjects through the macro concept, 'Choices', they were teaching to a much deeper conceptual level.

A review of the progress of the concept based integrated curriculum was conducted during the academic year 2013 – 2014. The evidence that teachers presented was anecdotal but

comments were that: the generalisations were the key to understanding and embedding learning, there was less spoon feeding by members of staff, children more readily identified their own success criteria, children offer more informed answers rather than 'stock' answers and think more deeply than previously. The initial signs were encouraging and it was now necessary to plan the next stage in the school's curriculum development.

4.8.b.ii The effects of the conceptual curriculum

The next annual curriculum day in the summer term 2014 provided an opportunity for staff to further discuss the impact of the new curriculum and its related effect on pedagogy. Each Phase Leader was given the opportunity to talk about the development of the curriculum in their Phase and to highlight any successes.

Below is a summary of their responses:

What worked?

Various levels of questioning to deepen understanding

Using a text to engage/hook

Discrete exploration of the concept before launch

Allowing the abstract to be taught contextually rather than discretely

More opportunities for independent learning

Learning was deepened

Transference –applying previous learning to new contexts (near lower order transference)

Development of subject specific language (in some areas)

Talk for writing

Exposing children to the correct terminology

Independence – selecting the correct tools for the job

Transference over time

High levels of engagement

Enrichment to support/contextualize the curriculum

Writing for purpose

Development of questioning skills – teachers and children

Engagement with provocative questions helped deepen/shape learning and next steps

Staff more confident to challenge rather than accept

Being new has forced conversations between staff – more engagement

No ceiling on learning

Increased level of challenge and expectations

Freedom to do 'new things'

Taking risks should be normal

We then discussed as a body, how to take the curriculum forward to the next step. All teachers present reported positive effects on children's learning. As part of the process of planning their units, teachers were asked to identify three types of questions - 'factual', 'conceptual' and 'provocative'. It was reported that the provocative questions led to discussions and debates and hence to a greater understanding, that children were thinking deeper and were analysing more. Some teachers talked about there being more transference of learning. By that the teachers meant 'near transfer' rather than far transfer.

As Head Teacher, I had reiterated whenever the opportunity arose that this was a concept based curriculum. Concepts meant knowledge and pedagogy meant giving children the opportunity to do as well as to learn by active engagement in the learning process. As well as identifying a topic and a macro concept through which the individual subjects could be studied, it also meant teaching conceptual understanding in each subject. It was therefore decided that more subject specific concepts should be identified as well as the umbrella or macro concepts and that a curriculum map needed to be drawn up showing these and where they would fit into each topic.

We had come across this approach when talking to our visiting advisor, Paul Ginnis, in 2010 and tried it with Year 6. As with other approaches we did not initially understand the theory behind it but it did have positive effects. The work with Year 6 was developed in the school using the work of Erickson, (2001, 2002, 2007)) as a guide with a secure understanding of theory to support it and had resulted in a new curriculum involving active learning and a deeper engagement on the parts of the pupils and teachers.

5. Conclusion

This case study has described a school's journey in developing curriculum and pedagogy against a background of a National Curriculum devoid of a theory of knowledge or pedagogy. The popularism of integrating the subjects in the curriculum (which the National Curriculum allows for) is investigated as questions were raised when the school undertook its journey.

As the research began, questions were raised about generic skills, curriculum integration and pedagogy as the school sought advice for its journey – questions about the reason for integrating school subjects and the roots of integration which led to an investigation about progressivism, theories of knowledge and a skills based curriculum. Thus the philosophical and sociological aspects of the school curriculum were investigated and the research became more focused.

The school's journey in developing curriculum and pedagogy

As the school began its journey it focused on developing teaching through the introduction of Assessment for Learning (AfL) and Learning to Learn (L2L) and developing the curriculum through cross curricular links which were popular at the time (2005 – 2014).

Although there is no defined pedagogy in England apart from the politicised pedagogy (Alexander 2008) of the Literacy and Numeracy strategies, L2L was introduced to help develop generic learning skills and learning dispositions. Whilst accepting there may be a place for generic skills, they should not take the place of school subjects because skills cannot be learned context free and we would see L2L as a series of practices, associated with metacognition and reflective learning rather than a general skill. The in-service provider who introduced the school to the idea of generic skills also introduced the idea of 'breaking down barriers to learning' which the school subjects and the school timetable provided. This in turn

raised more questions about an integrated curriculum based on developing skills and the curriculum structured round the school subjects.

The school experience also brought up the relationship between curriculum and pedagogy. As the Year 2 team experienced, as they began to change their curriculum and seek cross curricular links, so it affected pedagogy. The social realists insist that curriculum and pedagogy should be kept separate based on Bernstein's theory of knowledge differentiation (everyday knowledge and the theoretical knowledge taught in schools).

As the school began to experience how curriculum organisation affected pedagogy, it embarked upon a professional development programme to enable staff to develop the professional skills needed to teach in a more active and engaging way. The motives for this programme are explained and the positive effects on the staff are recorded.

Discussion with Mick Waters and the Curriculum Foundation gave the school leaders more of an idea about curriculum development. Skills, knowledge competencies and understanding were important and many curricula were underpinned by generic statements such as Creativity, Enterprise and Independence as both subject specialism and thematic approaches could be undertaken. I have given two examples of how teachers plan units in which key knowledge - concepts of knowledge-, is often disregarded and the focus of the pupils' learning is reduced to making a presentation. Discussions brought us to devise a unit for Year 6 to study which was close to Erickson's interdisciplinary study through a conceptual lens and Bernstein's studying through a 'supra content' concept. However, questions were left unanswered about the purpose of integration and whether it enhances learning.

The case study outlines the final part of the school's journey in developing the curriculum. We had unwittingly used an approach similar to that of Erickson's conceptual lens and

Bernstein's supra content concept. I have shown how this approach led to us teaching mathematics at a much higher level than we would have otherwise done, how the pupils were keen to find out things for themselves and how our teaching approach changed. We had used an integrative approach which valued each individual subject. I have outlined how this approach was adopted by other year groups.

Theories of knowledge and the curriculum

The Head Teacher made a decision about the curriculum based on theories of knowledge. Should knowledge and the school curriculum be rooted in some reality? Is it a given and arbitrary or is it related to the knower which can give rise to relativism? This is somewhat tied into a debate between traditionalists who favour a subject based curriculum, associated with an objectivist approach to knowledge and progressives who favour an integrated curriculum with its associations with constructivism and skills. I conclude that the theoretical knowledge of the school subjects is an essential part of the education of young people, based on:

- the view, articulated by Snook (1993), that the disciplines of knowledge are neither absolute nor arbitrary.
- the views of social realists that knowledge can get its objectivity as it transcends its social origins and that there is a realism which can be differentiated from the meanings we construct.

Curriculum and pedagogy

The claim that only teaching or learning experiences make demands on pupils, has been rejected, for this would mean that children could develop the same type of thinking skills or generic skills through any subject. Indeed, it is subject matter and its unique modes of enquiry that makes different demands on pupils and it is this that determines pedagogy which can ensure skills as well as understanding can be developed. Curriculum and pedagogy are linked but should be kept separate. It is both teaching and the methods of thought and enquiry of the

subjects which make differing demands on pupils and the types of skills such as analysis are different in each subject, (analysing the causes of the Second World War might involve a different set of sub skills to analysing the results of a science experiment).

Where Dewey saw a dualism between curriculum and pedagogy, the social realists see a necessary separation of everyday knowledge and theoretical knowledge based on the theories of Bernstein, Vygotsky and Durkheim.

I have discussed how active learning, (including aspects of AfL introduced through the teacher's methodology) is essential for developing an understanding of the school subjects at an abstract level whilst acknowledging that constructivist teaching has a dilemma because there is an epistemological basis for school subjects. Teachers have to inculcate knowledge whilst eliciting it because there is some knowledge that is real, (Bernoulli's laws of aerodynamics and Newton's laws of motion for example reflect a reality, and an active engagement in the learning process rather than being subject to didactic teaching methods can help pupils 'construct' understanding).

A more active form of learning can be realised by integrating subjects through a conceptual lens (Erickson) or a 'supra content concept' (Bernstein) which will lead to an understanding at a higher conceptual level and which would allow transfer of understanding.

Progressivism and curriculum integration

The roots of cross curricular study are traced to John Dewey whose pragmatic view of knowledge underpinned his approach to education in which subject matter does not represent infallible wisdom but should be valued if it offered new experiences and was part of an inquiry. Dewey's emphasis on the social context of all study has led to interdisciplinary approaches in which the school curriculum serves to solve a problem and despite a subject

based National Curriculum in England and Wales, schools have sought to establish cross curricular approaches which are endorsed by Ofsted. The approaches taken by Alexander in the Cambridge Primary Curriculum and in Rose's proposed curriculum would mean that aspects of some subjects might be taught through other subject areas, for example aspects of geography may be located in scientific studies or history. However, there is also the danger of knowledge being used instrumentally. Further, some curriculum models based on the notion of creativity focus on relevancy, motivation and skills, (RSA Opening Minds, Chris Quigley 2011).

Curriculum integration at a conceptual level

Within the domains of knowledge, there are complex connections at a conceptual level that make integrated studies possible and which will focus on a high level of abstraction on principles, leading to a deeper understanding of the structure of a subject. Whilst outlining a number of approaches which focus on knowledge being used instrumentally or whose focus is on skills, I identify one from research by Nikitina (2006), which focuses on a conceptualising approach and which involve mastering the basic mode of thought at a conceptual level.

Whereas a study of knowledge might allow us to see these complex connections that allow interdisciplinary study at a philosophical level, the sociology of knowledge reveals that the curriculum is a social construction and vested interest groups might have a reason to oppose integration. Pragmatists like Dewey had a relativist view of knowledge in which there was no objective basis for its validity and who allowed experience to be seen as knowledge. Bernstein believed that moving to a more integrated code would weaken power relations and allow for changes in pedagogy and that if it involved a supra content concept as a focus of study, this would lead to a deeper understanding of the subjects.

Bernstein's contribution to curriculum organisation

Bernstein's theory of knowledge differentiation has implications for curriculum designers who should separate the everyday knowledge, or experience, that children bring to school with them from the theoretical knowledge they must acquire and understand in order to understand their world. Bernstein's theory also allows us to see the epistemological differences between the domains of knowledge. However, this differentiation into horizontal and vertical discourse provides a dichotomy for the school curriculum because it suggests horizontal knowledge structures in the vertical discourse cannot be transferred across time in a cumulative sense. Work by Maton (2009) shows that there is potential to overcome segmented learning by using Legitimation Codes and semantic gravity.

A concept based curriculum

Priestley (2011) criticises curriculum models around the world in which knowledge, key skills and personal development are the key to curriculum design saying they have arisen out of a decline in curriculum theory and that the English National Curriculum has resulted in turning teachers into technicians. Until the new National Curriculum of 2015, the English curriculum documents published by the government had emphasised key skills and thinking skills as well as knowledge but we must ensure as teachers that skills are developed through teaching methods to develop an understanding of he concepts and principles of knowledge

The curriculum that was developed in the school was a knowledge led curriculum but one in which integrated studies occurred through a conceptual lens giving more depth and direction and demanding a pedagogy which promotes active learning in order to develop understanding. It addresses the conundrum in which teachers often focus on developing skills rather than a conceptual understanding of the school subjects but allows for questioning, enquiry, and discussion as part of an active learning process. It has demonstrated that a subject based curriculum does not depend on didactic teaching approaches, - quite the

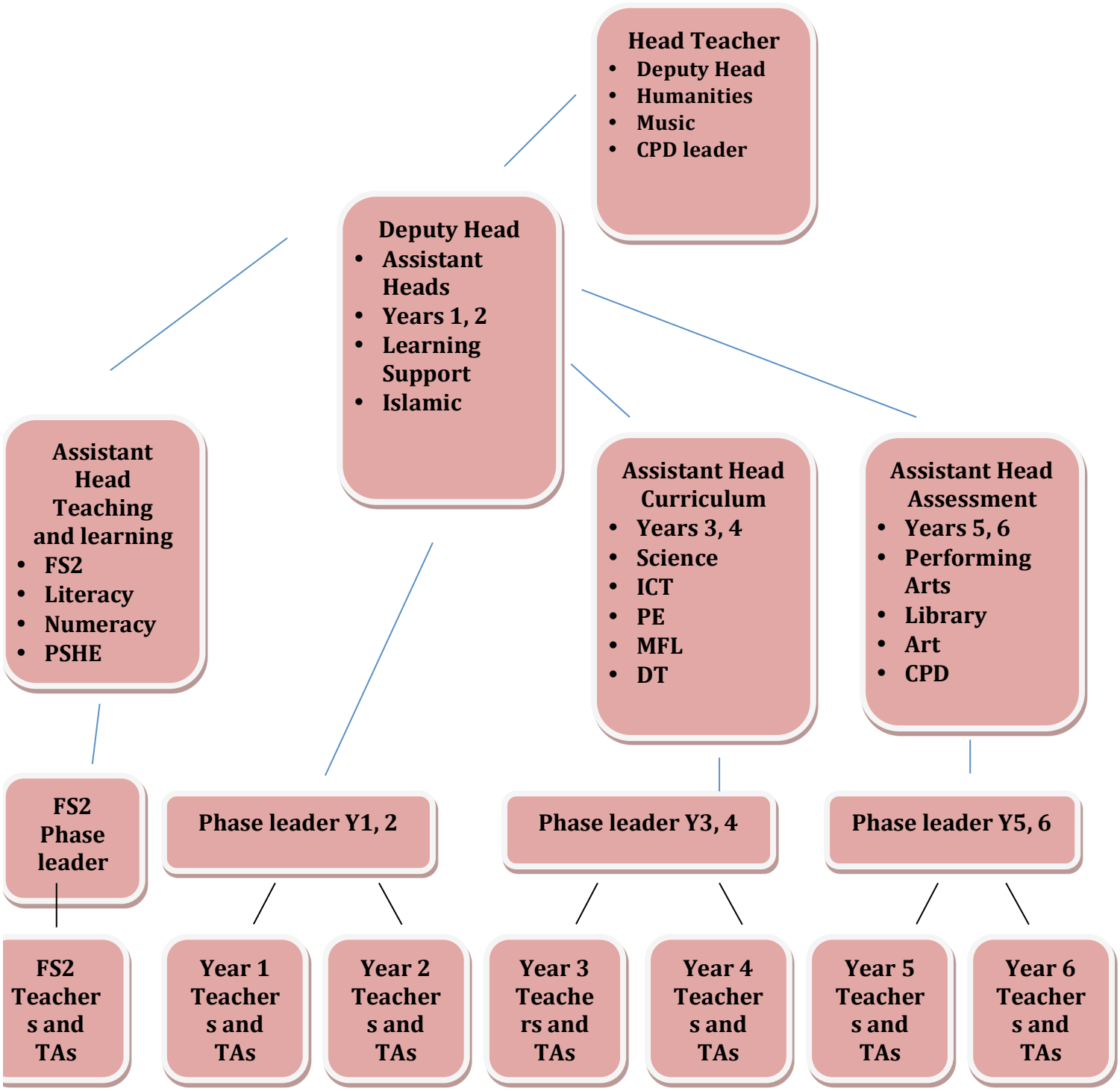
opposite and that a knowledge based curriculum should take precedence over a learner based curriculum and indeed gives the learners a conceptual understanding of the natural and social world through the school subjects.

The study has shown that a knowledge based curriculum based on developing an understanding of concepts by integrating subjects for study through a conceptual lens can result in deeper learning, more independence, transference of learning, higher levels of engagement and a removal of the ceilings to learning. The case was unique to a particular school and it is not claimed that the findings can be generalised. However, there are limitations: future outcomes could not be analysed and the study could not be continued due to the Head Teacher and researcher leaving the school in 2014.

Appendices

Appendix 1

Organisational chart Showing line management and responsibilities



Appendix 2

Curriculum Plan for Thematic enquiries 2012

Dubai English Speaking School

Years 1 – 5 Curriculum Map for Thematic Enquiry 2012-13

	Term 1.1 ***Date:11th September 2011***	Term 1.2 ***Date:***	Term 2.1 ***Date:3rd January 2012***	Term 2.2 ***Date:***	Term 3.1 ***Date: 22nd April 2012***	Term 3.2 ***Date:***
Year 1	***Theme:*** *Busy Bodies* ***Key Question:*** *How do you make a Busy Body?* ***Key Features:*** *Science, History, Art, DT, Dance, Role-play*	***Theme:*** *Home Sweet Home* ***Key Question:*** *What is your dream home?* ***Key Features:*** *History, DT, Science, Geography*	***Theme and Question:*** *Who's Afraid of the Dark?* ***Key Features:*** *Science, Art, Role-play,*	***Theme:*** *The Secret Garden* ***Key Question:*** *How does your garden grow?* ***Key Features:*** *Science, Geography, Art , Role-play,*	***Theme:*** *Toys and Games* ***Key Question:*** *What shall we play?* ***Key Features:*** *History, DT,*	***Theme:*** *Animals* ***Key Question:*** *What would make a good pet?* ***Key Features:*** *Science, PSHE, Geography*
Year 2	***Theme:*** *Exploring with Charlie and Lola - Familiar settings – more than just me* ***Key Question:*** *How would the world be different without famous people?* ***Key Features:*** *Literacy, Numeracy, DT, History, Geography, ICT*	***Theme:*** *Step back in time - Famous/significant people (Explorers)* ***Key Question:*** *How would the world be different without famous people?* ***Key Features:*** *Literacy, Numeracy, Art, Geography, History, Science, ICT, PSHE*	***Theme:*** *Here, there and everywhere - Contrasting locations and adaptations* ***Key Question:*** *Could a camel live in a rainforest?* ***Key Features:*** *Literacy, Numeracy, Science, Geography, ICT, Art*	***Theme:*** *Electricity* ***Key Question:*** *Can we live without electricity?* ***Key Features:*** *Literacy, Numeracy, Science, History, ICT, Art*	***Theme:*** *Once upon a time - Plants and animals in the local environment* ***Key Question:*** *Can animals live without plants?* ***Key Features:*** *Literacy, Numeracy, Science, Geography, ICT, DT*	***Theme:*** *Plants and animals in the local environment* ***Key Question:*** *Can animals live without plants?* ***Key Features:*** *Literacy, Numeracy, Science, Geography, ICT,DT*
Year 3	***Theme:*** *Digging up the Past* ***Key Question:*** *Could you survive in Ancient Rome?* ***Key Features:*** *Literacy, Numeracy,*	***Theme:*** *Revolting Recipes* ***Key Question:*** *How can I be a better eater?* ***Key Features:*** *Literacy, Numeracy, Geography, Science, D&T, ICT*	***Theme:*** *Journey of two pearls* ***Key Question:*** *Would Dubai exist without pearls?* ***Key Features:*** *Literacy, Numeracy, History, Geography,*	***Theme:*** *Hello H2O* ***Key Question:*** *Where does the water go?* ***Key Features:*** *Literacy, Numeracy, Geography, Science, ICT,*	***Theme:*** *Waving the magic wand* ***Key Question:*** *Assessments* ***Key Features:*** *Literacy, Numeracy, Reading skills, Science*	***Theme:*** *Let me entertain you* ***Key Question:*** *Did the Greeks have fun?* ***Key Features:*** *Literacy, Numeracy, History, Art, D&T, ICT,*

	History, Art, ICT, Science, ICT		*Art, ICT*	*D&T*		*Science*

Year 4	***Theme:*** *Out of this World!* ***Key Question:*** *If there is something out there what could it be?* ***Key Features:*** *Literacy, Science, DT, Art, Geography, ICT*	***Theme:*** *Searching for Mastermind 2011!* ***Key Question:*** *Would you want to be a Tudor?* ***Key Features:*** *Literacy, History, ICT, Art, DT, PSHE, Big Write*	***Theme:*** *Going Green!* ***Key Question:*** *What have we done and what are we doing?* ***Key Features:*** *Literacy, Geography, ICT, Science, Dance, Art, DT, Big Write*	***Theme:*** *Walk like an Egyptian!* ***Key Question:*** *What does the evidence tell us?* ***Key Features:*** *Literacy, History, ICT, Science, Art, Big Write*	***Theme:*** *Waving the magic wand!* ***Key Question:*** *Assessments* ***Key Features:*** *Literacy, Numeracy, Big Write*	***Theme:*** *tbc* ***Key Question: tbc***
Year 5	***Theme:*** *Who am I?* ***Key Question:*** *Where do I go from here?* ***Key Features:*** *Literacy, Science, Art, History, ICT, P.S.H.E.*	***Theme:*** *Culture Clash* ***Key Question:*** *What happens when two cultures meet?* ***Key Features:*** *Literacy, Science, History, Geography, D.T, Art, ICT, PSHE*	***Theme:*** *Survivor!* ***Key Question:*** *What do you need to survive?* ***Key Features:*** *Literacy, Science, Art, D.T, PSHE, Geography, ICT*	***Theme:*** *Incredible Inventions* ***Key Question:*** *What was the most incredible invention?* ***Key Features:*** *Literacy, Science, ICT, PSHE*	***Theme:*** *From the Source to the Sea* ***Key Question:*** *Will our water run out?* ***Key Features:*** *Literacy, Science, Geography, ICT, PSHE*	***Theme:*** *Frankenstein* ***Key Question:*** *Friend of foe?* ***Key Features:*** *Literacy, Science, Art, History, ICT, PSHE*

Appendix 3

Summary of presentation to middle leaders 2013 (Transcript of Prezi presented at Curriculum Day 2013) Available at: https://prezi.com/gimp1deknji9/curriculum/

1.The DESS journey

Broad, balanced curriculum
Cross curricular links established
DESS + - our own document for skills and concepts

Curriculum planning always seen as a longer journey

2. New NC proposals - summary
Aims are:
Rigour, high standards and coherence
Essential knowledge in key subject disciplines
Greater freedom for teachers to help children reach potential

3. Key features of NC:
Maths - arithmetic, written methods of long, multiplication and division fractions, decimals
Science - more emphasis on scientific knowledge and concepts
English - stronger command of written and spoken word, more use of phonics

4. Distinguish between NC and whole school curriculum

Detailed programmes of study for maths, English and Science but more flexibility in other subjects, although essential knowledge is prescribed

Free schools and academies (and DESS), free to depart from the NC!!

CPD - a move away from centralised courses towards collaboration and development tailored to individual needs

5. The curriculum -tree of knowledge

The trunk – quality of children's learning experiences

The branches reflecting major areas of human endeavor and ways of

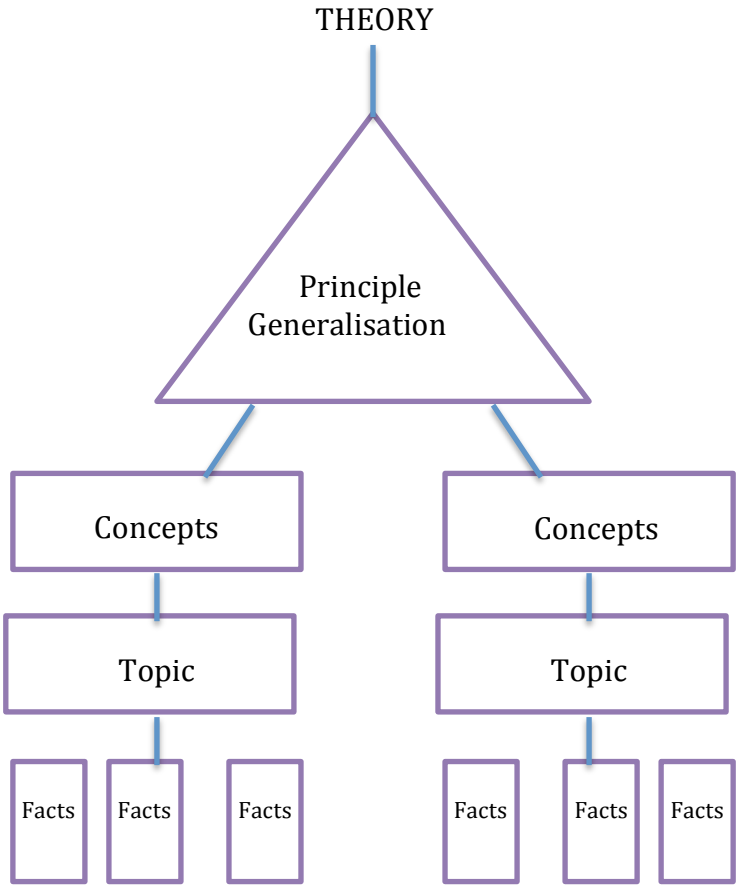
The roots representing skills and competencies such as successful learners, confident individuals responsible citizens and thinking skills, social skills, enquiry skills skills inliteracy, numeracy and ICT

6. What are your thoughts on this model of the curriculum?

7. Idea:
In knowledge, principles are obtained through concepts. A 'supra content concept' will focus principles at a high level of abstraction which will enable even young children to understand the structure of knowledge and of a subject.

This becomes possible through integration - pedagogy begins to emphasise how knowledge is created and ways of ways of knowing and becomes less didactic and more self regulating

8. Lynn Erickson's structure of knowledge in the school curriculum



9. Curriculum in DESS – how?

Literacy,
Science,
Numeracy

Macro concepts and essential questions

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