

# **CAN ONE TEACHER KNOW ENOUGH TO TEACH YEAR SIX EVERYTHING?**

## **Lessons from Steiner-Waldorf Pedagogy.**

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### **Abstract**

*Previous work by the author suggests that the answer to the question is no. Boys in Y6 clearly identified that teacher gender was not an issue for them, but that teacher subject knowledge was. Music, PE and science were consistently identified as subjects where boys were more vulnerable than girls to demotivation because they perceived their generalist class teachers as inadequate in subject knowledge and lacking in subject related practical skill. A new DfES funded study of Steiner Schools in England has offered the opportunity for extended comparison of generalist and specialist teachers working with the same classes.*

*From the ages of six to fourteen, pupils in Steiner schools receive a mixed diet of generalist and specialist teaching. For the first two hours of each day a class teacher, who ideally remains with the same group of children for eight years, teaches a two hour “main lesson”. After morning break, the entire school switches to subject specialist mode. Although in the youngest classes the class teacher may also take some of the specialist lessons, pupils receive regular specialist teaching throughout Key Stage Two of the subjects that appear most vulnerable to inadequacies in generalist teaching (music, PE and Modern Foreign Languages particularly). Critical analysis of extended classroom observations has given some surprising answers to the generalist – specialist debate. Whilst the study partially supports greater specialism in primary schools, the most effective teaching observed was by class teachers who operate under the pedagogical conditions formulated by Rudolf Steiner. Class teachers were seen to be effective in Steiner Schools with pupils up to the age of fourteen, and the eight year relationship with a class was also seen to be particularly effective in minimizing bullying and disruptive behaviour.*

### **Introduction:**

The question of whether one teacher can know enough to teach all the subjects to Y6 (and, indeed Y5) was raised by Y4 and Y6 pupils interviewed for a previous study (Ashley & Lee, 2003) in which pupils in eight primary schools were interviewed about their responses to video extracts of male and female teachers at work. The

pupils did not identify gender as an issue, but themselves raised the question of teachers' subject knowledge. Music and PE were the most frequently cited examples of subjects where pupils thought their teachers inadequate in subject knowledge, though pupil critique of teachers' lack of practical science skills also featured.

This question, of the practicality of a Key Stage Two teacher having good enough knowledge of ten subjects (as well as cross-curricular themes), was given prominence by (Alexander *et al.*, 1992) in their so-called "three wise men report". This was a seminal publication in the process of transition from multiple-focus group work to more didactic, single subject focus teaching in primary schools. Its failure to have a similar impact in bringing about a significant shift towards the subject specialist teaching it called for forms the substance of the present, ongoing enquiry into KS2 pedagogy which has received a significant boost through the DfES funded study *Steiner Schools in England* (Woods *et al.*, 2005).

This paper provides an account of what has been learned about teachers' professional knowledge through the author's lead role in conducting the case studies of Steiner Schools for the DfES. It begins with a contextualization to establish the relevance and significance of Steiner schooling. This is then followed by a theorization of the specialist-generalist issue. A brief review of the methodology employed precedes the main discussion of qualitative data gathered in Steiner classrooms.

### ***Steiner Schools in England***

The Steiner-Waldorf schools are a world-wide movement that constitute one of the most strongly established alternatives to mainstream schooling. There are 870 schools globally in 60 countries including most European countries, Australia, Canada, Egypt, India, Israel, Japan, Kenya, New Zealand, South Africa, South America and the US. There are 23 of these schools in England, ranging from large, well established schools catering for the entire 5 – 18+ age range to small schools of relatively recent foundation employing only two or three full time teachers. Relatively little is known in mainstream education about these schools, and the study reported here revealed a widespread public misunderstanding, even amongst some parents who send their children to the schools.

The first Steiner school was founded in 1919 by the Austrian philosopher Rudolf Steiner (1861-1925) to serve the children of employees at the Waldorf-Astoria cigarette factory in Stuttgart, from whence the name "Waldorf" originates. Steiner's output of scientific and philosophical writing was immense, and covered fields such as agriculture and architecture as well as education. He developed his own "spiritual-scientific" view of knowledge, known as anthroposophy (literally wisdom of man) and this system of "super-sensible" thought continues to underpin the Steiner schools. The esoteric nature of much of Steiner's anthroposophical writings perhaps gives rise to suspicion regarding quite what goes on in the schools, including questions about whether they might be the front for a strange religious cult. Misconceptions are widespread. Steiner and Montessori are often confused, though their philosophies differ in important ways. Other particularly common misconceptions that arise are that the Steiner schools are "free schools" in the tradition of A.S. Neill's *Summerhill*,

or that there is no set curriculum, or that the curriculum is entirely art based and unsuited to the more academic child.

Steiner schools offer a full curriculum that covers all the National Curriculum subjects, and children are far from free to choose whether or not to study it. Children receive no instruction in anthroposophy and have little awareness of its existence, though upper school pupils can begin to question their situation. Steiner aimed to integrate science, art and religion and though there are “religion lessons” which are largely Christian in content, the schools could not be called faith schools. Of all the anthroposophical principles that govern the pedagogy, by far the most significant is attentiveness to child development, underpinned by ongoing child study. The perception of each child as a spiritual individual with a karmic destiny of which teachers are guardians makes Steiner schools highly resistant to the emphasis in maintained schools on competitive testing. Teachers jealously guard their professional status, pedagogical independence and creative freedom.

The curriculum itself, which follows a spiral model, is governed by close observation and recording of what content motivates children at different ages. Steiner’s original view was that three broad stages of development could be identified. During the first phase, up to the second dentition at around seven years, “willing” is dominant, which means that children learn mostly by imitation and physical activity. During the second phase, from seven up to the full development of puberty at fourteen, willing continues but “feeling” becomes dominant, and children learn most through their aesthetic sense. The final phase, from fourteen until twenty one sees the dominance of “thinking” when the cognitive-rational processes come strongly to the fore.

These principles remain the foundation of Steiner-Waldorf pedagogy and curriculum to this day. The stage which concerns us here is the “feeling” stage of the 7- 14 year old, commonly referred to as the “class teacher years”. Crucially for this paper, children beginning this stage in Class I (National Curriculum Year 2) meet the person who will be their class teacher for a full eight years, during which time they experience a combination of class and subject specialist teaching unique to Steiner schools. The class teacher works with the children for approximately two hours every morning during a session known as “main lesson”. This would almost invariably be from the start of school until morning break at around 11 o’clock. After main lesson, there are subject lessons, most commonly two until lunch, and then a further two after lunch. For subject lessons, children of Key Stage 2 age will meet on a daily basis a range of different teachers. Some of these will be class teachers teaching their own particular specialism, others will be specialists employed only to teach their particular subject.

Specialist lessons in Steiner schools are often similar to specialist lessons in maintained schools. The “main lesson”, however, has no direct equivalence in maintained schools. Content of main lessons is derived from the subject curriculum, the principle being that some learning needs to be ongoing as in subject lessons, whilst other learning can occur in sustained, concentrated blocks. Main lesson blocks, however, have little in common with the primary school integrated day and “topic” work, either in content, organisation or pedagogy. They are governed by the need to adhere to rhythmic principles which require them to be closely in harmony with the children’s physical and mental cycles. For Key Stage 2, this would mean that a class

teacher would use music, drama, movement, story telling and ritual to punctuate periods of work on the main lesson curriculum which, whilst centred on a particular subject, might also have cross-curricular links to other subjects.

### ***Theorising Specialist and Generalist Teaching***

Alexander *et al* (1992) state that the key question to be answered is that of whether the primary school class teacher system makes impossible demands on the subject knowledge of the generalist primary teacher. They gave their own answer through stating that they believe that it does (*ibid*, p25) and then proposed a tripartite model of required knowledge:

- subject knowledge
- how pupils learn
- how to manage learning

(*ibid*, p18).

They did not at this time commit themselves to any form of benchmark with regard to how much subject knowledge is required, preferring instead to mirror the general unease about subject coordination and consultancy that has remained in the background since Alexander's seminal work on "Curriculum I" and "Curriculum II" (Alexander, 1984). This work remains as significant to day as it was in the pre-National Curriculum era of its publication. "Curriculum II" translates into today's terminology as the foundation subjects (and possibly science). These are the low status subjects, untested and unreported in league tables, in which teachers' subject knowledge apparently does not particularly matter.

In 1984, however, such subjects *did* matter, for HMI's concern then was with the "broad and balanced" curriculum and the inability of the primary teaching force to deliver it. Alexander records that HMI's view on the matter was quite unequivocal: the full range of curricular demands of class teaching being beyond the scope of most teachers, specific curricular weaknesses and inconsistency being direct consequences of inadequate teacher knowledge (Alexander, 1984: 186). The culmination of this concern came in 1997 when Circular 10/97 specified that new primary teachers should "for any specialist subject(s) have a secure knowledge of the subject to at least a standard approximating to GCE Advanced level in those aspects of the subject taught at KS1 and KS2" (DfEE, 1997).

Since then, however, the DfES have backtracked and precisely how much subject knowledge is required is only vaguely hinted at in current documentation. According to the Teacher Training Agency, a standard of subject knowledge "equivalent to degree level" is required at KS3 and KS4 (DfES, 2003). For KS2, however, the required level is merely "sufficient understanding" (*ibid*, p. 16), no longer defined by reference to benchmarks such as a degree or "A" level. Indeed, teacher competence in Curriculum II may arguably be reaching a new low, since from 2003 the standard for newly qualified teachers has been the somewhat undemanding: "sufficient understanding of a range of work across...history *or* geography...art and design *or* design technology...to be able to teach...with advice from an experienced colleague" (DfES, 2003).

Evidence of official dissatisfaction with this has come as subjects such as geography are singled out for criticism (OFSTED, 2005). The chief inspector (somewhat belatedly, perhaps) further speculates that in initial teacher education an unprecedented focus on subject knowledge of the core subjects has distracted attention from the question of generalist teachers' subject knowledge in ten different curriculum areas (Bell, 2003). Such is the enduring descriptive and analytic power of Alexander's Curriculum I and II model. The most remarkable feature of this saga, however, is the continuing reluctance to grasp firmly the nettle of the simple fact that, if the minimum standard of subject knowledge is "A" level, then one teacher cannot know enough to teach all the subjects.

The TTA's current answer to this difficulty seems to be to suggest in their standards for subject leaders that a "good knowledge" of the subject is required (DfEE, 1998). Attention is then cleverly diverted from a benchmark for this by focusing "primarily on expertise in the leadership and management of a subject". This is partially consonant with the thinking of the "three wise men" who put forward the following framework for development of the primary curriculum through increased subject expertise, suggesting that each primary school should work out a particular form of deployment according to its size and circumstances:

- The generalist who teaches most or all of the curriculum, probably specialising in age range rather than subject, and does not profess specialist subject knowledge for consultancy
- The generalist/consultant who combines a generalist role in part of the curriculum with cross-school coordination, advice and support in one or more subjects
- The semi-specialist who teaches his/her subject, but who also has a generalist and/or consultancy role
- The specialist who teaches his/her subject full-time (as in the case of music in some primary schools)

(Alexander *et al*, 1992: 43)

This again can be traced back to 1984 where Alexander sounds another cautionary note with regard to Curriculum II by citing a large Birmingham study that showed not only that the teachers saw themselves as only partially competent in Curriculum II subjects but, more importantly, that they were less likely to seek advice from Curriculum II subject co-ordinators than Curriculum I subject co-ordinators (Alexander, 1984: 192).

It may be time to face the possibility that we simply do not know whether A level is the benchmark for adequate teaching of subjects at KS2. No convincing empirical test has been carried out since the primary curriculum changed from a weakly framed, integrated approach to the present strong framing and classification. If such analysis moves us to confront the possibility that a primary teacher might need up to ten "A" levels, this need not be entirely a *reductio ad absurdum*, for in England the practice in independent preparatory schools requires precisely such levels of subject knowledge and the means of obtaining it is through the deployment of subject timetabled

specialist teaching across KS2. The associations representing these schools confidently assert that the availability of specialist teaching is a key reason for the superior academic performance of their 7 – 13 year olds (IAPS, 2005) – a claim also made by independent school heads interviewed by the author in connection with this current work. As any perusal of job advertisements in the *Times Educational Supplement* will confirm, the benchmark of sufficiency in subject knowledge for these schools is often a degree or equivalent.

It is possible, however, to propose an alternative *reductio ad absurdum* by asking whether a subject degree is really necessary to teach geography to nine year olds, or indeed whether such teaching is adequate reward for the graduate who has devoted her or himself to university study of the subject. A fuller theory of teacher knowledge than the simple tripartite structure of Alexander *et al* referred to above may be needed to address this fundamental question. One such theory is provided by Turner-Bisset (1999) who draws on earlier work by Shulman (1986). She identifies the following knowledge bases as contributing in sum to a *pedagogical content knowledge*. I shall contend that this amounts to a totality greater than could be obtained either through a traditional subject degree or through any of the vocational teacher training degrees that have hitherto been devised as a means of preparing primary teachers.

- Substantive subject knowledge
- Syntactic subject knowledge
- Beliefs about the subject
- Curriculum knowledge
- General pedagogical knowledge
- Knowledge of models of teaching
- Knowledge of learners: cognitive
- Knowledge of learners: empirical
- Knowledge of self
- Knowledge of educational contexts
- Knowledge of educational ends

(Turner-Bisset, 1999: 43)

There is not space available here to describe each category in detail. Briefly, as well as the formal body of knowledge of a subject (substantive), a teacher must also have process knowledge of how the subject operates (syntactic) and beliefs about the subject (for example, whether geography is a quantitative science or a qualitative branch of humanities). The argument that might be developed from Bernstein's (1971) subject socialisation principle is that such levels of knowledge begin to develop comprehensively only at post-GCSE levels. However, the model calls for a level of understanding of educational contexts and ends that are generic to the understanding of education as a process across age phases and beyond formal schooling. It calls for an understanding of curriculum, and we might take "understanding" here to refer to insights that go beyond technical training in how to deliver materials devised by others. A similar point might be made about knowledge of models of teaching. Such knowledge probably needs to be a critical one based on theory and praxis. The "expert teacher" must also have understandings of children that range from significant insights into psychological theories that might be taught at university to an empirical knowledge that must be developed through actual work with children.

What is presented here is a problem that goes beyond the “ten A levels” conundrum to a “two degrees conundrum”. Turner-Bisset’s model of expertise is a way of revisiting the agonised debates of the years that spawned the BEd degree when, as Alexander (1984) records, there was much tension between a DES view that only subject knowledge mattered, a Hirst/Young/Bruner inspired establishment view of undergraduate study of “education” as philosophy, sociology, psychology, history and politics in the context of schooling, and a more cynical professional view that “college theory” was of no value to young teachers struggling to control their first class. The need for empirical knowledge that can inform such struggles has by no means been satisfied, and what now follows is an attempt to contribute to this field. The possibility offered by Steiner education is that of a collegiate solution.

### ***The Research***

The principle that Alexander *et al* (1992) are grasping for in the proposed framework of specialism discussed above is surely that only a collegiate answer to the “ten A levels and two degrees” conundrum is possible. The combination of subject teaching from the age of seven upwards with the continuity of the same class teacher taking a daily two hour main lesson for eight years in a uniquely collegiate setting is what makes Steiner schools potentially sites for exploring this.

Data gathering for the project now described consisted of two main phases of empirical work in addition to a literature review, document analysis and key informant interviews. For the first phase, an extensive survey questionnaire was developed in collaboration with the DfES and one Steiner school which agreed to pilot the work. The survey was administered through personal visits by members of the research team to as many schools as were willing to accommodate this. This approach was chosen for two reasons. First, it was desired to achieve the fullest possible response rate from the 23 schools and it was felt that personal visits would overcome suspicion of or indifference to the project by the schools – a principle that was fully vindicated in practice. Second, it was felt that the visits would allow the researchers to gather additional interpretative data through conversations with key informants in the schools, which also proved very much to be the case in practice. In total, of the 23 schools, 22 agreed to participate in the project, 15 received visits by members of the research team, 6 self-completed the survey and 1 dropped out due to pressure of work after having indicated a willingness to self-complete.

The second phase of empirical work consisted of case studies, and seven schools were visited by the author of this paper for this purpose. It is these case studies that provide the data set shortly to be discussed. The case studies consisted of two instruments of data collection. For the first, the researcher spent one or two whole days shadowing a class and recording detailed field notes of all that happened in the class throughout the day. For the second, the researcher reflected on the notes and generated a series of questions that were put during the following day to the teachers that had been observed. The teachers were encouraged, in these interviews, to theorize with the researcher on their practice, relating it to the underpinning anthroposophical principles. Across the whole period of the study, the approach to theorizing was

iterative, that is to say that teachers in schools visited later on in the project were invited to comment further on the theorizing that had taken place in previous schools.

### ***Findings***

The culture of Steiner and mainstream schools is so different with regard to the testing and assessment of pupils as well as what counts as good pedagogical practice (Woods *et al.* 2005) that some compromise between description and analysis has had to be forged. Measurements based on any conventional form of testing would be largely meaningless. Classroom observations were written up as case studies or vignettes. The methodological challenge has been to extract a meaningful analysis from extensive qualitative data. One case study and one vignette are first presented to illustrate the principles of comparison and evaluation. A quantitative summary of the frequency across the whole study of the events described is then given.

Early on in the study, a respondent suggested that there were three types of teacher in Steiner schools:

- A class teacher teaching their own class
- A class teacher teaching their subject to another class
- A subject teacher who is not a class teacher

This respondent suggested that there was a continuum of diminishing quality in class control and teacher/pupil relationship from the first to the last of these. This proposition was put to subsequent interviewees, all of whom endorsed it as concordant with their own experiences. The case study now described illustrates this principle in action and considers the relationship between it and the quality of teaching and learning.

#### **Case Study One**

**Steiner Class: 4    National Curriculum Year: 5    Age of Pupils: 9 - 10**

The day began with friendly, informal chats to the class teacher as pupils arrived in class over a half hour period. As in all Steiner schools, the formal proceedings then began with the teacher shaking hands and speaking individually with each of the pupils. This was followed by a number of rituals, including recitation of the morning verse, which the pupils appeared to take seriously. The pupils then settled quickly for the main lesson which was science and concentrated on the natural history of the cuttlefish. In Steiner schools there is a strong emphasis on the teacher bringing material directly to the pupils through story telling and invocation of the imagination. Pupils were interested in what the teacher had to say and worked hard to produce pictures and an account of earlier work on the topic in their main lesson books. Pupils remained quiet and on task for the whole two hours, frequently asking questions that indicated a high degree of interest in the lesson content. The teacher appeared able to answer almost all of these, but was honest in admitting to the pupils when she was unsure of her facts.

The researcher remained with the class during morning snacks and was approached by a girl who enquired whether he would be staying for the next lesson. On hearing that he would, she replied "Oh well, I'd better warn you. The next lesson's always a naughty lesson. But it's not me!" This prediction was born out in that the French teacher experienced considerable difficulty in keeping order. Pupils who had previously been extremely compliant with their

class teacher called out and back-answered throughout the lesson. On one occasion, the teacher told a boy to leave the room but was ignored. She later insisted that the same pupil should be escorted to the class teacher, but when the pupil refused to move she simply carried on with the lesson.

The final lesson before lunch was music, and the pupils were again transformed. The lesson began with a skilful vocal warm-up and intonation exercise which involved the pupils in movement around the room. The teacher then sang confidently to the pupils, her performance being musical and technically accurate. This appeared to inspire the pupils who readily joined in singing. Whilst some sang more enthusiastically than others, all participated and no gender difference was noted. This teacher had brought to the lesson some tuned lyres which could be used to accompany the song. All the pupils were eager to play these and all behaved co-operatively, perhaps in the hope that they would earn a turn on the lyres.

The first lesson of the afternoon was drawing, and this was taught by an experienced teacher who had been at the school a long time. Perhaps surprisingly, the pupils were not automatically well behaved as they had been with their class teacher. There was some calling out and even some back answering, but the drawing teacher was not drawn into conflict with the pupils in the way the French teacher had been and was able to maintain the pupils on task. The teaching style was didactic and transmissive and heavily dependent on the teacher's own level of skill with the large wax crayons that are used in Steiner schools, as well as his ability to take the pupils through the various technical stages of producing the drawing.

The final lesson was eurythmy in the school hall. Eurythmy is a subject devised by Steiner. It is a form of expressive movement which involves working with gestures for the sounds in speech, rhythms and geometric forms. Conversations with pupils in a number of schools revealed that it is not a particularly popular lesson. This lesson was taken by the school's eurythmy teacher. All eurythmy teachers are specialists with specific Steiner training. In spite of the lesson's relative unpopularity, pupils generally participated well and were kept clearly task focused by the teacher. A few small disruptions by boys at the side of the hall waiting their turn were dealt with promptly by the teacher.

### **Commentary on Case Study**

This case study clearly shows that the class teacher, working with her own class, enjoyed the strongest and more secure relationship with the pupils. Through this, she was able to teach for a whole two hours without interruption and to demonstrate a warmth that allowed for humour and some mutual disclosure of more personal/domestic matters. At the same time, she was able to manage transitions very effectively, taking the pupils rapidly from rhythm and movement based activity to silent book based activity. The existence of well established routines and rituals undoubtedly helped with this. This pattern can be regarded as typical and representative of most Steiner class teachers observed, the only significant exception being a class teacher of Y9 pupils who was in evident difficulty with regard to knowledge of learners and models of management.

The French teacher had good subject knowledge. She was a native speaker and therefore proficient in oral modeling. She employed pedagogical techniques recognizably similar to those observed in other Steiner MFL lessons, so was not lacking in pedagogical knowledge. However, she made a number of elementary mistakes with regard to class management and clearly had a poor relationship with the pupils. This teacher was an example of a subject teacher who was not a class teacher and the school frankly admitted the difficulty of finding teachers who had good subject knowledge in MFL and who were also strong in pedagogy and management.

The music teacher was also a subject teacher but not class teacher. She had good subject knowledge and, importantly, also a high level of practical competence. She also possessed pedagogical knowledge specific to her subject. In all these respects, she was similar to the French teacher. The most notable difference was the way she communicated, enthusiasm, confidence and enjoyment, radiating warmth and fixing the pupils with confident eye contact. The drawing teacher belonged to the third category – a class teacher who was also a subject teacher. The drawing lesson was slower, more reflective and more technique focused than the French, music or eurythmy lessons and also took place in the afternoon. These factors might have accounted for the greater tendency of the pupils to engage in off-task chatter, but this was not confrontational and the teacher appeared to draw on subject knowledge and technical skill as well as the understanding of pupils that comes through years of experience.

This case study does confirm the hierarchy of class management skills that several respondents suggested. It clearly shows the value of a good knowledge of learners and that this is most likely to be possessed by experienced class teachers, with the class teacher who has fairly intimate knowledge of her learners in an empirical as well as theoretical sense fairs best. The teacher brought in as a subject expert was certainly the least successful. There is a difficult question with regard to the quality of pupils' learning however that the research was not fully able to answer by virtue of the fact that Steiner education is self-referencing and lacks the benchmarks of external tests set by subject experts. The vignette below, drawn from another of the case studies, is included to illustrate this.

Vignette1

**Steiner Class: 3    National Curriculum Year: 4    Age of Pupils: 8 – 9**

Main lesson continued with mental arithmetic practice through rhythmic movement and recitation and the teacher appeared confident with this pedagogic approach. Transitions involved children moving furniture to clear a central floor space for movement and acting and were achieved smoothly as a matter of routine. After 32 minutes, the class settled to work on the main content which was about farming, drawing on cross-curricular English and science. The teacher recalled first hand experience of a week's visit to a biodynamic farm through a passage of text for which the children had to identify "picture words", "doing words" and "naming words". This main activity continued for 58 minutes, after which there was a transition to science practical work. The children, working in small groups, were given three pots containing different soil samples and asked to observe closely what happened when water drops were added to each sample. In keeping with Steiner pedagogy<sup>1</sup>, the teacher did not question the children about the activity, but stressed that she would be asking them to tell her about it the next day. The lesson then concluded with the teacher telling the children, from memory, the story of Moses and Miriam<sup>2</sup>. Her narrative was slow, well measured and confident. She moved around the front of the class, maintaining close eye contact with the children, who listened carefully.

<sup>1</sup> Teaching and learning in Steiner schools follows a three day rhythmic cycle which draws on mental processes that occur during sleep. Steiner science pedagogy stresses the need for imaginative observation and the kind of questioning discourse that characterises constructivist learning approaches to science in mainstream schools would be considered antithetical to this pedagogy.

<sup>2</sup> Steiner pedagogy stresses the need for teachers to bring material directly to children without the impediment of a book. Most Steiner teachers are highly skilled story tellers and oracy is important.

## Commentary on Vignette 1

The teacher clearly had good knowledge of the children, but the most significant knowledge observable was of Steiner's pedagogical principles, which were put into practice throughout the lesson. In terms of subject knowledge, it needs to be appreciated that the teacher and class had spent a residential week on a biodynamic farm<sup>3</sup>, both teacher and children learning from the expertise of the farmer.

This would be typical of Steiner education in two ways. First, there is a pedagogical stress on the importance of farming as a topic for nine year olds. Second, the eight year relationship of the teacher with the class implies that the teacher should grow in learning with the children. The requirement to present lessons orally through narrative and visually through elaborate chalk drawing<sup>4</sup> requires the teacher to devote considerable amounts of time to personal preparation of subject knowledge. Against this must be considered the opacity of Steiner education to conventional assessment procedures. This is illustrated by the following extract of an exchange between myself and a pupil during the science practical:

MA: "So why is the water here?"

Pupil: "It came through the holes in the bottom."

MA: "How did it get to the holes?"

Pupil: "Simple!" (said as though I were an idiot).

MA: "Well, how?"

Pupil: "OK. Well it dissolves. Some mixes and some goes through."

In conventional, constructivist science, this exchange would be regarded as exemplifying that the pupil has a misconception. Alexander's current enthusiasm for dialogic teaching, furthermore might desire here a "genuinely interactive" exchange in which teacher and pupil explore together the meaning of "dissolve" and "mix", (Alexander, 2004). Steiner education, however, would not want to pursue this kind of questioning at this time or make this kind of corrective judgment, emphasizing instead processes which continue in the pupil's mind during sleep. This renders opaque to an observer, used to assessing trainee science teachers, whether or not the teacher herself understands mixtures, suspensions and solutions. To appreciate the teaching and learning fully, the entire three day rhythm in which the pupils recall content after sleep needs to be observed. Such a procedure is largely incompatible with the learning objectives model currently hegemonic in maintained schools as discourse follows processes at work in pupils' minds.

During the case studies, a total of forty lessons in fifteen different classes across eight schools were closely observed. Seven of these were KS2 classes, and eight were KS3. The table below presents an analysis of the observations undertaken, using the concept of "pedagogical flow" to capture this process. This is defined as an uninterrupted narrative, centred on lesson content. The assumption has to be made that for as long as this narrative continues without disruption, processes of teaching and learning envisioned by Steiner are occurring. Disruption of the narrative could arise either through class management related incidents, as might occur through

<sup>3</sup> Bio-dynamic farming is a form of agriculture that follows Steiner's anthroposophical principles.

<sup>4</sup> Steiner teachers must be trained to possess considerable skill in drawing as well as story telling.

inadequacy in knowledge of learners or learner management, or through subject related incidents due to inadequacies in knowledge of the subject material and its appropriateness. These would be manifest in the teacher being unable to give a satisfactory response to a pupil's question.

The column headed *clear* shows the percentage of lessons which passed without any interruption to pedagogical flow. Thus, for KS2, 72% of main lessons lasted a full two hours without any interruption to the teaching & learning discourse. The three columns headed *minor* show the percentage of lessons that suffered occasional interruptions to pedagogical flow, and the figure is further broken down into three categories derived from Turner-Bisset's knowledge bases. SK refers to any form of subject knowledge, where pedagogical flow was disrupted by the teacher's uncertainty of subject content. KTP refers to knowledge of models of teaching and appropriate pedagogy. This would include all interruptions due to the teacher's momentary uncertainty about appropriate strategies of class management or subject delivery that might otherwise have prevented the interruption. KL refers to knowledge of learners, cognitive gained through training and empirical through experience. *Minor* interruptions were often trivial and lessons so classified could mostly fall within the OFSTED range of satisfactory to very good, the majority being good. The three columns headed *unsatisfactory* show the number of lessons adversely affected by the same criteria to a degree that would be considered unsatisfactory by OFSTED.

#### Pedagogical Flow Analysis

Key Stage Two							
	Clear	Minor			Unsatisfactory		
		SK	KTP	KL	SK	KTP	KL
Main Lesson CT	<b>72%</b>	14%	14%	0%	0%	0	0
Subject by CT	44%	0%	0%	33%	0%	0	0
Subject by ST	50%	0%	0%	0%	0%	<b>38%</b>	<b>38%</b>

Key Stage Three							
	Clear	Minor			Unsatisfactory		
		SK	KTP	KL	SK	KTP	KL
Main Lesson CT	20%	<b>40%</b>	20%	0	0	17%	20%
Subject by CT	66%	0	33%	0	0	17%	20%
Subject by ST	<b>83%</b>	0	17%	0	0	0	0

The most relevant figures are those in bold. Thus at KS2, the teaching of main lesson by class teachers was clearly very strong. 72% of lessons had no interruption to pedagogical flow and the teachers clearly possessed a great deal of knowledge of their learners. The teaching of KS2 classes by subject specialists who were not class teachers, however, yielded a total of 38% of lessons that were unsatisfactory. In these lessons, the teachers possessed the necessary subject knowledge, but failed due to a combination of inadequate knowledge of models of learning, pedagogy and

knowledge of learners. Knowledge of learners was, in fact the, weakest element in these lessons. The teachers simply did not understand the children.

The table for KS3 has been included because it provides a useful comparison. It can be seen that at this level, the teaching of subject lessons by subject specialists was even stronger than the teaching of main lesson by class teachers. 83% of all such lessons passed without any interruption to pedagogical flow. None of the KS3 subject teachers' lessons was interrupted because the teachers lacked knowledge of the learners. However, subject knowledge was becoming an issue with 40% of class teacher main lessons interrupted by teachers' uncertainty about subject content, mainly exposed by pupils' questioning. In spite of this, most KS3 class teacher lessons were still strong, the figures being skewed by one class teacher who seemed not have knowledge of fourteen year old learners, or knowledge of how to manage them.

## ***Conclusion***

The study of Steiner schools has provided a unique opportunity to consider from another angle such pressing questions as KS2/KS3 transfer, the nature of a pedagogy for KS2, the appropriateness of class and subject teachers and the kinds of knowledge required. Observations supported Steiner's view that there is a significant change in pupils at around the age of 11. Contrary to the author's expectations and prejudices at the outset of the study, this might count against the notion of 9 – 13 as a distinct phase and weaken the case for maintained middle schools. However, provided suitable teachers can be trained and recruited (and not all proved suitable) there is potentially more of a role for class teachers at KS3 than in currently accepted practice.

At KS2, however, the findings tend to confirm that a good class teacher should remain the bedrock of primary practice up to age 11. There was little in the study to support a wholesale change to subject teaching as in many independent preparatory schools. The notion that the sum of all the different kinds of knowledge required to teach 9 – 11 year olds can only be held by a collegiate body is a principle that might be put forward quite strongly. Thus a collegial failure in which each primary school teacher operates without reference to colleagues might be seen as a serious one. Steiner schools, with their strong emphasis on collegiality and collegial pedagogic study of pupils and classes, offer a model of effective practice here.

The study confirms robustly that, for any individual teacher at KS2, the most important forms of knowledge are less subject knowledge than those knowledge bases that relate to pupils. The ability to form the relationships that permit learning is again the bedrock of effective pedagogy for KS2 and both cognitive and empirical knowledge of pupils, as well as a good knowledge of self, would seem to be priorities. In almost all cases observed, the Steiner practice of a class teacher for eight years appeared to be vindicated by the criterion of effective teaching and learning achieved through particularly strong relationships.

The Steiner practice of distributed pedagogical knowledge through a combination class teacher "main lesson" and subject lessons can be commended to primary

schools, but not without reservation. Effective teaching of modern foreign languages, music, PE, art and handcraft by subject specialists was observed, but not universally. Where Steiner schools were good in subject teaching, it is probable that pupils learned more effectively than in primary schools where the teacher lacks subject knowledge in these (or any other) areas. Subject teaching, however, was clearly seen to be more vulnerable to a lack of knowledge of pupils and their learning than class teaching to a lack of subject knowledge. Where subject teachers did lack knowledge of pupils, effective learning could be minimal. Particular caution might be exercised with regard to the use of adults supposedly possessing expert knowledge in, for example, a sport, but lacking the knowledge of pupils possessed by a good class teacher. The challenge therefore, is one that applies equally to school management and teacher supply. How can any of the models suggested by Alexander *et al* in 1992 be implemented? Steiner practice undoubtedly adds one more model to this list and offers intriguing possibilities for distributed pedagogical knowledge.

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