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Subject-based and cross-curricular approaches within the revised primary curriculum in Northern Ireland: teachers' concerns and preferred approaches

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A revision of the Northern Ireland Primary Curriculum took place in 2007. It promotes strongly a cross-curricular or thematic approach to planning and teaching and has an 'Area of Learning' structure which includes geography alongside history and science and technology in an area called 'The World Around Us'. Responses from teacher questionnaires and interviews with teachers and 'stakeholders' reveal wide-ranging opinions, mostly positive, about the effectiveness of this approach in improving pupil learning. A significant number of teachers have adopted a pragmatic, balanced and reflective approach to their planning, something which requires a high skill level in 'curriculum-making' which, in turn, can be enhanced by effective in-service training.

Keywords: primary curriculum; primary geography; curriculum integration; cross-curricularity; teacher opinions; curriculum-making

Introduction

The Northern Ireland Curriculum (NIC) was revised in 2007. Like the proposals in the Cambridge Primary Review (Alexander 2009) and the Rose Report (Rose 2009), it is not structured in single subjects but in 'Areas of Learning'. These include 'Language and Literacy', 'Mathematics and Numeracy', 'The Arts' (art and design, drama and music) and 'The World Around Us' (WAU), an area which includes history, science and technology and geography. Cross-curricular or integrated approaches to planning and teaching, termed 'Connected Learning' within the NIC, are encouraged, along with the use of active learning methods, Assessment for Learning (AfL) techniques and a focus on 'Thinking Skills and Personal Capabilities'.

In one of its introductory sections, the curriculum document produced by the Northern Ireland Council for Curriculum, Examination and Assessment (CCEA) states that 'Children learn best when learning is connected' (CCEA 2007, 10). It encourages relevant connections and integration between all of the Areas of Learning using cross-curricular approaches:

Although the curriculum has been set out under six Areas of Learning, further integration is encouraged to help children better understand the links between the different aspects of learning. (CCEA 2007, 16)

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Previous versions of the NIC, which became statutory in 1990 and 1996, had noted the importance of cross-curricular teaching, but it was not encouraged as overtly as in the 2007 curriculum. In it the formation of the Areas of Learning structure, the provision of exemplar materials – the ‘Ideas for Connected Learning’ (ICLs) and ‘Thematic Units’ (TUs) – and the emphasis on thinking skills and ‘connected learning’ have all combined to give cross-curricularity (CC) a much higher profile than before.

This paper discusses the pros and cons of cross-curricular and subject-focused approaches in primary school teaching with a focus on primary geography. It describes research into the opportunities and the concerns identified by the teachers and other educators by looking at the tensions which exist between the desire to highlight and celebrate subject distinctiveness while teaching within a ‘connected learning’ context. It is based on interview and questionnaire data provided by teachers and individual educational ‘stakeholders’.

Literature review

There is no shortage of published material on the pros and cons of subject-focused and integrated approaches. In the last six years, three textbooks using the word ‘cross-curricular’ in their titles have been published in the UK: Rowley and Cooper (2009), Barnes (2011) and Kerry (2011). These books, along with the publication of a number of journal papers and articles, signal a significant renewal of interest in the area.

Terminology

The debate about whether a cross-curricular or a subject-based approach is more effective in terms of pupil learning is beset by the problem of terminology and definitions. A plethora of terms is found in the literature for cross-curricular teaching – for example, ‘topics’, ‘projects’, ‘integrated teaching’ and ‘thematic teaching’. In the primary school, it is common for ‘integration’ to mean, in practice, a non-differentiated exploration of a theme or ‘topic’ using generalised and common-sense enquiry procedures. One of the best-known definitions of cross-curricular or topic work was given by Alexander, Rose, and Woodhead (1992, 21):

... a mode of curriculum organisation, frequently enquiry-based, combining aspects of various subjects under a common theme.

Within this paper, the terms ‘cross-curricular’ and ‘integrated’ are used synonymously. They are defined as: approaches to planning and teaching which attempt to bring together within the same unit of work or topic, aspects from different subject areas which are taught concurrently and which contribute in a meaningful and appropriate way to the unit’s whole. Each unit or topic must have core content, usually based on one, or possibly two, central subjects, and learning in one area must be supported by learning in the others (Martin 2002). The topic as a whole must be strengthened by the links, and the links should not focus just on content but also on skills and concepts. The intent of curriculum integration is to construct meaningful bridges to show connections in development and learning (Wortham 1996). Barlow and Brook (2010) brought together a number of these threads by arguing that an essential aspect of any cross-curricular approach is the idea that one theme may offer wide opportunities for quality learning in several subject areas (saving time and avoiding repetition), while at the same time this can create broader and more cohesive learning experiences, with greater consideration of how pupils learn.

In a booklet which preceded the NIC, addressing some of its implementation issues, CCEA (2006) used the phrase ‘connected learning’ in the context of the proposed revision of the curriculum and defined it as including:

... connecting new learning to learners’ prior experience; making explicit meaningful relationships between knowledge and skills in different contexts; and encouraging the transfer of knowledge and skills across different contexts. (CCEA 2006, 2)

In this definition, the idea of pupils connecting new learning to learning which they already have, irrespective of whether these connections cross subject boundaries, is suggested. In addition, the idea of knowledge and skills being used *in* and *across* ‘different contexts’ is taken to encompass cross-curricular teaching and a flexible approach to structuring the curriculum in general.

Writing specifically about geography teaching in the primary school, Catling (2010, 84) argued that ‘No aspect of geography can really be taught in isolation’. In the same book, Krause and Millward (2010, 335) stated that ‘Geography lends itself to cross-curricular work and provides a context for exploring many other subject areas’.

CC in Northern Ireland education

The Northern Ireland educational system has had a different history from the educational system in the rest of the UK. It has been characterised as being more conservative and less ‘liberal’ in its structures and management, allowing teachers less freedom to experiment with curriculum change (Caul 1993). In other words, the ‘pendulum of educational fashion’ had never swung as widely in Northern Ireland education as it has in England. However, because Northern Ireland has had long periods of direct rule government controlling the educational system, it has tended to be the case that when Westminster made changes in educational policy, Northern Ireland education followed suit – usually a little later and in a less radical way. Northern Ireland has followed fairly closely the pattern of curriculum prescription in England and Wales: before the early 1990s, there was very little ‘top-down’ control of what was taught in primary schools. In Northern Ireland, a common curriculum was introduced in 1990, one year after the National Curriculum in England and Wales, and was set out in a similar, subject-based structure. The revision in 1996 (DENI 1996) reduced content and overlap in the curriculum in a process mirroring the Dearing review in England and Wales (Dearing 1994), but it was not in any way a radical re-appraisal. The statutory requirements of this revision remained in place for 11 years. Encouragement to teachers to use cross-curricular approaches was set out in both the 1991 and 1996 curriculum materials. In the 1996 revision (DENI 1996), the introduction to the Programme of Study for Geography at Key Stage 1 suggested that the content set out might be used flexibly in the planning of appropriate topics which might be cross-curricular or geography-led.

A revised NIC was introduced in March 2007 (CCEA 2007). In terms of CC, it can be seen as the most radical curriculum in the UK or Ireland. In this revision, geography, history and science and technology were placed into an Area of Learning called ‘The World Around Us’. CCEA set out what it saw as the key features of the new curriculum; these included flexibility, active learning, integrated assessment, skills development and matching the learning to the learner. In addition, it described ‘Connected Learning’ and encouraged relevant connections and integration between all of the areas of learning in a cross-curricular approach: ‘Although the curriculum has been set out under six Areas of Learning, further integration is encouraged to help children better understand the links

between the different aspects of learning' (CCEA 2007, 16). In order to encourage the creation of strong and appropriate links across the curriculum, CCEA introduced a series of exemplar topics called 'ICLs' and 'TUs'. Many of these have a geography focus, for example, a topic for 6–8-year olds on their school and its surroundings, called 'School's Cool', a topic aimed at 8–9-year olds on water and its uses, called 'Liquid Gold' and an environmental topic called 'Eco Warriors' for 9–11-year olds. All are available as PDFs on the NIC website (<http://www.niccurriculum.org.uk/>).

Arguments in favour of CC

Arguments concerning the use of either subject-focused or cross-curricular approaches to learning have been hotly debated for many decades, with commentators either ardently supporting or opposing implementation of the various approaches in schools. Integrated approaches have been described as being a better reflection of the realities of pupils' experiences outside school (see, e.g. Tann 1988; Palmer and Pettitt 1993; Laurie 2011). Alleman and Brophy (1993, 287) put their point bluntly: 'Curriculum integration is one of those ideas that is obviously good'.

Educationalists who have written either in favour of or in opposition to cross-curricular approaches to planning and teaching have done so using a number of arguments. These have included psychological arguments concerning the nature of the mind of the learner and the conditions in which learning will occur, following work by famous educationalists such as Dewey and Vygotsky. Pragmatic arguments have also been made which allude to the idea that workers in the future will need to have the ability and flexibility to draw from many fields and solve problems that have interrelated factors. Further details on some of the arguments for cross-curricular teaching and learning have been set out in list form by both Morrison and Ridley (1988) and Cohen, Manion, and Morrison (2011).

A number of authors have proposed philosophical or epistemological arguments concerning the nature of knowledge itself (Bernstein 1971; Blenkin and Kelly 1981; Walkerdine 1983; Ward 1996; Kerry 2011). One of the strands within these kinds of arguments is that it is even more important for teachers who plan using integrated approaches to understand the 'deep structure' of each subject than it is for those teaching separate subjects (Bernstein 1975). Knight (1993, 3) concurred, stating that: 'A major problem with integration is simply that it demands sharp subject-matter understanding'. Thus, there is a body of evidence to suggest that a teacher's subject knowledge and understanding are directly related to the quality of the children's learning in a cross-curricular structure (Ryan and Jones 1998) and that an integrated approach to the primary curriculum demands of teachers high levels of skill and a wide 'pedagogical repertoire' (Burgess 2004; Wood 2011, 39). However, many teachers will argue that they have not had adequate training to allow them successfully to teach using a cross-curricular approach. In relation to geography, the 2008 Office for Standards in Education (Ofsted) subject report found that that many primary teachers were not confident in teaching geography and had little or no opportunity to improve their knowledge of how to teach it (Ofsted 2008). Three years later, the geography Ofsted report expressed concern over primary teachers' weak knowledge of geography, their lack of confidence in teaching it and insufficient subject-specific training (Ofsted 2011).

One of the main arguments in favour of an integrated curriculum is that pupils are more motivated to learn when the curriculum is organised in this way. Darling (1994) stated that the motivation gained by young children in following their own interests, albeit under teacher guidance, was fundamental to successful learning. The idea that pupil motivation

is tied up with pupils' views of the relevance to their everyday lives of the work with which they are engaged has been suggested by some researchers. Hayes (2010) wrote about how cross-curricular approaches emphasise a fusion of ideas and concepts within and across subject areas and broader life experiences in an attempt to make education more relevant and meaningful for children. Such approaches are often seen as a way to support the transfer of learning and skills from one situation to another, teaching pupils to think and reason, and provide a more relevant curriculum to engage their interest (see also Thomson, McGregor, and Sanders 2009).

Arguments against CC

It is argued by those supporting disciplinary or subject-focused approaches to the curriculum that the retention of sharply defined subject boundaries provides for a more rigorous explanation of and a sense of order about our complex world (see, e.g. Gardner 2004). At a practical level, cross-curricular work is seen by some as not being the most efficient way for children to learn; for example, Entwistle (1970, 10) suggested that integrated studies seemed a 'poor instrument' for acquiring knowledge and skills in a manageable, disciplined form. The argument is that it may be difficult for pupils to make sense of experiences and knowledge without the benefit of the conceptual structures which disciplines provide (Morrison 1986; Kerry and Eggleston 1988; McNamara 1994). In the 'Three Wise Men' report, Alexander, Rose, and Woodhead (1992, 21) argued that to deny children access to subjects was to '... deny them access to some of the most powerful tools for making sense of the world which human beings have ever devised'. Rather than focusing on the ideological arguments in favour of or against subject teaching, they advocated recognising the empirical limitations of topic work and the benefits of subject teaching.

For many teachers, the main arguments about the practical difficulties associated with the implementation of an integrated curriculum have centred around five main issues: the fact that subjects can lose their distinctiveness; that topic work can often result in low order work being set; that the links made between subjects in planning may be weak and contrived; that there is frequently a lack of progression and that assessment is a major difficulty (see, e.g. Knight 1993; Coe 2010; Johnston 2011).

A compromise position

A compromise position between the extremes of strict subject planning and overly elaborate topic-based approaches has been suggested by a number of authors to be a desirable way forward. This position includes the idea that topics should not be too broad, but be more limited in scope (Palmer and Pettitt 1993; Barnes 2011) and that topics should have links which are natural, meaningful and purposeful and have conceptual coherence, rather than being tenuous and spurious (Martin 2002; Alexander et al. 2008; Rowley and Cooper 2009). In addition, various authors have advocated that teachers should vary their planning approaches between whole class topic work, individual topics and modular units of work with a single curriculum focus, taking into consideration the context of the school and the children's specific needs. A central question for teachers in their planning should not be: 'How can these concepts be integrated?' but rather 'How can these concepts best be taught?' (Lonning and DeFranco 1997).

Part of a practical, compromise way to work involves teachers deciding on the level of CC that they might use for any topic or unit of work which they are planning. Following the introduction of the subject-based National Curriculum in England and Wales in the late

1980s, a number of UK-based authors set out their preferred structures for thinking about the levels of CC that might be used by teachers in schools (Tyler 1992; Foley and Janikoun 1996; Bell 1996; Ward 1996). The compromise approach advocates that the most effective curriculum is one which is flexibly managed and combines teaching through separate subjects and through topics, exploiting the advantages of both approaches.

Research methods

The research for this study sought information on the extent to which Northern Ireland primary school teachers have developed cross-curricular topics, as well as investigating teachers' and other educators' opinions about the introduction of the revised NIC, with a particular interest in the role and context of geography. These topics required research approaches which were both qualitative and quantitative. A mixed-methods approach was used, involving initially the use of individual and small group interviews followed by the administration of a questionnaire to a large number of teachers.

Interviews

Six individual interviews were carried out with officers from each of the five Area Boards in Northern Ireland, as well as with an officer responsible for the 'WAU' Area of Learning at CCEA and a member of the Northern Ireland Schools Inspectorate. In addition, nine small group interviews were carried out with teachers in their schools, sampled so that they spanned three of the five Area Boards as well as a variety of urban to rural locations and a range of school sizes. In each school, teachers spanning the full range of primary classes took part.

The interview procedure followed best practice principles discussed by Punch (2009) and Cohen, Manion, and Morrison (2011). They lasted, on average, 45 min. They were semi-structured in format and the respondents were supplied with the questions two weeks before the interviews took place. The questions used in the individual interviews and the group interviews covered much of the same ground. They addressed respondents' opinions and perspectives about the pros and cons of 'connected learning' and the WAU grouping of geography, history and science within the new curriculum. The teachers were asked to give examples of topics which they felt had been effective with regard to pupil learning, and if they felt cross-curricular approaches promoted differentiation and motivation. Transcripts of the interviews were analysed using content analysis where the codes created were derived from the data responsively rather than being determined pre-ordinately. The semi-structured nature of the question schedules produced a degree of pre-determination, but the analysis of the interviews has followed an emergent pattern, allowing categories to develop from the text.

Questionnaires

A questionnaire was posted to all teachers of Primary 5 and 6 pupils (ages 8–10) in all 878 Northern Ireland Primary schools. The reason for this focus on upper primary teachers arose from responses made in the school group interviews, in which many Foundation Stage and Key Stage 1 teachers indicated that, for them, the introduction of the revised NIC with its emphasis on Connected Learning had not required them to make great changes in their planning and teaching. On the contrary, upper primary teachers said that they had had to make major changes in the ways in which they planned and taught. Primary 5 and 6 teachers

Level of cross-curricularity	Nature of cross-curricularity level	Description of level
1	No cross-curricularity	Geography content/ideas/skills taught entirely discretely.
2	Weak cross-curricularity	A small amount of integration, with a main focus on one subject, but content/ideas/skills used from one or two other subjects.
3	Medium level of cross-curricularity	A limited cross-curricular topic, still with a focus on a main subject, but content/ideas/skills used from three or four other subjects.
4	Quite a high level of cross-curricularity	A broadly-based topic/project with content/ideas/skills used from around five to seven subjects.
5	Strong cross-curricularity	A high level of integration producing a very broadly-based topic/project with content/ideas/skills from a wide range of subjects (eight to ten) as part of the topic

Figure 1. Levels of CC from subject-focused to strongly cross-curricular.

had been, at the time when the questionnaires were administered, formally implementing the curriculum in their classroom for either two or three years.

The questionnaire was broad in scope, covering a number of aspects of the implementation of the new curriculum and teachers' opinions of it. The teachers were asked to give some information about their school and about themselves, but their anonymity was maintained. In addition, the teachers were asked to list all the WAU topics they were teaching during the academic year in question, and beside each one to indicate the level of CC they felt they had applied in the teaching of the topic, using a scale from Level 1 to Level 5, following descriptors and examples provided in Figure 1. The questionnaires were analysed using counts and descriptive statistics as well as parametric and non-parametric tests.

In total, 225 useable questionnaires were returned. The teachers who completed them came from all five of Northern Ireland's Area Boards and from small 2-teacher schools to 28-teacher schools. The teachers were predominantly female (79%) and their teaching experience ranged from 1 year to 37 years (mean = 14 years). It is estimated that returns were obtained from 168 different schools – 19.2% of the total number of primary schools in Northern Ireland.

Findings

The research upon which this paper is based was wide-ranging, encompassing teachers' and other stakeholders' views of a variety of aspects of the revised 2007 NIC. The main focus of this paper is to report on the views of the interviewees and the respondents to the questionnaire survey concerning the teaching of 'subjects' (with an emphasis on geography) within a curriculum which strongly encourages cross-curricular approaches. Initially, before discussing these issues, the results of a previous, pre-revision survey of geography teaching and CC in Northern Ireland primary schools are compared to the equivalent results from the current, post-revision survey.

Geography and CC: pre- and post-curriculum revision surveys

In 2005, before the revised curriculum was implemented, a questionnaire survey of primary school teachers in Northern Ireland was carried out to gain information on the geography-

based topics which were then being taught and the levels of CC used for each topic (Greenwood 2007). Comparisons can be made to the present questionnaire data by looking only at the information concerning P5 and P6 teachers and only at topics that are clearly geography-led topics (2005: $n = 99$ teachers; 2010: $n = 225$ teachers). The most important aspect of comparison – that of levels of CC – is discussed below.

The number of topics taught at each of the five levels of CC in both surveys is illustrated in Figure 2. These figures reveal that there has been a significant change in the levels of CC reported by the two sets of respondents in the pre- and post-revised curriculum surveys, in that there has been a marked shift to the right side of the graph in 2010 compared with 2005. In the 2010 survey, a much greater proportion of the topics were taught at the higher CC Levels 4 and 5 while a much smaller percentage of topics were taught at the lower CC Levels 1 and 2. In 2005, the mean CC figure for all geography-based topics taught in P5 and P6 was 2.93 (SD = 0.94); in 2010 that figure had risen to 3.64 (SD = 0.93). Using a ‘ t ’-test, the difference between the two means (utilising the transformation $\sqrt{(x + 0.5)}$ as advised by Sokal and Rohlf 1995) was found to be highly significant ($t_{695} = 9.701$, $P = 6 \times 10^{-21}$).

It is clear that teachers have responded in an obvious way to the recommendations concerning connected learning set out in the revised NIC. However, as will be seen below, while the majority of teachers indicate that they are favourably disposed to CC in general and the creation of the WAU Area of Learning in particular, there is a significant minority of teachers whose responses indicate either an ambivalence or antipathy towards these changes.

Opinions about cross-curricular teaching

In both the individual and group interviews, the interviewees were asked about their understandings of the pros and cons of teaching using a cross-curricular or a subject-focused

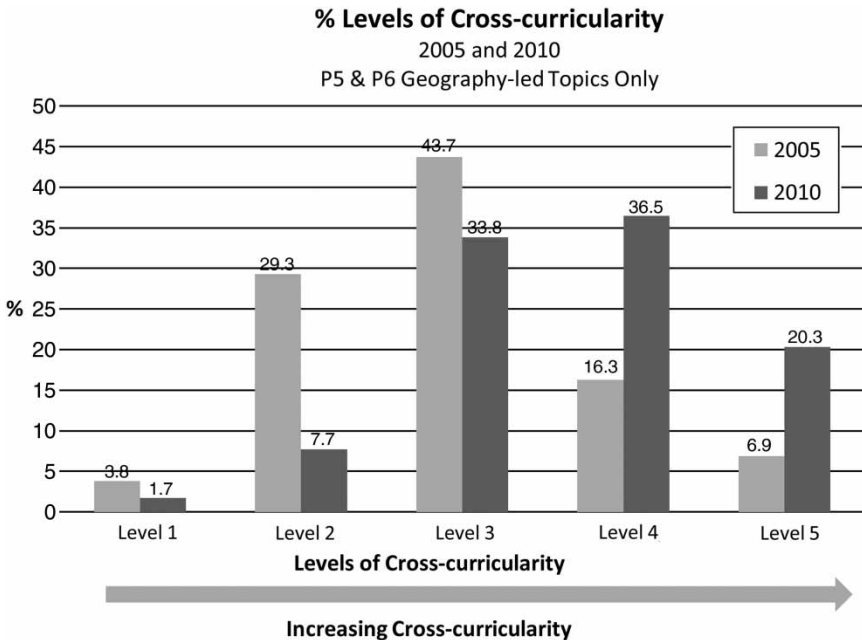


Figure 2. Comparison of the CC levels of P5 and 6 geography-led topics in 2005 and 2010.

approach. In general, the response of the teachers interviewed was that the ‘connected learning’ approach within the NIC produced more creativity and was more holistic, meaningful and relevant for the pupils or that the pupils were helped to be more independent and confident. Three of the individuals interviewed alluded to the benefits of ‘joined-up experience’ and the idea that subjects are artificial constructs for young children. The point was made that it was vital that pupils made the connections, not just teachers, and a significant number of teachers said that they saw evidence that this had occurred.

A cross-curricular approach helps children make connections and see relevance. It backs up and underlines learning in other areas and underlines work they have already done. (P5/6 teacher)

Similarly, individuals from the Area Boards and CCEA also spoke about the potential for cross-curricular approaches to improve pupil understanding and confidence. One Board officer discussed pupil ‘learning entitlement’ and said that:

Topics have the potential to act as the immediate vehicle to join up children’s learning experiences in a way that subjects can’t. (Board Officer)

A significant number of the questionnaire responses concerning teachers’ opinions of ‘connected learning’ were also very positive: 77 of the 225 teachers responding to a question about ‘connected learning’ in the NI Curriculum said that, for them, it works well, using descriptors such as ‘a great idea’, ‘useful’, ‘appropriate’, ‘valuable’ and ‘adds depth and meaning’:

I have found great benefits from connecting the children’s learning. It makes it all click into place for them! (P5 teacher)

The questionnaire respondents were asked if they thought the grouping of science, history and geography into one Area of Learning was a good idea. Of the 221 who responded to this question, 63.4% said ‘Yes’, 31.2% said ‘No’ and 5.4% were ‘Undecided’. Some of the most frequently made comments at this point were that the combination of history, geography and science was a natural, meaningful and relevant one. A number of the respondents said that they, as teachers, always tried to link these subjects, and that topics provide more depth and detail, more variety and a better learning experience than single subject teaching. The respondents were asked to list any advantages or disadvantages in the grouping of geography, history and science in one Area of Learning. A significant number of teachers recorded some advantages but no disadvantages, using words like ‘connected’, ‘cohesive’ and ‘holistic’ to describe the potential curriculum benefits. However, 36 of the teachers recorded for ‘Advantages’ that there were ‘None’.

Skills development and motivation improvements

Some of the most important positive arguments made in both interviews and questionnaires centred on the benefits which teachers felt had accrued in terms of skills development and increased pupil motivation. In seven of the interviews, teachers spoke about how they felt that a ‘connected learning’ approach lowered the risk of an over-emphasis on content while at the same time it facilitated the development of skills, stressing the importance of transferable skills. Teachers in almost all of the group interviews described how they felt that

pupils were more interested, involved and excited if teaching was carried out in a cross-curricular way, a number of them using the word *ownership*. Increased pupil enthusiasm and enjoyment were noted by a number of the questionnaire respondents.

Another (unforeseen) factor which emerged from both interviews and questionnaires was an increase in teacher enjoyment, seen by some as a vital pre-requisite for pupil enjoyment. For example, one teacher who was interviewed spoke about her teaching within the NIC by saying:

I think my children are enjoying it more because I am enjoying it more. (P4 teacher)

A total of 88 of the questionnaire respondents wrote unprompted about how the introduction of the revised curriculum had proved to be a very positive experience for them personally, increasing their interest, enthusiasm and enjoyment in teaching, partly due to what they saw as an increase in teacher autonomy and *empowerment*.

Critical concerns

A significant number of respondents to the questionnaire as well as the individual and group interviewees reported a number of disadvantages and problems with 'connected learning' and the WAU Area of Learning. The most frequently voiced responses of this kind contained the idea that topics may be more contrived than subject-based planning. The danger of contrivance and artificiality and the temptation to include too much content in topic planning were noted by all five of the Area Board officers, who called for teachers to use a mixture of planning approaches, including subject-based teaching. One suggested that:

There will be times when you have to teach something discretely; you make connections where appropriate. (Board Officer)

Worryingly, a number of questionnaire respondents wrote that they had felt pressure to create strongly integrated topics which resulted in them contriving curricular links, some implying that the guidance they had received in training courses had led them in this direction in their planning. Some wrote about the dangers of 'difficult', 'confused' or 'artificial' links in planning topics.

A second major issue raised was the possibility of the loss of specific content and skills associated with the three WAU subjects. A fear expressed was that cross-curricular planning could over-emphasise content as opposed to skills. Nine teachers in their questionnaire responses stated clearly that they preferred the structure of separate subjects to cross-curricular planning. One was particularly vehement in her opposition to connected learning; in answering whether or not it is a good idea that the subjects have been linked in the WAU Area of Learning, she wrote:

Absolutely not! Definitely not at KS2. Children are not learning as much as previously – the curriculum in these subjects has been diluted. (P5/6 teacher)

The teachers who expressed concerns about a connected learning approach most frequently cited the possible loss of science skills and content (as opposed to geography or history). A total of 80 comments about loss of science were made in questionnaire responses. It was felt that this focus on science stems from the fact that in the previous iteration of the curriculum

science had status as a ‘core’ subject alongside literacy and numeracy, and many primary schools had science coordinators. In many teachers’ eyes, science had suffered a serious demotion.

This finding is reinforced by the results of a small-scale survey of primary school teachers by Johnson (2013). The majority of the teachers in her survey (90% of 29 teachers) said that they were spending less time teaching science than previously, with 50% saying that this reduction was substantial. A number of teachers considered that topic work lent itself more easily to history and geography rather than science. Johnson concluded that teachers did not always recognise opportunities to link science to topic work in a meaningful way and that training and support were needed if they were successfully to make these conceptual links. She expressed concern that science was being watered down and had the potential to become ‘lost’ in the WAU.

Eleven teachers complained more generally that subjects were losing their identity or that their pupils were unaware of what ‘subject’ they were doing:

I find my class think they are missing out on subjects; they ask – ‘when are we doing history/geography/science?’ (P5/6/7 teacher)

Some of the teachers interviewed asserted that subject-based teaching could at times be more in-depth while cross-curricular work could, paradoxically, be ‘bitty’. In one school where interviews took place, the KS2 teachers agreed that teaching using a subject focus avoids the dilution and superficiality that can occur when using a cross-curricular approach, noting also that it was easier for them to monitor coverage and progression when focusing on subjects.

Overall attitudes to change

The responses of each teacher to six of the questions in the questionnaire concerning opinions about CC in the NIC were analysed to determine his or her overall ‘Attitude to Change’ (ATC); each respondent was designated as being essentially positive, negative or ambivalent. The result was that 70.6% of the 225 respondents were classified as being broadly positive in their attitude to the changes listed above; 24% gave answers which suggested a degree of ambivalence to the changes; and 5.3% were classified as being broadly negative. The only other recent canvassing of teacher opinion about the revised NI Curriculum has been a report entitled *Teachers’ Voice 2010* compiled by the General Teaching Council for Northern Ireland (GTCNI 2011). This survey covered both primary and post-primary teachers. The response to one question relating to the NI Curriculum produced a similar response to the ATC figures reported above: in the GTCNI survey 71% of the respondents felt that the new curriculum had impacted on the effectiveness of their teaching in a positive way; negative impact was reported by 12% of the respondents and 13% responded ‘Not at all’.

Discussion

The section above has discussed the opinions of teachers and stakeholders on CC and WAU reported in the interviews and questionnaires. A wide range of views was expressed, some vehemently negative, but the majority of teachers were positive or very positive towards ‘connected learning’ and the placing of geography, history and science within the one

Area of Learning. Around 86% of the questionnaire respondents were able to list at least one advantage of this way of arranging the curriculum.

Balanced approaches to CC and WAU

One aspect of how teachers have put cross-curricular planning into practice within the revised NIC is revealed in the interview and questionnaire responses: a significant number of teachers can be said to have taken a balanced and pragmatic approach to CC in their planning and teaching, stressing that there is no one 'right' organisational method, and that in fact a variety of approaches was beneficial for pupils. For example, one P6 teacher said:

I don't think you can say that one approach works and the other doesn't. I think you have to assess what the children are learning and at the end of the day judge which is the best way forward for them. (P6 teacher)

Some stated that not everything integrates easily or equally, that some topics do not lend themselves naturally to a strongly integrated approach and that at times it was more efficient and effective to teach aspects of the curriculum as separate subjects:

It is important not to forget about the science, history and geography areas that do not lend themselves to connected learning. (P4/5 teacher)

It seems also that the majority of teachers appear to be using cross-curricular approaches in a reasonably 'restrained' way – that most WAU topics listed were being taught at a medium to 'quite high' level of CC, and a relatively small percentage of topics were being taught at the highest level of CC – Level 5 – where it is more possible that topics can become unfocused and 'woolly'. The teachers who, in their questionnaire responses, were most strongly opposed to CC as a concept may have had in mind, perhaps based on previous unhelpful experiences, very wide-ranging, unfocused topics which proved ineffective in terms of pupil learning in their classrooms. Respondents at both ends of the CC 'Levels' spectrum might benefit from being shown a 'middle way'. For example, teachers who expressed serious concern about the loss of subject content might be 'won over' to cross-curricular planning if they saw topics set out where the subject content was clearly at the core of a weakly integrated or subject-focused topic (as argued for by, e.g. Alexander, Rose, and Woodhead 1992; Palmer and Pettitt 1993; Barnes 2011). Similarly, respondents who felt under pressure to 'connect everything' would benefit from seeing clear exemplars of topics where CC is 'weak' – that the links with other subjects or Areas of Learning are few, but the links which are made are purposeful and provide strength to the topic as a whole.

Effective learning – a combination of elements

During some of the interviews and in a number of the questionnaire responses, teachers made it clear that they believed that, in order to maximise the effectiveness of pupil learning, connected learning needed to be used in conjunction with pupil involvement in planning and an element of pupil choice in topics. Where possible the topic being studied should be linked to the pupils' own experience and involve a high degree of activity-based learning. It was agreed by the majority of the individuals interviewed that if the only change within the revised curriculum was a change to cross-curricular work, then no great increase

in effective learning would be achieved; rather, all of the aspects listed above needed to be developed at the same time. If this occurred, improvements in pupil learning should be seen. It was also noted, however, that while these changes might prove very effective for pupils, they are not easy changes for teachers to make and require teacher time and effort, and ideally a substantial and effective training programme. One of the skills which teachers and schools working within the revised NIC have to develop more so than previously is the skill of ‘curriculum-making’. The term ‘curriculum-making’ (Halocha 2010; Owens 2010) is described in The Geographical Association’s ‘Manifesto’ (GA 2009) and was encouraged through its *Action Plan for Geography* (GA 2011). It is defined as

... the creative act of interpreting a curriculum specification and turning it into a coherent scheme of work. [It] lies at the heart of good teaching and heightens the enjoyment of teaching. (quoted in Owens 2010, 8)

This skill is especially important in the area of WAU since the provision in the revised NIC of a wide degree of teacher choice has produced the possibility for teachers of devising a great variety of cross-curricular topic permutations, which is something with which many of today’s teachers are unfamiliar; they would benefit greatly from specific in-service training in this area.

Linked with curriculum-making, and of specific relevance to geography-based topics, cross-curricular local studies work was seen by many of the respondents as an aspect which, when done well, can result in excellent work being produced. A number of teachers referred specifically to feeling that they now had greater opportunity to engage in the planning and teaching of topics which have local, topical, current, relevant elements or involved ‘spontaneous’ teaching. The Board officer member of the Inspectorate who was interviewed stressed that a great deal of effort is required before high quality local studies work can happen because it is personalised to the area and needs a great deal of research, planning and skill on the part of teachers.

Conclusion

The present research is timely because it has taken place during a period when, arguably, what is taught and how it is taught in primary schools in Northern Ireland has changed more radically and at a greater pace than at any time previously. Evidence of the uptake of ‘new’ initiatives such as activity-based learning, thinking skills and AfL approaches as well as ‘connected learning’ is visible in many primary school classrooms. For some teachers, the change to the revised curriculum has been nothing short of a revolution in that they have seen the potential benefits of the new approaches and embraced them positively and wholeheartedly, altering radically the ways in which they plan and teach in their classrooms. Some teachers had adopted these approaches even before they were statutorily required to do so. Others have been more resistant and some have been openly negative to the changes. This spectrum of views emerged most strongly in the questionnaire survey in this research and which allowed the respondents to convey their views anonymously.

On the basis of the results of this study, the authors of the revised NIC should be heartened that such a major curricular change has been implemented effectively and relatively seamlessly by Northern Ireland’s primary school teachers. A comparison of the 2005 geography-based survey and the 2010 questionnaire survey within this research shows that teachers in P5 and P6 classrooms are now planning and teaching topics at higher

levels of CC than they were before the implementation of the new curriculum. However, in doing this, a significant number of teachers have adopted a pragmatic, balanced, thoughtful and reflective approach to their planning.

An integrated approach to the primary curriculum requires teachers to have high levels of skill in terms of curriculum subject knowledge and teaching methods (Shulman 1987; Burgess 2004) as well as ‘curriculum-making’. Similarly, Wood (2011, 39) suggested that teachers utilising cross-curricular approaches need a deep and sophisticated understanding of learning and a wide ‘pedagogical repertoire’. Teaching cross-curricular topics is not easy. Effective teaching of topics within ‘WAU’ may mean that teachers will include open-ended and flexible approaches in their delivery, and use a range of resources and a mixture of whole class, group work and independent work. All of these aspects require of teachers a degree of confidence as well as knowledge and skill – aspects which can be developed by the provision of substantial, effective in-service training. This is what is needed.

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