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**Teachers' Perceptions of Interdisciplinarity
and the Extension of Literacies**

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Abstract

The purpose of the present study is to investigate the following questions:

1. Do teachers' perceive interdisciplinarity as valuable?
2. Do teachers believe interdisciplinary approaches will enhance pupils' literacies?
3. What do teachers perceive as barriers to interdisciplinary practices and what could be done to encourage more interdisciplinary teaching?

Data were gathered through questionnaires and semi-structured interviews. The questionnaire was distributed to the teachers in one English and one Norwegian secondary school. A total of 44 teachers responded. Subsequently, six interviews were conducted in the Norwegian school and five were conducted in England.

The key findings of the study are the following: First, the informants believe interdisciplinary approaches in teaching can have a positive effect on students' motivation. They also believe interdisciplinarity can bring more variation to learning and reduce classroom management problems. The teachers perceive the value of interdisciplinarity as to be a capacity for bridging the gap between the school or educational system on the one side, and the 'real world' on the other. It reflects a curriculum in which knowledge is a 'whole' instead of compartmentalised disciplines.

Secondly, the teachers think interdisciplinarity can have positive effects on learning, and they believe that both the print-bound literacy as well as multiple literacies could develop in integrated studies. However, despite their positive attitudes to interdisciplinarity, the teachers do not practise such approaches accordingly. The main

hindrances are perceived to be a lack of time for planning integrated schemes, and logistical barriers, such as timetable restrictions. With respect to what measures should be taken in order to encourage more integrated teaching, a need for more time and in-service training is mentioned, as well as teacher teams and set office hours. Finally, 'school culture' is discussed as an important factor in a process of change.

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1. Introduction

The current study seeks to explore the following questions:

1. Do teachers perceive interdisciplinarity as valuable?
2. Do the teachers believe interdisciplinary approaches will enhance pupils' literacies?
3. What do teachers perceive as barriers to interdisciplinary practices and what could be done to encourage more interdisciplinary teaching?

The system best known to the researcher is the Norwegian school in which she teaches English at the upper secondary level. Even though interdisciplinarity (by which is meant teaching and learning across the curriculum, see section 2.2.) does not seem unfamiliar, the literature reviewed for the present thesis does not indicate that the approach is commonly used in education (see Chapter 2). During the researcher's engagement in Norwegian schools, interdisciplinarity has been applied mainly in isolated 'projects' (but perhaps more regularly used in vocational subjects), in which different subject areas have been worked on together. These issues are explored in more detail in Chapters 2 and 5 respectively.

With respect to literacy issues, they are widely discussed, not only owing to the expansion of, and access to, modern technology for the general public, but also as a result of greater contact with information and communication technology (ICT) in schools. At the same time, or rather as a consequence of contemporary communication (and cultural and linguistic diversities), scholars widely discuss the notions of 'literacy'

and ‘multiliteracies’ (not least owing to the studies of, for example, The New London Group 2000) (NLG). Some argue for a redesigning of school to meet the demands of the social diversities and the changing shapes of people’s lives (NLG 2000, Unsworth 2001). To address the learning needs of the present situation, a pedagogy of flexible and multimodal discourses is necessary (NLG Group 2000).

In the present study, the researcher has chosen to look at interdisciplinarity and literacies together because, it is suggested that the one leads to the other.

Interdisciplinary approaches involve working with multiple subject areas; and literacies, which lend themselves to communication across and between disciplines, demand an interdisciplinary approach. The reason why the researcher takes an interest in exploring this dynamism is to be clear about whether the connection between interdisciplinarity and literacies may constitute strategies for enhanced learning, or own qualities that attract pupils to learning. As it seems, teachers in upper secondary school face increasing challenges (such as pupils’ motivational problems, see section 5.2.), which might, in part, be met by a change of strategy. Therefore, the present study might be seen as a small contribution to the discussion about content, style and methodology of teaching and learning. Additionally, it may also relate to the Norwegian National Curriculum which is to be implemented from August 2006. Decisions about strategies and methodology in teaching the reform are to be taken locally, which may be a good opportunity to reconsider educational issues.

This study surveys the views of teachers in three English and one Norwegian upper secondary school; hence, there is a small, comparative element to the study. The empirical data is collected by questionnaires and interviews; the first designed to

provide breadth of information, the second, to supply a deeper knowledge about the research questions. The thesis begins, in Chapter 2, by reviewing some of the literature about the research topic. Of two main sections, the first concentrates on interdisciplinarity from a historical and current perspective, while the second looks at the notions of 'literacy' and 'multiliteracies', trying to shed some light on the development from past to present (and the growing differentiating of the term 'literacy').

For the purpose of the present study, the term 'literacy' implies print-bound literacy, the traditional view which involves writing and reading print on a page (Andrews, Robinson, and Torgerson 2004). 'Multiliteracies', on the other hand, denotes a much broader concept, which could include skills such as reading signs, sound, graphics and digital media (see section 2.3.3. and Andrews, Robinson, and Torgerson 2004).

Chapter 3 addresses the research questions and the methodology, the sampling criteria and the informant background. It discusses the methods applied in the data collection, as well as their justification. Additionally, the chapter aims at demonstrating the data processing and analysis of the material. Finally, a section on ethical aspects, reliability and validity is included.

Chapters 4-6 constitute the findings of the study. Thus, the fourth chapter discusses teachers' perceptions of interdisciplinarity, how they define it, and the legitimacy of this approach with respect to, for example, motivation and classroom management. A discussion about negative aspects of interdisciplinarity is also included.

Chapter 5 continues the discussion about the findings. First, it concentrates on how students' reading and writing skills might develop in an interdisciplinary setting, and second, how multiple literacies may expand in such an environment. The chapter distinguishes between 'literacy' and 'multiliteracies' for two reasons: First, the researcher believes that teaching children reading and writing skills will continue to be a major task in education. Secondly, based on what she learnt from the pilot interview (see section 3.4.2.), the researcher made an informed decision to discuss 'literacy' first, and in so doing she hoped to form a basis for moving on to the more complex and presumably more unfamiliar concept 'multiliteracies' (see section 3.4.2.). Hence, an important presupposition of the present study is that the 'traditional' literacy whose purpose is to teach reading and writing coexist with literacies of other fields. Chapter 6 looks at what the teachers perceive as obstacles for practising interdisciplinary schemes, as well as, points to what steps could be taken to increase interdisciplinary teaching in their schools. Finally, Chapter 7 provides the conclusion to the study.

The phenomenon of interdisciplinarity has different names in the literature, such as 'Cross-curricular' and 'Integrated Studies' (see section 2.2.1.). These terms are also used in the present thesis. Additionally, it remains to explain the term 'literacies' which will be used in the subsequent chapters. Here, 'literacies' has a wider scope, and includes both 'literacy' and 'multiliteracies'.

Finally, it is important to remind that the limited size of a study like the present one does not allow for lengthy discussions of every topic. Consequently, some topics will be mentioned only briefly.

2. Literature review

2.1. Introduction

According to the literature reviewed for the present thesis, the concepts of ‘interdisciplinarity’, ‘literacy’ and ‘multiliteracies’, are all important issues in the education debate today. The present chapter will discuss and define these key notions, providing a theoretical basis for the subsequent empirical investigation. By the investigation, the thesis attempts to connect these notions, focusing on whether interdisciplinary approaches in teaching may influence literacy and multiliteracies skills. As the empirical data is collected in England and Norway and the author of this thesis is teaching in Norway, the scope of the literature research is specifically, but not exclusively, American, British and Scandinavian literature. Section 2.2.2, then, discusses what characterises interdisciplinarity and section 2.2.3. constitutes an argument for more cross-curricular schemes in education. Section 2.2.4. aims at seeing interdisciplinarity in a historical context, whereas 2.2.5. seeks to discuss subject integration at present time. Further, section 2.3. looks at ‘literacy’ and ‘multiliteracies’, in which 2.3.2. discusses the mention of literacies in the National curricula. Section 2.3.3. sheds some light on literacies which scholars now define as having a wider scope than the pure alphabetical skills. Finally, section 2.4. concludes the chapter.

2.2. Interdisciplinarity

2.2.1. Introduction

Interdisciplinarity, as an approach to teaching and learning, or as an approach to curriculum design, has been widely discussed in the literature. The scope of the present review is mainly the 1990s and the first years of the 21st century but it will also refer to

a few earlier works. In the 1970s Hausman (1979) discussed the relation between established disciplines and interdisciplinarity and how interdisciplinarity could be introduced in education. Warwick (1973) claimed it is more important focusing on *why* ‘Integrated Studies’ (see Chapter 1) should be implemented instead of *how* it should be done. Pate, Homestead and McGinnis (1997) and Gire Dahl (2002) focus on methodological issues and how to build a coherent curriculum. Dimmock (2000) and Kaufman, Moss and Osborn (2003) discuss the shift of emphasis in education, away from teaching and toward learning. Dimmock (2000) not only focuses on methodological issues but also a school re-design that involves several aspects of the school, for example curriculum, teaching, learning, organisation and management. Most of these studies will be returned to later in the thesis.

The literature shows that the approaches to teaching and learning across the curriculum may have different names, for example ‘Cross-curricular approach’, ‘Integrated studies’ and ‘Transdisciplinarity’ (see Chapter 1). Nevertheless, they all seem to communicate common values such as learning across discipline boundaries, desegregation of knowledge and making connections with the ‘real world’ (see Chapter 4).

2.2.2. Characteristics of interdisciplinarity

The categorising of knowledge into disciplines goes back to the ancient Greeks who hierarchised them according to their nature of being practical, theoretical or productive and the system was consolidated by the growth of educational institutions in Europe (Moran 2002). The term interdisciplinarity came into use in the social sciences in the 1920’s, responding to the decline of general forms of education and the consolidation of

disciplines. According to Moran (2002), interdisciplinary approaches nurture “a wide-ranging, total knowledge” (p. 15). They challenge our understanding of knowledge, as well as our traditional ways of dividing it into disciplines. Moran (2002) adheres to the notion of interdisciplinarity being transformative, allowing new perspectives to emerge (see also Glenn 2003). This view is a critique of the existing compartmentalising of knowledge as being non-compatible with the world outside the educational system. In an epistemological sense, interdisciplinarity may be seen as a new way of ordering knowledge (Moran 2002; Kaufman, Moss and Osborn 2003).

Moran (2002), Mathisen (1997) and Erickson (1998) discuss the distinction between interdisciplinarity and multidisciplinary, where the latter denotes less integration. A multidisciplinary approach may be several disciplines contributing to a common theme without real integration between them, or in Moran’s (2002) words: “The relationship between the disciplines is merely one of proximity” (p. 16). Erickson (1998) claims that “the majority of instructional units being designed in classrooms around the country today are what I would refer to as “coordinated, multidisciplinary” rather than “integrated, interdisciplinary.””(p. 64). She further argues that the interdisciplinary unit has a “conceptual lens that forces thinking above the fact base” (p. 65). This “creates a metacognitive study...that goes far beyond...memorization of information related to the topic.” (p. 66). Erickson’s arguments about metacognition in learning correspond to Molander’s (1997) discussion on deep approaches to learning which is discussed below.

In his article on interdisciplinary research Mathisen (1997) takes interdisciplinarity to mean “research and collaboration across established discipline

boundaries.” (p. 29). Moran (2002), on his side, states that “the value of interdisciplinarity lies in its flexibility and indeterminacy, and that there are potentially as many forms of interdisciplinarity as there are disciplines.” (p. 15). He broadly defines interdisciplinarity as “any form of dialogue or interaction between two or more disciplines” (p. 16). This definition seems to agree with the ways the participants of the present study perceive interdisciplinarity and interdisciplinary practice in their schools. Due to these qualities, Moran’s (2002) definition will be used throughout the discussion.

This section has reviewed some of the discussion about interdisciplinarity. The following section will look at some arguments for integrated approaches in education.

2.2.3. From disciplines to interdisciplinarity

It could be argued that compartmentalisation of knowledge features progressively throughout the educational systems of the western world, from primary school to university level. However, voices are raised for more integrated methods (see section 2.2.2.). According to Moran (2002) and Mathisen (1997), “disciplines will remain a powerful force within the contemporary university” (Moran 2002, p. 185), partly because the measuring of student achievements is based on the discipline system. Mathisen (1997) argues that the academic tradition as such is geared towards specialised areas and less open to interdisciplinary discourse, both in teaching, publishing and grading. However, he calls for political determination to encourage cross-curricular activities beyond the tasks researchers normally work on. Moran (2002), on his side, perceives interdisciplinary approaches as alternatives to “outmoded systems of thought which are kept in place by institutional power structures” (p. 182); new paths that

encourage creative thinking and open up for making links across curricula. Likewise, Asbjørnsen (1994) who is engaged in a different field, the field of engineering, also points to a gap between what universities teach and what knowledge is actually needed in the work as engineers. He claims that it is just as important to teach why problems are posed as how to solve them. The time is long gone for “trotting along in old traditions and cultures” (p. 177); Asbjørnsen says, and calls for other teaching methods that take into consideration new technology and interdisciplinary approaches. A redesigning of education is necessary, which focuses on problem-based learning and a more interdisciplinary understanding (Asbjørnsen 1994).

Let us here look at the concept ‘problem-based learning’ (PBL) more closely as there seems to be a connection between PBL and interdisciplinarity. According to Savery and Duffy (2001), Bjørke (1996) and Pettersen (1995) PBL originated in the medical schools in the 1960’s. It represented an alternative to lecturing which was the traditional way of teaching. From the field of medicine PBL has spread to other fields of education. In his book *Designing the Learning-Centred School*, Dimmock (2000) argues in favour of PBL in preference to segregated disciplines. The over-arching principle of PBL is adaptive education whose task is to “cater for all students, whatever their ability, age, gender, race and ethnicity.” (p. 139). Consequently, this implies that “teaching and curricula are more flexible and accommodating of the different abilities and needs of students.” (p. 139). What characterises PBL are the following features (Bridges and Hallinger 1992 in Dimmock 2000):

(1) a problem is the starting point for learning; (2) the best problems conform to the real world; (3) knowledge is organized around problems rather than disciplines; (4) students, individually and collectively, assume more responsibility for their own instruction and learning; and (5) learning takes place in small groups rather than through direct teaching (p. 149).

Viewed from this perspective, PBL is a strategy that may bridge the gap between education and the real world as it confronts students with realistic problems. These are often complex in nature; therefore, students are likely to use a range of learning styles, tools and materials to solve them (Dimmock 2000). This, as well as Moran's (2002) definition of interdisciplinarity above, suggests that the problem-based approach is likely to be interdisciplinary in nature.

2.2.4. History of interdisciplinarity

According to the literature, interdisciplinarity is a long established multifaceted educational practice (of which PBL is a more recent example). Molander (1997), Leiviskä (2001) and Gire Dahl (2002) claim that from a historical point of view, interdisciplinarity should be categorised as a constructivist approach. By this is meant that students are encouraged to build their own knowledge, to create a synthesis of competence based on their own interests and ideas. Teachers would ideally act as guides or facilitators of the learning process and not as instructors. Learning would centre on real issues, which would be reflected in the learning of unities instead of detached fragments. Important to this line of thought was the American scholar John Dewey (1859-1952), one of America's most famous philosophers, who looked upon education as a democratic enterprise stressing pupils' intrinsic motivation and interests as central elements. In 1916 Dewey "proposed school experiences that took into account the needs and interests of students" (Pate, Homestead and McGinnis 1997, p. 135) emphasising that "these experiences should be reflective of the real world." (p. 135). Dewey was a strong advocate for a holistic¹ view, which is one of the characteristics of this form of learning. One of Dewey's contemporaries, W. H. Kilpatrick, followed Dewey's ideas and published the article *Project Teaching* in 1917, using the recent (at

the time) notion 'project' (Gire Dahl 2002). The word comes from the Latin 'pro' and 'jacere' meaning 'to throw forward' (Gire Dahl 2002, p. 45). When first introduced, the project method was seen as progressive in nature (Gire Dahl 2002). It was characterised by student collaboration, reflection and topic learning instead of segregated disciplines. Moreover, W. H. Kilpatrick focused on student autonomy in decision making which make the students able to decide the point of departure. He assumed that this was the best way to achieve coherent knowledge. According to Kilpatrick it was important to focus on the problem or the questions posed, and thereafter, look for the principles needed to find the answers (Gire Dahl 2002). This image of "throwing something forward" corresponds with the notion of project work today in which students are presented to a problem (and asked to solve it). Problem solving, however, is a strategy that can be used both in single subjects and in interdisciplinary schemes.

2.2.5. Present day interdisciplinarity

The discussion about integrated learning is still relevant. Elaine Homestead and Karen McGinnis were two American middle school teachers in the early 1990s who together with Elizabeth Pate undertook a search for an integrated curriculum in their own classes (Pate, Homestead and McGinnis 1997). The calls for educational reforms and their own dissatisfaction with the curriculum was the starting point for their work. They believed that an integrated curriculum improves motivation because it stimulates a desire to solve problems that appear interesting and relevant:

Curriculum integration and motivation go hand in hand. Integrated curriculum provides experiences for students that are inherently compelling. ...learning comes from within, from the desire to satisfy curiosities... (Pate, Homestead and McGinnis 1997, p. 8).

Pate, Homestead and McGinnis (1997) report “a deeper understanding of content” (p. 59) by teachers and students, as well as a success in connecting “school and the outside world.” (p. 59). They claim that part of their success was due to a holistic curriculum, which, according to Molander (1997), relates closely to a deep approach². Molander (1997) argues that students who use a deep approach succeed to a greater extent in their studies (compared to those who have a surface approach) because it focuses on ‘wholes’ of knowledge instead of separate elements. The method of problem solving and deep learning, however, can be applied in both single subject schemes as well as in interdisciplinary schemes, but it may be argued that interdisciplinarity may encourage these desirable qualities.

This section has looked at interdisciplinarity from a present day perspective. It is claimed that pupils are more motivated for integrated studies and that this approach is positive with respect to learning outcome.

2.2.6. Conclusion

Section 2.2. has discussed some of the literature about interdisciplinarity. The approach has been identified as an interaction between and across disciplines, which ultimately transforms and contextualises knowledge in a way opposing to the compartmentalised subjects. Some scholars argue for more use of interdisciplinary methods to encourage creative thinking and a higher interdisciplinary understanding. Here, PBL is seen as a possible strategy, which will also relate learning to the real world. Historically, interdisciplinarity is placed in a constructivist tradition which emphasises the creation of one’s knowledge, and where the notions of interdisciplinarity, project work and a

holistic view are closely connected. At last, the section also discusses present day interdisciplinarity.

2.3. From literacy to multiliteracies

2.3.1. Introduction

The overall purpose of the study in hand is to explore teachers' perceptions of interdisciplinarity and development of literacies. For this reason, the study considers it important to explore 'interdisciplinarity' and 'literacies' (see Chapter 1) individually, and subsequently, it discusses to what extent interdisciplinary approaches have an effect on the development of literacies. Moreover, the study makes an important distinction between the concepts of 'literacy' and 'multiliteracies' (see Chapter 1), because, since interdisciplinary teaching may involve several media such as computers and other digital instruments, it might prepare for other literacies than print literacy only. Thus, having examined the notion of interdisciplinarity, the study proceeds first by shedding some light on literacies from the point of view of the Norwegian and English National Curricula, and secondly, by discussing literacies as a multifaceted notion examined by several scholars today.

2.3.2. National Curricula and literacies

The development of new technologies has broadened our understanding of literacy, compared to earlier when its scope was limited to reading and writing text in a linear fashion. We will now have a closer look at the Norwegian and English National Curricula to examine what they say about literacies and about teaching multiple

literacies. As the bulk of the empirical data for the present thesis is collected in Norway, the Norwegian curriculum will be discussed in more detail.

Going back to the Norwegian National Curriculum of 1974³ (for the 9-year compulsory school), there is, of course, no mention of digital multimedia, or multiliteracies for that matter. At this point the focus for the subject of Norwegian is fully on alphabetical literacy, in addition to a sample of Swedish and Danish texts for reading. This has changed for the equivalent National Curriculum of 1997 (L97)⁴ which states that learning materials should comprise different media such as text, sound, image, literary works and ICT. It is pointed out that pupils should learn about, and how to use, information technologies in their daily work at school. In its section about the subject of Norwegian, L97 states that its educational aims are about identity, experience, culture, skills, communication and, becoming educated. Thus, the subject today has a wider scope in covering autonomous literacy (reading and writing), as well as a cultural dimension. There is an emphasis on ICT in education:

In their education, pupils should acquire knowledge about, insight into, and positive attitudes to developments in the information society and information technology. Pupils should develop the ability to use electronic equipment and media critically and constructively... Development in this area is rapid. It is important to find solutions locally for experimentation, exchanges of experience, and follow-up work across subject boundaries. (The Royal Ministry of Education, Research and Church Affairs 1999, pp. 86-87).

Hence, policy makers have to some extent acknowledged the fact of a globalised society and multilayered ways of communication but, other than the mention of ICT in the national curriculum, there is no emphasis on a vision of multiliteracies for the age group 6-16. The Core Curriculum for Primary, Secondary and Adult Education, however, argues in favour of multimodal teaching and learning, in which the teachers act as facilitators (see section 2.2.4.). In this scheme, students' exploration and critical

judgement are important elements just as much as, their active engagement in the learning process, in teams or individually. Additionally, the use of advanced technology is important as a consequence of a rapidly changing technological world in which novelty is a key notion (<http://www.utdanningsdirektoratet.no>). Likewise, the new National Curriculum for Norway coming into practice in 2006 seems to emphasise the diversity of teaching and learning more clearly. In the curricula proposed for the Norwegian and English programmes the emphasis on the ability to use new media and digital instruments is clearly expressed (The Norwegian Directorate for Education and Training 2006).

In England, the present National Curriculum emphasises use of ICT in schools. Within the English programme for example, ICT is suggested for a range of areas. Students are also encouraged to apply multimodal ways to present their work, such as moving images and pictures (<http://www.ncaction.org.uk/subjects/english/ict-ops.htm>)⁵. Furthermore, the Qualifications and Curriculum Authority (QCA) is presently conducting a debate entitled 'English 21' which is designed to consider the future of English in the 21st century. Here, digital technology and new forms of communication are recognised as heavily impacting and reshaping the dynamics of teaching and learning in the near future. English 21 suggests there might be "a need for real changes of emphasis -- abandoning some aspects and developing others." (http://www.qca.org.uk/11782_11909.html)⁶. According to the QCA "it is important to ensure that English teaching can be enhanced, not constrained, by potential change" (http://www.qca.org.uk/11782_11909.html). Thus, what we see here, both in the new National Curriculum for Norway, and perhaps more so in the English debate about the future of English, seems to be a move towards multimodal strategies in education and a step back from a 'standard' as it used to be in the past.

2.3.3. From literacy to multiliteracies

Internationally, the debate about what counts for literacy and how literacy is to be recognised, is widely discussed, for example by The New London Group (2000) (NLG) and Unsworth (2001). Despite potential disagreements on what constitutes literacy today the chief mission of education would be seen, by most scholars presumably, as preparing learners to take part in society on an equal basis. To fulfil this important mission literacy pedagogy plays a prominent role, and traditionally literacy has focused on a standardised way of linear reading and writing. According to NLG (2000) “literacy pedagogy...has been a carefully restricted project – restricted to formalised, monolingual, monocultural, and rule-governed forms of language.” (p. 9). This interpretation of literacy does not fully comply any longer with the modern society in which the multimodality of communications dominates. In their private lives, young people engage actively in a conglomerate of non-linear textual and non-textual modes, in ways they do not encounter in school (Unsworth (2001; Beavis 2001; NLG 2000), a fact which calls for a rethinking of literacy; *what* it is, and *how* it is going to be taught.

The established definition of literacy in terms of alphabetical skills is no longer a sufficient one, in that print literacy is losing ground to, for example, visual literacy and interactive hypermedia in particular (Morgan 2001). The literature discusses a range of literacies, like for example: Social literacy, emotional-, critical- and literature literacies, digital- and media literacies (Street 1995; Messaris 1994; Freire and Macedo 1987; Wray 2004; NLG 2000; Andrews 2004). Some of the notions overlap each other in meaning, for example ‘media literacy’, which, easily shades into ‘multiliteracies’ or ‘digital literacy’ (Burn and Leach 2004). Locke and Andrews (2004) point to literacy

and technology as two components that mutually impact each other, which means that literacy is a shifting idea, under constant transformation and expansion. Andrews, Robinson and Torgersen (2004) suggest that:

...the scope of literacy can be expanded so that written language becomes written language and graphical or pictorial representation. Second, the skill can be treated as social, rather than psychological; in this view, literacy is the ability to operate a series of social or cultural representations. (p. 2).

This is the broad sense of literacy that may be called multiliteracies. This view is also taken in Low and Beverton (2004) in which literacy is seen as ‘literacy events’ and ‘literacy practices’; the first one involving reading or writing in some way and the latter referring to the ways “an individual copes with an event” (p. 97). ‘Literacy practices’ therefore, will involve a range of ways to solve a problem. Thinking in terms of NLG (2000), ‘literacy practices’ are identical to ‘multiliteracies’ suggesting a multitude of ways of practising literacy. A similar expression is ‘curriculum literacy’ in Unsworth (2001). Unsworth argues for the existence of a set of literacy practices for each subject, rather than for one type of literacy practice spread across the whole of the curriculum.

As mentioned above, the introduction of multiliteracies might bring a new pedagogy into practice. A model of this new type of pedagogy is described in NLG (2000). This dynamic model has three aspects: Available Design, Designing and The Redesign. The process of ‘Design’ could be explained as the following: ‘Available Design’ is the resources for shaping (‘Designing’) a new meaning, which is called ‘The Redesign’. Through the process of Redesigning, the meaning-maker transforms or conceptualises knowledge into new meanings (see the discussion about neural development in section 5.3.). This theory of pedagogy is based on four components in interplay (NLG 2000): ‘Situated Practice’, in which the learner takes part in meaningful

practices guided by experts and, in which learning is based on the student's own experiences and needs. 'Overt Instruction' has the overall aim of raising awareness of learning and draws attention to important features the student comes across. 'Critical Framing' is a stage of reflection, in which the learner sees her designing in a larger context, whereas in 'Transformed Practice' the student implements her design (the redesigned) into new contexts. This theory of pedagogy is largely based on scaffolding and metacognition. 'Scaffolding' means to focus upon important elements in the constructing of knowledge, whereas 'metacognition' denotes the awareness and understanding of the processes and relations in learning. These factors are seen as crucial in meaning-making. In contrast to the one-standard school literacy, this view of teaching and learning is based on recognising diversities (compare Morgan 2001). For that reason, the NLG theory connects well to a pedagogy of multiliteracies.

2.4. Conclusion

The purpose of this chapter was to review some of the literature in the field of interdisciplinarity, literacy and multiliteracies. Section 2.2. describes interdisciplinarity and related notions, and gives a short account of the historical background. Section 2.3. deals with literacy from a historical point of view as well as the present focus upon multiliteracies. The National curricula are examined from a perspective of literacies, and the discussion points to a greater focus on multiple media at present, and therefore also, on multiliteracies. Finally, the last section is an argument for extending the scope of literacy.

The studies mentioned in this chapter will be returned to in the argument about the research findings, as well as other studies that are pertinent to the issues that emerged from the research.

¹ A holistic approach emphasises 'the whole' rather than its separate parts.

² Deep approaches are integrating the separate parts of a text and perceive them as a whole (Molander 1997).

³ This is listed in the References as "Kirke- og undervisningsdepartementet (1974) *Mønsterplanen for grunnskolen*".

⁴ This is listed in the References as "The Royal Ministry of Education, Research and Church Affairs (Norway) (1999) *The Curriculum for the 10-year Compulsory School in Norway*".

⁵ This is the current National Curriculum introduced in 2000.

⁶ This refers to the current National Curriculum introduced in 2000.

3. Methodology

3.1. Introduction

From reviewing the literature in Chapter 2 the suggestion is that education needs to move away from what might be seen as customary standards and towards a greater focus on other ways in teaching, such as interdisciplinary approaches. The present chapter, however, attempts at explaining the methodology used for the study.

3.2. Methods

In selecting a method for data collection it is important to consider what is the best way of “tackling the topic under study and providing answers that are reliable and valid” (Verma and Mallick 1999, p. 3). In some cases it might be appropriate to apply more than one method so that one could complement and support the other (Denscombe 2003). The choice of methods is closely linked to the aims of the study (Bell 2005); in this case, to find how teachers perceive collaboration and interdisciplinarity. Hence, due to the qualitative and attitudinal nature of this study the research is carried out by means of questionnaires and interviews. Denscombe (2003) and Bell (2005) both consider the advantages and disadvantages of questionnaires and interviews.

Questionnaires have the advantage of achieving a wide coverage and of collecting a relatively large amount of data in a short time. But, as Denscombe (2003) puts it, “the potential disadvantages of questionnaires go hand in glove with the potential advantages.” (p. 160), and the negative sides of the questionnaire are, superficial, poorly completed answers in addition to the impossibility of checking the answers (Denscombe 2003). In the present thesis, questionnaires were used to “paint a broad ... picture” (Drever 1995, p. 8) of the topics in question, embodying background information for a

more substantial in-depth study done by semi-structured interviews, which lend themselves “to putting flesh on the bones of questionnaire responses” (Baoyin 2004, p. 29) (See also Bell 2005).

The data collection was carried out in a two-stage process in each country. First, the questionnaire was distributed to the full staff of one secondary school in each country. This was followed by the interviewing of five teachers in England and six in Norway¹. Each interview would not last more than 20-30 minutes because the researcher did not want to overburden the interviewees. Second, she assumed this time would suffice in getting the teachers’ general views of the issues, conditioned however, by a clearly focused interview schedule (Gillham 2000b). Last, there was also a concern about the time it would take to transcribe the interviews because, according to Denscombe (2003), “transcription of the tapes is generally far more time-consuming than the actual collection of the data.” (p. 183).

3.3. Sampling criteria and informant background

The most important criterion for the data collection was to include several departments or subjects in order to provide for breadth of information. Additionally, for the Norwegian interviews, the study sought teachers with different lengths of practice, as well as teachers with management duties². This way, the study aimed for results that reflected the diversity of the teaching staff. However, the interviewee sample came to constitute mainly long-experienced teachers³, including one senior manager. It is important to bear in mind that this sample is by no means representative for the teaching profession as a whole as the study has not been able to choose a balance of for example

age and gender (only one male teacher is included, see section 7.4.), which presumably would have had an influence upon the research findings.

Based on the criteria above, the study might be able to point out themes or questions shared by staff across disciplines within a school or between the schools. The research was conducted in one upper secondary school in Norway and three secondary schools in the north of England. The reason for the uneven numbers is the problems the researcher had to get into a single school to do the full research (see section 3.4.2.). All the English schools are mixed comprehensive in predominantly mono-ethnic catchments areas. In one of the English schools teachers from the departments of Design and Technology (DT), English, Maths, Modern Foreign Languages (MFL), Science, and Geography, contributed with 12 questionnaires altogether⁴. This is a secondary school with approximately 1000 students aged 11-16, and nearly 50 teachers. The second school has about 1300 students aged 11-18 years and 90 teachers. Here four interviews were conducted, in the departments of Arts, DT and English. The third school has 90 teachers and approximately 1000 students aged 11 - 18, and here one teacher of English was interviewed. Again, the numbers of interviewees vary due to the difficulties about access to schools and teachers (see section 3.4.2.). In Norway, the research was completed in one school. This is a vocational school hosting the departments of Arts, Health studies and General Studies (which is English, Norwegian, Maths, Science, and Physical Education). At the time of research about 40 teachers were employed and the students aged 16-19 counted a total of approximately 250. Interviews were conducted with six teachers from the different departments: Three teachers from Arts, two from Health Studies and one from General Studies. The study aimed at choosing teachers from the corresponding subject areas in the two countries, but as DT is not a subject in the Norwegian school, it was substituted by Health Studies.

There are, however, other differences and parallels between the subjects chosen in the schools: The Norwegian Arts and Health Studies constitute dissimilar disciplines and departments and thus, the links between them are few or none at all. The General Subjects, on the other hand, relate to both Arts and Health Studies. Subsequently, they interact with these disciplines on a regular basis. Conversely, in England, DT probably relates more closely to Arts in contents and form, and according to the English interviewees, the subject of English may connect easily to Arts (see Chapter 4).

3.4. Research questions and procedure

3.4.1. Questionnaire

An important point of the questionnaire was to survey to what extent teachers cooperate across subject areas. In the pilot there were five questions, of which the first three were factual. The two more complex ones were included towards the end, which position makes it more likely that the respondents would complete the questionnaire (Denscombe 2003 and Cohen, Manion and Morrison 2000). The pilot questionnaire was as follows:

1. What department do you teach in?
2. Do you plan schemes of work with teachers in other departments? Yes No
3. If you do, what departments?
4. Do you see cooperation across disciplines as valuable? Yes No
Briefly, give reasons for your answer.
5. Please answer this question if it applies to you: If you think cooperation across disciplines is valuable, what is the reason for not practising it?

The ideas for these questions are based on reading literature such as Kaufman, Moss and Osborn (2003), Pate, Homestead and McGinnis (1997) and Erickson (1998). To some extent, they are also based on the researcher's experience in the Norwegian upper secondary school. Question 1 is contextual, enabling the study to identify departments

with frequencies of collaboration. Questions 2 and 3 seek information about the frequency of collaboration, informing about the number of teachers who collaborate, as well as, what departments are involved. Questions 4 and 5 are attitudinal in their intention, enquiring teachers' views on collaboration, and what they see as obstacles to it. The results of the questionnaires would indicate to the researcher whether these areas of inquiry would be interesting for further investigation in the interviews (see section 3.4.2.).

The questionnaire was piloted with one English and one Norwegian teacher (these did not contribute to the data material). The piloting is of paramount importance in giving feedback on a range of issues critical for the success of the questionnaire (Cohen, Manion and Morrison 2000). For the present questionnaire it was important to test the validity of the questions; whether they would help the study get the information it needed (Denscombe 2003). This involved for example, making sure that the vital issues of the investigation were covered (Denscombe 2003) and checking the clarity of the questions in order to ensure accuracy or avoid ambiguity. Second, the researcher wanted to steer clear of long phrasings because she anticipated that the respondents would disregard questions they did not instantly understand. Thirdly, with respect to layout and length, the format ought to appear user-friendly and, according to Denscombe (2003), "easy on the eye, because this encourages a more positive attitude to filling it in." (p. 152). With those aspects in mind the researcher aimed at wordings that could elicit the information she wanted by five questions only, and importantly, they all had to be fitted in on a single page. It was assumed that the moment respondents had to turn the page to complete the questionnaire they might be impatient or lose concentration, which in the worst case might have influenced the response rate. These considerations were not the least important for the English teachers as they seem

to have a very tight schedule. The goal was to spend a maximum of 10 minutes to fill it in. Additionally, to make it more convenient for the respondents, Questions 4 and 5 were left with some space between them to write in the answers. This was to avoid writing on the back of the page or having to add an extra sheet; so the piloting would also indicate whether the spacing was sufficient for the answers. Finally, the piloting would presumably give answers to whether the introduction that explains the purpose of the research is comprehensible (Cohen, Manion and Morrison 2000, Bell 2005).

The English piloting of the questionnaire indicated that some modifications should be made to obtain a more detailed picture of teacher contact across departments. The 'yes' and 'no' alternatives in Question 2 were changed into 'often', 'sometimes' and 'never', in order to get more balanced information. Additionally, the pilot showed that the questionnaire did not offer any opportunity to give details about cross-departmental collaboration in general; consequently, Question 4 was added to gain information of collaboration beyond pure teaching schemes (See the Appendix). To check on the validity of the research instrument the researcher talked with the pilot respondent after the questionnaire was completed to learn whether the questions were clear, accessible and easy to understand, and also whether she thought there were other important questions to ask in this particular context. She did not have any comments for change at all.

Interestingly, the Norwegian pilot questioned what factors might cause difficulties in teacher collaboration. Having considered it, the comment was disregarded because the researcher found that delimiting factors in teacher collaboration would probably appear in Question 6 which asks for reasons for non-collaboration. However, the researcher became aware of inaccurate wordings in the Norwegian

Questions 1, 2 and 3. The background is this: Within the English schools each subject constitutes its own department, whereas in Norway, there are several subjects in each department. Under these circumstances it was necessary to rephrase the English questions that constituted only the phrase ‘departments’ into ‘departments or subjects’ in the translated version.

With respect to the distribution of the questionnaires in England, it proved very difficult to get access to the full staff of the school in which the researcher had already made some contacts (see section 3.4.2.). The senior management would not introduce the teachers to the questionnaire due to their heavy workload. Other solutions had to be found. After having contacted several schools there was one head teacher who was willing to make the questionnaire available to the teaching staff. This resulted in the return of 12 questionnaires (see section 3.3.) which is a very low number compared to the total of 50 teachers; and, which also means that any of the English results have to be treated with a high degree of caution. The reason for the gap in response rates between the countries might be that the questionnaires were not delivered personally to the English teachers (Gillham 2000a, Bell 2005), neither was the researcher allowed access to the school to introduce herself and the study. For that reason, the questionnaire was e-mailed to a secretary who arranged a collective return of the responses. Also the fact that each answer would not be fit in single envelopes for the sake of confidentiality (see Section 3.6) might have caused a low response. Yet, this situation is a good example of the “distinct advantages in being able to give questionnaires to respondents personally” (Bell 2005, p. 148). It also, again, points out the crucial test of keeping confidential information out of reach of others. Conversely, the researcher did not have a genuine opportunity to resolve the matter differently as long as she was not granted access to the school.

In Norway, the questionnaire distribution was uncomplicated. With the Norwegian head teacher's permission a translated version of the English questionnaire was given to the full teaching staff in the school, in both paper and electronic formats. The staff counted 40 teachers at the time of inquiry. 32 questionnaires were filled in and returned, which gave an 80% response rate (See Fig. 1, Chapter 4).

3.4.2. Interview

The research took place in two stages; the collecting of information by questionnaires and, secondly, the interviews. First, the questionnaire answers gave valuable signals of the scope of collaboration in the schools, as well as the teachers' general attitudes to collaboration across disciplines (see Fig. 1, Chapter 4). This information was important in providing a general background to the interview design. Second, the questionnaire information indicated a rhetoric-reality gap with respect to how the respondents value collaboration and the extent to which they practise it. These findings, and particularly the results of Questions 5 and 6 encouraged the study to undertake further research, and which generated Questions 3 and 6 in the interview schedule (see the Appendix).

The interviews were semi-structured, which meant using open-ended questions and probes and prompts in order to encourage the informants to provide supplementary information (Denscombe 2003, Gillham 2000b). The final interview schedule therefore, is more like a series of discussion topics being "general enough to allow exploration but focused enough for the study" (Yuesu Huang 2003).

The piloting of the interview schedule in England caused some changes. Consequently, the lack of an introduction to the difficult question regarding multiliteracies is taken care of in the final draft of the interview schedule, in which the topic is gradually introduced by discussing literacy first (see Chapter 1). Additionally, seeing that the term 'multiliteracies' might be difficult to perceive, further explanation is given in a short annotation (See the Appendix). In retrospect, however, the researcher must admit that her assumption about teachers having clear views of what 'literacy' is was somewhat unsafe, despite the fact that Question 4 and the above-mentioned annotation give the interviewees a definition of the term. Further, it was assumed that the English teachers were familiar with the term because of the amount of work on literacy over the last 10 years in England, and the fact that the National Strategies are now working across all subjects. On the other hand, the informants (in both countries) received the questions one or two days in advance to prepare for the interview.

In contrast, there is no equivalent single term to 'literacy' in the Norwegian language; therefore, the English terms were used in the interviews. This might be a challenging situation for the interviewee. On those grounds, it was considered necessary to give a more thorough introduction and explanation to the terms, and the interviewees were also asked prior to the interviews whether or not they understood the explanation. Beyond that, no changes were made to the schedule.

The ideal situation would probably be to do the questionnaires and the following interviews with the same teachers who would then be given an opportunity to elaborate on their questionnaire responses. However, from the difficulties explained above, the English interviews were conducted in two different schools, with which the researcher had earlier made contact (see section 3.3.).

Some of the key arguments that emerged from the English material were focused more strongly in the Norwegian interviews by probing and prompting (Denscombe 2003); for example, ‘motivation’, ‘classroom management’, ‘negative sides to cross-curricular teaching’, the importance of ‘time’, and whether the school has good courses of action or a culture for cooperation among staff. There was, of course, a danger of putting ideas into the interviewees’ heads, but it was all the same important to get them thinking and talking about these key issues. Six Norwegian teachers were asked to give interviews. To prepare a best possible basis for comparing teachers’ views, the interview questions were identical in the two countries, the only difference being in Norway, where the teachers gave interviews in Norwegian. This implied adapting some phrases for the Norwegian context (see section 3.7.).

Due to the difficulties of getting into English schools, the bulk of the research was done in Norway. However, the English data provides useful contextual information in discussing similarities and differences between the two systems.

3.5. Data processing and analysis

Most of the questionnaires were returned within two weeks. The researcher did not send any prompting letters (Cohen, Manion and Morrison 2000) to the English school because of the improbability of any further response (due to the teachers’ work load). In the Norwegian context, follow-up notes were sent to a whole-staff-forum via the school electronic mail system and these reminders were fruitful for the response rate.

According to Gillham (2000a) it is of great importance to work out a summary system to display the overall response to the questions. In a quantitative study, raw data in the form of numbers is easily fitted into tables or graphs but other variables have to be transformed into numbers to facilitate counting (Bryman 2004). The coding process that follows is fundamental for identification of data categories and paves the way for data analysis and conclusions (Maykut and Morehouse 1994, Bryman 2004, Bell 2005).

For the study in hand, the questionnaire answers were fitted into an analysis grid (Gillham 2000b) which is a practical instrument for data management and produces the overview necessary. The number of each question goes along the top of the grid and the departments (to which teachers belong) go down the left side. Questions 1-4 produced numbers instantly, whereas the responses to 5 and 6 had to be coded and categorised in order to produce numbers for the grid. It might be important here to add that particularly the Norwegian teachers' high consensus of opinion on Question 5 (see Appendix and Chapter 4) made it necessary to reanalyse the material, assuring its accuracy. The material was utterly examined to ensure that the words and phrasings used in the answers actually validated the high consensus (see section 3.7.).

For the interviews, a similar analysis grid was made, in which the interviewees were placed in columns along the top of the grid. Then the categories were added down the left hand side.

There are various ways of assigning substantive arguments to its category: Researchers may "*tick the relevant box ... or write in the actual statement*" (Gillham (2000b, p. 66), but for this study the decision was taken to write in parts of the statements into clear units. These key notes brought the summary to life, and

importantly, they are a practical instrument in indicating differences and similarities between respondents' statements. During the writing-up stage it is easy to return to the transcripts for the full statements (Maykut and Morehouse 1994). However, this strategy made the analysis grid larger in size (as several A4 sized sheets had to be taped together). Using highlighter pens to mark off sections of 3-4 categories in each made it easier to retrieve and present data for analysis (Hitchcock and Hughes 1995).

3.6. Aspects of ethics, reliability and validity

Issues of ethics, reliability and validity are fundamental in any research. Participants should be treated respectfully to "preserve their dignity as human beings." (Cohen, Manion and Morrison 2000, p. 56). Researchers should follow a code of ethical practice in research behaviour. Hence, in most cases of social research, participants should be fully informed and make their decision about participation, based on knowledge about, and comprehension of, the research to be undertaken. It is also important that the subjects know about their right to withdraw consent at any time. According to Diener and Crandall (1978) informed consent is "the procedures in which individuals choose whether to participate in an investigation after being informed of facts that would be likely to influence their decisions" (in Cohen, Manion and Morrison 2000, p. 51).

The issues of anonymity and confidentiality apply to both questionnaires and interviews. In the process of negotiating access and acceptance the guarantees of non-traceability of the respondents will be central, at least where sensitive information is asked for (Cohen, Manion and Morrison 2000). In the present questionnaire, the

respondents were not asked to give names, gender or age, and the researcher believes the issue of anonymity was therefore taken care of.

There are several aspects to be aware of with respect to interviewing: The researcher has to bear in mind what impact the situation has on the interviewee and that objectivity is hard to achieve. This has an effect on the reliability of the information received (Denscombe 2003, Verma and Mallick 1999). Some interviewees may be shy or nervous of the idea that their words are kept on file; therefore, it is of paramount importance that the researcher is alert to the matter of anonymity and trust. The interview should therefore be introduced by assuring the full anonymity of the interviewee. Verma and Mallick (1999) illustrate the significance of reliability by comparing it to the speedometer of a car: “The purpose of a speedometer is to provide an accurate indication of how fast a car is travelling at any given moment” (p. 24) and “a true reading of the car’s speed” (p. 24).

For the present study, the interviews were tape-recorded which in itself may impact the situation: “... the process of recording has a bearing on the freedom with which people speak...” (Denscombe 2003, p. 177). On the other hand, tape-recording is for the researcher a clear advantage in transforming interviews into written format because “it helps to correct the natural limitations of our memories” and “allows more thorough examination of what people say” (Bryman 2004, p. 330).

Another imperative aspect of interviewing is the danger of bias (Bell 2005). Particularly in research in which the interviewer has a keen interest (Marshall and Rossman 1999), there is a fear of bias. For that reason, the present interviewer tried to avoid leading questions and putting words into people’s mouths (Drever 1995,

Denscombe 2003). The way this was done was to remain reserved and ask as few questions as possible. The situation could easily be compared to an examination in which the examiner plays the role of the listener but at the same time, encourages the student to show her speaking competence. It is important to try to secure that personal engagement does not impact the interview situation or cause distorted judgement in the data analysis (Bell 2005, Marshall and Rossman 1999).

The danger of bias could to some extent be reduced by triangulation (see below) or by asking for a 'peer review' (Gillham 2000b), which was done for the present study: The interview transcripts were examined for substantive statements by a peer equally competent to the researcher (Gillham 2000b). Her categorisation of statements was then compared to the researcher's, which basically revealed matching analysis of the material, with the addition of a few but important categories: 'School culture', 'Need for change' and 'Obstacles' (to cross-curricular work).

The notion 'triangulation' was originally used in the context of navigation, by which "sailors could identify their true position at sea" (Denscombe 2003, p. 133). Analogously, triangulation in research, by using multiple approaches and data sources, gives confidence that "the data has some consistency" (Denscombe 2003, p. 133). Triangulation, therefore, implies seeing things "from different perspectives and thus to be able to confirm or challenge the findings of one method with those of another" (Laws 2003 in Bell 2005, p. 116). In a multimethod approach different methods can be seen as complementing each other (instead of competing with each other) which again support the validity of the findings (Denscombe 2003, Anderson 1998). Finally, triangulation, with its implications of cross-checking, questioning, and seeing things from different

perspectives, helps eliminate bias in data interpretation and as a result, contributes to the validity and reliability of a study (Anderson 1998, Bell 2005).

Hence, validation of data is to gauge the credibility of the information (Denscombe 2003). To ensure validity of the present thesis, both questionnaires and interviews are applied in order to cross-check information. The contents of the interviews are also tested against each other, in order to look for inconsistencies or parallels. Lastly, the researcher, being an experienced teacher, is also to some extent able to weigh the reliability of the information. All in all, the researcher believes that reliability and validity have been considered within the natural limitations of a small-scale study like the present one.

3.7. Conclusion

This chapter is concerned with the methods applied in the present research, having discussed the research procedures, the data processing and the analysis. Likewise, it has tried to show what sampling criteria were influential and decisive for the scope of the study and in short, also given some contextual information about its participants. The last section has sought to discuss some important ethical issues and the significant concerns of validity and reliability, which are ultimately crucial for the quality of research in general.

The study in hand is based on information achieved both from Norwegian and English informants, and Chapter 3 has pointed to difficulties encountered in negotiating access to the English schools, the consequences of having to collect questionnaire and interview data in separate schools, and the subsequent weaknesses of the data material.

The small English questionnaire sample means that significant comparisons to the Norwegian material cannot be made, and therefore the study is not a direct comparative study. However, the English data as such is important to the study as it may open up some interesting areas for discussion.

When working across nations, it is important to have knowledge of differences in terminology and culture, for example educational contexts and concepts which are familiar in one country might have a different meaning in another. The present research has met challenges of incongruence in school systems and the way departments and subjects are organised (see section 3.4.1.). Obviously, too, linguistic conventions and differences had to be negotiated in the translating process. The translation sometimes caused wordings that deviated with the original, but it was important to stay as faithful as possible to the informants' manner of speaking. Therefore, some quotes made in the following chapters may appear awkward and even have linguistic errors.

¹ The reason for the unequal number of interviewees in the two countries is the difficulties of getting into English schools to do research.

² Regarding the English sample, the researcher was not really in the position to select among teachers because of the difficulties to get access to schools.

³ Because few teachers with short experience were available at the school.

⁴ Importantly, the questionnaire was designed for the whole staff, but only 12 teachers responded.

4. Teachers' perceptions of collaboration and interdisciplinary teaching

4.1. Introduction

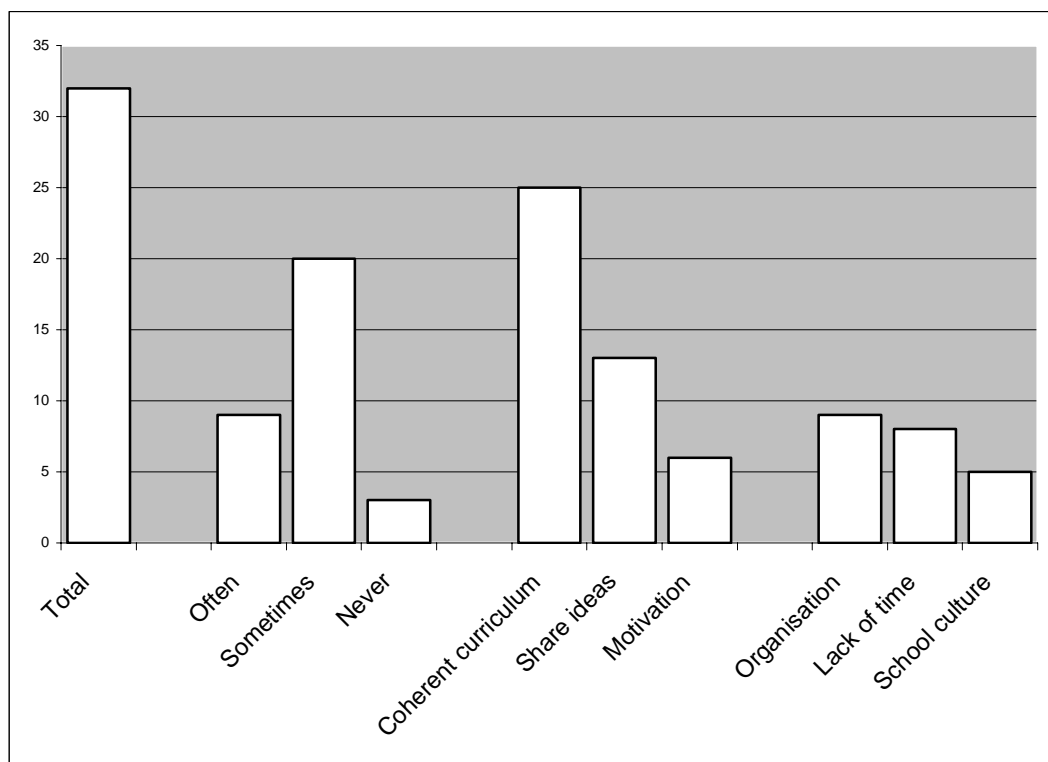
The present chapter as well as Chapters 5 and 6 seek to present and analyse the findings. The present chapter will discuss the results of the questionnaire in section 4.2. Section 4.3. presents the informants' definitions of interdisciplinarity. Section 4.4. deals with the legitimacy of interdisciplinarity in education, focusing on the value of cross-curricular approaches in 4.4.1., motivation and variation in section 4.4.2. and classroom management in 4.4.3. Negative aspects of cross-curricular approaches are discussed in section 4.4.4., and 4.5 provides the conclusion to the chapter.

4.2. Questionnaire results

The research instrument of the present study consists of the questionnaires which try to ensure breadth of the data, and the interviews in which issues raised by the questionnaires are followed up. The fact that only 12 out of 50 English teachers answered the questionnaire (section 3.3.) makes a very low response rate not representative for the whole staff. Five of the 12 teachers see collaboration as valuable because it might facilitate a more integrated curriculum. Eight teachers give 'lack of time' as a reason for not practising collaboration and four teachers say the reason is 'organisational' matters. Even though this information is supported by teacher interviews in England (and Norway), the results can not serve for comparison to Norway but, might indicate, to a small extent, trends in the school where these teachers work. It may also provide some extra, contextual information for the Norwegian findings but will not be discussed at length.

Figure 1 below seeks to illustrate the Norwegian questionnaire findings. The single graph to the left shows the number of teachers who responded to the questionnaire. The 3-bar graph to the left illustrates the answers to Question 2, which asked about the frequencies of cross-departmental practice (see the Appendix). The middle 3-bar graph shows the results of Question 5, which gained information about values of cooperation. The 3-bar graph to the right demonstrates the answers to Question 6, which gives the reasons for not collaborating across departments (see the Appendix). In the subsequent discussion of the interview data references will be made to the questionnaire information for triangulation or data corroboration (see section 3.6).

Figure 1. The Norwegian questionnaire findings.



32 out of 40 Norwegian teachers answered the questionnaire as illustrated in the graph above. According to the 3-bar graph to the left, nine teachers often plan work schemes with colleagues in other departments, 20 teachers do it sometimes and a small minority of three never practise such collaboration¹. That 29 teachers report cross-departmental cooperation might be seen as a relatively high number, however, the ultimate goal may still be that more teachers collaborate 'often'. The middle 3-bar graph which illustrates the answers to Question 5 (see Appendix) shows that 25 teachers see collaboration as important because it opens up for a more logical and coherent curriculum. This, according to the informants, allows the pupils to see the disciplines as part of a greater whole (see Chapter 2), and, will also produce higher learning outcome. This result, however, is quite surprising as long as only nine teachers cooperate 'often' across disciplines. The result in the next column is also somewhat unexpected, which shows that 13 teachers believe the sharing of ideas and securing of quality in teaching are

important aspects of collaboration. Finally, six teachers believe that working with others contribute to their personal motivation and commitment. The high scores mentioned here may illustrate a rhetoric-reality gap because many teachers value interdisciplinary approaches highly, but relatively few practise it accordingly (see also Chapters 6 and 7). The 3-bar graph to the right gives the main reasons why collaboration is not practised despite teachers' approval of it. Nine teachers claim organisation and logistics are decisive, eight teachers argue a lack of time whereas five teachers state that the school does not have a culture or a policy for collaboration. This compares to the Norwegian interviews in which all the teachers discuss organisation and time matters (section 6.2.). Last, the tendency in the limited English questionnaire material points towards the same obstacles (see above).

4.3. Defining interdisciplinarity

Principally, the informants define cross-curricular approaches or interdisciplinarity in similar ways. One English teacher defines it as “working closely with colleagues from other departments... working in different material, on the same theme, same sort of idea.” (E3). She gives an example of how two subjects would complement each other (see also Moran 2002):

...I was thinking of history and English that would also complement one another, so you could actually bring a number of departments together, the history element would be quite useful I think, when looking at poetry, and again I can see music and art as grateful, in teaching history, to make history come alive. (E3)

This teacher considers the combination of subjects in a creative way, to make “history come alive”. The National Advisory Committee on Creative and Cultural Education (NACCCE) claim that creativity in education is about making new connections

(NACCCE Report 2001). This is also reflected in the next teacher's understanding of cross-curricular teaching:

What I think is meant by cross-curricular teaching is where a project is taught in different subjects, so for example in history we might do something with attacking castles, ...might make some devices that you could actually attack castles with, blisters and catapults and that sort of thing. So they could study it from a historical point of view, and we could study it from a practical point of view. (E4)

A Norwegian teacher sees interdisciplinarity as working on

a topic that integrates several subjects, for example English and history, then you may teach British history and cultural aspects, and for English, the focus is on applying the language in speaking and writing... (N6).

N6 claims that by working on a joint topic the students' knowledge will be reinforced, which is also mentioned by other informants (see section 4.4. and Pate, Homestead and McGinnis 1997). Further, a fourth teacher believes interdisciplinarity

can be a thematic approach, for example we did something in our English department with music, drama and history on the theme of war, and we also have done something on community, culminating in an evening's production of little bits of drama and display of art work and English work. ... And sometimes it's just a matter of making links between things that are artificially divided by discipline labels (E2).

In addition to being a thematic approach, E2 considers interdisciplinarity also a matter of skills:

... skills that surface in different kinds of subject areas, different disciplines, which feed each other, and so I think it's a skills thing as well. (E2).

The teachers perceive interdisciplinarity as a thematic approach or a project in which different subjects are brought together. Their definitions largely agree with Moran's (2002) definition of interdisciplinarity: "Any form of dialogue or interaction between two or more disciplines" (p. 16). The teachers seem to have a clear vision of what interdisciplinarity is but, as Chapter 6 will show, they have not all been in the position to try out such schemes. E3 and E4 above, for example, sketch possible interdisciplinary scenarios which for diverse reasons may be difficult for them to perform in practice (see also section 6.2.).

4.4. The legitimacy of interdisciplinarity in education

All 44 teachers (both British and Norwegian) who responded to the questionnaire consider teacher collaboration as valuable in terms of seeing education as a continuum, being inspirational, learning from colleagues, and the value of motivating each other (see also Kaufman, Moss and Osborn 2003). Further, collaboration is fundamental to cross-curricular teaching and the present research data shows a general consensus among the teachers involved that interdisciplinarity is an important strategy in education. This section will discuss the general value of interdisciplinarity in school, followed by other issues such as motivation, variation, class management, and finally, some negative sides to subject integration.

4.4.1. The value of interdisciplinary approaches

In the present section which concerns the value of interdisciplinarity, it may be right to devote some space to what N4 says about her teaching approaches. The reason is that this teacher is clearly involved with interdisciplinary teaching (see N4 in section 5.3.)

which she believes has been successful and which also shows what interdisciplinary methods can achieve (Pate, Homestead and McGinnis 1997). N4 refers to Gestalt theory in which a holistic view of learning is fundamental² (see also Molander 1997). This means, according to her, to recognise the interrelationships between disciplines, the continuum of knowledge, and relating it to the society and to the individual itself (see also Chapter 2). Gestalt therapy claims the existence of a ‘Gestalt Cycle’ whose phases are ‘Fore Contact’, ‘Contact’, ‘Final Contact’ and ‘Post Contact’ (Clarkson and Mackewn 1993). N4 argues along the following lines:

Human beings experience the Fore Contact, the Contact and the Post Contact. To reach Post Contact in learning it is necessary to gain an understanding of more than one discipline or subject...because learning has the perspective of wholeness rather than decontextualising. ...Fore Contact is when you are curious and want to find answers to your questions, for instance by reading a newspaper. When the pupil succeeds in finding the answers she gains Contact, for example: the newspaper article is about our hospitals that accommodate patients in corridors due to lack of space, this is all about money and politics. Then, I believe, the pupil has learnt something; she has gained Post Contact (N4).

In the discussion about values of interdisciplinarity, it is clear that many teachers regard seeing knowledge as a larger entity, a continuum, a major argument (see Fig. 1). This attitude is reflected in the interviews in which the teachers in both countries argue (though not everybody has the same degree of enthusiasm) that delivering an integrated curriculum will have a positive effect on students’ understanding; it “encourages joined-up thinking and feeds different experiences.” (E2) (See also Asbjørnsen 1994). According to teacher E1, students will be better informed by subject reinforcement; being allowed to...

...see a bigger picture and to use their different skills and knowledge in concert rather than separately, and each time they do it,...link with something in another subject, it embeds that knowledge and expertise, I think it's very beneficial, ...it can reach everybody at some point. (E1).

Moreover, according to N6, cross-curricular approaches facilitate for different learning styles too, by addressing a wide range of media in addition to ordinary textbooks.

Surely, varied learning styles can be used in single subjects, but interdisciplinary teaching may to a larger extent possess these qualities.

The teachers seem to perceive the value of interdisciplinarity in similar ways. They point out the importance of continuous knowledge and the contextualising of issues under study. The informants believe that an integrated curriculum increases understanding on a broader basis.

4.4.2. Motivation and variation

The teachers largely agree that cross-curricular approaches are fruitful with respect to motivation (one informant seems less certain about this), because of the varied learning styles and diverse angles from which a theme might be illuminated (Pate, Homestead and McGinnis 1997). Interdisciplinarity may also motivate students when they realise the interconnections of subjects. A Norwegian art teacher puts it this way:

The pupils will be more motivated because they see the value of the subject. Pupils are often very interested in the main disciplines in this course while the General Subjects they would rather escape. Therefore, when they realise that mathematics is functional also in art, they will be more motivated for it (N3).

This refers back to the questionnaire information which sees 'education as a whole' as the main benefit from collaboration across departments. Four of the Norwegian

interviewees mention that interdisciplinarity will bring more varied methods. N4 states that “dissimilarities can be very educating” for the teachers involved, as the members will draw on each other professionally and methodologically. Teacher N5 adds that the situation is rewarding for teachers’ well-being, as well as, giving some insight into colleagues’ disciplines. (Pate, Homestead and McGinnis 1997).

The variety of ways lessons may be delivered is also focused upon by the Ofsted (The Office for Standards in Education) (<http://www.ofsted.gov.uk>). One English informant says a lack of variation in teaching was pointed out by their last inspection:

I would just comment that the recent Ofsted inspector did say that in my department there was a definite in-house style. It means that the teachers were teaching in a very similar sort of way, the lessons contained similar structures, I mean should that be a good thing, or a bad thing, and my own personal view is that it is a bad thing to have an in-house style... (E3).

E3 believes that interdisciplinarity would encourage to using more media and varied styles, which again would have a motivating effect on the students.

Two of the English participants claim that approaches to learning should be auditory, visual and kinaesthetic to provide for the diversity of needs in a group (Interestingly, these terms are not used by any of the Norwegian informants). Likewise, it is also stated that “novelty is extremely important” (E1), which means there has to be a variation in approaches to stimulate children to be creative. Again, it is important to remind the reader that these qualities are not limited to interdisciplinarity only, but they might be better taken care of in an interdisciplinary setting.

This section has seen that teachers believe interdisciplinarity is important to students’ motivation. They claim this approach incorporates varied learning styles

central to provide for novelty and the diverse needs of a group of students. It is also mentioned that students will be more motivated in an interdisciplinary scheme because they see the value of the individual subjects and that they are all connected and necessary parts in a bigger unity of knowledge.

4.4.3. Classroom management

As stated above, most teachers in this research are quite clear that cross-curricular approaches in teaching have a positive effect on pupils' motivation. One English interviewee claims that keeping pupils motivated is actually also necessary for classroom management:

So when you've got kids that are used to flash images...you need to be able to stimulate those children who are used to that entertainment culture ... keeping their interest. It's something you do have to think about because otherwise it's gonna lead to bad behaviour... (E5).

E5 seems to believe that motivated learners exhibit fewer behavioural problems (compare Pate, Homestead and McGinnis 1997). E1 and E3 also believe that cross-curricular schemes will increase motivation, which again will reduce behavioural problems:

I think behavioural problems evaporate when children are motivated. I think, from my own experience, if they're interested in what they're doing, behavioural problems are much less in incident (E1).

(See also Gire Dahl 2002). E3 adds about interdisciplinarity:

I think it could improve discipline because when people are motivated they want to learn, and will be less easily distracted if they're interested in a topic, and this is a big issue at the moment... (E3).

Four English interviewees are clear that interdisciplinarity will have a positive effect on behaviour. The fifth teacher does not believe that cross-curricular links will have an effect worth mentioning:

I am struggling now to think of how it would change the classroom management situation ... I know people that teach in extremely difficult schools ... and I don't think it would be any easier for them if there were cross-curricular links, they would still have got the same problems, you still got the discipline problems, you still got pupils coming in fighting into the room, and children with lots of problems... (E4).

Only one of the Norwegians, N4, discusses behaviour issues. She argues that cross-curricular activities increase motivation, and the positive attitude to learning will have an effect on behaviour. As part of this picture, she points to the important role of the teacher who needs to be constantly engaged with her students, for example by taking part in drama pieces: "My debut was when they unintentionally needed a stand-up; I join in very much and sometimes I also take part in their presentations" (N4).

Of the informants who discuss behavioural issues, the majority agree that interdisciplinary schemes will cause less classroom management problems. This is mainly explained by higher motivation among the students.

4.4.4. Negative aspects of interdisciplinary approaches

Generally speaking, the participants of the present study demonstrate a positive attitude to interdisciplinary schemes. However, some negative issues have also been discussed, and these are the focus of the present section.

Not all the English participants were positive about collaboration. One would prefer not to work across departments even though it was clear that work of a cross-curricular nature was being done with the class:

We're ... reinforcing their learning in other subjects, but it's not something I feel we have to sit and sort a topic out between departments. ...but no one ever would see that, the English department don't have a clue I'm doing that, and neither would probably any of the management, I don't know... (E5).

E5 partly teaches across disciplines but is not willing to share her ideas with colleagues in other departments (compare to Kaufman, Moss and Osborn 2003). There is a tendency to protect one's own discipline from being integrated in other subjects. E5 argues for more concentration on one's own field instead of working across fields:

I suppose you feel a bit protective towards what you teach as well, but I just think they could have concentrated on their own subject-related material a bit better (E5).

E5 seems to fear a dilution of the discipline if it is integrated with other departments because of contact with non-professionals. Even though they understood the argument the Norwegian teachers did not comply with it:

It is important to find a good balance between nurturing one's own field and on the other hand, relating positively to other fields of knowledge. Progress and collaboration will not happen if everybody was only concerned about her own discipline. We need joint thinking to achieve growth (N5).

Others claim that the dilution argument is hypothetical: "This is a strange idea as long as you don't abdicate as a subject teacher" (N6), and "I am not afraid of that in any projects as we don't work that way constantly, and it is rewarding to learn about each other's subjects, too" (N1). Asher (2003) puts it this way: "Interdisciplinary teaching need not dilute the ... program; it could, moreover, enhance it." (p. 131).

N6 mentions a negative argument about interdisciplinary *projects* (which she seems to juxtapose to interdisciplinarity). This relates to the issue of time loss and that the quality of students' work in a project period might not justify the time spent on it. N6 believes that sometimes the General Subjects are not sufficiently focused on, "we don't have enough control of the activities in a project; whether the pupils get the in-depth knowledge they need" (N6). Comparably, in his discussion about project work in school (see section 2.2.4.), Gire Dahl (2002) attends to the question of time loss and that students are being delayed in their studies.

A final argument against integrated learning is the perception of over-complexity. Teacher N2 puts forth that for some students working across the fields may appear chaotic, in comparison to keeping the General Subjects apart from the special subjects. Even though he is mainly positive to interdisciplinary approaches, E4 argues that children could be tired of working on a topic in several subjects. Again, Gire Dahl (2002) claims that cross-curricular projects might be confusing and cause stressful situations for the pupils; some of them are tired and would rather prefer ordinary lectures.

4.5. Conclusion

The present chapter has discussed teachers' perceptions of collaboration and interdisciplinarity. With respect to the questionnaire results, they show an overall positive attitude towards cross-departmental collaboration, but on the other hand, teachers do not practise accordingly. This indicates a rhetoric-reality gap which is also noticeable with respect to interdisciplinarity (see Chapter 6).

The teachers perceive interdisciplinarity as taking the form of themes or project work. The subjects involved complement and connect to each other, contributing to a more 'whole' knowledge which may also relate better to the pupil and the 'real world'. Generally, the respondents think an integrated curriculum enhances more learning.

The teachers also see some other benefits to be gained from interdisciplinarity. First, they believe it will have an effect on pupils' motivation because of more varied learning styles and a more logic curriculum. It is assumed that students will easier understand the legitimacy of single subjects, as being parts of a larger context. Secondly, the majority of the teachers who discussed classroom management believe that interdisciplinary approaches have a positive effect on behaviour. They explain this by higher motivation for interdisciplinary schemes.

The last section of the chapter points to negative aspects of cross-curricular work, such as a negative attitude towards collaboration with other departments, a fear of dilution of subjects, and the question of time loss and over-complexity in projects. Yet, all in all, the research shows that both the English and the Norwegian informants believe interdisciplinary approaches are valuable in teaching and learning.

¹ It would have been interesting to see how the equivalent numbers in a larger English material were. In the present small response, 6 teachers state they never plan work schemes outside their own department, 5 sometimes do, and 1 often does.

² By going into these details the researcher is aware that this particular teacher may be identified by the reader and needs to inform that the teacher has given her informed consent on the matter of identification.

5. Teachers' perceptions of the benefits of interdisciplinarity to literacies

5.1. Introduction

The present chapter seeks to illustrate the interviewees' perceptions of interdisciplinarity as to encourage literacies skills. The chapter has two main sections. Section 5.2. will discuss what the teachers think the potential of interdisciplinarity is, with respect to literacy gains (see Chapter 1 and section 2.3.1.) and section 5.3. addresses the issue with respect to multiliteracies (see Chapter 1 and section 2.3.1.). Section 5.4. provides the conclusion to the chapter.

5.2. Teachers' perceptions of the benefits of interdisciplinarity to literacy

The interviewees were asked whether, or to what extent, they think cross-curricular approaches in teaching would enhance students' literacy skills. It was also pointed out to them that 'literacy' in this context meant 'the ability to read and write' (see Chapter 1). All the interviewees in both countries claim that teaching and learning across disciplines has a positive effect on literacy (but three of them, despite their views that cross-curricular teaching reinforces information, concurrently object to interdisciplinarity, see section 4.4.4.). E3 believes the immersion in interdisciplinary learning schemes will develop reading and writing:

...looking at new ideas then new words will emerge quite spontaneously, and I think you will get a layer-upon-layer approach, so if you've got the musician and the artist working together, then you will have ... quite a rich literary environment, new words perhaps that people have not come across, and new ways of putting ideas together, which will again rub off on the teachers themselves, but also on the children, too, as they build upon these ideas... and the vocabulary of the children is actually enhanced by that, I've actually seen it happen (E3).

This is supported by E2 who claims that in a cross-curricular scheme “all these skills are cross-fertilising each other”, and she gives an example of a teacher who deliberately combines science with literacy to reinforce and expand both. Some scholars see an integrated curriculum as necessary for understanding the ever-increasing complexities of the world; Glenn (2003) for example, claims that the brain organises information in holistic schemes, “often in the form of a thematic web that combines... the knowledge gained.” (p. 147). This facilitates integrated instruction “to increase understanding and retention.” (p. 147) (see also section 5.3.). Likewise, N2 believes the holistic approach will add to the students’ understanding of the continuous nature of knowledge and thereby extend their learning. (See section 2.2.5.).

Pace, Homestead and McGinnis (1997) claim that “curriculum integration and motivation go hand in hand” (p. 8), and Glenn (2003) states that “integrated instruction is a worthwhile curricular approach as it motivates students and helps encourage...learning” (p. 148). Also the participants of the present study claim the importance of motivation; hence E1 argues that a cross-curricular approach will extend literacy skills due to higher motivation among students:

... if children have positive experiences that will always lead to improved performances because they’re interested and they want to do well, and literacy skills will grow as a consequence of that ..., if they are interested in something they will make the effort to read and write and to explore in whatever medium is appropriate... (E1).

We may ask then how educators can motivate children and encourage literacy learning. Teacher N6 mentions a recent cross-curricular project called “Picture of the

period around 1905” in which the pupils studied the political situation, the history of Art, painting, architecture and the history of literature. She says that:

...one of the students, who had shown no interest in Norwegian until the time, now was reading the history of literature with great interest. Undoubtedly, this process was valuable; and also the ways we learn, through images, illustrations, graphics; we can not learn everything by plain text. Therefore, applying a diversity of approaches to a topic as well as focusing a great deal on text, is most certainly valuable for reading and writing development (N6).

Other teachers have similar arguments and examples. An Art teacher puts it this way:

The fact that interdisciplinary exercises usually offer a wider range of approaches to a topic means that more students will be engaged. ...Many students are more motivated for studying if their reading is part of designing something practical, and having a specific purpose for searching literature and other sources makes them face up to the task. The connection of literacy to practical matters seems to be favourable, and consequently, adding to the expansion of these skills (N1).

(See the discussion on multiple intelligences in section 5.3)

Comparably, the last years have seen several studies on technology connected to literacy (see Andrews 2004). One of them, Parker (2002), reports projects about “moving image media within the context of English and literacy teaching” (p. 38), which suggest that “dramatic improvements in reading and writing can take place when language, image and culture are brought together through powerful visual narratives.” (p. 39). According to Parker (2002) “‘motivation’ is a key facet of media work in schools”. This indicates that film, in this case, may be an effective springboard for existing literacy programmes and for the advancement of reading and writing. Likewise, Stansberry and Schwarz (2003) claim that in an integrated scheme about video production, “the basic skills of alphabetic literacy are strengthened as students collaborate to create anything from a video book review, to a documentary...” (p. 1). So,

also according to the participants of the present study, we may suggest that working across disciplines generally, in different contexts and various ways, may generate motivation and literacy gains.

However, it is important to stress that the cross-curricular scheme alone does not necessarily engender higher literacy levels, but that the teacher's action is just as important. N2 points out that close follow-up of students is crucial for successful cross-curricular schemes in general. Concerning this, it might be useful to call attention to Burden and Williams (1998), who examine how to teach children to think, in order "to be able to face the demands of a rapidly changing world" (p. 189). They address how to organise the curriculum and the teaching pedagogy to develop such skills. Similarly, according to N2, the action of the teacher in a cross-curricular scheme might have important implications for its success. The teacher could be seen as a guide or a mediator for the student in her thinking and navigation in a multidisciplinary learning environment. N2 believes that if the teacher does not recognise her part as a mediator which also involves ensuring that the diverse disciplines are attended to adequately, it is likely that the student will not extend her knowledge, far less develop her literacy skills:

You have to ensure that all the learning targets are covered ... that the pupils learn something, and you must ensure that every pupil is carefully instructed and guided ...if not, some of them will probably drop out and will not learn anything... (N2).

According to this section, the interviewees' generally agree that interdisciplinarity can enhance literacy skills. They think that the integration of subjects could create a beneficial literacy environment, in which the disciplines jointly enhance one another. This also refers to the combination of practical and academic fields, in for example working with visual narratives.

5.3. Teachers' perceptions of the benefits of interdisciplinarity to multiliteracies

All the informants (in both countries) consider interdisciplinary schemes as favourable to 'multiliteracies' (see Chapter 1 and section 2.3.3.). Previous to the discussion below, the study would like to call attention to why it is important to teach multiliteracies.

Being multiliterate, according to E3, is important because multiliteracies

give you insight into areas of knowledge that would otherwise be unperceived... it's our job really, our duty as teachers to encourage and enable children to have access to these things (E3)¹.

E3 is supported by N6 who argues that the school has to educate children to be multiliterate:

It is important to teach multiliteracies because that is the new world. We have been behind in this area but now things are changing in school, too. (N6).

E4 claims that their interdisciplinary schemes in Design and Technology help the students exercise multiple skills (by using several media in their studies):

Oh yes, we are quite multitalented in DT, but that's a bit like the real world, like designers in the real world, you have to draw on inspiration from lots of places and to use that inspiration to come with their own ideas. ...in what they've done with us it has improved their range of literacies...because they've demonstrated good IT skills, presentation skills, knowledge of visual things... (E4).

Similarly, E3 and E1 think cross-curricular approaches will stimulate multiple literacies, for example in an integrated scheme of art, music and literature:

I think students then be introduced to subject matter in an exciting way that would encourage them to find out more about Van Gogh, find out more about

perhaps particular pieces of music, what else has this composer actually written, or what else has this poet written ... because if the words come to life through music or art, or whatever, that would encourage people to go out and want to find out more about it... (E3).

I used music with my Year 9 this morning because we were looking at Graffiti Art, so I played them some music that I bought in the Museum of Modern Art in New York that reflects the culture of that time (E1).

E1 convincingly argues the importance of learning as a continuum (see also Glenn 2003, section 5.2.); making connections between the two brain hemispheres, and thereby build multiple literacies:

Clearly, visual literacy is of particular interest to us in this department, and we make links wherever possible because we teach 3D, sculptural work, ... what interests me is the structure of the brain ...having left and right hemispheres, a lot of what we do in art is right hemisphere oriented work, intuitive, creative, and so on, but I think it is clear that more links you can make between the left and the right brain, the more leonardo da vinci we'll be likely to get, ...children need to see that all these skills can work together to improve their performance in everything they do really... And anything that we can do to help them make those connections between the left and right brain thinking, I think is essential, and I think that help make more literacies possible (E1).

E1 believes that in integrated schemes, her pupils make more links and they learn more (see also Glenn 2003). She claims the wiring of the brain is ultimately central for effective learning and the advancement of multiliteracies. E1 maintains that education today is dominated by left brain activities, and the important counterpart to balance learning is for example art activities:

This is the balance that they need, I think something like, I wrote it down actually because it alarmed me, something like 70% of the national curriculum is geared towards left brain activity, so I really think it's very important. And making connections, you know the wiring of the brain where systems of neurons connect with each other, out-of- lessons particularly, their brain so developing physically as well as intellectually, and if we can make connections with previous learning in everything that they do, this provides the facilities for that,

those kind of connections to happen in the brain in fact, it's not just a temporary thing, it actually adds to their, the effectiveness of using their brain really (E1).

E1's concerns here are supported by Marshall (2002) who stresses that teaching should address students' multiple intelligences (see also Gardner 1993), which include linguistic intelligence, but also, for example, artistic and naturalistic depictions. This scope will, according to Marshall, provide for wider neural development and learning (see also N1's statement in section 5.2.). Likewise, Stansberry and Schwarz (2003) discuss an interdisciplinary scheme in their article "Expanding Literacy Through Video Production" (<http://fp.okstate.edu/stansbe/>). They claim that "video production enables authentic learning experiences for diverse students across the curriculum." (p. 7) which subsequently will benefit multiliteracies due to the range of work tasks that have to be undertaken in the process (see also Glenn 2003; and E4 above).

An example of a successful task involving multiliteracies is the production of the video 'Communication' made by N4's students. Here, the interdisciplinary approach was essential (see N4 in section 4.4.1.). N4 reports that her students were more energetic and motivated for this task, claiming, too, that they learn more by working with exercises where they have to control more disciplines and media (compare Glenn 2003). Throughout the process, then, the students realise how the diverse elements connect to each other and make a whole (see also section 2.2.5, Molander 1997). N4 puts it this way:

They see all the elements; it is just like the Kinder Egg.

Connecting to that, N4 and N5 state the importance of relating approaches in school to the world outside by for example using the communication media many children know in their private lives (compare to Stansberry and Schwarz 2003). This is in accordance with Cope and Kalantzis (2000) who argue for bridging the technological gap between homes and school, and with NLG (2000) who claim a pedagogy of multiliteracies in response to the growing multimodal ways of communication (see section 2.3.3.). Regarding computers for example, a recent OECD study shows that “school students who are established computer users tend to perform better in key school subjects than those with limited experience or a lack of confidence in their ability to perform basic computer functions” (<http://www.oecd.org/document/>). The study finds that “students who have used computers for several years mostly perform better than average”.

This section has examined whether the informants think interdisciplinary approaches in teaching and learning will extend multiliteracies. The research material shows that they all believe combined subject areas in a thematic scheme or a project is favourable for the development of multiple literacies.

5.4. Conclusion

In this chapter, the study has made the point that learning is the process of making connections. Although a few teachers see disadvantages about cross-curricular approaches, the study has shown that the teachers generally believe interdisciplinarity can develop literacies. Their presumption is partly based on evidence of their classroom practice and sometimes on their reading of academic literature. Based on the evidence found, which is admittedly very small, the English teachers seem to exercise integrated

teaching less regularly than the Norwegian teachers. This could be explained by the fact that in the Norwegian school there are several disciplines in each department (see section 3.4.1) which may perhaps pave the way for combined schemes:

My course of study includes four subjects so closely connected that we can hardly avoid interdisciplinary teaching schemes (N3).

Another possible explanation to more interdisciplinary teaching in the Norwegian school, or perhaps a consequence thereof, is the interdisciplinary exams:

We have interdisciplinary tests and exams which we try to prepare the students for throughout the year, and therefore, the Art subjects are targeted for integrated schemes (N1).

¹ On the other hand, she points out that the inflexibility of the curriculum at the moment in England would not allow for that (see Chapter 6).

6. Obstacles for implementing interdisciplinarity and possible ways forward.

6.1. Introduction

Chapter 6 will look at what the teachers perceive as barriers to interdisciplinary approaches, and suggest possible changes towards a school design in which interdisciplinarity might be more employed. Thus, section 6.2. will focus upon obstacles to interdisciplinarity and the study will show that the complications for integrated schemes are to a large extent the same in the two countries. Section 6.3. will concentrate on what changes the teachers think have to be made to facilitate more cross-curricular approaches, both on the individual and organisational levels. This section also includes a paragraph about school culture which is a central factor in a process of change. Furthermore, section 6.4. relates to ‘other’ issues which could not be incorporated in any other section, but which still are worth mentioning. Finally, section 6.5. provides the conclusion to the chapter. References to the questionnaire findings will be made appropriately.

6.2. Obstacles to interdisciplinarity

In the interviews, four of the English teachers clearly signal what they see as the main obstacles to cross-curricular teaching today. These are connected to ‘time’ and organisational or logistical matters (Pate, Homestead and McGinnis (1997). These findings mirror the questionnaire information in which eight out of 12 British informants¹ give ‘lack of time’ as the key reason for not practising cross-curricular teaching, and four informants mention reasons of organisational nature. For the Norwegian informants the situation is different. Seven of 32 teachers (21, 8%) argue a

lack of time, whereas nine teachers (28%) communicate organisational reasons for not practising interdisciplinarity² (See Chapter 4 and Gire Dahl 2002).

Four of the English interviewees call particular attention to the curriculum and timetable restrictions as barriers to cross-curricular approaches. One of them, E1, mentions the non-existence of cross-curricular activities they used to have earlier:

We did a health day, democracy day...but they're getting pushed out by the ...exam system and the curriculum at times, which is a shame, because the biggest problem is the timetable, restrictions of that... (E1).

E4 mentions logistical problems in organising cross-curricular schemes:

... you've got 200 pupils in each year, so if you're going to do a cross-curricular thing, you want to do it with everybody in that year, and just matching up 200 children who we might teach in ten different sets, with science children that are in different sets ... and it just logistically doesn't work (E4).

Besides logistics, E4 sees lack of time and a "very structured National Curriculum which determines what each department has to teach" (E4) as the main obstacles. E2 adds that teachers are "fighting against various sorts of rigid framework" as well as the administrative work load connected to teaching:

...the problem is that there is so much that is imposed on us, there's so much that you have to cover... One of the problems is that we have schemes of work that we are all supposed to deliver in a similar sort of way for children in a similar sort of age... It's not so much of how you deliver things, but about the number of things you have to address, so that you have lots of objectives you've got to not only meet, this is the National Literacy Strategy, not only got to meet a certain number of objectives for year 7, 8, 9, but you've got to be able to evidence that you've done that, rather than you are trusted as a professional to create your own way of delivering literacy... It's really the number of boxes you have to tick and it's really complicated to address and deliver the National Curriculum and the Strategy at the same time and make it all interweave and make sure that all the children get access to all those things when you might have 200 children and one set of this sort of book and that sort of play... (E2).

This teacher is clear about the stress she feels, the increasing time factor and the rigidity of the curriculum which leave her less chance to plan alternative schemes:

... it's just that we are inundated with these new initiatives and new expectations, and things change so much, ... if we did not have to have things changing all the time, imposed upon us, then we'd have more time to invent this kind of stuff... because people are so constrained by this is what you have to do to everybody, you can do things a bit more exciting (E2).

As regards pressure, Leonard, Bourke and Schofield (1998)³ argue that teaching is an increasingly demanding occupation of which “time pressures and organisational change have emerged in recent literature as the most significant sources of teacher stress” (<http://www.aare.edu.au/99pap/leo99542.htm>). Likewise, Brown, Ralph and Brember (2002) report teachers’ “bewilderment and angst at the scope and rate of change and the diversity of roles with which they were having to cope” (p. 6). This article also shows the teachers’ concern about “increasing variety and number of tasks” (p. 7), a heavier marking load and generally too little time to do their work satisfactorily (<http://education.newport.ac.uk/>).

With respect to the Norwegian interviewees, they all discuss the same issues as their British colleagues (Gire Dahl 2002); about lack of time for collaboration to prepare for integrated schemes, as well as organisational barriers, such as the set-up of timetables. This information is supported by the questionnaire answers which show that organisational questions and ‘time’ are the main hindrances for integrated approaches. Two teachers mention difficulties about implementing joint schemes with the General Subjects⁴, mainly due to the fact that these disciplines only have one teaching session a week:

I wish we could block schedule our teaching in topics projecting the General Subjects and, that we from now on would consider these matters when setting up timetables (N1).

Furthermore, what adds to the concerns above, are teachers' attitudes to interdisciplinarity (Gire Dahl 2002 and Glenn 2003) and the matter of sharing knowledge. These issues are brought up by five of the Norwegian informants who believe it might be to some extent difficult to adjust to a new system of openness, collaboration and sharing of knowledge; and disengage with the formula of each teacher keeping her own private record of schemes. The informants suggest that some teachers might not recognise the value of cross-curricular schemes. Furthermore, they say, it might in part be a question of each individual's ability and willingness to consider one's discipline in a continuum with others. Goodwyn (1992) (who explores what teachers regard as important in the teaching of English) indicates that interdisciplinarity is not highly prioritised, and that "cooperation is seen as 'a good thing' but...not a major concern" (<http://eric.ed.gov/>). On the other hand, Rush (1981) suggests that by our objections to integration, "instead of encouraging excellence, we may be limiting our students' intellectual options" (<http://uk.jstor.org/view/>). Goodwyn's (1992) observation, however, conforms to the rhetoric-reality gap discussed in section 4.2., which implies that teachers are generally positive to integrated teaching but fewer practise it.

This section has discussed the obstacles to interdisciplinarity in the schools. Teachers in both countries are concerned about the time pressure and organisational matters, such as the timetable restrictions. These findings agree with the questionnaire results which show that 'time' and 'organisation' are the main obstacles for cross-departmental collaboration. Additionally, a number of informants suggest that some teachers' attitudes may obstruct cohesive schemes.

6.3. Need for change

This section will discuss suggestions for changes that might facilitate for more interdisciplinary schemes in the schools. Propositions made by the English informants will be discussed first, and thereafter, the Norwegian ones. Two English teachers mention that more time is needed to address multiple literacies and different learning styles. Additionally, E3 discusses other issues, for example the need to try out cross-curricular teaching:

The thing is, you don't know what will happen until you try it, so building on from that, a new idea would come out from that that we had not seen, so we could pursue that as well, and new avenues of learning would be created from that, it's like giving people freedom to think, and when you give the freedom to think and the fertilisation of ideas, that's when it begin to double and create new ideas (E3).

E3 envisions a different scheme with departments working together, integrating for example creative writing, music, images or graphical illustrations. She believes that “if you had those three departments working together, it would create something very, very exciting in English” (E3). E3 is open for experimenting and risk taking in search for new ways. This is what Glenn (2003) and Pate, Homestead and McGinnis (1997) do in their quest for a new curriculum and new paths of learning (see Chapter 2), hence, it might be that teachers who are interested and willing to take risks are vital parts of the pack in school and curriculum design (Kaufman, Moss and Osborn 2003; Dimmock and O'Donoghue 1997).

Secondly, E3 addresses teachers' proficiency in the context of practising multiliteracies (Interestingly, she is the only teacher who brings up this point) (see also Gipson 2003):

...I think ...practise multiliteracies we would be better informed as deliverers of a particular subject, about the ways in which we can use multiliteracies, access to computers, film, history, art, design, technology... (E3).

She signals a need for in-service training in these areas:

If we have knowledge ... of ways we can use that and we offer children this, so we are going to create a generation of people who will be better used to using this material, and will then pass that down to the next generation and so on, so I think it's a question of changing the culture or, and certainly having a driving force in the school who can actually see this, and look ahead really ... (E3).

Correspondingly, in his report on ICT in schools as a means to transform education

Gipson (2003) points out the limited professional development:

...despite the millions ploughed into the initiative, little impact has been made systemically on transforming teaching and learning in classrooms across the country." (p. 25).

The subsequent paragraphs will discuss the Norwegian interviewees' reflections about what should be changed in the school. All the Norwegian interviewees emphasize 'organisational' and 'time' issues as the main hindrances to more interdisciplinary teaching (see also Gire Dahl 2002). These findings correlate well with the questionnaire information (See Figure 1) which lists 'organisation' and 'time' as the main obstacles for not practising collaboration across disciplines.

However, teacher teams⁵ (Dimmock and O'Donoghue 1997; Pate, Homestead and McGinnis 1997), which are the recent organisational structures at the school under

study, are perceived as realistic starters to more collaboration and cross-curricular teaching:

I believe that by the new organising of teachers into cross-curricular teams we will have a legitimate forum to plan interdisciplinary work ...for example, we could do topic periods teaching several disciplines that run parallel (N6).

Correspondingly, Pate, Homestead and McGinnis (1997) (see section 2.2.5.) discuss how their organising as a team helped them to build a coherent curriculum for their students. Additionally, the studies of Dimmock and O'Donoghue (1997), (discussing innovation and redesign of schools) look upon the team approach as central for the success of curriculum and administrative development.

Moreover, N5, who is in favour of fixed office hours, believes that a core office time for all teaching staff would facilitate for meetings and extended collaboration; in fact, she states that such core time might be required for extended interdisciplinary teaching. Secondly, she believes that for schools to survive in an increasing competitive world⁶, as educators they have to demonstrate flexibility in ways of teaching (see also Cope and Kalantzis 2000), and for that reason, N5 trusts interdisciplinary teaching and learning as one instrument for reaching such a goal.

6.3.1. School culture

In the Norwegian questionnaire information, five teachers (15,7%) claim they do not practise cross-curricular teaching due to a lack of culture or focus on such approaches (see Figure 1). In the Norwegian interviews, five out of six teachers mention a lack of a clear policy for interdisciplinary teaching in the school. N6 claims that traditionally teachers have been alone with their students and little collaboration with colleagues has

taken place. The informants do not agree about whose responsibility it is to provide for a policy of interdisciplinary teaching in the school. Two informants argue it is up to the teachers to provide for coherent learning, another would like the head of department to act on the issue, instead of leaving it to each individual teacher to decide. The two last informants claim the senior management team should initiate such teaching approaches. This is supported by Erickson (1998):

Principals are critical to the success of any schoolwide innovation or change. Teachers look to their leaders for guidance and support. When we are talking about something as fundamental to the learning process as the structures for curriculum and instruction, then the principal must be knowledgeable.” (p. 156-157).

(see also E3 in section 6.3. and Dimmock and O’Donoghue 1997). N2, for example, anticipates a strategy for implementing cross-curricular approaches in the school:

The same way as they have pushed forward the development of teams, the senior management could have focused on interdisciplinary teaching. Then more teachers would see, perhaps, that we have to try other methods... (N2).

Section 6.3. has discussed some ideas for change in order to encourage more integrated teaching. For the English teachers, more time is needed to experiment with integration of subjects to create new, interesting schemes. There is also a need for in-service training about how to deliver schemes involving multiliteracies. The Norwegians argue for more time to plan integrated teaching, but at the same time they see the present teacher teams as a good instrument for creating interdisciplinary activities. Fixed work hours are also mentioned in order to make more collaboration and interdisciplinarity possible. Additionally, section 6.3.1. discusses the policy of the school, and whose responsibility it is to implement integrated teaching. It has been pointed out that the senior managers’ role is important in this process. In the

subsequent section, the study will briefly mention some issues that have not been included in the above sections, but still are important areas to call attention to.

6.4. Other

Seven teachers communicate their concerns about matters connected to the use of multiple media, but the first point made is more connected to student participation in scheme design:

...it's completely changed now because children seem to have more of a say in how they're taught, and you hear them complaining about teachers, saying "it's boring you only teach us one way", I mean in our day, I wouldn't even think... (E5).

It seems like E5 is questioning pupils' criticism of methodology and content issues, perhaps also that pupils seem to get greater influence on lesson planning (see Glenn 2003). It is beyond the scope of the present study to discuss this matter. Still, it is interesting to note that none of the Norwegian teachers mention these issues. Over the last years in Norway, pupil democracy has been more focused, including pupils' right to participate in scheme designing (Monsen 1998).

The subsequent points relate to the use, or misuse, of computers and the Internet. Calling attention to what the study has previously said about the qualities of applying multiple media to advance literacies, the following statement may seem paradoxical:

...we should not lose sight of kids being able to read, think and convert information themselves, I think computers kind of do too much for them, kids are just copying and pasting research, not even reading through it or understanding it (E5).

Four of the six Norwegian teachers share this concern about pupils copying texts from the Internet (Stansberry and Schwarz 2003), but they also stress the importance of teaching them how to use the Net correctly. One teacher, however, is not alarmed by students' copying of the Net. She claims the Internet texts serve as good models from which they can learn how to create their own. Gradually, she says, they start composing their own personal texts.

E5 and N3 are in other ways critical to pupils' use and misuse of computers in school:

Computers can have their own problems because the kids will play behind your back..., watching television, stick on games before you know it, flicking on and off, so to hold the concentration and get them to think, I don't think being on the computer necessarily is the answer, yes it is a really good tool of researching, we can get access to all kinds of information really brilliantly... (E5).

According to N3 it is easy to misuse technological devices such as computers because the pupils are not critical enough to the choices they make. It might be tempting to use text, colour and sound without first having considered whether this formula is well-suited for the goal of the task:

The goals are very important ... what are the pupils to achieve? ...be careful that the specific effects are not used only for the sake of using them... (N3).

In this section some additional arguments have been briefly discussed. They relate to student participation in scheme design and some concerns some teachers have about the way some pupils use computers and the Internet.

6.5. Conclusion

The present chapter has been concerned with the obstacles for interdisciplinary teaching, and it is interesting to note that the Norwegian and the English teachers address the same main barriers to such practice. 'Lack of time' and 'organisational barriers' are the main problems, such as a heavy administrative workload and timetable restrictions. These findings are supported by the questionnaire results (see Chapter 4). Additionally, the time factor and the rigid curriculum cause a great deal of stress, which is confirmed in the literature. What are also seen as an obstacle are teachers' attitudes to combined schemes. A few teachers assume some colleagues might not be willing to leave the familiar territory of their subject area in a quest for a more coherent curriculum.

Secondly, the study has shown what thoughts teachers have about changes in the future to make more integrated teaching possible. Here, the informants claim the need for more time altogether, as well as a higher proficiency as deliverers of multiple literacies. An asset for joint teaching is teaching teams which are presently in function in one of the schools. The team work involves a set time for collaboration. However, it is assumed that set office hours for the teaching staff are necessary to facilitate for cross-departmental collaboration and preparation for interdisciplinary schemes.

Interesting, too, is the discussion about school culture or school policy, in which some of the Norwegian teachers ask for an official plan for interdisciplinary approaches. It might be that such steps would help to reduce the rhetoric-reality gap in the question of cross-curricular teaching, because all the informants of the present study are positive

to cross-curricular activities but only to some extent do these attitudes materialise in teaching.

¹ Considering the small size, the study will not deal with percentages when discussing the British material, but will do so for the Norwegian information.

² Importantly though, as mentioned before, the questionnaire data from the two countries can not be compared due to the low response rate in Britain.

³ The year of publication is not given but according to references made, the paper is published in 1998 or later.

⁴ Though it happens to some extent.

⁵ Which in the present context means that teachers working on the same course and the same year are organised in teams.

⁶ For example, the competition between private and public schools.

7. Conclusion

The purpose of this chapter is to sum up and conclude the work of the present study.

Section 7.1. summarises the main findings of the study as discussed in Chapters 4-6.

Section 7.2. discusses possibilities for further research and section 7.3. looks at possible implications for practice. Section 7.4. provides a critique of the study and its methods.

7.1 The main findings of the study

The questions the present study wanted to explore were the following:

1. Do the teachers' perceive interdisciplinarity as valuable?
2. Do the teachers believe interdisciplinary approaches will enhance pupils' literacies?
3. What do teachers perceive as barriers to interdisciplinary practices and what could be done to encourage more interdisciplinary teaching?

The first research question is explored in Chapter 4. The informants explain the concept 'interdisciplinarity', its value in general, with respect to motivation, variation and classroom management. The teachers explain interdisciplinarity in terms of activities across subject boundaries, subject reinforcement, and a rational and realistic curriculum. The teachers believe the approach is valuable as it lends itself to a broader context, includes various media, and can enhance learning outcomes. The pupils are assumed to be more motivated in integrated studies because they may see how the

disciplines relate to each other and to a greater whole. Cross-curricular studies are also valuable with respect to their qualities of bringing novelty to both teaching and learning. These findings corroborate with the questionnaire results, where learning in 'wholes', motivation and sharing ideas with others are seen as valuable aspects of collaboration across departments.

Furthermore, the teachers mainly agree that integrated teaching may be beneficial for classroom management. They believe the approach has a motivating effect, and subsequently, problem behaviour may decrease. However, one teacher argues that integrated teaching will not diminish misbehaviour for children with complex problems.

Towards the end of the chapter some negative aspects are discussed, such as a dislike for collaboration across departments and the fear of a dilution of disciplines in a combined scheme. All in all, however, teachers' perceptions of interdisciplinarity are positive. This is supported by the questionnaire response, in which all respondents think cross-departmental collaboration (on which integrated teaching is based) is valuable.

The second research question is discussed in Chapter 5; whether teachers believe interdisciplinary methods can enhance literacy and multiliteracies (see Chapter 1). All the participants believe that integration encourages literacies, and some have experienced such positive effects in their students. Several teachers claim that bringing together various media, such as art, music and technology can expand literacy due to its motivating effect. Likewise, interdisciplinarity is assumed to have a constructive effect on multiliteracies, because the one causes, or encourages, the other. Some teachers

think that a multiliterate environment is beneficial to learning because more neural connections are made in the brain.

Chapter 6 has discussed what the teachers perceive as the obstacles to interdisciplinarity. As the discussion proceeds, it becomes clear that the teachers' positive attitudes to interdisciplinary methods are not being turned into practical teaching accordingly, and the study is left with a sense of a noticeable rhetoric-reality gap (see below). The main reasons for not undertaking cross-curricular activities, suggested by the teachers, are the lack of time and issues about how the teaching is organised, such as timetable restrictions. Also on these points the interview information is supported by the questionnaire answers. Further, it is assumed that teachers' attitudes are influential on whether interdisciplinarity is exercised in the school.

The chapter includes a section about what changes ought to be made to encourage more integrated teaching. Here, the English and the Norwegian teachers agree that more time is needed, and the English teachers call for more in-service training. The Norwegian teachers point out teaching teams and fixed office hours are constructive measures to be taken. Some of them also bring into the discussion school policy, and whose responsibility it is to instigate interdisciplinary teaching as a systemic action. It is pointed that this task is the duty of both teachers and managers.

7.2. Possibilities for further research

The discussion about interdisciplinarity in upper secondary school is important, contributing and adding to the major argument of the extended notion of literacy (multiliteracies). The present study is only a minor contribution in that respect;

however, it might indicate some areas in which further investigation might be worthwhile.

One such area is the rhetoric-reality gap discussed above (see also Chapters 4 and 6). It refers to the fact that the teachers speak in positive terms about integrated approaches, but they practise it to a lesser degree. The reasons given in the interviews are limited time to plan integrated schemes, as well as other obstacles of logistical and organisational nature. However, only a small number of teachers were involved in the present research, which hinders any general conclusion to be drawn. Relating to this, Goodwyn (1992) claims that teachers perceive collaboration “as ‘a good thing’ but...not a major concern” (<http://eric.ed.gov/>) (see section 6.2.). Could a similar assumption be made for interdisciplinarity, and could it also be another explanation to the rhetoric-reality gap?

7.3. Possible implications for practice

Again, it is important to bear in mind that the size of the present study does not suffice for more than tentative conclusions. Still, it might leave educational professionals with a greater awareness about interdisciplinary approaches, and its relative potential for increasing learning outcomes. Secondly, the study may, to some extent, call attention to the importance of teaching multiliteracies as a consequence of the increasingly complex world we live in. Finally, the present research material is an evidence for the participants’ positive attitudes to cross-departmental collaboration and interdisciplinarity. This result might suggest a tendency in a larger teacher population, and subsequently, could propose a reconsideration of teaching styles.

7.4. A critique of the study and its methods

There are several factors that might have an influence on the results of research. In the case of the present study, the research was undertaken in only three English schools and one Norwegian school. 44 teachers answered the questionnaire and 11 teachers gave interviews. Second, no considerations were made with respect to gender; hence, the research sample constitutes only one male teacher (see section 3.3.). Third, the study aimed at interviewing teachers of various lengths of practice (which often correlates with 'age'), but the sample did not fully reflect this criterion (see section 3.3.). Due to these limitations, it is evident that the study and its findings cannot apply to all upper secondary school teachers.

Regarding the applied methods, the research findings are assumed relatively valid. The reason is that the questionnaires and the interviews elicited concurrent information, and the multi-method approach to the present research is assumed to benefit its quality. However, it is generally considered a danger that research may be skewed by biased information. First, the quality of the data could suffer by biased answers which were designed to match what the interviewee believed was the point of view of the researcher (Denscombe 2003). Second, there could be a chance that interviewees do not feel sufficiently comfortable in the situation (see section 3.6.).

Finally, it is tempting to think that a different angle to the present research questions could have given different answers, for example, the aim could have been to collect some evidence for the statement that interdisciplinarity is not a favourable approach in education.

Appendix I

Questionnaire

My name is Tove Holmbukt and I am a student in the department of Educational Studies at the University of York, and I am planning a dissertation about subject integration in the secondary school. By means of this questionnaire, I would like to get an idea of teacher cooperation across subject areas, and I would be grateful if you would spend some minutes on completing the questionnaire. Please tick the relevant boxes and write in where asked.

Thank you!

1. What department do you teach in? Name:.....
2. Do you plan schemes of work with teachers in other departments?
Often Sometimes Never
3. If you do, what departments? Name:.....
4. Do you cooperate across disciplines in other ways? Please give an example.

5. Do you see cooperation across disciplines as valuable?
Yes No
Briefly, give reasons for your answer.

6. Please answer this question if it applies to you: If you think cooperation across disciplines is valuable, what is the reason for not practising it?

Appendix II

Interview schedule

1. What department(s) do you teach in?
2. Teachers may use several methods in their work, for example cross-curricular approaches. In your view, what is cross-curricular teaching?
3. Do you see cross-curricular methods as valuable? Why/why not?
4. A traditional definition of 'literacy' is 'to be able to read and write'. Do you think cross-curricular methods will improve literacy skills? Give reasons.
5. (See text below). Do you think that cross-curricular methods in teaching will improve students' level of the range of literacies that have been focused upon over the last years? Give reasons.
6. Do you, or colleagues you know of, practise cross-curricular teaching? Why/why not?

About 'new literacies'/multiple literacies:

Traditionally, we have looked upon 'literacy' as being able to read and write. Over the last years, however, scholars have claimed that due to heavy impact of new technologies of for example computers, sound, image, 3D, colour, etc, 'new literacies' have emerged. Therefore, we can no longer speak of **one** single literacy, but **multiple** literacies.

Abbreviations and Coding

The following abbreviations are used in the text:

DT – Design and Technology

PBL – Problem-based Learning

NLG – The New London Group

ICT – Information and communication technology

With respect to coding, each teacher is coded by a capital letter and a figure. This system is used throughout the thesis:

E1, E2, E3, E4, E5: The English teachers

N1, N2, N3, N4, N5, N6: The Norwegian teachers

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