

Interdisciplinary teaching as motivation: An initiative for change in post-16 vocational education

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Abstract

A team comprising researchers in teacher education and teachers in secondary education vocational study programmes decides to plan and try out interdisciplinary teaching schemes combining the subjects of English and media studies. This is a two-stage study. Firstly, the research team wants to observe whether an interdisciplinary approach to teaching and learning will have positive effects on students' motivation and thereby their engagement with learning activities. Questionnaires are applied in addition to the researchers' participatory observations. Secondly, a longitudinal objective is to investigate whether the experience achieved has led to any changes in the way teaching and learning activities are organized. Teaching members of the team are interviewed. Drawing on the concepts elaborated and restricted codes, and assuming that traditional teaching is disciplinary and tends to favour the academically inclined students, this article argues in favour of altering the code by opening up the conventional disciplinary setting of students' learning. Thus, the main components of this article are a study of the students' response to working across the disciplines and a discussion of whether the inferences made by the research team during and after the interdisciplinary project have caused any new practices in the facilitation of teaching and learning activities in this school five years later.

1. Introduction

Nationally and internationally, the debate on education is coloured by the high dropout rate in secondary education. In Norway, the dropout figures are significantly higher in the secondary vocational programmes (42%) compared to the academic programmes (17%) (Statistics Norway 2015), and, as a consequence, the attention paid to the importance of students' social and cultural backgrounds is reinforced. Markussen (2010) points to a correlation between choice of education programme and social background, arguing that the typical student aiming for vocational studies wants fewer years of education, has lower grades, and comes from an academically poorer background than applicants to academic programmes.

Our research team¹ hypothesizes that one explanation of the dropout problem could generally be students' lack of motivation (Stroet, Opdenakker & Minnaert 2014). Taking their choice of education programme into consideration, it is generally anticipated that the students would be more motivated for the vocational subjects, in this case media studies, compared to the academic subjects, for instance, science or mathematics, and in this case, English. In our discussion below, we suggest that vocational versus academic disciplines may be understood as practice of different 'codes' (Bernstein 1974, 1990), and depending on the student's familiarity with, and acknowledgement of, them, they may have an impact on student motivation. By carrying out a series of interdisciplinary teaching schemes in our post-16 vocational study programme (media studies) in Norway in 2008-2009, the research team wants to investigate how it might effect students' motivation when we teach across subjects, integrating vocational and academic subjects (media studies and English). Interdisciplinary projects can be seen as a form of CLIL based teaching where topics in non-language subjects are taught in a foreign language. CLIL, Content and Language Integrated Learning, is an international term which covers a wide range of teaching and learning methods where foreign languages are applied to teach non-language subject content and aimed at increased competence in language, as well as in the non-language subject (Coyle, Hood & Marsch 2010). In this article, we use the terms 'interdisciplinarity' or 'interdisciplinary project' since the project in question is limited to a short period of the school semester and limited to a specific topic.

This article discusses whether interdisciplinary approaches would make education more engaging, motivating and meaningful to the students, implicitly, how such approaches might address the dimensions of student population diversities when it comes to vocational instead of academic preference. Beyond our team's ambitions of improving our teaching practices, we wish any positive effects of our interdisciplinary approaches to gain foothold in the overall teaching methods in the school. Thus, the article also investigates whether the concrete actions and reflections in the research team have to any extent spread to other programmes, teachers or managers in this particular school. What is not within the scope of this article, but nevertheless of

¹ Our research team consists of four teachers and two researchers. The teachers have master's degrees in English, pedagogy and media studies respectively, and one of them is also a researcher in the interdisciplinary project. The second researcher has a background in teaching, as well as a PhD in English and works in teacher education as associate professor in English. The teachers have taught media studies and English for several years in the vocational school where the project is done.

great interest for a later study, is to what extent our findings might contribute towards educational design such as curricula and methodologies in the Norwegian secondary education.

Our scheme designs are directed at what we believe will be motivating and meaningful to the students. We want to make teaching and learning more authentic and effective by incorporating learning targets of several subjects in one scheme with the objective of opening up new and wider perspectives. Within a social constructivist approach to learning, students are seen as active learners who connect experience from different fields of life to construct meaning (Palincsar 1998). Combining knowledge from a variety of sources to create new insights is the ideal in social constructivism, and, thus, it is appropriate to ask in what ways we, as educators², could connect 'school life' and 'life outside school'. The project we want to put into practice implies systematic thinking of curricula and scheme design that may comply with the diversity of study preferences among our vocational students.

2. Theoretical background and methods

In our discussion of educational change, we find Bernstein's (1974) language classification codes an interesting point of departure. Bernstein distinguishes between the restricted and elaborated codes, which he claims are functions of different social structures; i.e. they tend to be found among working class and middle class members, respectively. Briefly explained, the language codes differ with respect to e.g. cultural identity markers and degrees of linguistic complexity and detail (Bernstein 1990). Some scholars argue against Bernstein's theoretical framework, partly because it is seen as a deficit view of students from particular socio-economic groups (Edwards 2009). Our research team finds Bernstein (1974) interesting because of his claim that school pedagogy is predominantly prepared for the elaborated code, and his argument that the education system contributes to reproducing and legitimating societal class differences (Chouliaraki 2001). We suggest the notion 'code' could illustrate how the school as an institution contributes to the preservation of social control. In our view, Bernstein draws a social structure that may associate with the structure of Norwegian secondary education, i.e. vocational and academic programmes, which, to some extent, seem to attract students from lower and higher social backgrounds, respectively (Markussen 2010).

Hence, according to Markussen (2010), the education system reproduces the social inequalities in society. This is not in harmony with ideas of democracy and equality, and Bernstein (1974) claims that the foundation for a democratic social development is that all students are given similar opportunities for success and for being heard. Thus, Bernstein (1974) believes that school is an important factor in the development of democracy. Although the Norwegian Curriculum The Knowledge Promotion Reform (Kunnskapsløftet) (UDIR 2013) shares Bernstein's belief of democracy, it might be slightly ambiguous. An evaluation report by NOVA, Norwegian Social Research, suggests that

² In the present paper, the term 'educator' implies 'teacher' and 'researcher', thus, also covers 'research team'.

“Kunnskapsløftet requires a greater focus on promoting knowledge and academic and basic skills. The school is ... to a greater extent oriented on the type of knowledge and skills that ... are to a particular extent demanded ... by the well educated middle class. The new demands on students from the reform are almost playing in tune with the highly educated, and students from such layers will therefore perhaps be better equipped to adapt to the learning goals under Kunnskapsløftet” (Bakken & Elstad, 2012, 260).

In our view, aiming for democracy in education involves debating, for instance, what set of social, pedagogical and methodical approaches should be used in school, teachers’ attitudes to teaching and learning, and organisational issues. Monotonic reference to one ‘code’ or the other, as demanded by specific social groups, may be seen as counterproductive towards the goal of motivating all learners to reach their full learning potential. This indicates that the practice in Norwegian schools is not always in tune with the idea that all students, independent of education programme, social background or personal capacities, should be offered learning schemes with opportunities for success. The research team’s introduction of interdisciplinary work attempts to bridge this gap between rhetoric and reality.

That school pedagogy is predominantly prepared for the elaborated code (Bernstein 1974; Bakken & Elstad 2012) benefits the children already socialized into this code. For children more familiar with a restricted code, Bernstein (1974) claims that a social change is expected. This disvalues the language and culture of the children concerned and psychologically separates the individuals from their families and communities. Bernstein (1974, 136) puts it this way:

“A change of code involves changes in the *means* whereby social identity and reality are created. This argument means that educational institutions in a fluid society carry within themselves alienating tendencies.”

It is this dynamism of code and alienation, on the one hand, and a culture of democracy offering equal opportunities, on the other, which is tangent to our discussion on increasing student motivation through interdisciplinary work. We believe code and alienation do not comply with each and every student’s skills and abilities regarding knowledge and learning. It is essential to continuously reflect upon the culture or perspectives of one’s own educational practice. Educators may possess considerable power to shape and design education; hence, we have a corresponding responsibility to question whether we practise teaching principles that motivate and benefit all learners. If teaching becomes a repetitive standardized pattern, we may ask whether teachers practise their responsibilities to adapt methods and curricula to achieve an ambition of ‘no child left behind’ (U.S. Department of Education n.d.). In 2016, Finland will implement a new national curriculum aimed at student-centred learning communities, focusing on connecting or integrating subject areas, facilitating differentiated instruction and learning as social processes. To prepare students for their future lives in a complex world, Finland focuses on motivation and the importance of students developing multifaceted, or diverse, competences (Tulivuori 2015). These ideas are supported by The New London Group (2000) consisting of the researchers Bill Cope, Mary Kalantzis and Gunther Kress among others. They debate what

constitutes appropriate teaching in this day and age, what children need to learn to be able to navigate in our shifting world and in the light of the increasing multiplicities of the future world. It might well be that we have to rethink the ‘what’ and ‘how’ of teaching and what new learning needs pedagogy should address (The New London Group 2000). Brough (2012) and Perkins (2009), who argue in favour of connecting instead of disconnecting subject areas, support this view, which is also materialised in the Norwegian project FYR³ (academic subjects, vocationalisation and relevance). This project aims at implementing, maintaining and developing vocationalisation of academic subjects in secondary vocational programmes in order to possibly increase student motivation, and FYR’s ultimate goal is to improve the quality of vocational education, which effect may be that dropout numbers in secondary education are reduced. It is a national goal that by the end of 2016, all secondary vocational schools work actively and systematically with integrating academic and vocational subjects. Our research team’s interdisciplinary work in 2008-2009 is thus a concrete example of the FYR strategy (Udir 2015). Additionally, the reports published by the Ludvigsen committee (NOU 2015) about future ambitions for Norwegian schools contain both the Finnish ideas as well as the FYR strategy which all aim at subject integration and collaboration. Hence, our research team is interacting with some of the most challenging issues we face as educators, such as facilitating increased student engagement in order to make the curriculum more interesting and meaningful to the diversity of learners (Cope & Kalantzis 2000; Hayes 2010; Brough 2012).

According to Hayes (2010, 382), interdisciplinarity is defined as “combinations of subjects ... within project or thematic work...” or, as in Moran’s words: “any form of dialogue or interaction between two or more disciplines” (Moran 2002, 16). As Professor Elam at Stanford University maintains, students become the resource because we see interdisciplinarity in practice through their work (The Center for Teaching and Learning 2007). Our research team hypothesizes that through an interdisciplinary approach, students would “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 ...” (Holmbukt 2007, 47-48). Our team anticipates that integrated schemes would build a more coherent, seamless curriculum that encourages joined-up thinking and prepares for a holistic view of knowledge. Students would learn by examining issues and build on their pre-existing knowledge; and, to work towards such aims, our students are given open, widely framed tasks in which they act according to constructivist principles. Bernstein (1974) uses the notion ‘framing’: “Strong framing entails reduced options; weak framing entails a range of options. Thus, frame refers to the degree of control teacher and student possess over the selection, organisation, and pacing of the knowledge transmitted and received in a pedagogical relationship” (Bernstein 1974, 205-206). Our interdisciplinary work is typically weakly framed, as students are given more control of the work content and processes. We believe weak framing feeds the desirable aim of teaching children to think, and, according to Burden and Williams (1998), “the ability to analyse situations, to think critically, to solve problems logically and also creatively, and to face life’s revelations with judgement, intelligence and flexibility assume paramount importance” (Burden & Williams,

³ Fellesfag, Yrkesretting og Relevans

1998, 189). In this process of problem solving, interdisciplinary work may easily open up the way to variation in ways of learning. Learning in a social constructivist perspective gives the students the opportunity to assume a learning cycle of engagement, exploration and explanation according to their own individual needs, and the teachers would act as facilitators of the learning process and knowledge creation (Gire Dahl 2002; Holmbukt 2007). This principle involves not only subject integration but also subject reinforcement, i.e. the transfer of knowledge from one field to another. Subject reinforcement and the extension of knowledge happen according to what Vygotsky (1962) terms ‘the zone of proximal development’⁴, and “as this is achieved through social interactions... the approach to learning can aptly be called ‘social constructivist’” (Burden & Williams 1998, 190). In the social constructivist perspective, motivation is connected to the contextual expectations built into the social interaction (Vygotsky 1962).

Motivation, as a theoretical concept, explains how a goal-oriented activity is initiated and maintained. In school, motivation describes the effort and attention given to learning activities (Wentzel & Brophy 2014) and is usually characterized as either external or internal. Examples of external motivation are the prospects of receiving rewards or higher marks, or other goals that have limited relevance to the learning activity itself. Internal motivation, on the other hand, is the internal drive to continue an activity that is found interesting and meaningful; hence, the work process is kept alive due to interest in the issues, the learning material or the activity (Wentzel & Brophy 2014; Pate, Homestead & McGinnis 1997; Dewey 1916). In order to strengthen students’ inner and outer motivation for their work, we have to consider the interaction between the fulfilments of different needs among students (Maslow 1943). In this approach, the need for positive feedback is seen as an outer motivation factor, whereas their creativity while working with the given task and their interest in collaborating with fellow students may be viewed as stemming from an inner and deeper motivation.

With respect to methodology, the methods used for collecting data are educators’ participatory observations and student questionnaires in the interdisciplinary project and interviews with two teachers for the longitudinal observations. The educators observe the students during the different stages of their work, e.g. the planning and execution of their film work. During the interdisciplinary project our research team notes that students, who by traditional, teacher-centred approaches would not respond to learning activities with enthusiasm and excitement, now are active, creative and productive in their group. Our observations are logged and discussed in our weekly team meetings, which are important arenas for reflection and discussions throughout our project. Five years later, the teacher informants comment upon the same type of change in student behaviour and motivation that we observed in 2008-2009 (cf. Section 5).

Towards the end of the school term, the students are presented with the following questionnaire:

⁴ The zone of proximal development is an important principle of Vygotsky's work, defining the range of tasks that a child can perform with the help and guidance of others.

1. What is your favourite subject?
2. Why is this your favourite subject? Explain.
3. What do you think about working in an interdisciplinary way?
4. Do you prefer to work with one subject at a time or with several subjects integrated?
5. Why would you prefer to work this way? Explain.
6. What work methods would you like to use more in school?
7. On a scale from 1 to 10, what is the most preferable way to work in school?

Questions 1 and 2 will inform the research team about the students' favoured subjects and also prove or falsify our hypothesis about their favoured subject being the vocational and not the academic subjects. Questions 3-7 in particular are designed to generate information about the students' views and attitudes regarding interdisciplinary methods compared to traditional, teacher-centred approaches. The final question asks them to rank five alternatives (see Table 1 below) from 1 to 10, with 10 as the highest score. As the research team is mainly interested in the contrasts in student responses, we only include the number of scores in the 0-4 and 7-10 categories, omitting those of 5-6 (see section on Findings below).

For the longitudinal perspective of this study, two key members of the teacher team from 2008-2009 have been interviewed. The teachers, Informant 1 and Informant 2, are in their fifties, represent both sexes, and they both hold MA degrees in education. They are experienced teachers, having taught secondary classes for several years, including media studies. Their experience and key roles in the interdisciplinary project make them obvious interview informants five years after the project finished. Semi-structured interviews are used to investigate whether the interdisciplinary work has led to any changes in practice on any level in the school. The interviews are tape-recorded and transcribed. The information provided in the first interview is validated against the information gathered in the second interview, but Informant 2 also brings in some additional perspectives. The interview guide is as follows:

1. After implementing our interdisciplinary project, is it possible to see any change in the school (e.g. teaching practice, attitudes to interdisciplinarity among teachers and school management, school culture, team work, planning, etc.)?
2. Do you still work with integrated schemes in media studies? Why/why not?
3. What are your present views about interdisciplinarity?
4. What does the school management team seem to think about interdisciplinarity now?
5. How do you think the idea and practice of interdisciplinarity will develop further?
6. Have the students modified their attitudes to integrated schemes?

3. The interdisciplinary project

We shall discuss one specific case, an interdisciplinary assignment, which combined the academic subject, English, and several vocational subjects within media studies: media design and media expression, media production, media communication and film studies. The students were in their first year of post-16 education. This was a heterogeneous group of 30 students, several of whom qualified for special needs education, which required individually adapted plans

in one or more subjects. Due to this diversity, the levels of competence also varied considerably. Some students were relatively high achievers in English, whereas others performed towards the bottom end of the scale. Likewise, their motivation to work on theoretical issues also varied to some extent. The team of teachers and researchers systematically tested out carefully planned interdisciplinary schemes to investigate whether specific changes in schemes would affect student motivation and involvement with curriculum work. Higher student motivation was the research team's ambition. Bearing in mind our earlier discussion on 'code', we believe our team had prepared the ground for a type of code implying a variety of methods. We anticipated that the students would be more motivated to engage in various learning activities that combined their vocational subjects with the academic subject, English.

In the following, we shall present one student assignment as an example of interdisciplinary work. This is the assignment given to the students:

“Interdisciplinary assignment

Subjects involved: English, media design and media expression, media production, media communication, film studies.

Title: American Life

You are going to make a film that illustrates how the USA, in one way or another, influences our everyday lives. The contents of the film should be inspired by the text 'Made in America' in your English textbook, what you have learnt so far about media and media influence, and your own personal experience. Make a documentary or a short film. Length: 2-3 minutes. Work in groups, and prepare, shoot and edit the film.”

In addition to the making of the film, the groups performed oral presentations about media's impact on people, explained the choices made during their work process, and wrote individual evaluation reports and work logs. The research team designed the scheme on specific learning goals in the Knowledge Promotion Reform 2006 (i.e. the Norwegian national curriculum), against which the answers to the assignment were assessed. Below we shall focus on the work of one group. This group chose to focus on the fast food chain, Burger King, and its restaurant in the centre of town. The students wanted to make a documentary. Over six days, they wrote a synopsis, scheduled the work, did the actual shooting of the scenes, edited and produced the film. On the last day they showed their work to the rest of their class. The film consisted of the following: In the opening scene, the main character arrives at the restaurant front door, presents herself in front of the camera and continues with the following words: “In my class we have a school project about America and how American culture is affecting our everyday lives. My group has decided to make a documentary about the American food chain, Burger King ...” In the continuation we see her interviewing the manager, asking questions about the food, what age group their guests are, etc. This interview is carried out in Norwegian and subtitled in English. Later some people in the street are asked questions about the Burger King food, whether they like it or not, etc. These interviews are also given in Norwegian and subtitled in English. Thereafter, another student presents background information about the food chain

and, finally, the last two students give information about specific products. Music is fed in on parts where nobody speaks, which gives the film a sense of totality. This is an example of how one of the student groups responded to the interdisciplinary project implemented in our classrooms and which provides the foundation for the subsequent research.

4. Questionnaire findings

This section discusses the findings in the student questionnaire. Questions 1 and 2 ask students to name their favourite subjects and give reasons for their choices. A small minority of four students prefer subjects such as physical education, mathematics and Norwegian, explaining that these subjects are ‘fun’ or ‘easy’⁵. However, the majority of students favour vocational subjects because they like to learn about photography, making films, etc. The students’ responses to Question 3⁶ can be categorised in three groups. One third of the answers may be seen as neutral, since students typically indicate that interdisciplinarity is ‘ok’. The second third of the answers is negative; for instance, the students think the method is boring. The last third of the answers is positive, as the students indicate that they like to integrate subjects and think it is ‘fun’. Question 4⁷ receives 12 clear answers in favour of interdisciplinarity, while seven prefer single subjects. Then there are four answers indicating that preferences towards integrated or single subject work depend on the assignment given. Question 5⁸ asks the students to give reasons for their preference. The reasons why students favour interdisciplinary tasks are listed below (our translation into English):

1. It is easy in a way; we get more things done!
2. I work together with others and do not feel alone
3. Less stressful, gives a better overview
4. It is easier and more perspicuous
5. It is a freer way to work
6. More fun, we combine a lot of subject fields
7. Easier to learn, and more practical work
8. Because variation is good with respect to stress and motivation
9. It is good; I like to integrate subjects. It makes everything a lot more interesting
10. It is a lot more challenging
11. I get less homework (in other subjects)
12. It is informative which makes the school days easier and more interesting
13. Because it is easier to get higher marks by being active (as opposed to sitting at one’s desk all the time)

In comments 1), 4), and 5), the students express a positive attitude towards the work method. They point to the freedom and joy they experience while working with interdisciplinary topics. It is seen as less stressful. Such emotional aspects may be important factors regarding

⁵ These will not be discussed any further.

⁶ What do you think about working in an interdisciplinary way?

⁷ Do you prefer to work with one subject at a time or with several subjects integrated?

⁸ Why would you prefer to work this way? Explain.

their inner motivation for working with the given task. Likewise, the comment given in 2), deals mainly with the students' inner motivation and the value of the social interaction that Vygotsky (1962) emphasizes. In addition, comment 10) speaks of the inner motivation among students; to find interdisciplinary work "challenging" is in line with Maslowian notions of the various needs that human beings hope to fulfil and where the need for having stimulating tasks is at the top of Maslow's (1943) well-known pyramid. Statements made in comments 11) and 13) exemplify the typically outer motivation factors; the anticipation of getting less homework and higher marks may be seen as clear-cut examples of outer motivation. The remaining comments provide a combination of grounds stemming from inner and outer motivation and the advantages of working in interdisciplinary projects. The students state that they get more practical tasks, that there is more variation in the working methods applied, and that this strengthens their motivation. One of the students (3) claims that interdisciplinary work provides a better overview of the individual subjects.

The above list of statements coincides largely with the findings in Holmbukt (2007). In this study, the informants generally see cross-curricular schemes as beneficial to students' learning. They believe that integrated schemes "will have an effect on pupils' motivation" (Holmbukt 2007, 54). Pate, Homestead and McGinnis (1997, 8) claim that "curriculum integration and motivation go hand in hand" and Glenn (2003, 148) states that "integrated instruction is a worthwhile curricular approach as it motivates students and helps encourage...learning". These claims conform to our student statements about motivation and variation, and emphasise the values of encouraging engagement and participation in learning activities.

With respect to Question 6⁹, it generates six answers in favour of group- and interdisciplinary work, and four expressed a wish for more media- and practical work, which both are closely connected to interdisciplinary approaches. The remaining answers indicate satisfaction with the situation as it is or suggest concrete assignments rather than 'methods'.

Information gained from Questions 3-6 suggests that a minority of students are dissatisfied with interdisciplinary work, arguing that it is 'difficult' and 'too much to control at the same time'. Finally, in Question 7, the students are asked to express their preferences with respect to ways of working with learning activities and are asked to rank each alternative below by giving scores on a scale from 1 to 10, (10 is the highest score).

The following data emerged¹⁰:

Table 1. Students' preferences

Category		Scores 0-4	Scores 7-10
1	Lecture by teacher. Students listen and take notes	14	3
2	Lecture supported by PowerPoint, film,	6	9

⁹ What work methods would you like to use more in school?

¹⁰ The category 'Scores 5-6' is omitted (see section on theoretical background and methods).

	the Internet, etc.		
3	Interdisciplinary tasks	7	14
4	Group work	4	14
5	Independent work	6	8

As the table shows, interdisciplinary tasks and group work receives the highest scores, and we may consider these figures rather affirmative to the extent that 14 students give these two categories a score between 7 and 10. Contrastingly, only three persons give the higher scores to the ‘Lecture by teacher’ category (category 1), and 14 give this category a score of 4 or lower. Further, the table shows that the categories ‘Lecture with Powerpoint/film/the Internet’ (category 2) and ‘Independent work’ (category 5) are rather similar in scores, ranging from six to nine votes. The difference between categories 1 and 2 is also interesting to note. Only three students give high scores to the category ‘Lecture by teacher. Students listen and take notes’, but when lectures are supported by technology (category 2), the total of high scores increases to nine votes. This may indicate that the learning environment that media and technology create has the potential to motivate students (Heafner 2004). Media and technology are also essential in interdisciplinary work. Hence, Table 1 shows a clear divide in students’ most preferred ways of working: between methods¹¹ where they collaborate and work on joint tasks (categories 3 and 4), and methods more individually oriented (categories 1, 2 and 5). These findings correlate with data gained from Questions 3-6. The larger proportion of students is neutral or positive to social constructivist approaches to learning, and this agrees with this view of knowledge construction. According to social constructivism, people learn in interaction with others, and knowledge is a result of a social process (Gire Dahl 2002; Palincsar 1998; Dewey 1916).

5. Interview findings

Since the project took place during the academic year 2008-2009, it is interesting to examine whether it has had any durable effect in the school. Hence, semi-structured interviews are carried out five years later with two of the key teachers. The interviews explore whether the project has caused any change of practice, for example at the systemic level in the school, whether interdisciplinary work is now more facilitated and encouraged, or whether our project has contributed to new perspectives about interdisciplinarity, teaching and learning. It is also interesting to learn what the interviewees anticipate about future subject integration (cf. interview guide above).

The interviewees state that changes have taken place. The school managers have approved changes in teacher schedules in the sense that within each team the teachers are able to organize teaching in time-specific periods. In practice, this means that, for example an English teacher may concentrate his/her teaching over a definite period, and thus, teach less over the next period. The new flexibility offers solutions to logistical problems that might otherwise arise. The question still remains, however, whether teachers prefer their classroom time to be distributed so

¹¹ The term ‘method’ is used here to address ways to work on learning tasks. Thus, the term may have a relatively wide reference.

unevenly and whether this arrangement is a way of organising work that is desirable in the long run.

The interviews indicate that the school has not transformed its educational profile into one that focuses on interdisciplinarity in particular. Changes that are more obvious, however, concern the staff's attitudes to interdisciplinary teaching. From being positive to integrated studies in 2009, the school managers have now stated that interdisciplinary approaches are something they favour, and accordingly, the teachers are encouraged to initiate schemes across subject fields. Informant 1 claims the managers' attitudes have changed from being positive to actually actively encouraging the teachers to alter or modify their practice, correlating with a holistic view of learning. Currently, these issues are often debated in the school staff meetings, but in 2009 these discussions were only taking place within the school's media studies team. Likewise, Informant 2 argues that the change in the school mainly concerns the teachers themselves, and their own reflections on teaching and learning. Informant 2 claims that the initial interdisciplinary experience has influenced the teachers who were involved at that point; one example of a project that has actually been carried out every year since 2009 is the assignment, 'American Life', discussed in this article.

The idea of interdisciplinarity has spread to other education programmes and subject areas, e.g. art and design. The collaboration of students in the making of magazine front covers is just one example and involves processes such as design, photographing and the production of the magazine cover. A second example of integrated tasks is a project on gene-modified food. From the teachers' point of view, integrating natural science and programme subjects is a positive experience with respect to student motivation and engagement. This and other integrated schemes have been successful to such an extent that the teachers have decided to develop them further and make them part of the annual teaching plan. Student enterprise projects (entrepreneurship education) are also activities in this school, and various subjects will feed in when students work on business concepts, set up and manage budgets, and produce marketing plans, brochures and posters. A prerequisite to successful integrated tasks, however, is that schemes are well planned and prepared.

According to Informant 2, the avenues of interdisciplinary teaching have contributed to a more interesting work life in the school. Yet, both informants point out that the learning effect of interdisciplinary schemes is not measured or investigated, and that this ought to be an important aspect for future research. Longitudinally, they claim that it is relevant to investigate whether interdisciplinary teaching could meet some of the challenges regarding high dropout rates (Witte & Rogge 2013). It is considered important to discuss measures that can be taken at the institutional level.

According to Informant 1, joint planning is still an important part of the foundation for interdisciplinarity. In the spring, the media studies team has sessions for planning the next academic year, and with their annual subject plans as a starting point, the teachers discuss and define topics in which both academic subjects and vocational subjects will be included. The goal

for the near future is to implement interdisciplinary schemes in all three years of media studies where

“students will be actively engaged with interesting and relevant problems; they will be able to discuss with each other and with the teacher; they will be active inquirers rather than passive; they will have adequate time to reflect; ... and they will reflect seriously about the constructions produced by other students...” (Phillips & Soltis 2009, 51).

Students in the media classes are presented with ‘open’ or weakly framed learning activities, entailing a range of options in problem solving. Thus, they are given the freedom to use their thinking skills in a wider scope as opposed to activities where the teachers control and detail the tasks, reducing students’ options in creating knowledge and solving problems. The weak framing (Bernstein 1974) opens up the way to a variety of answers with respect to content and form. According to social constructivist perspectives, teachers in this school “oppose the view that knowledge is built up by isolated individuals, and they stress that knowledge construction within the disciplines is a social activity” (Phillips & Soltis 2009, 50). They seem to be in agreement with the psychological constructivist von Glasersfeld (1995), who argues that students are not passive recipients of information or instruction but actively engaged in problem solving and meaning-making. They are exposed to a range of stimuli from which they will investigate, experience and construct their own individual knowledge (Glasersfeld 1995; Phillips & Soltis 2009).

6. Conclusive remarks

It seems that some changes have taken place in this post-16 vocational school. The introduction to the interdisciplinary approach to teaching, presented by the research team in 2008-2009, has had some extending effects, mainly in the team itself, but also on other teams in the school. The teacher informants hold the view that less change has taken place in the school as a system, but, according to them, the school managers take more interest in interdisciplinary work by encouraging and facilitating such practice in the school as a whole. However, whether teaching across subjects is practised or not still depends on the individual teacher and his/her personal interest in this approach. This situation may however change as a result of the FYR initiative.

Interdisciplinary schemes, like the one we have discussed here, might correspond well with current attempts at vocationalising language learning in secondary education.

What remains to investigate and measure is the students’ learning outcome of an interdisciplinary practice in the school. At this point, the teacher informants cannot say whether students actually learn more compared to single subject teaching. This kind of investigation would need to consider not only the learning outcome in the individual subjects involved, but also the more general aims of the national curriculum, such as for instance collaboration and creativity. Furthermore, our research team believes that teaching across subject fields is an interesting approach to increase student motivation (cf. Brough 2012) as the material suggests that students approve of interdisciplinary and collaborative approaches to learning. Taking Bernstein’s concepts of code and framing into consideration, and by opening up to a variety of learning methods, a more diverse student population can become dedicated students who are

motivated to increase their input and efforts. We believe it is worthwhile taking this observation into consideration in the pursuit of ensuring more students pass secondary education.

It is important to bear in mind that the size of the present study does not suffice for more than tentative conclusions. Still, since the majority of students of this study find interdisciplinarity appealing, it might suggest a tendency in a larger vocational student population. Our study suggests that interdisciplinarity appeals to a wider range of students, including the ones who might, to a lesser extent, hold the academic qualities of Bernstein's (1974) elaborated code. Bernstein's claim that social control is preserved due to 'code' is, in our view, echoed in secondary education today, to the extent that teaching is largely aimed at academically skilled students (Bakken & Elstad 2012). Consequently, to achieve the goal of equal opportunities for all, curricula have to be negotiated and delivered by diverse approaches, and it might be necessary that teachers expand their range of teaching methods. Interdisciplinary work may be one creative approach in the quest for meaningful and motivating strategies that may benefit the larger student population.

References:

- Bakken, A., & Elstad, J. I. 2012. *For store forventninger? Kunnskapsløftet og ulikhetene i grunnskolekarakterer*. [Great expectations? The Knowledge Promotion and the differences in students' marks]. NOVA - Norwegian Social Research. http://nova.no/asset/5587/1/5587_1.pdf, accessed 15.11.14.
- Bernstein, B. 1974. *Class, codes and control - Volume 1 Theoretical studies towards a sociology of language*. London: Routledge.
- Bernstein, B. 1990. *The structuring of pedagogical discourse - Vol IV Class, codes and control*. London: Routledge.
- Brough, C. J. 2012. Implementing the democratic principles and practices of student-centred curriculum integration in primary schools. *The Curriculum Journal*, 23 (3), 345-369, DOI: 10.1080/09585176.2012.703498
- Burden, R., & Williams, M. 1998. Pulling it together: The challenge for the educator. In R. Burden & M. Williams (eds.), *Thinking through the curriculum*, 189-197. London: Routledge. <http://site.ebrary.com/lib/tromsoub/docDetail.action>
- Chouliaraki, L. 2001. Pedagogikkens sociale logik: En introduktion til Basil Bernsteins uddannelsessociologi. ["The social logic of pedagogy - An introduction to Basil Bernstein's Education Sociology". In *Pedagogy, discourse and power*]. In L. Chouliaraki & M. Bayer (eds.), *Pedagogik, diskurs og magt*, 26-70. Viborg: Akademisk.
- Cope, B., & Kalantzis, M. (eds.). 2000. *Multiliteracies: Literacy learning and the design of social futures*. New York: Routledge.
- Coyle, D., Hood, P. & Marsch, D. 2010. *CLIL, Content and Language Integrated Learning*. Cambridge: Cambridge University Press.
- Dewey, J. 1916. *Democracy and education*. New York: The Macmillan Company.

- Edwards, J. 2009. *Bilingual education and bilingualism: Language diversity in the classroom*. Clevedon, UK: Multilingual Matters. ProQuest ebrary.
- Gire Dahl, A. 2002. *Prosjektarbeid som innovasjon i den videregående skolens metodikk: Om læreres beredskap for å implementere metoden*. [Project work as innovation in upper secondary school methodology: On teachers' readiness to implement the method]. Doctoral dissertation. University of Oslo, Norway.
- Glaserfeld, E. von. 1995. *Radical constructivism: A way of knowing and learning*. London: Falmer Press.
- Glenn, W. J. 2003. Learning to let go: Student participation in the development of an integrated English curriculum. In D. Kaufman, D. M. Moss, & T. A. Osborn (eds.), *Beyond the boundaries: A transdisciplinary approach to learning and teaching*, 145-154. Westport: Praeger.
- Hayes, D. 2010. The seductive charms of a cross-curricular approach. *Education 3-13: International Journal of Primary, Elementary and Early Years Education* 38 (4), 381-387. DOI: 10.1080/03004270903519238.
- Heafner, T. 2004. Using technology to motivate students to learn social studies. *Contemporary Issues in Technology and Teacher Education*, 4(1), 42-53. Association for the Advancement of Computing in Education (AACE).
<http://www.citejournal.org/vol4/iss1/socialstudies/article1.cfm>, accessed 20.08.15.
- Holmbukt, T. 2007. *Teachers' perceptions of interdisciplinarity and the extension of literacies*. MA thesis, University of York.
<http://www.ub.uit.no:8080/munin/bitstream/handle/10037/2287/article.pdf?sequence=1&isAllowed=y>, accessed 10.01.16.
- Markussen, E. 2010. Valg og gjennomføring av videregående opplæring før Kunnskapsløftet. *Acta Didactica Norge* 4(1).
<https://journals.uio.no/index.php/adno/article/viewFile/1057/936>, accessed 25.08.15.
- Maslow, A. 1943. A theory of human motivation. *Psychological Review* 50(4), 370-396.
- Moran, J. 2002. *Interdisciplinarity*. London: Routledge.
- Norges offentlige utredninger (NOU). 2015. *Fremtidens skole*.
<http://nettsteder.regjeringen.no/fremtidensskole/files/2015/06/NOU201520150008000DDDPDFS.pdf>, accessed 10.01.16.
- Palincsar, A. S. 1998. Social constructivist perspectives on teaching and learning. *Annual Review of Psychology* 49, 345-375. DOI: 10.1146/annurev.psych.49.1.345
- Pate, P. E., Homestead, E. R., & McGinnis, K. L. 1997. *Making integrated curriculum work: Teachers, students and the quest for coherent curriculum*. New York: Teachers College Press.
- Perkins, D. 2009. *Making learning whole*. San Francisco: Jossey-Bass.
- Phillips, D. C., & Soltis J. F. 2009. *Perspectives on learning*. (5th ed.). New York: Teachers College Press.
- Statistics Norway. 2015. *Throughput of pupils in upper secondary education, 2009-2014*.
<https://www.ssb.no/en/utdanning/statistikker/vgogjen/aar/2015-06-04>, accessed 05.01.16.

- Stroet, K., Opdenakker, M.-C., & Minnaert, A. 2014. Fostering early adolescents 'motivation: A longitudinal study into the effectiveness of social constructivist, traditional and combined schools for prevocational education. *Educational Psychology: An International Journal of Experimental Educational Psychology*, 1-27. DOI: 10.1080/01443410.2014.893561
- The Center for Teaching and Learning. 2007. Interdisciplinary teaching and learning: A panel discussion with Stanford Faculty. *Speaking of Teaching* 16 (2).
<http://web.stanford.edu/dept/CTL/Newsletter/interdisciplinary.pdf>, accessed 01.09.15.
- The New London Group. 2000. A pedagogy of multiliteracies: Designing social futures. In B. Cope, & M. Kalantzis (eds.), *Multiliteracies: Literacy learning and the design of social futures*, 9-37. New York: Routledge.
- Tulivuori, J. 2015. *Nya läroplansgrunder med sikte på mångsidig kompetens*. Utbildningsstyrelsen, Finland. <http://www.slideshare.net/iktsenteret/nya-lroplansgrunder>, accessed 22.08.15.
- U.S. Department of Education. N.d. *Every student succeeds act (ESSA)*. <http://www.ed.gov/essa>, accessed 11.01.16.
- Utdanningsdirektoratet (UDIR). 2013. *Læreplanverket for Kunnskapsløftet*.
<http://udir.no/lareplaner>, accessed 10.10.15.
- Utdanningsdirektoratet (UDIR). 2015. *Rammeverk for FYR-prosjektet (2014-2016)*.
<http://www.udir.no/globalassets/upload/fyr/rammeverk-fyr.pdf>, accessed 10.01.16.
- Vygotsky, L. 1962. *Thought and language*. Cambridge, MA: MIT Press.
- Wentzel, K. R., & Brophy, J. E. 2014. *Motivating students to learn*. (4th ed.). New York: Routledge.
- Witte, K. D. & Rogge, N. 2013. Dropout from secondary education: all's well that begins well. *European Journal of Education* 48 (1), 131-149. DOI:10.1111/ejed.12001