



# Cross-curricular teaching

## **SITUATIONAL SURVEY**

*An insight on interdisciplinarity in Europe today*



Funded by the  
Erasmus+ Programme  
of the European Union

# SITUATIONAL SURVEY

## *An insight on interdisciplinarity in Europe today*

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**CROSSCUT PROJECT OUTPUT 1**

**VERSION 4 – OCTOBER 2018**

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# Output 1. CROSSCUT COMMON REFERENCE FRAMEWORK

|                       |   |
|-----------------------|---|
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## Abstract

The situational survey gives an insight on interdisciplinarity in European school at the secondary education level today.

## Quality control checklist

| Quality control check   | Tick box                            |
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| <b>Generic Minimum Quality Standards</b>  |                                     |
| Document Abstract provided  | <input checked="" type="checkbox"/> |
| Document Summary provided (with adequate synopsis of contents)  | <input checked="" type="checkbox"/> |
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| CROSSCUT format standards complied with   | <input checked="" type="checkbox"/> |
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**\*Status:** Indicate if:

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## Document summary

The situational survey is an insight on interdisciplinarity in Europe today. It is the first output of the European project entitled CROSSCUT. It maps the status of cross-curricular activities on two levels: the intended curricula and the actual practices at schools to identify enablers and obstacles for effective cross-curricular teaching. The first step if was to determine a common definition and characteristics of cross-curricular teaching.

In the first part, the methodology of the investigations, led in six countries (Denmark, Finland, France, Norway, Poland and Portugal), is summarized and described thoroughly: study of the national curricula and policies, school leaders' interviews, focus groups with teachers and teaching observations were made in 23 schools at secondary education level.

The second part describes the European state of art of cross-curricular teaching. The similarities of the five countries studied are underlined. Concerning intended cross-curricular teaching, national curricula are subject-based while there is a real determination to develop cross-curricular skills in the national policies. Nevertheless, mentions of interdisciplinary approaches are unclear and sporadic so they are still considered as optional. Practically, cross-curricular teaching covers a large range of activities, among and within the countries. The initiatives depend mostly on individual teachers who are motivated and have a positive attitude towards transdisciplinary approaches. The discussions with school leaders and teachers allowed to establish the enablers and the obstacles of cross-curricular teaching. It also allowed to define the required skills and, therefore, the training needs of teachers to carry out multidisciplinary teaching.

In conclusion, the situational survey gives an overview of cross-curricular teaching in Europe. In the framework of the project, it will be the base for a common competence framework and a learning platform.

# 1. Introduction

Cross-curricular Teaching (CROSSCUT) is an EU project funded by the ERASMUS+ programme. The project includes partners from six European countries: France, Portugal, Poland, Norway, Finland, and Denmark. CROSSCUT consists of five consecutive steps with corresponding outputs:

- O1. Situational survey**  
Observation and meta-analysis of cross-curricular teaching practices in secondary schools. This field study will identify obstacles and enablers that enhance effective cross-curricular teaching.
- O2. Common reference framework**  
The situational survey (O1) will act as guide for a collaboratively designed common competence framework.
- O3. Online learning platform**  
A learning platform will be developed for secondary teaching based on the learnings from O1 and O2. This includes training modules, teaching resources and participatory tools.
- O4. Evaluation of platform**  
There will be an evaluation survey to determine the short-term impact of the platform.
- O5. Recommendation for furthering cross-curricular teaching**  
The final output will point to the necessary conditions for the development of optimal collaborative and interdisciplinary teaching processes.

The present report represents 'Output 1' (O1) of the CROSSCUT project – methodology and results of a situational survey. The aim of CROSSCUT is to develop cross-curricular and new learning approaches for education systems in the European Union (EU) on the secondary level, which enables transversal competences and skills. This follows the EU's 2006 eight key competences for lifelong learning:

*“Competences ... defined ... as a combination of knowledge, skills and attitudes appropriate to the context. Key competences are those which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment.”<sup>i</sup>*

Cross-curricular teaching has shown to be an effective tool to develop these competences compared to the traditional teaching (e.g. Lattuca et al., 2004, Amadio, 2013, or Eurydice, 2012), which will be further addressed in the second chapter of this report.

As noted, this report focuses on the current situation of cross-curricular teaching in the participating countries. The objective of this situational survey is to explore:

*“... the current status of cross-curricular activities on two levels: the intended curricula and the actual practices at schools in order to identify obstacles and*

*enablers for effective cross-curricular teaching*” (CROSSCUT project description, p. 52)

In order to fulfil the objective, the investigations have been explorative in nature. Therefore, the investigations serve both as indicators of current European status of cross-curricular teaching as well as examples of practices, enablers and challenges related to cross-curricular teaching in different European countries. The present report sums up the findings in a collective meta-analysis based on insights of gained through investigations in six European countries: France, Portugal, Poland, Norway, Finland, and Denmark. The situational survey takes its vantage point in trying to investigate the general cross-curricular teaching. The point of departure for this is systematic reviews (e.g. Booth, Sutton, & Papaioannou, 2016) of national cross-curricular efforts. This meta-study consists of four main steps:

1. Systematic national collection of data conducted by each participating country.
2. Critical assessment and analysis of the collected data into reviews (see appendix 6 for national cross-curricular reviews).
3. A synthesis of these reviews.
4. Identifying the current situation of cross-curricular teaching.

The two first steps were conducted on a national level by the local researchers participating in CROSSCUT. The first step consists of interviews with school leaders, focus groups interview of teachers, and observations of teaching. The second step is where the local researchers analyse their findings and provided reviews for this report. In short, the local researchers act as “... *the instrument for data collection and analysis*” (Bernard, 2011, p. 270), because of their local knowledge of the field, e.g. language, profession, and so on. Furthermore, there has been conducted a survey in the form of a questionnaire in the first half of 2018. The analysis and review of this questionnaire is ongoing at the time of writing and will be guiding O2-O4.

This report consists of steps 3 and 4, as it tries to find common threat to the current state of cross-curricular teaching. Different participants in different countries with different language, and traditions provide varying results; see figure 1 below for an overview of the collected data from each country. Therefore, the sense making of these reviews are made on a broader meta-level, because the project has the objective to develop new learning approaches for all on the secondary level. This entails limitations in its nature, such as neglecting some local nuances and variances or focusing on observation of teaching rather than on observation of learning. Furthermore, access and number of participating schools vary from country to country in this project, e.g. five lower and upper secondary schools in Portugal and four upper secondary schools in Norway. As such, this report represents a common ground investigation for the current situation of cross-curricular teaching.

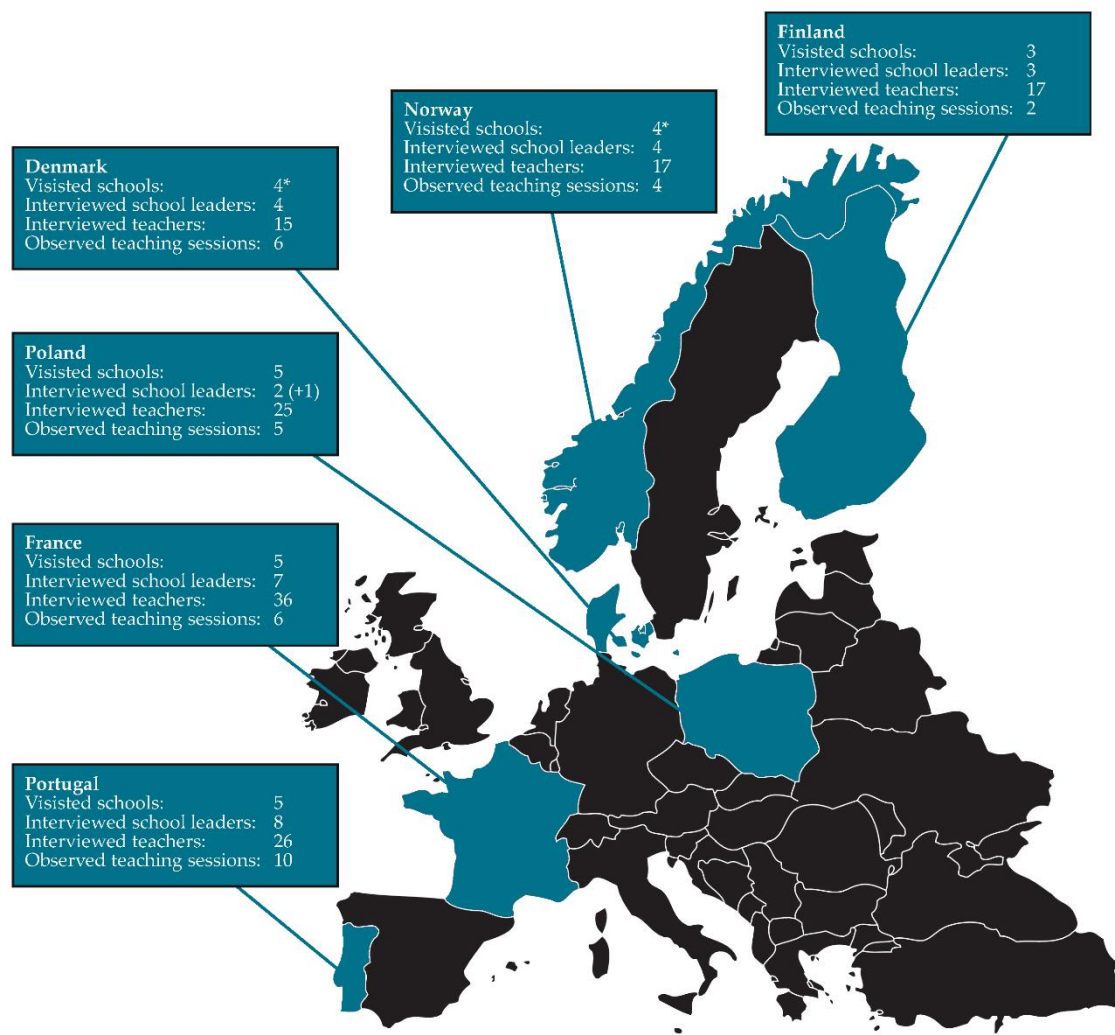


Figure 1: Overview over the collected data and the six participating countries (local partners): France (Centre International D'Etues Pedagogiques - CIEP, lead partner and Ecole Normale Superieure de Lyon - IFE), Portugal (Universidade Do Minho – UMINHO and Universidade Aberta - UAB), Poland (Instytut Badan Edukacyjnych - IBE), Norway (Norwegian Directorate for Education and Training - UDIR), Finland (CICERO Learning), and Denmark (Laboratory for Coherent Education and Learning - SDU). Photo: Colourbox (adapted/modified)

<sup>i</sup> Recommendation 2006/962/EC of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning

## 2. Cross-curricular teaching

The argument of cross-curricular teaching often stems from the argument that in order to understand the world – with all its complexity – teaching has to go across and incorporate multiple topics and subjects. This can be in sharp contrast to the compartmentalized structure of subjects in school systems. As Jephcote & Davies (2007) notes, structures of subjects are recreated and embedded into the curriculum – a subject have a certain structural “... voice” (p. 213) and power, which echoes over time. This argument is strengthened by Lenoir (2006), who found that, over a 20 year period, the same subjects (French and mathematics) were at the top of the hierarchical order and dance, music, and drama was among the lowest in the Quebec school system. This shows how structures and power relations becomes traditions, which – as shown by Lenoir (2006) – can be hard to break. Furthermore, teachers have a role in the recreation of mono-curricular teaching structures, because many “... teachers are trained in a single academic discipline and are often not used to working in close collaboration with their colleagues”, as noted in the CROSSCUT project description. This follows Lenoir & Hasni (2016) notion that students “... do not generally study out of a love for the school disciplines, but instead, one might say, out of a ‘love’ for the teacher” (p. 2438). This sheds light on and emphasises the importance of the teacher, because it they directly play role in how and what students on the secondary level learn – whether it be mono or cross-curricular teaching.

Cross-curricular teaching is a widely used approach and discussed term, for instance Amadio (2013) emphasis on the importance of interdisciplinary curriculum, because it “... can develop students’ understanding of the environment and build skills for promoting sustainable development”, (p. 295) and Eurydice (2012) highlighting cross-curricular teaching as “... contributing to personal development, citizenship, lifelong learning and employability” (p. 12). Therefore, as described in the project description, “professional development should allow teachers to cross boundaries of traditional subjects by taking part in collective processes and using different learning strategies and methods”, in order to provide fertile ground for the developments of modern and critical citizens. Moreover, as Michelsen & Iversen (2009) suggests, “what is needed, is a conceptual frame and a didactical model for integrating productive ideas from a variety of theoretical and practical perspectives on the relation between ...” (p. 36) different subjects for this to be successful.

### 2.1 Definition of cross-curricular teaching

For the CROSSCUT project, a common ground definition of cross-curricular teaching was developed to encapsulate the different countries participating in the project. The working definition of cross-curricular teaching in the CROSSCUT project is:

*‘Cross-curricular teaching is teaching that involves a conscious effort to apply knowledge, skills and competences to more than one subject area simultaneously with the rationale of forming autonomous citizens, solidary and responsible, intended for a democratic, inclusive and fair society.’*

This definition does not only echo the participators of the project, but also relies on past insights to cross-curricular teaching, e.g. Amadio (2013) and Eurydice (2012) from above. Furthermore, a cross-curricular approach to teaching and learning is a transformation process guided by the concrete needs of the student, teacher and members of the school and community as well as clear educational goals. A cross-curricular approach to teaching characterised by:

- Teaching is designed to meet the interests and needs of students, it is intended to be relevant, contemporary, and engaging, and it is aligned with global educational goals, such as in Amadio (2013) and EU's eight key competences for lifelong learning.
- Teaching is about making links between subjects in order to better understand a problem and developing knowledge, skills and competences that are not subject-bounded and that are related to real life.
- Teaching is about connecting school and community in multiple places to promote education as a process of democracy, enabling children, young people and adults to understand the society and participate in the decisions of the places they inhabit, making them active partners in sustainable development.
- The subjects are related through a central theme, issue, problem, process, topic, or experience.
- Teachers cooperate about teaching across their subjects to promote interaction between subjects and share their cross-curricular methods and pedagogical experiences.

The term cross-curricular has been used throughout this report. However, a number of other terms are often used, such terms include: cross-disciplinary; interdisciplinary; multidisciplinary; and transdisciplinary (for instance see Lattuca et al., 2004, Lenoir & Hasni, 2016, or Jantsch, 1972). Although there are nuances in the meaning of these terms, they have all been included when searching for relevant material. Furthermore, distinctions are not been made in this survey, as this project employs a pragmatic common ground approach in which the national partner would conduct, collect, and analyse according to cross-curricular teaching, as defined above. Moreover, the multiple nationalities (and thus languages) involved in the project make it hard to use only one term, as subtle distinctions often get 'lost in translation', as shortly discussed in the introduction. Therefore, the CROSSCUT project operates with a rather lengthy and broad definition of cross-curricular teaching.

### 3. Methodology

The following section describes the methodology of the situational survey both as an overview and in details. The detailed description of the methods is not a prerequisite for understanding the findings section.

#### 3.1 Overview of situational survey

As described in the introduction, the performed investigations were exploratory and sought to offer insight into the current state of cross-curricular teaching in European countries, provide examples of such teaching, and identify enablers and obstacles for cross-curricular teaching. This overall objective was divided into sub-questions; answering these research questions provides pieces of the puzzle. The utilised methods and the research questions to be answered by each method are outlined below:

| Method   | Research questions   |
|--|--|
| Review of national curricula, policy, and resource documents | What is the intention of cross-curricular teaching on the national level?  |
| Interviews with school leaders                               | What is the intention of cross-curricular teaching on school level?<br><br>What is being done by the school management to enable cross-curricular teaching?  |
| Focus group interview with teachers                          | How do secondary teachers understand cross-curricular teaching?<br><br>How do secondary teachers describe their cross-curricular teaching?<br><br>Which elements/initiatives are considered enablers and obstacles of cross-curricular teaching by secondary teachers? |
| Observation of teaching                                      | How can cross-curricular teaching sessions take place?   |

**Table 1: Overview of methods used to convey finding for Output 1 and the research questions to be answered on the basis of these methods.**

The investigations were carried out in France, Portugal, Poland, Norway, Finland, and Denmark, thus, European education systems were broadly represented in this survey. In total, 26 schools were visited by CROSSCUT partners and observations of teaching sessions, interviews with school leaders, and focus group interviews with teachers were carried out at each school. The survey included all core subjects of lower and upper secondary education. The partners agreed on investigating different levels of secondary education in order to investigate different aspects on cross-curricular teaching on different levels. This has two implications: Firstly, it broadens the scope of the investigation, because it allows the project to gain insights based on both levels of secondary education; Secondly, it allows the partners some freedom in order to collect data by pragmatically utilized their knowledge of the field, as noted in the introduction, the partners are the data collectors and analysers. The partners in France, Finland, and Denmark focused on

lower secondary education and the partners in Norway, Poland, and Portugal studied upper secondary education in their countries.

At the 26 schools participating in the situational survey, 28(+1) school leaders and 136 teachers were interviewed, and 33 teaching sessions were observed. An overview of the performed observations and interviews provided in Table 2 (and figure 1 in the introduction):

| Country      | Visited schools | Interviewed school leaders | Interviewed teachers | Observed teaching sessions |
|--------------|-----------------|----------------------------|----------------------|----------------------------|
| France       | 5               | 7                          | 36                   | 6                          |
| Portugal     | 5               | 8                          | 26                   | 10                         |
| Poland       | 5               | 2 (+1) <sup>†</sup>        | 25                   | 5                          |
| Norway       | 4*              | 4                          | 17                   | 4                          |
| Denmark      | 4*              | 4                          | 15                   | 6                          |
| Finland      | 3               | 3                          | 17                   | 2                          |
| <b>Total</b> | <b>26</b>       | <b>28 (+1)</b>             | <b>136</b>           | <b>33</b>                  |

Table 2: Overview of data collection. \*In Norway and Denmark, one school withdrew prior to data collection. In France, one school withdrew and was replaced by another school. <sup>†</sup>Two school leaders interviewed + one vice leader as part of focus group interview.



### 3.2 Detailed description of methodology

The overall goals were to convey interviews/focus group interviews with resource persons including teachers and school leaders at schools in each of the six partner countries, to provide insights into the challenges, successes, and frustrations associated with cross-curricular approaches. The focus group interviews were supplemented by school visits and observation of teaching practices at the schools. Furthermore, a literature study of the national curricula in the six partner countries<sup>ii</sup> was carried out with a focus on transversal competences and skills. Specific guidelines for the individual methods are provided on the following pages. The situational survey consisted of three phases:

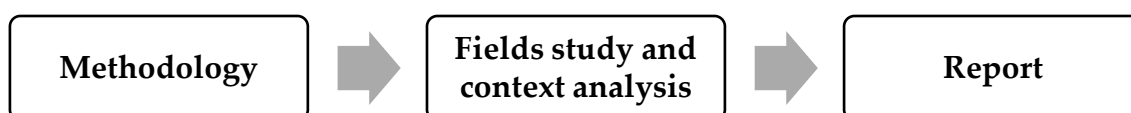


Figure 2: Phases in Output 1: Situational survey.

Originally, it was intended that the results of the initial part of situational survey (review, interviews, and observations) were used to inform the development of a questionnaire in the subsequent part of the situational survey. However, data collection of interviews and observations was delayed, and therefore the present situational survey report solely comprises results from the initial part. As noted in the introduction, the questionnaire was distributed to schools during the first half of 2018 in cooperation between SDU and IBE, and it is in the process of being analysed. It will include a greater number of teachers and school leaders than the initial data collection involved, and results will be applied as a baseline for the evaluation process (output 4) and along with this output provide insights to the current situation of cross-curricular teaching for output 2-3.

#### 3.2.1 Phase 1: Methodology (Mid October 2016 – End November 2016)

In the first phase all partners identified schools for investigation in the situational survey and the methodology was developed and described by SDU.

| Tasks in phase 1   | Responsible partner(s) | Original time plan | Realised time plan |
|--|------------------------|--------------------|--------------------|
| Identification of schools  | All partners           | End October        | -                  |
| Development of guidelines for the curricular review, interviews, focus group interviews and observations | SDU (Denmark)          | End November       | Start December     |

Table 3: Overview of tasks in phase 1.

#### 3.2.2 Phase 2: Field study and context analysis (End November 2016 – Mid March 2017)

In the second phase, all partners carried out the field studies described in the methodology document and collected literature for the context analysis. The partners also conducted a preliminary analysis of their performed interviews and classroom observations.

| Tasks in phase 2  | Responsible partner(s) | Original time plan | Realised time plan |
|---|------------------------|--------------------|--------------------|
| Conducting curricular review, interview, focus group interviews, and classroom observations                           | All partners           | Start March        | -                  |
| Preliminary analysis of and reporting on curricular review, interview, focus group interviews, and observation to SDU | All partners           | Mid March          | End May*           |

Table 4: Overview of tasks in phase 2. \*Different timetables at schools in different countries delayed the data collection process.

### 3.2.3 Phase 3: Report (Mid-March 2017 – End May 2017)

In the third phase SDU further analysed the situational survey results by conducting a meta-analysis to summarise, compare and highlight results. The results are collected and disseminated in the present report.

| Tasks in phase 3   | Responsible partner(s) | Original time plan | Realised time plan |
|--|------------------------|--------------------|--------------------|
| Meta-analysis of situational survey results (curricular review, observations and (focus group) interviews) | SDU (Denmark)          | Mid-April          | End May            |
| Writing first version of situational survey report   | SDU (Denmark)          | Mid May            | End May            |
| Discussing situational survey report   | All partners           | End May            | End May            |
| Final version of situational survey report   | SDU (Denmark)          | Start June         | End May            |

Table 5 Overview of task in phase 3.

### 3.3 Guidelines for individual methods

Specific guidelines for the data collection process are available in appendix 1-4. These consist of:

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|            |  |
|------------|--|
| Appendix 1 | Review of national curricula, policy, and resource documents |
| Appendix 2 | Interviews with school leaders                               |
| Appendix 3 | Focus group interviews with teachers                         |
| Appendix 4 | Observation of teaching sessions                             |
| Appendix 5 | Consent form   |

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**Table 6: Overview of specific guidelines for the data collection process**

- 
- <sup>ii</sup> The investigations were carried out in six partner countries. A seventh partner from the Netherlands was unable to stay in the project. CICERO learning from Finland - joined the project at a later stage and their results has since been incorporated in this paper.

## 4 Meta-analysis of cross-curricular teaching in the European Union

The following sections present similarities in cross-curricular teaching among six European countries: France, Portugal, Poland, Norway, Finland and Denmark, as well as country-specific features. It summarises the meta-analysis that has been performed on the basis of the preliminary analysis carried out by the project partners representing each country. Trends are brought out and general points are made. The meta-analysis is presented in five main themes:

- I) Intended cross-curricular teaching,
- II) Realised cross-curricular teaching,
- III) Obstacles and enablers of cross-curricular teaching,
- IV) Required skills for carrying out cross-curricular teaching, and
- V) Teachers' needs for training and professional development.

### 4.1 Intended cross-curricular teaching

In order to gain an overview of the intended cross-curricular teaching on national level, national curricula, national policies, and other resource documents were reviewed for content relevant to cross-curricular teaching. The reviews were collected into reports, based on the conducted investigation in each participating country to determine both the intended level and the intended orientation of cross-curricular teaching in the country. A general note on the topic is that the existence of official documents concerning cross-curricular teaching is limited and the mentioning of cross-curricular elements is often sporadic and indirect. For example in the present Danish school act of the public school (folkeskole) the requirement for cross curricular teaching is not explicitly stated, but it is *“declared, that the content of the teaching must be chosen and organised to give the pupils the opportunity for academic insight, overview and experience of relationships”* (Danish report, p. 1). This demand of experience of relationships indicates a requirement for cross-curricular teaching.

Most countries seem to operate with a core-curriculum structured around mono-disciplinary school subjects. Often the national curriculum does not explicitly address cross-curricular dimensions, e.g. Portugal: *“Secondary education is subject to national examinations, structured in a disciplinary way”* (Portuguese report, p. 4); and France: *“the secondary education curriculum is still largely influenced by the model of the former traditional lycée, structured around school subjects”* (French report, p. 1). However, as described in the French report there have been some attempts to promote interdisciplinary work, but with marginal effect on the overall curricular structure: *“This is a development in curriculum design in France, not a revolution”* (French report, p. 2). Another common feature in the investigated countries is that teachers generally seem to be free to choose between teaching methods, however within the framework of a content, which is defined to a high extent by a core curriculum provided by the government. The Polish report of national resource documents points to the challenge that this situation possesses:

*“One of the critical issues is the restricted amount of time which can be spent on the realization of the program, therefore teachers do not have much time for discussing issues in details or introduce topics in innovative ways, nevertheless they are highly encouraged to do so.” (Polish report, p. 1)*

Teacher collaboration is also a topic that appears in multiple reviews. In Norway, a strategy plan for secondary schools from 2005 also mentions cross-curricular collaborations among teachers as important, but no guidelines for execution were issued.

The overall learning objectives stated in official documents are often general skills and competences that are rarely linked to specific disciplines. Therefore, cross-curricular learning activities do not conflict with the learning objectives. For instance in Poland the general education at lower and upper secondary level *“aims to enable students to: (1) acquire a body of knowledge covering facts, rules, theories and practices; (2) acquire the ability to use the knowledge gained in carrying out tasks and solving problems; (3) develop attitudes which determine efficient and responsible functioning in the modern world”* (Polish report, p. 4). It can be argued that cross-curricular teaching and learning activities are particularly suited to facilitate the fulfilment of both the second and third aim.

The Norwegian education system also operate with a set of ‘basic skills’ (first introduced in 2002 and 2003) that *“are cross-curricular in the sense that they are integrated in all subjects across the entire curriculum for primary and secondary education”* (Norwegian report, p. 7). However, these basic skills are operationalised in competence aims for each subject, and thus, they are taught and assessed separately without *“apparent connections across subjects in the national curriculum”*. In spite of this, one of the clearest examples of cross-curricular teaching being put on the agenda in the recent years is seen in Norway with the introduction of ‘cross-curricular competences’. The Ludvigsen Committee was appointed by the Norwegian Government to evaluate basic education subjects against future competency requirements. It was concluded that cross-curricular competences are key competences in light of future societal changes and that the ‘basic skills’ defined in national curricula was the clearest example of cross-curricular competences. However, the committee explicitly determines that these competences *“should be taught in all subjects through multidisciplinary themes and work”* (Norwegian report, p. 9). At present, the Norwegian schools await a revision of the entire curriculum, but basic skills will be maintained and that coherence between subject contents will be enhanced. Furthermore, *“three cross-curricular themes will be prioritized: sustainability, democracy and citizenship, and health and life skills”* (Norwegian report, p. 10). It is the intention that these themes are emphasized in several subjects thus facilitating cross-curricular collaboration at schools. In France, a similar collection of themes to be emphasised is listed. On the potential for implementing cross-curricular themes in the Polish secondary education system, the Polish reviewers wrote:

*“It should be quite easy to build cross-curricular themes between several subjects. And it should be stressed that some of these subjects have interdisciplinary content by its nature, e.g. natural science, civic education, history and society, economics in practice [...]”* (Polish report, p. 7)

The implementation of education reforms often brings changes in educational goals, such as the introduction of an education reform in 2008 in Poland. The Polish reviewers described a shift focus from an interdisciplinary perspective towards a more mono-disciplinary perspective on the upper secondary level. At lower secondary level, the curriculum still contains some project elements that allow for cross-curricular teaching. In France, a recent secondary education reform introduced in 2016 implemented projects for lower secondary education. These projects are defined to be interdisciplinary and often involve at least three subjects. Over three years the students must carry out at least six of such projects “*on the basis of two or three hours a week on average*” (French report, p. 3). The introduction of these projects into the curriculum has also been followed up with the introduction of an exam in which the students present one of their interdisciplinary projects. Another example of increasing emphasis on cross-curricular teaching by reforms is the latest core curriculum in Finland – from 2014:

*“... introduces seven transversal competences that are seen especially essential in participating to the future’s society. Transversal competence or skills refers to the entity that consist of knowledge, skills, values, attitudes, and will. It means also ability to use knowledge and skills in a context-specific way. ... studying and working as well as growing as a human being and citizenship require competence connecting and crossing the boundaries of different subject and knowledge areas. Vitikka, Krokfors, and Rikabi (2016) note that this is the first time in the Finish curriculum tradition, when this kind of transversal competences are included in the curriculum.”* (Finish report, p. 2)

The natural sciences appear to be a field where multiple countries realise a cross- or interdisciplinary potential and have made requirements hereof. However, the division of the natural science disciplines differ among the countries. In Denmark, the disciplines are divided into three subjects: ‘physics/chemistry’, ‘biology’, and ‘geography’ at lower secondary level and four subjects: ‘physics’, ‘chemistry’, ‘biology’, and ‘geography’ at upper secondary level. For subjects taught at the extended level the Polish general upper secondary education also operates with a division into four subjects but as a supplementary subject the natural sciences are combined into one (interdisciplinary) subject called ‘natural science’. In Denmark, a new form of the final exam in lower secondary education has recently been implemented (voluntary trial run in 2016 and compulsory in 2017). Here, the three subjects in natural science are combined into one project based examination called the ‘joint physics/chemistry, biology, and geography national evaluation’ which focuses “*students’ competencies within the four areas of competence (i) inquiry, (ii) modelling, (iii) perspective and (iv) communication*” (Danish report, p. 1). At most schools the practical execution and preparation of students for this new exam often consist of the teachers deciding on a number of themes able to include all three science subjects. These themes are then covered more or less independently in each subject throughout the last two years of schooling, which can create a mismatch between the intended cross-curricular and the executed mono-curricular teaching, as the Danish reviewers’ point. This is because the new form of assessment is introduced without making changes to the core curriculum of these subjects, and, at the same time, changing the requirements to the teachers. The Norwegian reviewers also raise this concern of lacking alignment between curricular focus and exam framework. In Norway, “*the current framework for the exams does not mention cross-curricular form of the exam at all*” (Norwegian report, p. 12).

#### 4.1.1 Summing up national intentions

It seems that most of the reviewed countries operate with a mismatch between a curricular discipline-oriented structure (as defined in official curricula documents) and an emerging intention to develop students' cross-curricular competences. Initiatives are being introduced in all investigated countries, and the national curricula often contain learning objectives that would be accommodated well with cross-curricular teaching and learning activities. The indications of cross-curricular intentions are, however, often vague. As a result, teachers might focus their teaching effort on the clearly defined mono-disciplinary content. We argue that, the intention to develop students' cross-curricular competences needs to be accompanied with a specific dedication to cross-curricular teaching activities in official curricula documents as well as in the exam framework. It is essential that the countries provide a *“holistic education [in order to] enable understanding of connections and relationships between ... issues”* (Finish report, p. 2) to minimize mismatch between intentions and realisations.

## 4.2 Realised cross-curricular teaching

To get an impression of the actual status of European cross-curricular teaching, school leaders and teachers in the six investigated countries were interviewed. The school leader interviews provided information about the cross-curricular practice on school level and what the school management does to enable cross-curricular teaching, and the teachers provided information about their cross-curricular teaching practices and their experience of enablers and obstacles to conduct this form of teaching. In addition, self-proclaimed cross-curricular teaching sessions were observed in the six investigated countries.

### 4.2.1 School leaders

The school leaders' understanding of cross-curricular teaching is very broad and range from a teacher making connections to subjects other than their own to multiple teachers from different subjects cooperating on a common theme. One school leader considered all activities that concerned real world problems cross-curricular and underscored that the cross-curricular elements appear in the application of knowledge. Examples of different understandings are:

*“It is about mutual support among common core subjects and program subjects. The purpose is to make each other's teaching better in order to provide students with relevant knowledge and skills.”* (Norwegian school leader)

*“Theoretically – cross-curricular teaching involves correlation between subjects. It can be done in a thematic block, in a problem block, it can be done based on a specific project [...]”* (Polish school leader)

*“The definition, I feel like saying, is several teachers from different disciplines who work together on a shared topic with shared objectives and joint evaluation.”* (French school leader)

*“Interdisciplinarity represents all those moments that enable students and teachers to show that skills are broad. It doesn't mean... they aren't superimposable for subjects and purely subject-based objectives, but everything that contributes to showing the students we can broaden fields and use our skills towards a shared objective, for me, is, directly or indirectly, interdisciplinarity.”* (French school leader)

*“If the school or organizational level aims to promote some new structure or ways of doing, it can decrease teachers’ individual, spontaneous projects and experiments” (Finish school leader)*

The interviewed school leaders provided insight into various activities that the individual school classifies as cross-curricular. Often these activities revolved around project work, but other activities were also emphasised. Table 7 below lists different activities that were brought out as examples of cross-curricular teaching activities.

| <b>Cross-curricular activities</b>   | <b>Countries</b>                               |
|--|--|
| Project work   | All countries                                  |
| Themes days and block scheduling   | Denmark, Poland, Norway, Finland               |
| Project weeks  | France, Denmark, Norway                        |
| Theme coordination among teachers – the teachers teach the same theme but in their own subject       | Norway, Finland                                |
| Multiple teachers (with different specialisations) present in the same class                         | Denmark, Finland, (France), (Norway), (Poland) |
| Extracurricular activities – outside the classroom   | Portugal, Poland                               |
| Cooperation with external partners e.g. local companies, schools at another level or foreign schools | Poland, Denmark, France, Norway, Finland       |
| Student enrolment in different programmes/profiles e.g. fit-for-life, science, or law-journalism     | Denmark, Poland                                |
| Participation in competitions  | Denmark, Norway                                |

**Table 7: Examples of cross-curricular activities mentioned by school leaders and the country the school leaders represent.**

Cross-curricular teaching activities are generally encouraged by the school leaders, but there are examples of school leaders who do not expect their teachers to do cross-curricular teaching: *“Cross-curricular teaching is not obligatory and it is not always relevant and appropriate”* (Norwegian school leader).

The report from Portugal stands out from the other investigated countries; according to the Portuguese school leaders (and backed by the Portuguese teachers) cross-curricular teaching activities generally do not take place in class. The Portuguese curriculum is very fixed, and the teachers’ work is determined (or as expressed by a school leader held hostage) by the national exams. Instead, the school leaders point to extracurricular activities happening outside the



classroom as the space where transversal teaching can take place. The Portuguese school leaders do, however, possess a positive attitude towards cross-curricular teaching.

When implementing cross-curricular teaching activities, the objective often is to make the subject matter more relevant and meaningful to the students, to make connections to the real world, and/or to develop transversal competences. A Norwegian school leader formulates: *“We strive to introduce students to a holistic practical work processes by integrating common core subjects and basic skills, including digital skills”*.

Time specifically allocated for teacher collaboration and preparation is a recurrent theme in the school leader interviews. There is a common notion that such time is necessary, but the extent to which it is possible to allot time differs among schools and countries. Some teachers have multiple planning days throughout the school year, whereas others only plan collaboratively prior to the school’s year start, and others again only sporadically meet up in informal settings. Some teachers also teach together (co-teach) or visit each other’s classes. In both Denmark, Norway, and Poland individual school leaders have implemented teacher teams who coordinate or correlate their lessons with specific classes in mind to ensure coherence across subjects. In France, Finland and Norway, the school leaders emphasise that it takes both time and effort as well as management support to build a culture of teacher collaboration. As noted in the Finish report: *“... school leaders are responsible for managing multidisciplinary teaching in a large picture and offer the resources it requires (e.g. time and materials), whereas teachers are responsible for planning and organizing the particular activities because they, as pedagogical experts, know what their students’ need and what is the best way to support their learning”* (p. 5). This task is especially urgent at present in France as interdisciplinary projects have recently been introduced in the national curriculum and teachers are trying to figure out how to handle these projects. Among both school leaders and teachers’ *relationship of trust among colleagues* appears to be a keyword when establishing this culture.

School leaders in both Norway and Denmark note, that teachers find it easier to make cross-curricular connections among subjects in which they themselves have official teaching competence, and Danish and Polish school leaders describe that combining similar subjects e.g. subject within the natural sciences or the humanities comes more natural than combining dissimilar subjects.

*“Well, if you teach the class in both Danish and in social science, then you can easily identify overlapping elements – and then you do it. It becomes hard if you need to include subject you are unfamiliar with, you need to approach a colleague, and then it becomes a larger burden to plan. It can be difficult in today’s Denmark and the Danish public school at the moment, at any rate you have to be driven by desire”* (Danish school leader)

School leaders across countries do not experience many expectations to the school concerning cross-curricular teaching. Multiple Danish and Norwegian teachers even feel that the curricular demands for cross-curricular teaching are too few. They feel that they have to implement activities on their own initiatives without a formal backing.

In general, the school leaders report a positive attitude towards cross-curricular teaching from both students and teachers although many teachers (and school managements) struggle to work out the practicalities. A Norwegian school leader also reports higher efficiency in class due to less repetition in different subjects. On the potential of cross-curricular teaching and learning, many school leaders point to both psychological benefits such as increased interest, motivation, and engagement and cognitive benefits such as higher levels of reflection and ability to make connections among topics.

#### 4.2.2 Teachers

Teachers had various approaches to cross-curricular teaching and reported varying support from their school management. These variations exist both within and across countries. In general, the teachers understanding of cross-curricular teaching involved *“common themes that stretch across subjects and cover competence aims in different subjects in a meaningful and structured way that facilitates better achievement of learning outcomes”* (Norwegian summary).

A general approach applied by teachers in Norway, Denmark, Finland, and France is projects revolving around a pre-determined or a student-selected theme with multiple teachers and multiple subjects involved. Such projects typically take place during special project weeks or during traditional classes over a period of several weeks. A Norwegian example of such a project combines the subjects ‘Norwegian’ (Native language) and ‘Health and social care’. Here students wrote an article about hygiene and made an oral presentation. Students’ were evaluated on written and oral communication skills as well as subject knowledge. More formalised examples are seen in France and Denmark with the introduction of interdisciplinary projects in the French curriculum and the introduction of a ‘joint physics/chemistry, biology, and geography evaluation’ in the Danish Curriculum. Whereas, Finish teachers emphasis the work of theme days, which *“... are planned and organized by a planning team starting ... about half a year before the certain theme day. ... One teacher emphasized the essence of the theme: It should not be some general topic, such as, ‘forest’ or ‘electricity’ but a more specific one that could really be integrated with the activities, objectives and educational contents of the school.”* (Finish report, p. 7).

Another widespread approach to cross-curricular teaching is cross-curricular ‘correlation’, where teachers coordinate to teach the same theme in the same time period but do the actual teaching individually and from the perspective of their own subject in their own class time. In the Polish education system, this approach became especially popular in the early 2000s and has been referred to interchangeably with interdisciplinary teaching. It is *“understood as the simultaneous instruction regarding the same issue/phenomenon/historical period during subject-specific instruction (i.e. Greek philosophy simultaneously being discussed in literature and ethics classes)”* (Polish summary). Such cross-curricular correlation most easily take place when the same teacher teaches the different subjects, both there are examples from different countries where different teachers coordinate their teaching either informally or sporadically or in special cases in organised teacher teams. A Polish teacher describes such process and the practical issues concerning the cross-curricular correlation:

*“Things are not that easy. I had this experience of sitting down together and planning for a joint programme with two colleagues of mine. I was teaching Polish, her- history, him – culture. We made an agenda specifying instruction time and instruction goals. We decided to correlate our instruction by historical periods. Say, she [the history teacher] introduces antiquity, me – I cover literature in antiquity, him – classical architecture [...] but I had 4-5 hours instruction time, she had two and he had one. Even though we took the differences in instruction time into consideration, unexpected things happened (the culture teacher had classes on Friday, and those were often cancelled due to class trips). By the end of the day we couldn’t make it. By the time we got to Renaissance we failed.”*

A teaching situation with multiple teachers present in class seems to be a rare occurrence but examples are seen in Denmark, Finland, Norway, and France. Some Danish schools enrol students in specific programmes/profiles e.g. natural science and extra class time with two teachers is allotted in the schedule. In France, Norway, and Poland there are examples of regular co-teaching where two or three teachers are present in the classroom.

An issue that stands out from the teacher interviews is that it is usually an issue that the learning objectives for the individual subjects first and foremost must be fulfilled. Teachers do not wish to compromise the individual subject and risk student failure. Therefore, it seems that only teachers with a surplus of confidence or teachers who are especially open-minded willingly engage in cross-curricular activities. Another aspect were brought up in the Finish report, as *“...cross-curricular activities are quite new phenomenon in lower secondary schools and that they have not yet developed useable ways of evaluating learning with cross-curricular activities”* (p.8). Here it is not the learning objectives of the individual subject, which provides a hindrance, but rather but the lack of skills or competences to carry out the cross-curricular intentions.

The Portuguese teachers concur with the school leader in concluding that cross-curricular teaching essentially does not take place in the Portuguese secondary education system due to a tight and very discipline-oriented curricular system. However, they point to laboratory classes as a place and a situation where transversal competences can be developed and knowledge from various disciplines can be utilised. Some of the Portuguese teachers also try to make connections to other subjects and encourage students to seek out knowledge from teachers from other subjects. Like the school leaders, the Portuguese teachers emphasise extracurricular activities as places to cross-disciplinary boundaries. But again, it is stressed that these activities rely on teachers’ voluntarism. The Polish teachers also mentioned extra-curricular activities as a space with room to be more creative. For example, one school offered *“a course combining physics and music, covering different aspects of acoustics both theoretically and practically. This course was offered by a physics teacher who privately is an instrumentalist and a music connoisseur”* (Polish summary). As a general rule such initiatives seemed to be carried out by individual teachers with unique interests and willingness to put in the effort.

With the exception of Denmark and France, where a joint exam in the natural science subjects and a demand for interdisciplinary projects have recently been introduced, teachers generally do not experience expectations to conduct cross-curricular activities. Therefore, initiatives often rely on the individual teachers and often involve a special kind of open-minded and engaged

teachers. However, as the school leaders observed, there are teachers who generally do not wish to participate in curricular development and in teacher cooperation. Such teachers were also present among the interviewed teachers. However, most teachers do see great potential in drawing on real world problems or on other subjects to contextualise their teaching and to make meaning for the students. French teachers agree that cross-curricular teaching can give more legitimacy and weight to all subjects. Many teachers also agree that cross-curricular teaching is appropriate for developing critical thinking, understanding, ability to see multiple perspectives, and cooperation skills. Some French, Portuguese, and Polish teachers even express, that cross-curricular activities is more exciting for the teachers as well:

*“It refocuses us and it’s interesting; otherwise, we never question ourselves.”* (French teacher)

*“It’s more interesting in terms of content; we are less limited regarding time, less limited regarding form. [...] The final result, the final product, is much more interesting.”* (French teacher)

*“Interdisciplinary teaching is considered not less beneficial for students as it is for teachers. Most of the interviewed teachers consider cross-curricular teaching a way to make teaching more attractive for themselves. (...) interdisciplinary teaching is viewed as an opportunity for teacher collaboration and “doing something fun” together with a fellow-teacher. This aspect of interdisciplinary teaching too, is considered to counteract boredom and routine in teaching.”* (Polish report)

*“Teachers consider that transversal teaching implies responsible teaching/learning, sustained by discovery and carried out through project work, develops useful skills for autonomous, critical and creative citizen participation and instigates the use of new information and communication technologies, stimulates the development of communication, autonomy, critical and creative thinking, entrepreneurship, cooperation, is affirmed in the overall training of the student and active professional development of the teacher.”* (Portuguese report)

#### 4.2.3 Observation of teaching

The observations of teaching sessions provided examples of cross-curricular teaching from different countries. The fact, that teachers themselves had proclaimed the sessions to be cross-curricular, renders variations in the teachers’ understanding of cross-curricular teaching activities visible. Selected examples are outlined in the table below. The examples clearly exemplify the variety of observed teaching sessions.

| Country | Teachers and students | Subject(s) and topic   | Brief description  |
|---------|-----------------------|--|--|
| Poland  | 2 teachers<br>1 class | Biology as dominant subject, mathematics as auxiliary subject. The topic was genetics. | Students got a set of tasks with genetic crosses. Biology teacher served as a facilitator in solving tasks from genetics laws’ point view, while mathematician was helping students to solve the part of tasks which concerned probability issues. Differences in results were |

|          |  |  |  |
|----------|--|--|--|
|          | (upper secondary level)  |  | discussed. The whole theme was very focused on enhancing students' critical thinking skills.   |
| Poland   | 1 teacher<br>30 students<br>(upper secondary level)                              | Polish as dominant subject, history as auxiliary subject. The topic was the epic poem 'The Song of Roland'.  | The discussion during the session considered not only main plot and characters of this 11/12th century poem, but also characteristics of chivalric epic and the whole historical context of the story including role models in society.  |
| Finland  | 2 teachers (+1)<br>14 students   | Japanese language and culture. The observed class was part of the wider course about Japanese language and culture, and different teachers had 'a leading role' in certain lessons | The aim was to get familiar with Asian and Japanese arts and practice to use ink in drawings and to draw traditional Asian landscape paintings. In the beginning of the lesson, a visual arts teacher told about the history of the methods and their links to Japanese culture. After that, the tools, techniques, and methods were presented. The end of the lesson was used for drawing and practicing the techniques. The other teacher, in this special class, was more in the role of an observer and she helped students if needed. |
| Denmark  | 1 teacher<br>17 students<br>(lower secondary level)                              | Physics/chemistry as dominant subject, biology and geography as auxiliary subjects (only marginally). Topic was energy.  | Students prepared for their exam; the 'joint physics/chemistry, biology, and geography evaluation'. Teacher hands out material on energy (one of the exam topics). Student themselves decided their focus. Some students read; others did experiments.   |
| Norway   | 7 teachers<br>90 students<br>(upper secondary level)                             | Physical education, geography, social science, natural science as equal subjects. Topic was 'Multidisciplinary public health'.   | Project spanning over 6 weeks. Student chose a focus area within the theme of multidisciplinary public health, developed research questions and key competence aims. They guided their own learning process.   |
| France   | 2 teachers<br>25 students + 2 teachers<br>25 students<br>(lower secondary level) | French and mathematics as dominant subjects, geography, history and technology as auxiliary subjects. Topic was a historical board game.   | Students worked on an interdisciplinary project, which lasts the whole school year. It consisted of creating from scratch a board game that takes place in ancient Rome (game-boards, pieces, clues, etc.). The aim of this session is to help the students to understand connections between Roman places and the figures by using visual and written support materials.  |
| Portugal | 1 teacher<br>26 students<br>(upper secondary level)                              | Geography as dominant and only subject. The topic of 'natural resources that population disposes could have references to biology and social science.                              | Students were provided exercises, used the internet, watch videos, followed a manual and prepared for an upcoming field trip where they would do exercises.  |

**Table 8: Examples of observed teaching sessions.**

As the examples from above reveals different approaches to cross-curricular teaching. For instance, Portugal stands out by not really including other subjects than the primary subject in the observed teachings, the Polish examples often includes an auxiliary subject for conceptual understanding, and the Danish, Norwegian, and French examples are dominated by project-based teaching involving multiple subjects, however, carried out in various ways. For a deeper understanding and look into one of the examples from above this report includes a detailed description of a cross-curricular teaching session, see next page. The teaching session is an example of project based cross-curricular teaching. The chosen session is from Denmark and provides a somewhat extreme example with multiple teachers, many students and no subject-restrictions at all. Project based cross-curricular teaching was also observed in Norway and France.

### Example: Observation at a Danish independent boarding school for lower secondary students

**Number of teachers and students:** 7 teachers, approximately 150 students in groups of 4-6 students

**Class level:** 10<sup>th</sup> grade. **Topic of session:** Individual topics for each project **Interrelationship between subjects:** Several subjects are included in each student project. Students draw on whichever subjects are relevant to their specific project. Large focus on competences related to project management, presenting/communicating and innovation. The subjects that appear most dominant are social science, Danish and English. Science subjects are only included. **Detailed description and context:** It is the third day of a project week where the students work in groups on different projects. The projects were proposed by companies or are the students' self-developed innovation projects. Groups were assembled on the basis of personality profiles/roles in project groups and interest. All groups have their own workspace in the gym (small corners divided by pin-up boards), most groups are present but some are out doing practical work or researching for their project. Materials for practical work (most often models) are available. Teachers are present at the teacher table but are not called for very often, some teachers circulate among the groups. The groups indicate on their pin-up board whether they would like help, would not mind an interruption, or would like peace to work. The pictures below give an impression of the atmosphere in the gym.

The majority of groups is very focused on the task at hand and has included various ways of organising, discussing, and making sense of their projects. What to the observer seems very messy actually seems to give the student overview of their project and their progression. The pictures below show two groups working on their projects.

At the end of the week the students pitch their project to the companies that originally made the project proposals. Afterwards the students discuss their ideas with the companies, and some will take the proposed ideas and use them in reality. **Examples of projects:**

- A group is developing a teaching session for the theme park Tivoli about Tivoli's history to be used in connection with their upcoming anniversary. The project also includes a proposal for the "future Tivoli". Here the group is building a model.
- A group is making suggestion to an aid agency about how to make people (especially immigrants) show up for their events. A group is developing a computer game. This was students' own innovation project.
- A group is developing new programme concepts for a Danish television network.



#### 4.2.4 Summing up realised cross-curricular teaching

The current status of European cross-curricular teaching varies greatly both within and among countries. In general, only few (if any) demands of cross-curricular teaching are made and initiatives seem to be driven by individual, specially engaged teachers (in Portugal such effort is even voluntary). School leaders are aware of practical issues with lacking time and fixed curricula

and many are trying to support the teachers' effort by introducing teacher teams and allocating time for joint planning among teachers. Both school leaders and teachers classify a range of activities as cross-curricular. Two types of activities stand out: cross-curricular project work and curricular correlation. Cross-curricular projects take place in France, Finland, Norway and Denmark and revolve around students' self-directed work on a pre-determined or self-selected theme with teachers from different disciplines as counsellors/supervisors. Curricular correlation consists of the coordination of themes that are taught in the same period. The individual teacher teaches from the perspective of his/her own subject in his/her own class time. Both school leaders and teachers see many positive aspects of cross-curricular teaching; it seems that it is not lack of potential that hinders cross-curricular teaching in the European schools.

### 4.3 Obstacles and enablers of cross-curricular teaching

Information about obstacles and enablers of cross-curricular teaching mainly stem from interviews with teachers and school leaders. Many points appeared in the previous section on the European status of cross-curricular teaching, but issues of specific concern are brought out below.

#### 4.3.1 Enablers of cross-curricular teaching

Both school leaders and teachers mentioned time for teacher collaboration as an essential enabler for cross-curricular teaching. Such time must be put in the work schedule and formalised in order to work for all teachers – otherwise it will only (or especially) engage teachers who actively seek out cooperation. A Danish school leader explained that they have established teacher teams and that each team have a furnished room where they can meet to discuss their approaches to teaching and possible collaboration projects. It is stressed that the schools must actively support teachers' collaboration:

*"If you want change and development it takes an effort on a school level and not just a few individuals here and there. There should be a system for collaboration, it should be expected, and it should be facilitated."* (Norwegian school leader)

*"It is very important to give the teachers time for planning. It can't be just up to the teachers to organise this kind of teaching."* (Norwegian teacher)

*"Since the start of the year, I've spent my time looking for teachers, [...] looking for time slots. We cross paths all the time in the corridors [...]. If we really want to carry out interdisciplinary projects, we have to have specific times and places."* (French teacher)

Other enablers brought out by school leaders are long-term planning and organisational willingness to learn and adapt. A Norwegian school has introduced training programmes for the entire staff and one of these modules is about cross-curricular tasks. Here the teachers have the opportunity to compare and apply competences among different subjects. One of the Polish school leaders also has teachers' competence development in mind:

*"Teachers need to be prepared for various questions from other fields, they cannot be narrowly prepared for a given subject, widening knowledge of related fields is important for giving students more holistic picture of matters"* (Polish school leader)



*"It is important to create spaces that do not close teachers in their subject, but rather compel them to talk to one another in order to work on transversal competences" (Portuguese school leader)*

Curricular flexibility and thus greater autonomy are mentioned as necessary enablers by both Polish and Portuguese school leaders as well as teachers. This follows the findings from Finland, where official documents curricular documents emphasis cross-curricular activities and that school leaders should have a vision and strategy for it, but also that:

*"...teachers' autonomy and independence of teaching was highlighted. The idea and need for cross-curricular activities should evolve from students' needs and teachers' ideas instead of coming as orders from above. Activities should remain flexible and free: 'I hope that this is not something we are demanded to do that you have to document and report everything you do. Rather, it should arise from your own aims and there should be free space and possibilities to use creativity. If you are tired, there is no need for creativity and new ideas.'" (Finish report, p. 8)*

It could seem that it is a balance act between support from the system (e.g. time and resources) and the freedom to choose which kinds of activities that should be cross-curricular. In the case of France, where interdisciplinary projects have been introduced to the curriculum, several teachers express frustrations in the lack of examples on "how to do it". It seems that these teachers could benefit from concrete examples as starting point for their own implementation.

Collaborations skills, teamwork, mutual understanding, reflections and past experiences are enablers pointed out by teachers. In line with this a French teacher describes how an established trust among teacher colleagues enabled him/her to build in other subjects in the teaching:

*"The legitimacy of teaching a different subject that's not your own comes naturally because we know one another; we trust one another; we give each other permission..."; "At the start, I said, I'm a French teacher: it's inadmissible, and then I quickly realised that actually it was fabulous. So, I worked on history and geography a lot, and that's how, in the end, I co-taught with myself, that is to say I created a maximum of linkages between the two subjects to interest [the students], which worked rather well." (French teacher)*

In the case of Portugal, enablers brought out by the school leaders are teachers' positive attitude and their voluntarism. The teachers here points to specific training, allotted time, curricular flexibility, informal spaces and spaces for organising cross-curricular activities, and evaluations that *"do not reduce the student to a number"* as elements that would enable their cross-curricular teaching practice. In Poland, some teachers also called for top-down initiatives like introducing cross-curricular teaching in an explicit way in official documents. However, they warn to caution; in order for true and successful cross-curricular activities to take place, a professional open-mindedness from the teachers must also be present.

#### **4.3.2 Obstacles**

From the point of view of the school leaders, one of the main obstacles for introducing cross-curricular teaching is teachers' lack of interest and willingness in changes and development. This

notion was expressed by e.g. Norwegian and Portuguese school leaders, according to them, the teacher excuse themselves with lack of time. A Polish school leader mentioned that some of his staff members are individualists and prefer working on their own, and a Danish school leader experienced that some teachers hold on to their core-subject and have difficulties looking beyond.

Another challenge that is brought out by both school leaders and teachers is the general lack of cross-curricular exams, which hinder teachers' focus on cross-curricular teaching. This issue is especially critical in Portugal. Teachers are less willing (or able) to spend time on cross-curricular activities when the assessments are oriented towards the individual subjects – they feel they are gambling with their students' success. In addition, according to the teacher, students are often not interested in subjects and additional work, which they will not be included in their final exams; therefore, it is very hard to motivate them to participate in such activities. A Polish school leader also problematized 'instability of the educational system'. Changing education reforms makes teachers less willing to put in the time and effort of developing innovative ways of teaching because they risk that the next reform will render their teaching project infeasible. This school leader wished for the possibility of a financial gratification to teachers who develop their teaching – a wish echoed by the teachers at the school.

Teachers generally emphasise lack of support from school management in terms of allocated planning time as an obstacle for collaboration that is necessary for successful cross-curricular teaching. It was evident from the school leader interviews that this is an issue that they are aware of. Some schools have implemented such planning time but – according to the teachers – not enough time. This follows Albrechtsen (2011) research on teacher collaboration in upper secondary school (after a reform), where it is argued that time is viewed as a "*scarce resource ... [a] measurable unit in terms of hours that can be negotiated with*" (p. 159). This entails some securities, because "*It gives them the assurance that they can only use the time they have been given*" (ibid) and some insecurities, because some of teachers 'own' time has become joint teacher collaboration time. As noted before, structures have a tendency to recreate and, therefore, "*... collaboration must be continuously re-launched in the teacher collegiate interaction systems*" (ibid, p. 160) for it to succeed. The problem is complex, as not only teachers encounter challenges – such as time –, but also lawmakers, school leaders, and other actors, who should be aware and actively participate in order to enable new structure to emerge.

Some school leaders also note that newly educated teachers are unfamiliar with cross-curricular activities, and in Portugal the school leaders state that newly educated teachers are generally not prepared to undertake cross-curricular teaching. Danish and French teachers mention different aspects of insecurity about teaching cross-curricular sessions. Some feel that their content knowledge in subject outside their official teaching competence is insufficient and fear to student questions that they do not know the answer to. Others resist teacher collaboration in the fear of judgements. Some Danish teachers also describe that the lack of control of the situation when the students work on self-chosen project can be intimidating but is something they have to learn to deal with. Furthermore, some finish teacher mention that "*... the continuum between different school levels can influence the possibilities of carrying out cross-*

*curricular activities. Teachers felt that in lower secondary education, students need to learn certain competences in order to manage in upper secondary level"* (Finish report, p. 8), which limits the time for cross-curricular activities.

Students' state-of-mind and the fact that students generally are unaccustomed to cross-curricular teaching are brought out by Polish teachers, whereas the Portuguese teachers point to a number of structural issues as obstacles such as lack of time, high workload, lack of training, framework of exams, lack of teacher collaboration, static curriculum, conservative pedagogical practice, etc. A teacher phrases:

*"The tight curricula of each of the subjects. The very definition of curriculum does not foresee transversality. Also, our practice the teacher works a lot in isolation, inside the classroom. The teacher's disciplinary training withdraws sensitivity for sharing."* (Portuguese teacher)

In general, it seems that obstacles for cross-curricular teaching mainly arise from either teachers' attitude and capabilities or practical issues such as a strict national curriculum and lack of time for preparation. On the subject of practical issues, a Polish school leader explained that cross-curricular activities mainly take place at lower secondary level because there is more time for it in terms of time scheduling at this level than at upper secondary level.

#### 4.3.3 Summing up enablers and obstacles for cross-curricular teaching

School leaders and teachers in five investigated European countries list a number of enablers and obstacles for cross-curricular teaching. Table below sum up the enablers and obstacles most often mentioned – naturally, many of these elements are each other's opposites.

| Enablers  | Obstacles  |
|---|--|
| <ul style="list-style-type: none"> <li>- Time and space for teacher collaboration</li> <li>- Curricular flexibility and greater autonomy</li> <li>- Evaluation/exams in cross-curricular competences</li> <li>- Training in cross-curricular teaching</li> <li>- Teamwork and collaboration skills</li> <li>- Mutual understanding and insight into other subjects</li> <li>- Open-minded teachers</li> </ul> | <ul style="list-style-type: none"> <li>- Lack of time</li> <li>- Fixed subject-oriented curriculum</li> <li>- Lack of evaluations of cross-curricular competences</li> <li>- Teachers' lack of interest and willingness</li> <li>- Teacher insecurity and unfamiliarity</li> </ul> |

Table 9: List of enablers and obstacles of cross-curricular teaching

#### 4.4 Required skills for carrying out cross-curricular teaching

Information about the skills required for carrying out cross-curricular teaching and teachers' needs for professional development mainly stem from interviews with teachers and school leaders. The requirements to teachers as stated by the school leaders encompass:

- strong pedagogical competences,
- solid subject knowledge,
- willingness to collaborate,
- and openness to changes and development.

The interviewed teachers supplement this list with:

- individual motivation for cross-curricular teaching,
- insight in other disciplines,
- curiosity and broad intellectual interests,
- management skills and project competences,
- good relations among colleagues,
- and broad life experience.

The Polish teachers perceive teachers' personality as the crucial factor. Personality is a recurrent theme in both the teachers and the school leader interviews. In addition to the beneficial personality traits already listed, a teacher point to spontaneity:

*"If a math teacher had a lesson before me and I see for example Pythagorean theorem on the blackboard I then pick up from there, discuss with my students and integrate it in my lesson. Cross-curricular teaching does not always have to be planned. It can happen spontaneously."* (Norwegian teacher)

#### 4.5 Teachers' need for training and professional development

The meta-findings of the situational survey point to a number of issues concerning the current status and possible implementations of cross-curricular teaching in European secondary education. It is clear that on the overall level, the schools lack incentives in the national curriculum and that a number of challenges revolving around the practical organisation e.g. time for teacher collaboration exist. These issues are to be dealt with politically and on school management level. The CROSSCUT project is able to point to these issues and problematize them, but CROSSCUT's primary focus is on the teacher level; what are the teachers' needs for training and professional development concerning conducting cross-curricular teaching?

From the situational survey, we point to the following focus areas regarding training and professional development of cross-curricular teachers:

- **Common understanding of 'cross-curricular':** Teachers (and school leaders) have very different understandings of the term 'cross-curricular'. It would be beneficial to have a common understanding and language regarding the topic.
- **Common understanding of 'cross-curricular':** It seems that many teachers refrain from cross-curricular teaching in fear of compromising their own subject and student's success in exams. Such teachers will benefit from the realisations that cross-curricular competences do not negatively affect subject-specific skills or competences. Cross-curricular teaching can also be a tool to overcome learning difficulties for students who struggle learning in a traditional classroom. Thus, cross-curricular activities can be framed as another way of learning.

- **Concrete examples of cross-curricular teaching activities:** Teachers who do not implement cross-curricular teaching on their own initiatives may benefit from concrete manageable examples of cross-curricular teaching activities. After familiarising themselves with different ways of implementing cross-curricular teaching activities they might feel more comfortable to make further developments by themselves.
  
- **Leadership in schools:** On the leadership level, the importance of supportive leaders who take responsibility of organising time and space for teachers' development of cross-curricular teaching activities is stressed. Furthermore, school leaders must actively foster shared educational objectives, shared professional beliefs, and professional trust among teachers to improve teamwork necessary for successful cross-curricular teaching.

These aspects of teachers' needs will be further elaborated on in output 2 of CROSSCUT, Common reference framework.

## 5 Conclusions

The present report shows findings of Output 1: Situational survey which is based on reviews of resource documents and school visits in six European countries: France, Finland, Portugal, Poland, Norway, and Denmark. The reviews were conducted in order to give insight into the intended level and orientation of cross-curricular teaching in the investigated countries. The school visits included interviews with school leaders, focus group interviews with teachers and observations of self-proclaimed cross-curricular teaching sessions and gave insight into the realised level of cross-curricular teaching practice as well as pointed to enablers, obstacles, and required skill for carrying out cross-curricular teaching. Conclusions have been made in the regularly 'summing-up sections' and suggestions for training and professional development of teachers with regard to cross-curricular teaching have been made.

Variety seems to be a keyword when describing the current status of European cross-curricular teaching practice; the investigations have offered various examples of cross-curricular teaching activities and various understandings of the term 'cross-curricular' and what classifies as such. It is notable that some schools are further along the process of implementing cross-curricular initiatives than their national curricula accommodate at present. In some cases, the schools actually feel that the subject-oriented focus of national curricula restrict the schools' effort to develop students' cross-curricular competences. Besides this general subject-oriented focus in the national curricula, lack of time for planning and for teacher collaborations appear to be one of the main obstacles for implementing cross-curricular teaching. Handling these issues would be important enablers of cross-curricular teaching. At present, it seems that only especially open-minded, self-confident, and engaged teachers willingly initiate cross-curricular teaching activities. However, it appears to be a general agreement among both teachers and school leaders that cross-curricular teaching activities have great potential to increase motivation, foster holistic ways of seeing matters and solve problems, provide meaningfulness to students, and develop key transversal competences.

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## Appendix 1: Review of national curricula, policy, and resource documents

The review of

- national curricula
- documents concerning the cross-curricular dimension in teacher initial and continuous training, in in-service teachers' required skills, and in textbooks and exams,
- paper, reports etc. describing national cross-curricular teaching intentions or practices in both historical perspectives as well as current state
- and other resource documents

is conducted to determine the intended level and orientation of cross-curricular teaching on national level, on the studied level of secondary education (lower or upper level) in each country.

All partners search relevant national documents and websites and compose a summary with important quotations included.

Relevant keywords to look for are: cross-curricular, cross-disciplinary, interdisciplinary, multidisciplinary, pluridisciplinary, transdisciplinary, secondary level/education/teaching.

The summary is sent to Nadia R. Dyrberg (nrnk@sdu.dk), SDU, March 15<sup>th</sup> at the latest.

## Appendix 2: Interviews with school leaders

The interviews with school leaders are conducted to determine the intended level and orientation of cross-curricular teaching on school level as well as exploring initiatives to enable teachers to carry out cross-curricular teaching sessions.

The interviews can take place as a focus group interview with all the school leaders or as individual interviews in connection with a visit to the school. Individual interviews can take place the same day as the focus group interview with teachers and observation of teaching practice at the school take place.

A semi-structured interview approach is utilised. The interviews are guided by a specific set of questions (serving as a checklist of topics to be covered) but still allow the interviewer to follow up on interesting matters brought up by the interviewee. As such, the questions included in the interview guide below are meant as guideline; the interviewer is free to vary the specific phrasing of questions and ask follow-up questions to clarify what has been said.

Interviewers need to be aware of group dynamics, if the interviews are conducted as a focus group interview. For example, if interviewees struggle making themselves heard, the interviewer can address these persons directly: “\_\_\_\_\_, do you have the same approach at your school?” or “Does this experience apply to all of you?”

In general, these recommendations proposed by Robson (2011)<sup>1</sup> should be followed:

- *Listen more than you speak.*
- *Put questions in a straightforward, clear and non-threatening way.*
- *Eliminate cues which lead interviewees to respond in a particular way.*
- *Enjoy it (or at least look as though you do).*

Interviews are conducted in the countries' primary language.

Interviews are audio-recorded and preliminary analysis in the form of summaries is performed. These English summaries are collected by SDU for meta-analysis.

### Interview guide

Prior to the interview's beginning

- Introduce yourself
- State the purpose of the study
- Obtain written consent to audio-record the interview (see “Consent form” below)

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<sup>1</sup> Robson, C. (2011). *Real World Research: A resource for users of social research methods in applied settings* (third edition). Padstow, UK: Wiley.

**Use of cross-curricular teaching**

1. Do teachers at your school conduct cross- curricular teaching?
2. If yes, please describe examples of cross-curricular activities in your school.
3. What are your impressions and conclusions from these experiences? When does cross-curricular teaching work for your students? Which practices worked best? Why?
4. While doing cross-curricular teaching, do teachers collaborate? How?

**Intended cross-curricular teaching**

5. What are the goals and expectations held by the school management at your school for the extent and format of cross-curricular teaching at your school?
6. Does teaching at your school live up to these expectations? Why /Why not – in your opinion?

**Enablers and obstacles of cross-curricular teaching**

7. What is being done to promote/encourage/assist teachers' cross-curricular teaching?
8. Who has the responsibility for cross-curricular teaching to take place? (Teachers, school leaders etc.)
9. What are the main challenges and obstacles you meet regarding cross-curricular teaching? How do you overcome them?
10. In your opinion, are the teachers sufficiently educated to handle cross-curricular teaching? If not, what could be done to develop these competences?

**Understanding of cross-curricular teaching**

11. What do you consider to be cross-curricular teaching? Please provide examples
12. What does your school consider to be cross-curricular teaching? Please provide examples
13. Is cross- curricular teaching included in the core curriculum or anyhow defined at national level? If yes, in what way is cross- curricular teaching defined on a national level?

**Safe-keeping of data**

Audio data files are kept for safe keeping for the entire project period and for five years after.

**Preliminary analysis**

The preliminary analysis is performed as a 'condensation of meaning' – a summary of main points with illustrative quotations included. Approximately two A4 pages (all together) is expected from each partner country to sum up all interviews with school leaders. The preliminary analysis is sent to Nadia R. Dyrberg (nrnk@sdu.dk), SDU, March 15<sup>th</sup> at the latest.

## Appendix 3: Focus group interview with teachers

The focus group interviews with teachers are conducted to explore teachers' understanding of cross-curricular teaching, their description of own cross-curricular teaching practice, and their perception of enablers and obstacles to carry out cross-curricular teaching sessions.

Focus group interviews take place with 6-8 teachers from the same school and can take place the same day as observation of teaching practice at the school.

A semi-structured interview approach is utilised. The interviews are guided by a specific set of questions (serving as a checklist of topics to be covered) but still allow the interviewer to follow up on interesting matters brought up by the interviewees. As such, the questions included in the interview guide below are meant as guideline; the interviewer is free to vary the specific phrasing of questions and ask follow-up questions to clarify what has been said.

When conducting focus group interview, the interviewer needs to be aware of group dynamics. For example, if interviewees struggle making themselves heard, the interviewer can address these persons directly: “\_\_\_\_\_, do you have the same approach to your teaching?” or “Does this experience apply to all of you?”

In general, these recommendations proposed by Robson (2011) should be followed:

- *Listen more than you speak.*
- *Put questions in a straightforward, clear and non-threatening way.*
- *Eliminate cues which lead interviewees to respond in a particular way.*
- *Enjoy it (or at least look as though you do).*

Focus group interviews are conducted in the countries' primary language.

Interviews are audio-recorded and preliminary analysis in the form of summaries is performed. The English summaries are collected by SDU for meta-analysis.

### Interview guide

Prior to the beginning of the interview

- Introduce yourself
- State the purpose of the study
- Obtain written consent to audio-record the interview (see “Consent form” below)

### Cross-curricular teaching practice

1. Please describe a cross-curricular teaching session.
2. How often do you conduct cross-curricular teaching?
3. How do you plan cross-curricular teaching sessions?
4. How do you conduct cross-curricular teaching sessions?
5. How do you evaluate cross-curricular teaching sessions?

6. Which subjects have you conducted cross-curricular teaching with? Why did you choose these subjects?
7. How often do you share your experiences and ideas about cross-curricular teaching with your colleagues? How do you share those experiences? What kind of feedback is useful in further use of cross-curricular teaching?
8. What do you think is the impact of cross-curricular teaching on pupils' subject-related knowledge and competences?
9. What do you think is the impact of cross-curricular teaching on pupils' transversal competences?

### **Enablers and obstacles of cross-curricular teaching**

10. In your experience, which teacher competences are important in order to plan and execute cross-curricular teaching sessions? / What do you think a teacher should know and be able to do in order to perform cross-curricular teaching?
11. Do you feel you are competent enough to perform cross-curricular teaching? If yes, how did you gain competence in this area?
12. Which enablers for cross-curricular teaching do you experience?
13. What is being done at your school to promote/encourage/assist cross-curricular teaching?
14. What could be done to further enable cross-curricular teaching?
15. In your experience, are there any obstacles for cross-curricular teaching? Please, provide examples.

### **Understanding of cross-curricular teaching**

16. What do you consider to be cross-curricular teaching? Please provide examples
17. What are the requirements to you about conducting cross-curricular teaching?

### **Safe keeping of data**

Audio data files are kept for safe keeping for the entire project period and for five years after.

### **Preliminary analysis**

The preliminary analysis is performed as a 'condensation of meaning' – a summary of main points with illustrative quotations included. Approximately two A4 pages (in total) is expected from each partner country summing up all teacher interviews. The preliminary analysis is sent to Nadia R. Dyrberg (nrdek@sdu.dk), SDU, March 15<sup>th</sup> at the latest.

## Appendix 4: Observation of teaching sessions

The observations are meant to serve as examples of how (self-identified) cross-curricular teaching takes place in practice in the six partner countries.

The observation of teaching can take place on the same days where you conduct focus group interviews with the teachers. In total, one or two sessions of cross-curricular teaching are expected to be observed at each school.

### Observation guideline and preliminary analysis

Outlines of each observed teaching sessions are produced. Two out of the 5-10 observed sessions are described in detail. The selected session to be described in detail should be that stand out, e.g. being best practice examples, having the most innovative practices or most strongly highlight obstacles or enablers.

Outlines should feature:

- Number of teachers and number of students involved
- Topic of the session
- The involved subjects and the interrelationship between them. (Are the subjects equal or does one subject appear as the primary subject with the other(s) as auxiliary subject(s)?)
- Brief description of the teaching and learning activities

Detailed description

- Number of teachers and number of students involved
- Topic of the session
- The involved subjects and the interrelationship between them. (Are the subjects equal or does one subject appear as the primary subject with the other(s) as auxiliary subject(s)?)
- Detailed description of the teaching and learning activities with examples of assignments.

The outlines and detailed descriptions are sent to Nadia R. Dyrberg (nrnk@sdu.dk), SDU, March 15<sup>th</sup> at the latest.

## Appendix 5: Consent form

Translate the consent form below. Make minor adjustments to your context if necessary. Use the consent form to obtain the signatures from all interview participants prior to the conduction of interviews.

### Consent form

I hereby give my consent to document this interview on [day] [month] [year] through audio recording for the purpose of research and development of cross-curricular teaching as part of the ERASMUS+ project 'CROSSCUT'. I also give permission for anonymised quotations to be included in publications. I am aware that I can withdraw my permission without explanation at any time.

I am a teacher/school-leader in \_\_\_\_\_ (name of school, city, country).

\_\_\_\_\_  
Date

\_\_\_\_\_  
Participant's signature

## **Appendix 6: Norwegian findings and national reviews of other countries**