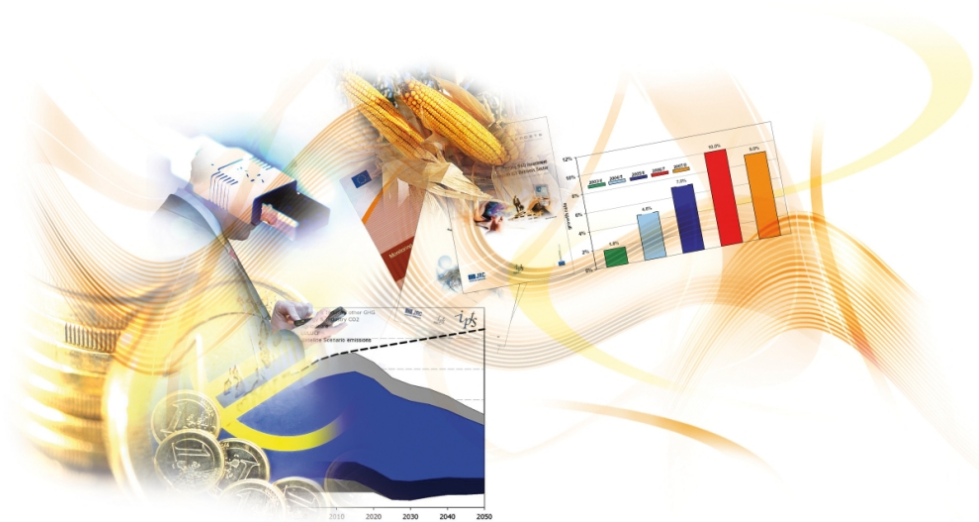


The Role of Creativity and Innovation in School Curricula in the EU27

A content analysis of curricula documents

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Preface

This report has been prepared by empirica, with the support of the Institute for Prospective Technological Studies (JRC-IPTS¹).

The report is part of a project on 'Creativity and Innovation in Education and Training in the EU27 (ICEAC)' carried out by the Institute for Prospective Technological Studies (IPTS) in collaboration with the Directorate General Education and Culture, Directorate A, Unit A1. This project aims to provide a better understanding of how innovation and creativity are framed in the national and/or regional objectives and applied in educational practice at primary and secondary level. It collects and analyses the present state of affairs in the Member States as regards the role of creativity and innovation in primary and secondary schools. The project started in December 2008 and the following methodological steps were taken:

- A scoping workshop (held in Seville on 23-24 February 2009);
- A literature review on the role of creativity and innovation in education by IPTS;²
- The current report on the analysis of curricula by empirica;
- A report on a teachers' survey conducted by IPTS and European Schoolnet and analysed by IPTS with the support of the University of Seville;
- Interviews with educational stakeholders by Futurelab and IOE;
- A report on good practices by Futurelab and IOE;
- A validation workshop (held in Seville on 1-2 June 2010);
- A final report.

More information on this IPTS project can be found at:

<http://is.jrc.ec.europa.eu/pages/EAP/iceac.html>

More information on current and past IPTS projects on ICT for learning can be found at:

<http://is.jrc.ec.europa.eu/pages/EAP/eLearning.html>

The studies and results of the IPTS Information Society Unit can be found on the Unit website:

<http://is.jrc.ec.europa.eu>

¹ The Institute for Prospective Technological Studies (IPTS) is one of the 7 research institutes of the European Commission's Joint Research Centre (JRC).

² See http://ftp.jrc.es/EURdoc/JRC52374_TN.pdf

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Executive Summary

Background, objectives and methodology

The objective of the study *The Role of Creativity and Innovation in School Curricula in the EU27: a content analysis of curricula documents* was to understand how Innovation and Creativity are framed within the EU Member States' learning objectives and / or school curricula at primary and secondary level. The study focused on compulsory education differentiated by school type (primary and secondary school) and subject. In total, 37 countries and/or regions were studied, the latter included the following: Wallonia, Flanders and the German speaking community for Belgium; Bavaria, Lower Saxony and Saxony for Germany; Andalucía, Extremadura and Madrid for Spain; England, Northern Ireland, Scotland and Wales for the UK.

Around 1,200 curricula documents were identified and analysed using the search terms Creativity and Innovation (and their stems *creativ** and *innovat**) and five synonyms of these terms which had been selected from an initial list of 15 synonyms.

This agreed wordlist was used for content analysis, and provided the number of:

- Hits (= frequency count; occurrences of the words in the wordlist / search terms in the curricula documents),
- Concordances (= list of occurrences of the words / search terms in the curricula text, presented within the context that they occur in), and
- Co-locators (= certain words frequently occurring next to or near the above words / search terms) for the words in the wordlists where identified.

In each case, the content analysis was carried out with the documents in their national language. No translations were used.

This report presents a summary and synopsis of the results. A more detailed country and/or region report is available on request from IPTS. It should be noted that although general conclusions are drawn in this report, certain restrictions and limitations should be taken into account when comparing and drawing inferences from the results. Limitations result from:

- the huge variety and differences between the national and regional education systems, the curricula, and their very different status and relevance in the overall educational systems, which differ from country to country,
- the (non) availability of curriculum documents in useable format for the content analysis in some countries, and
- the limitations of a software-based content analysis approach and methodology with a strong quantitative focus based on word counting and an analysis of search term frequencies.

However, both IPTS and the study team see the study results as an original contribution which needs to be complemented by further studies with other approaches and methodologies to achieve the overall objectives of understanding creativity and innovation in obligatory schooling. IPTS has taken this into account in the overall study design to ensure a comprehensive view and also that a comparison of the results with 'real life and practice in schools' is made.

Main Findings

Creativity and Innovation on the educational agenda

Creativity and Innovation – the latter to a much lesser extent– feature in the curricula of primary and secondary education in Europe. There are, however, major differences across countries. Most of the EU Member States and regions analysed (20 out of the 36 countries and regions) show relative occurrences of the search terms Creativity and Innovation and their synonyms in their compulsory education curricula which are above the European average of 0.73 hits per thousand curricula words.

As the table below illustrates, 11 countries and regions show high, 17 medium and only 8 countries and regions rather low relative occurrences of the search terms in compulsory education school curricula (general curriculum documents and subject curricula).

High (Relative occurrence >1.0)	Medium (Relative occurrence >0.5 - <1.0)	Low (Relative occurrence <0.5)
Austria Belgium - German speaking community Czech Republic Estonia Hungary Lithuania Latvia Portugal Slovenia United Kingdom - Northern Ireland United Kingdom - Scotland	Belgium - Flanders Bulgaria Germany - Bavaria Germany - Saxony Greece Spain - Andalucía Spain - Extremadura Spain - Madrid Spain - national level Finland France Ireland Luxembourg Slovakia Sweden United Kingdom - England United Kingdom – Wales	Belgium - Wallonia Germany - Lower Saxony Denmark Italy Malta The Netherlands Poland Romania

This shows that Creativity is referred to in school curricula in all countries and is already part of the educational political discourse in most European countries. This preliminary consideration needs to be validated by analysing the corresponding situation in real life situations in schools.

Definition and conceptualisation of Creativity and Innovation

Overall, two major approaches to Creativity seem to appear. When Creativity is defined as a creative task or activity, then it is usually linked to specific subjects such as Art, Music, Languages, and Technologies. The focus is on doing things creatively. The other approach conceives Creativity more broadly and considers it as a skill, like ‘creative thinking’ or ‘creative problem solving’ which should be encouraged and developed in all subjects. In this more transversal approach, the world Creativity is often linked to capacity building,

empowerment, problem solving, self expression and (personal) development of pupils and students. This is illustrated by the use of words close to the search term like: awareness, capacity, independence, initiative, learning, personality, responsibility, skills, solutions, understanding or thinking.

Linking of Creativity and Innovation in specific subjects

The use of the word Creativity can be found in almost all school curricula but more frequently in subjects like Arts or Music. However, there are variations across the countries which are further described below.

In some countries (e.g. Northern Ireland and Scotland especially) Creativity and its synonyms are frequently mentioned in all subject groups. However, the term hardly appears in any of the subject groups (including the Arts) in other countries (e.g. in Wallonia, Lower Saxony, Denmark, France, Netherlands, Poland). In most countries, we find high relative occurrences in the subject group Arts and mostly substantially smaller relative numbers of occurrences in the other subject groups, which vary depending on the country or region, with no clear pattern.

Focus of the use of Creativity and Innovation

Analysing the results as to the target group or person addressed in the curricula clearly indicates that most occurrences –in both primary and secondary education - focus on the pupil's learning experience and projected outcomes, i.e. the focus is clearly on the pupil / student and the learning process. References to teachers as a target group occur more often in general guidance documents than in subject curricula.

Information and Communication Technologies (ICT), Creativity and Innovation

The mention of ICT is, in most cases, restricted to a few subjects and rarely connected to Creativity. Sometimes ICT is referred to indirectly in the curricula, using expressions like 'computer', 'new media' and 'media competence', or referred to as a tool to be used throughout the teaching and learning process.

Where ICT as a subject exists, ICT is comprehensively mentioned in the corresponding curricula. There is no overall clear pattern, or relationship with Creativity, amongst the other curricula. Some subject curricula (for instance, Social Studies, Art, and Science in several countries) mention ICT briefly, whilst other subject curricula make no mention at all.

In several countries (e.g. Wales, England, Northern Ireland, France, Luxembourg), ICT is seen as a cross-curricular issue and included in general introductory documents (sometimes linked to Creativity), while in other countries and regions, dedicated regional plans and programmes promoting the use of ICT in schools in general are referred to.

The relevance of general introductory, guidance and cross-curricular documents

In most countries, relevant general introductory documents, guidance and cross curricular documents could be identified in addition to the subject-based curricula documents. These documents are of particular relevance in some countries as they define overarching issues and topics like 'ICT', or 'Creativity' as competences to be achieved and sometimes provide guidance for schools and teachers.

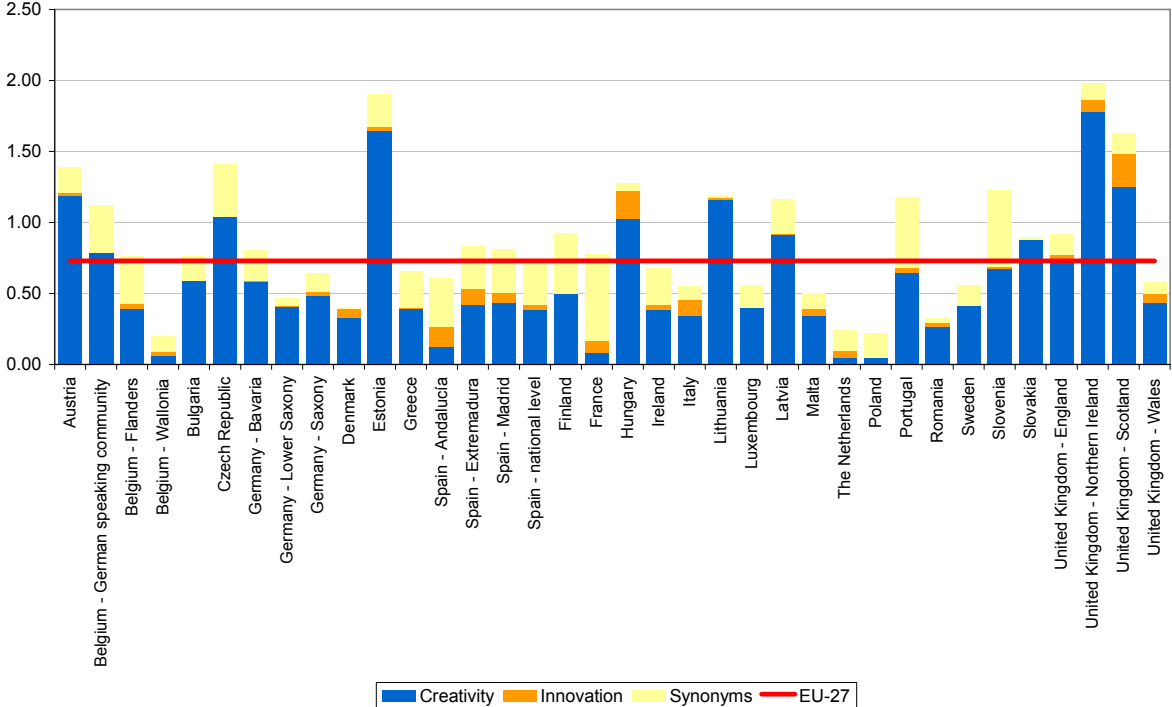
In general, one has to bear in mind that national curricula serve different purposes in different countries. In some countries they are statutory, formal and prescriptive; in others they constitute only a general framework to be filled with content and further refined by the

schools themselves. The legal status of school curricula varies between countries, which poses certain limitations on direct comparisons between them. In many countries, national school curricula are supplemented or re-interpreted by regional, local, school and teacher / class curricula or schemes of work. This means that caution must be exercised in drawing conclusions from comparing national curricula.

Concrete Results from the Content Analysis

Overall general results: In an analysis of the occurrence of the search terms in all school curricula, including relevant general introductions, guidance and cross-curricular documents and subject-based curricula in the different countries, it became apparent that the word Creativity is relatively frequently mentioned in school curricula in many European countries, unlike Innovation which hardly occurs at all in curricula.

Relative occurrence of Creativity, Innovation and their synonyms in school curricula in Europe (EU27)



Creativity is by far the dominant word, with occurrences ranging from 0.04 in the Netherlands and Poland to 1.78 in Northern Ireland. There are only few exceptions like in France, Andalusia, Netherlands and Poland where synonyms are more frequently used than the term Creativity. Innovation as a term only plays a minor role and is most prominent in Scotland and Hungary. However, even in these countries, its relative occurrence is only 0.23 and 0.20 respectively.

Relative occurrence of Creativity, Innovation and their synonyms in primary and secondary school curricula in Europe (EU27)

Country	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Austria	1.19	0.02	0.18	1.37
Belgium - German speaking community	0.79	0.00	0.33	1.12
Belgium - Flanders	0.39	0.04	0.33	0.74
Belgium - Wallonia	0.07	0.02	0.11	0.20
Bulgaria	0.59	0.00	0.17	0.76
Czech Republic	1.04	0.00	0.37	1.41
Germany - Bavaria	0.58	0.01	0.22	0.80
Germany - Lower Saxony	0.41	0.00	0.05	0.46
Germany - Saxony	0.48	0.03	0.13	0.64
Denmark	0.33	0.06	0.00	0.40
Estonia	1.65	0.03	0.23	1.90
Greece	0.39	0.00	0.26	0.66
Spain - Andalucía	0.13	0.14	0.34	0.60
Spain - Extremadura	0.42	0.11	0.30	0.83
Spain - Madrid	0.43	0.07	0.31	0.81
Spain - national level	0.39	0.03	0.30	0.72
Finland	0.50	0.00	0.43	0.93
France	0.09	0.09	0.61	0.78
Hungary	1.02	0.20	0.05	1.27
Ireland	0.39	0.04	0.26	0.68
Italy	0.34	0.11	0.10	0.55
Lithuania	1.16	0.01	0.01	1.18
Luxembourg	0.40	0.00	0.16	0.56
Latvia	0.92	0.00	0.25	1.16
Malta	0.35	0.05	0.11	0.50
The Netherlands	0.04	0.05	0.14	0.24
Poland	0.04	0.00	0.17	0.22
Portugal	0.65	0.03	0.50	1.18
Romania	0.27	0.03	0.03	0.32
Sweden	0.41	0.00	0.15	0.59
Slovenia	0.67	0.02	0.54	1.52
Slovakia	0.88	0.00	0.01	0.89
United Kingdom - England	0.73	0.04	0.14	0.91
United Kingdom - Northern Ireland	1.78	0.08	0.12	1.98
United Kingdom - Scotland	1.25	0.23	0.14	1.62
United Kingdom - Wales	0.43	0.06	0.08	0.58
EU-27	0.52	0.03	0.17	0.73

General curriculum documents: The above table summarises results from all curricula documents, including subject-based curricula and general curriculum documents. 'General documents' refers to relevant introduction texts extracted from curricula or introduction

documents, further guidance documents or texts/documents dealing with relevant cross curricula issues. These are available in most countries under review.³

The search terms Creativity and Innovation and their synonyms appear in these general documents more frequently when compared to all documents: 1.29 per thousand words (relative occurrence) against 0.73 for all documents (including the subject-based curricula and general documents).

The range of differences between occurrences in general documents is substantial. Sweden (0.00) and Poland (0.36) are at the bottom end of relative occurrences and Slovenia (3.72) and Northern Ireland (2.17) at the top. In countries like France, Portugal and Slovenia the high relative occurrences are due to very high figure for the synonyms. These are five times above the average relative occurrence (0.29) in Portugal (where it is 1.55), more than four times in France (1.33) and more than three times in Slovenia (0.98). With an average relative occurrence of 0.14, Innovation is rarely mentioned. The highest relative occurrence appears in Hungary (0.51).

Some countries rank high in terms of the relative occurrence of the search terms on both types of curriculum documents (i.e. general documents and subject-based curricula). These are countries and regions like the German-speaking community in Belgium, the Czech Republic, Estonia, Hungary, Lithuania, Portugal, Slovenia, Northern Ireland and Scotland. Others show very high relative occurrences on the 'general documents' and relatively low figures in the subject-based curricula (e.g. Italy, Malta). Both results may be an indication of the high importance given to the cross-curricular and general framework and guidance documents in these countries with respect to the definition of Creativity as a key objective of teaching and learning and its high importance in compulsory education in general.

Subject-based curricula documents: Compared to the general curriculum documents analysed above, the relative occurrence of the search terms and their synonyms in the subject-based curricula documents only is at a lower level (0.70 compared to 1.29 occurrences per 1,000 words). Again, there are important country differences. In some EU Member States, the search terms occur more frequently in relative terms (more than twice as often and, in some cases, almost three times as often) than average (0.70) - i.e. in Estonia (1.92), Northern Ireland (1.92), Scotland (1.72), the Czech Republic (1.51) and Austria (1.49). Countries like Bulgaria (0.20), Poland (0.20) and the Netherlands (0.24) achieve the lowest figures.

There are few differences in occurrences of the search terms between **primary and secondary school curricula** (excluding general and cross-curricular documents). In **primary school curricula**, the average relative occurrence of all search terms together is 0.68, which is almost identical to the value for all school curricula (0.73) (see table above). There is a huge variance, however, between the countries. The overall range of all search terms is from 0.00 in Wallonia and the Netherlands to 1.92 in Estonia. Creativity is by far the most dominant search term, with relative occurrences ranging from only 0.00 in Wallonia and the Netherlands to a high 1.62 in Estonia. In some countries like France, Flanders, Czech Republic, Bavaria and Spain (national level) and Poland the synonyms are rather prominent with values reaching beyond 0.50, while the average relevance occurrence per 1,000 words across all countries remains at a low 0.23. Innovation as a term only plays a very minor role (its average relative occurrence is 0.02) and is most prominent in Northern Ireland (0.25).

³ Austria, German speaking community in Belgium, Flanders, Czech Republic, Bavaria, Saxony, Estonia, Greece, Andalucía, Extremadura, Madrid, Spain - national level, Finland, France, Hungary, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Sweden, Slovenia, Northern Ireland, Scotland, Wales

Overall, the results for **secondary schools** are very similar to the ones for primary schools with an average relative occurrence of all the search terms of 0.69 (compared to 0.68 in primary school curricula), 0.52 (0.43) for Creativity, 0.03 (0.02) for Innovation and 0.14 (0.23) for the synonyms. The same applies to the range of values between the countries for Innovation and the synonyms. Again, a large variation in the use of the term Creativity can be observed between the countries, with the by far highest value of 3.15 for England and the lowest values of 0.04 for the Netherlands.

Analysis according to subject groups

Occurrences were also analysed according to school subject and type (primary and secondary). Due to the vast number of school subjects and to the differences in subject allocations between the Member States, the study team decided to cluster school subjects into 8 subject groups, namely: Arts, ICT, Languages, Mathematics, Natural Sciences, Physical Education, Social Sciences and Other.

Overall, Creativity shows the highest number of relative occurrences in all subject groups, followed by the synonyms. Innovation comes last, at very low values.

The subject group “Arts” shows the highest overall relative occurrences (total: 2.24), which are mainly on Creativity (1.66) followed by its synonyms (0.55).

The subject groups “ICT” (1.13) and “Physical Education” (0.78) ranks next, while all other subject groups score below the average.

Relative occurrence of Creativity, Innovation and their synonyms in school curricula according to subject group in Europe (EU27)

Subject group	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Arts	1.66	0.03	0.55	2.24
ICT	0.85	0.16	0.13	1.13
Physical Education	0.54	0.01	0.23	0.78
Languages	0.50	0.01	0.15	0.66
Social Sciences	0.24	0.05	0.10	0.39
Other	0.28	0.02	0.06	0.35
Mathematics	0.17	0.01	0.10	0.28
Natural Sciences	0.20	0.02	0.06	0.28

When differentiating according to school type, it becomes apparent that the relative occurrences for both primary and secondary schools are at rather similar levels for all subject groups, with secondary schools slightly above primary schools in most subject groups. Only the subject groups Arts and ICT achieve figures above the average.

I. Introduction and Background

The present study, an “Analysis of the role of Creativity and Innovation in school curricula in the EU27”, was carried out by JRC-IPTS⁴ on behalf of the Directorate General Education and Culture (DG EAC).

In December 2008, IPTS started the ICEAC project on “Creativity and Innovation in Education and Training in the EU Member States”. The objective of this project was to provide a better understanding of how Innovation and Creativity are framed in the national and/or regional objectives and applied in practice in primary and secondary level education. The study aimed to investigate the present state of the affairs in the EU Member States in relation to the role, if any, of Creativity and Innovation in national schools’ curricula and in teaching and learning practices.

The project was divided into different studies which:

1. Provide an overview and understanding of educational policies explicitly dealing with creativity and innovation;
2. Give an insight on a series of conditions that implicitly support creative learning and innovative teaching;
3. Assess what support is offered to develop creativity and innovation in EU Member States;
4. Assess experts' and educational key actors' perceptions of how creativity and innovation are dealt with/approached in their respective countries;
5. Collect and examine a number of good practices for innovation and creativity;
6. Compare the explicit educational objectives/curricula on creativity and innovation with actual support mechanisms and practices in EU Member States;
7. Look at what role ICTs are playing in fostering creativity and enabling innovation in Education and Training (E&T).

The present study addresses point 6. Its general objective is to carry out an analysis of the role of Creativity and Innovation in national curricula for compulsory education at primary and secondary education levels to provide a better understanding of how Innovation and Creativity are framed within the EU Member States learning objectives and/or school curricula at primary and secondary level. As such, the curriculum analysis in the present ICEAC study is only part of a much broader information gathering exercise. The other ICEAC studies referred to above, including the literature review, interviews with stakeholders, examples of good practices, and the European survey of teachers had already been carried out or were running in parallel.⁵ Together with the present study, they provide a rich picture of the present state of affairs in the EU Member States of the role of Creativity and Innovation in national school curricula and in teaching and learning practices.

In the present study, all EU27 countries have been studied. In countries where the responsibility for education and schools is primarily located at the regional level, curricula from specific regions have been identified, selected and analysed. This has been the case in the United Kingdom, Belgium, Germany and Spain. For the United Kingdom, curricula for the countries England, Wales, Scotland and Northern Ireland have been analysed. For Belgium, separate reports for the Wallonia and Flanders regions have been prepared. In Germany, the study team, in co-operation with IPTS, agreed on and selected three regions to be studied:

⁴ The Institute for Prospective Technological Studies (IPTS) is one of the 7 research institutes of the European Commission’s Joint Research Centre (JRC).

⁵ For an overview of the general study, see <http://is.jrc.ec.europa.eu/pages/EAP/iceac.html>

Saxony, Bavaria and Lower Saxony. In Spain, three regions were also chosen (Andalucía, Extremadura and Madrid) and an analysis of the relevant national level documents carried out.

An analysis for Cyprus could not be carried out as the relevant educational websites - such as the website of the Ministry of Education and Culture (<http://www.moec.gov.cy>) and the website of the educational reform (<http://www.paideia.org.cy>) - were undergoing major reconstructions as regards structure, activities and information provided. When data was being collected (from 15 September to 15 October 2009), these websites displayed no curricula for primary education and for secondary education, only documents for seven out of 30 subjects were listed. The study team also received a printed copy of the primary school curriculum. This was scanned using Optical Character Recognition Software but the low quality of the result did not allow analysis of the text. For these reasons, it was decided not to include an analysis of curricula for Cyprus.

II. Research Method

The research approach of the present study was a content analysis of national curriculum texts. The frequency that the words 'Creativity' and 'Innovation' and their synonyms were used in national curriculum texts, and to a lesser extent the context for their use, was the focus of the analysis. Subsequently the approach and methodology is described in more detail guiding the reader through the process steps of preparation, organisation, execution and analysis.

1. Identification of curriculum texts and selection of curricula

Through Eurydice⁶ and IPTS the study team was provided with links to websites and/or documents which – amongst others - include school curricula for each of the EU27 countries. The information about compulsory schooling in the EU27 countries has been taken from "Compulsory education in Europe 2009/10"⁷ as well as from "Eurybase - Descriptions of National Education Systems and Policies".⁸

Empirica together with National Correspondents had to get access to all the national websites, identify whether they contained the relevant documents, i.e. all curricula for all subjects and cross-curricular documents in compulsory education. Together with the National Correspondents and supported by national experts these sources and associated documents were verified and the curricula documents identified and selected for each country. Where these sources turned out to be insufficient the above actors became active in searching for the correct curricula documents. Each Country Report provides a list of documents including the year of publication and the URL from where they have been downloaded providing full transparency as to the sources accessed and documents used for analysis (Chapter VII in each Country Report).

Relevant guidance and supporting documents of different type could also be identified in some countries. These include relevant introduction texts extracted from curricula or introduction documents and / or further guidance documents and / or texts / documents dealing with relevant cross curricular issues.

These have been analysed and reported about in the same way as the curricular introduction sections and cross curricular documentation described above.

In a further step the relevant curricula had to be selected from the documents identified on the different websites or provided by national or regional ministries or other government organisations.

The study team followed different approaches to develop existing but not suitable documents for proper use for the content analysis. These included the use of OCR to convert scanned documents into readable formats, and splitting documents and where necessary re-merging them to achieve subject-related curricula documents for the content analysis.

⁶ Eurydice is a network which provides information on and analyses of European education systems and policies. It consists of 35 national units based in all 31 countries participating in the EU's Lifelong Learning programme (EU Member States, EEA countries and Turkey) and is coordinated and managed by the EU Education, Audiovisual and Culture Executive Agency in Brussels, which drafts its publications and databases

⁷ http://eacea.ec.europa.eu/education/eurydice/documents/compulsory_education/106EN.pdf

⁸ http://eacea.ec.europa.eu/education/eurydice/eurybase_en.php

In several countries and regions (e.g. Austria, England, Northern Ireland, Saxony, Lower Saxony) the relevant curricula documents are already provided in the ideal format for the analysis, i.e. for each subject and each school type a document is provided in a format (e.g. pdf) which can easily be converted to a txt file required for inclusion in the content analysis software tool WordSmith.

In other countries and regions (e.g. Lithuania, Finland, Spain or Romania) further work was needed to prepare the relevant documents for further use. This included for instance splitting documents which provided all subject curricula for a specific school type according to subject or compiling and merging different parts of documents in a way to end up with documents relating to subjects and the different school types.

In several cases (e.g. Estonia, Finland, Latvia, Hungary, Scotland or Portugal) differentiation according to school types (i.e. primary or secondary) turned out to be impossible, for instance because the system combines primary and lower secondary schools in one institution. In such cases, a combined analysis of primary and secondary school curricula was undertaken for the different subjects.

In two cases it was not possible to split the documents according to subjects since the documents are not differentiated that way. This applies to Poland (the national curriculum texts for primary education were not divided by school subjects) and Italy (the texts for some school types in upper secondary school were not divided by school subjects).

Some curricula documents were available as scans only. In these cases the study team converted curricula documents to make them useable for the content analysis (e.g. Bulgaria, France and Portugal). In other cases (even after several attempts) the conversion did not reveal a satisfactory result (e.g. Cyprus) since the scans were of a very poor quality.

An overview of the curricula according to school type in the EU27 countries as they have been analysed as part of the present study is depicted in the following table.

Table 1: Overview of school curricula analysed according to school types in the EU27*

Country / Region	Primary	Lower secondary	Upper secondary	Secondary	Primary and secondary
Austria	x	x	x		
Belgium - German speaking community					x
Belgium - Flanders	x			x	
Belgium - Wallonia	x	x	x		
Bulgaria	x	x	x		
Czech Republic	x			x	x
Germany - Bavaria	x	x	x		
Germany - Lower Saxony	x	x	x		
Germany - Saxony	x			x	
Denmark	x			x	x
Estonia					x
Greece	x	x	x		
Spain - Andalucía	x			x	

Country / Region	Primary	Lower secondary	Upper secondary	Secondary	Primary and secondary
Spain - Extremadura	x			x	
Spain - Madrid	x			x	
Spain - national level	x			x	
Finland					x
France	x	x	x		
Hungary					x
Ireland	x			x	
Italy	x	x	x		x
Lithuania	x			x	
Luxembourg	x			x	
Latvia					x
Malta	x			x	
The Netherlands	x	x	x		
Poland	x			x	
Portugal					x
Romania	x	x	x		
Sweden					x
Slovenia					x
Slovakia	x	x	x	x	
United Kingdom - England	x			x	
United Kingdom - Northern Ireland	x			x	
United Kingdom - Scotland					x
United Kingdom - Wales	x			x	x

* No data for Cyprus could be made available

For further information on where to find the curricula, and how the curricula are organised, the reader is refer to Appendix 1, which provides detailed information per each country regarding the curricula documents.

2. Relevant issues for consideration, restrictions and limitations

The above methodological elaborations have already demonstrated the challenges and problems associated with the preparation of school curricula documents from the different EU Member States and regions for a comparative analysis.

There are a number of further considerations, restrictions and limitations which have to be borne in mind as relevant background information.

Use of curricula documents for compulsory education in the EU Member States

The identification and selection process of relevant curricula documents has already been described above, including the description of further necessary steps which had to be undertaken for each country and region to develop and prepare these documents for use in a software tool-based content analysis.

Utmost caution has been exercised to ensure that the correct relevant curricula documents have been identified and selected. Different actors have been involved in this process including experts from Eurydice and IPTS, national government representatives, National Correspondents employed by empirica in each of the EU Member States and the empirica study team.

However, there remains some uncertainty as to whether in all cases the correct documents have been selected and used. This uncertainty stems from the fact that even the simple question “what is compulsory education” and how is this reflected in the school type differentiation in a country could not always be answered with certainty. Different experts expressed different views. Sometimes the information provided in reports on Eurydice websites was questioned by national experts and in such cases solutions had to be found. In other cases and due to the frequent changes in national educational systems some information available on public websites turned out to be outdated and had to be replaced by more recent information.

One objective of the present study was to carry out a comparative analysis of the use of Creativity and Innovation in school curricula in all EU Member States at the level of school type and at subject level. The problem here is the fact that the number of subjects taught in different school types and across Europe differs widely. In some countries, like for instance Romania, the number of subjects taught is very large and more than 100 documents had to be analysed. In total the study team had to analyse around 1,200 curriculum documents in all the 36 countries and regions under analysis. The analysis also revealed that subjects in one country did not always have an equivalent in others or an equivalent which did not match perfectly in terms of content.

As long as the analysis is restricted to a single country or region this does not provide any problems. However, problems emerge when trying to compare the results from the different countries. To circumvent and solve this problem the study team decided to develop so-called ‘subject groups’ to which each single subject in each country and region was allocated individually and to then restrict the interpretation and analysis to a subject group level.

From many countries the study team received the information from national contacts (e.g. national government representatives, National Correspondents) that curriculum reforms are in progress and new curricula about to be released either in 2010 or 2011 (e.g. Latvia, Bulgaria, Slovakia or Portugal). In such cases the decision was taken to select and use the presently available curricula documents.

Translation of subject names from national language to English was made using translations provided by the national ministry or if these could not be identified Eurydice translations were used or own translations by the study team/National Correspondents have been made.

Comparability of curricula documents

Some challenges as to the comparability of curricula documents have already been described above also describing how these have been solved in the present study. There are further issues and challenges concerning the comparability which need to be borne in mind

when reading the results sections of the present report and which pose some restrictions on a comparative analysis. These include the following:

National curricula serve different purposes in different countries. In some countries they are statutory, formal and prescriptive; in others they only constitute a general framework to be filled with content and be further refined by the schools themselves. This is confirmed by a recent OECD report: "In a number of countries (e.g. Austria, Finland, Norway, and the Netherlands) there are minimal or no guidelines at national level for teaching specific subjects or competencies, as schools and teachers are independent and expected to determine this by themselves".⁹

The legal status of school curricula varies between countries, which poses further limitations to their direct comparison.

Further relevant (policy) documents, for instance non-statutory guidance material, are provided alongside the school curricula in several countries. In these documents the search terms, especially the term Creativity, is also mentioned. This was also pointed out by a recent OECD report: "There may, however, exist relevant guidelines or aides, such as the Finnish guidebook for teachers on cross curricular themes or the Irish ICT framework on integrating ICT in the curriculum."¹⁰ For the purpose of the present study it was decided to carry out an analysis of school curricula alongside with an analysis of other relevant guidance and cross curricular documents where these exist and report about the results in the same chapter in the Country Reports.

In many countries national school curricula are supplemented or re-interpreted by regional, local, school and teacher / class curricula or schemes of work. This means that caution must be exercised in drawing conclusions from national curricula.

Difference between curricula and educational practices

Actual practice and what happens in classrooms can be very different to what is stated and described in the curricula and therefore cannot be extrapolated or inferred from national curricula. IPTS and the study team are fully aware of this. The overall ICEAC approach has considered this outside the present study through a European school survey to assess the conditions for Creativity and Innovation in each country at the school level, which has been conducted from 15 September to 15 October 2009.

3. Search terms

The content analysis searched for two types of word: a) stems of the words creativity and innovation (Creativ*¹¹ and Innovat*). For the majority of member states one stem was sufficient, however for some states two or three stems had to be used because more than one word in the language had the same meaning as creativity and/or innovation. b)

⁹ OECD: 21st Century Skills and Competences for new Millennium Learners in OECD Countries. EDU Working Paper No. 41, 18 December 2009.

¹⁰ OECD: 21st Century Skills and Competences for new Millennium Learners in OECD Countries. EDU Working Paper No. 41, 18 December 2009.

¹¹ The asterisk means that the word is truncated and is used as a stem. For the word "creativity", it was decided to use the stem creativ* and not the one creat* in order to exclude words as "create" and "creation". Although this two words could be linked to creative production, choosing the stem creat* would have meant having to deal with a very high number of occurrences, many of which would have been arbitrarily determined to be relevant or not. As the first aim of this analysis was to highlight if creativity and innovation are explicitly mentioned in school curricula, such a search would have gone beyond the scope of this study.

Synonyms of the words creativity and innovation. The number of synonyms for states varied from three synonyms to six synonyms. The variation was due to the synonyms available in different languages.

The complete wordlists in the national languages and their English translations are provided for all countries and regions in Annex 2.

The overall list of synonyms was developed, discussed and finally agreed upon between the study team and IPTS. This list, presented below, includes words which are not synonyms by definition, but that are related to creativity and innovation according to the literature in the field. From this list, the National Correspondents were asked to select the five most relevant for their country:

- Risk-taking
- Ideas
- Think*
- Imagin*
- Connections
- Original*
- Experiment*
- Collaborat*
- Discover*
- Curiosity
- Entrepreneurship
- Cutting-edge
- Fertil*
- Groundbreaking
- Initiative
- Inspir*
- Invent*
- Pioneer*
- Explor*.

The final selection of synonyms was agreed on with the National Correspondents in each country following intensive discussions with the aim to end up with a meaningful and manageable number of synonyms based on the above agreement.

At the start of this process and for different countries the study team started with the stems of the two key search terms and a rather large number of around 10 (or even more) synonyms and carried out content analyses with these larger numbers of synonyms to identify those revealing most meaningful results. The results were analysed and an agreement was reached between empirica and the National Correspondents about those synonyms to be excluded because they did not provide substantial added value to the analysis and those to be kept. This resulted in a different number of synonyms for each of the search terms (Creativity and Innovation) for each country. Typically not the complete synonym words but their stems were taken, e.g. 'initiat*' or 'invent*'.

In some countries and after the validation of the first analysis results by national experts the wordlist was refined and the analysis repeated since other search terms turned out to be more meaningful and appropriate.

In the case of France and at the request of the national government experts the list of synonyms was changed after an initial content analysis had been completed and the analysis was re-done with a revised list of synonyms based on the suggestions from the national government expert. This explains the difference between the search terms used in France and Belgium-Wallonia, albeit curricula are written in the same language.

4. Content analysis: frequencies of stems/words

Empirica used the software tool WordSmith to carry out the content analysis and identify the words from the wordlists described above in the 1,244 subject curricula documents separately for each country and region. This resulted in the number of:

- Occurrences (= frequency of occurrences of the selected stems/words in the curriculum texts),
- Concordances (= list of occurrences of the stems/words in the wordlist explained within the context that they occur in), and
- Co-locators (= selection of words frequently occurring next to or near the stems/words in the wordlists).

In each case the content analysis was carried out with the documents in their national language. No translations were used.

Before starting the analysis work, the National Correspondents analysed the hits identified first for their relevance to exclude irrelevant uses of the terms, for instance the expression "Creative Director". For each country the analysis was carried out separately and in several parts. It started with a frequency analysis based on the absolute numbers and relative numbers of occurrences of the search terms and their stems and synonyms differentiated by school type and subject. This was followed by a brief analysis of the most important co-locators. This was the 'quantitative' part of the analysis which was complemented by a more 'qualitative' approach with the analysis of the concordances. The concordance analysis provides context information and helps to reveal information on the type of use of words searched for, how they are defined, conceptualised and framed.

Where available, curriculum introduction sections and cross curricular documentation have also been analysed using the content analysis tool WordSmith. In the cross curricular documents where the search terms occurred, these have been analysed in Chapter V in the relevant Country Reports.

The content analysis methodology used in the present study has its limitations since it has a more quantitative focus and is based on word counting and an analysis of frequencies of the search terms which sometimes is criticised as 'mechanistic'. The analysis methodology was agreed upon between IPTS and the study team and both are fully aware of the limitations. But both see the study results as one important contribution which has to be complemented by further studies with other approaches and methodologies to achieve the overall objectives of the ICEAC study. IPTS has taken account of this in the overall study design to ensure a comprehensive view and also a comparison of the results with 'real life and practice in schools' to be obtained (see introduction).

5. Country / region reports

The results from the content analysis were summarised separately for each country and region in Country Reports with a length of between 20 and 50 pages. The reports were written using a common and standard format agreed between IPTS, empirica and European Schoolnet. These reports are available on request from IPTS.

In the more qualitative part with the analysis of the concordances a structured description format for the presentation of results for each subject and school type was provided which also included scales to be used for classifying the 'connection and relationship to ICT' and the overall 'relevance' of Creativity and Innovation in each subject curriculum.

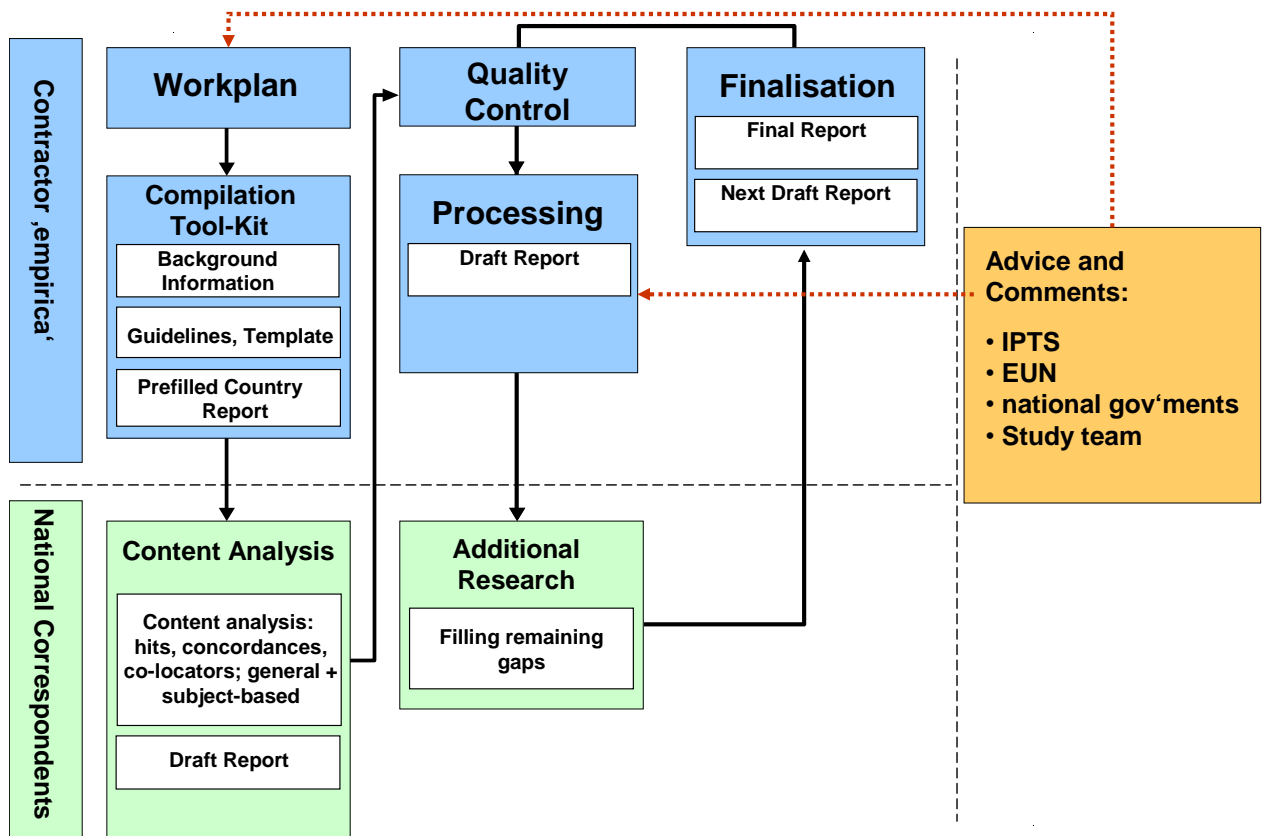
The agreed Country Report structure is as follows:

- I. Study Objectives.
- II. Compulsory Education and Curricula Organisation (information from Eurydice).
- III. Frequency Analysis.
- IV. Co-locators.
- V. Analysis of Concordances for each subject and each school type.
- VI. Summary and Conclusions.
- VII. Bibliography.

The sequence of steps for the development of the country reports, their validation and quality assurance activities by different actors and the report finalisation are depicted in the following figure.

The country reports were written by National Correspondents with national language capabilities in each country. They started their work on the basis of an already partly pre-filled Country Report in which the complete text for Chapter II, the tables and graphics in Chapters III, IV and V and the bibliographical information in Chapter VII were already included by empirica. Each National Correspondent also received an example of a completed Country Report for orientation purposes. Draft reports were submitted by the National Correspondents to empirica.

Figure 2: Quality assurance process



In each Country Report, Chapter II includes overview information on the compulsory education and curricula organisation in the country at stake. This information was taken from

“National System Overviews” available at “Eurybase - Descriptions of National Education Systems and Policies”.¹² It also includes the specification of the national sources from which the curricula documents were obtained and – where relevant - some brief further information on the structure and content of the curricula, subject curricula selected and – where necessary – procedures and activities undertaken to prepare the documents for the content analysis.

Chapter III provides the results from the quantitative analysis of the curricula documents while Chapter IV presents the results from the analysis of the co-locators.

In Chapter V the results from the analysis of the concordances are described. The results are presented in a structured format and for each subject provide quantitative and qualitative information. This includes relevant figures on the absolute and relative frequency of the occurrence of the search terms and a brief text with the information needed to quickly obtain an overview of the uses. In addition, a classification of the ‘connection and relationship to ICT’ and the overall ‘Relevance’ of Creativity and Innovation is made for each curriculum using the scales ranging from 1 – 3 and 1 – 5 for judging the corresponding relevance. In this chapter, the study team also carried out the analysis of further relevant documents for countries where these could be identified.

Where further relevant general guidance and support documents could be identified these were included in the content analysis to search for the occurrence of the search terms Creativity and Innovation and the synonyms. The results were analysed and reported about in Chapter V. Where the general documents could be allocated to a specific school type these were included in the corresponding school type chapters. Where the documents were of a more general nature and not specifically addressed to a school type, these were included at the end of Chapter V under a further heading.

Chapter VI provides a brief summary and conclusions. The Country Reports are concluded with the bibliography in Chapter VII.

Empirica sent the draft reports for comment to IPTS. In parallel, these were also sent to European Schoolnet¹³ who asked national representatives of its Steering Committee for their comments on the Country Reports. These representatives are nominated by the minister of education in each country and in most cases are ministry of education officials. In some cases the representative consulted colleagues working more closely on curricular issues before submitting comments on the Country Report to European Schoolnet who passed them on to empirica, in some cases with suggestions for improvement. Throughout this study, European Schoolnet also raised quality assurance issues with empirica. For those countries not members of European Schoolnet,¹⁴ empirica together with the relevant National Correspondents identified and approached national experts for Country Report validation.

Based on the results from the Country report validation by IPTS and the national experts the reports were revised. In some few cases (e.g. France, Belgium-Flanders), parts of the analysis were repeated either using further or more recent and updated curricula documents provided by the national experts or further synonyms for the search terms Creativity and Innovation. The final versions of Country Reports were made available to IPTS for final approval and to European Schoolnet.

¹² http://eacea.ec.europa.eu/education/eurydice/eurybase_en.php

¹³ European Schoolnet is a not-for-profit consortium of 31 ministries of education in Europe and leads the way in bringing about change in schooling through the use of new technology and supporting the European dimension in schools.

¹⁴ Germany (Bavaria, Lower Saxony, Saxony), Latvia, Bulgaria and Romania.

III. Major Results

In the present chapter, major results from the analysis of the content analysis of the school curricula in each of the EU Member States (and selected regions in countries where the responsibility for schools and education resides at the regional level) are provided.

Most of the results are provided in overview format in tables and graphics to support the reader in getting a quick overview of the present situation in Europe and to ease grasping and understanding key messages.

When mentioning the terms Creativity and Innovation, we always refer to the use of their stems (Creativ* and Innovat*) in the different languages in the curricula analysed.

Results are always presented for each country in each of the overview tables and graphics. The objective is to demonstrate the range in the use of the search terms Creativity and Innovation and synonyms in the different school curricula and not to benchmark the countries to each other. Due to the widely varying educational systems and the hugely differing purposes of school and subject curricula and their different importance and weight in education in the EU Member States (compare explanations given in Chapter III) this is not possible and should be avoided although the presentation format may suggest differently.

The overview in Table 2 provides the absolute occurrences¹⁵ of the search terms in each country's school curricula. It is a distorted picture since the larger the documents in size the more likely it is that the number of occurrences of the search terms is also high. But it does provide a general picture. For the remainder of the analysis, relative occurrences of the search terms are used, i.e. the occurrence of a search term per 1,000 words. This is seen as the most appropriate measure.

The presentation in this chapter moves from a description of the general to the more specific results. It starts with an analysis at the highest level, i.e. the occurrence of the search terms in all school curricula including relevant general introductions, guidance and cross curricular documents in the different countries. It then provides a more detailed view focussing on the subject-based curricula for all school types of compulsory education (primary and secondary education) followed by an analysis differentiating according to school type (primary and secondary education) separately. Finally, it provides an analysis according to subject groups. For this analysis the widely varying subjects in the different school curricula in the EU Member States have been grouped under the headings of eight subject groups (Arts, Languages, Natural Sciences, Social Sciences, Physical Education, ICT, Mathematics and Other). This allows for a more detailed subject group level comparison across the countries. At all levels of analysis and description a differentiation between the occurrence of Creativity followed by Innovation and the synonyms is provided.

1. Overall general results

In this chapter, a brief overview of the absolute number of the search terms in the different countries is provided followed by the presentation of the relative occurrences and their analysis.

¹⁵ 'Absolute occurrence of a search term' = the number of occurrence of a specific search term / word; relative occurrences of a search term = the occurrence of a search term per 1,000 words

Absolute occurrences of the search terms

The absolute number of occurrences of all the search terms is depicted in the following table which gives an overall and first impression of the absolute size of the curricula documents in the different countries.

Table 2: Absolute occurrence of Creativity, Innovation and their synonyms in school curricula in Europe (EU27)

Country	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)	No. of words per curriculum
Austria	146	2	22	168	122,408
Belgium - German speaking community	40	0	17	57	50,789
Belgium - Flanders	20	2	17	38	51,137
Belgium - Wallonia	6	2	10	18	91,327
Bulgaria	592	1	171	764	1,001,586
Czech Republic	51	0	18	69	48,867
Germany - Bavaria	192	2	71	265	329,340
Germany - Lower Saxony	150	1	19	170	365,739
Germany - Saxony	206	12	55	273	424,803
Denmark	195	38	2	235	594,025
Estonia	117	2	16	135	70,904
Greece	135	1	89	225	342,358
Spain - Andalucía	11	12	30	53	87,657
Spain - Extremadura	78	20	55	153	184,724
Spain - Madrid	68	11	48	127	156,765
Spain - national level	69	6	53	128	178,975
Finland	28	0	24	52	55,984
France	26	26	183	235	302,426
Hungary	62	12	3	77	60,506
Ireland	143	14	95	252	370,994
Italy	50	16	14	80	145,893
Lithuania	577	6	5	588	497,273
Luxembourg	81	0	32	113	201,278
Latvia	365	1	98	464	398,672
Malta	152	21	47	220	437,558
The Netherlands	17	20	55	92	380,218
Poland	5	0	19	24	111,264
Portugal	39	2	30	71	60,354
Romania	221	23	23	267	827,224
Sweden	14	0	5	20	33,950
Slovenia	178	5	143	403	265,253
Slovakia	257	0	4	262	292,847
United Kingdom - England	149	8	29	186	203,745
United Kingdom - Northern Ireland	108	5	7	120	60,589
United Kingdom - Scotland	105	19	12	136	83,760
United Kingdom - Wales	161	24	30	215	371,575
EU-27	4,814	314	1,551	6,755	9,262,767

In total the size and volume of school curricula in the EU27 amounts to more than 9,200,000 words with a huge range of words from more than 1,000,000 in the curricula in Bulgaria to less than only 34,000 words in Sweden. The search terms occur 6,755 times out of which 4,814 are for the term Creativity. The range of the total occurrences of all search terms by country is from 18 occurrences in Wallonia to 764 absolute occurrences in Bulgaria. Those for Creativity range from 5 in Poland to 592 in Bulgaria, for Innovation from 0 in several countries to 26 in France and with respect to the synonyms the range is from 2 in Denmark to 183 in France (see Table 2).

As can be seen by the following analysis of the relative occurrences of the search terms large figures and numbers of occurrences give a distorted view of the importance of Creativity and Innovation. This can be illustrated by using the example of Northern Ireland. Here we identified a rather low 120 absolute occurrences of the search terms which in relative terms results in the highest relative occurrence of 1.98. In Bulgaria, with 764 absolute occurrences the corresponding relative occurrence is only 0.59.

Relative occurrences of the search terms

The analysis of the occurrence of the search terms in all school curricula (including relevant general introductions, guidance and cross curricular documents as well as subject-based curricula in the different countries) shows that the word Creativity is relatively frequently mentioned in school curricula in many European countries, unlike Innovation which hardly occurs at all in curricula.

The occurrence of synonyms varies between countries. Overall, the range of occurrence of all search terms (Creativity, Innovation and synonyms) is from 0.20 per thousand words in Wallonia, Belgium to 1.98 in Northern Ireland with a European average of 0.73 (Figure 3).

Figure 3: Relative occurrence of Creativity, Innovation and their synonyms in school curricula in Europe (EU27)

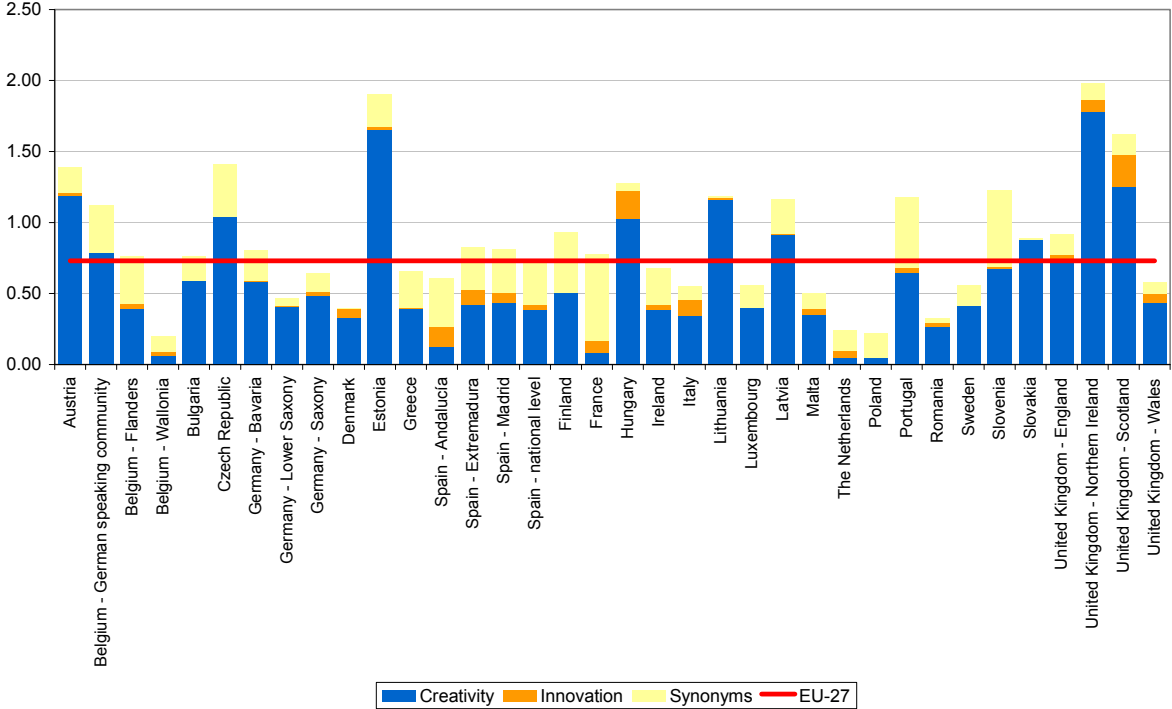
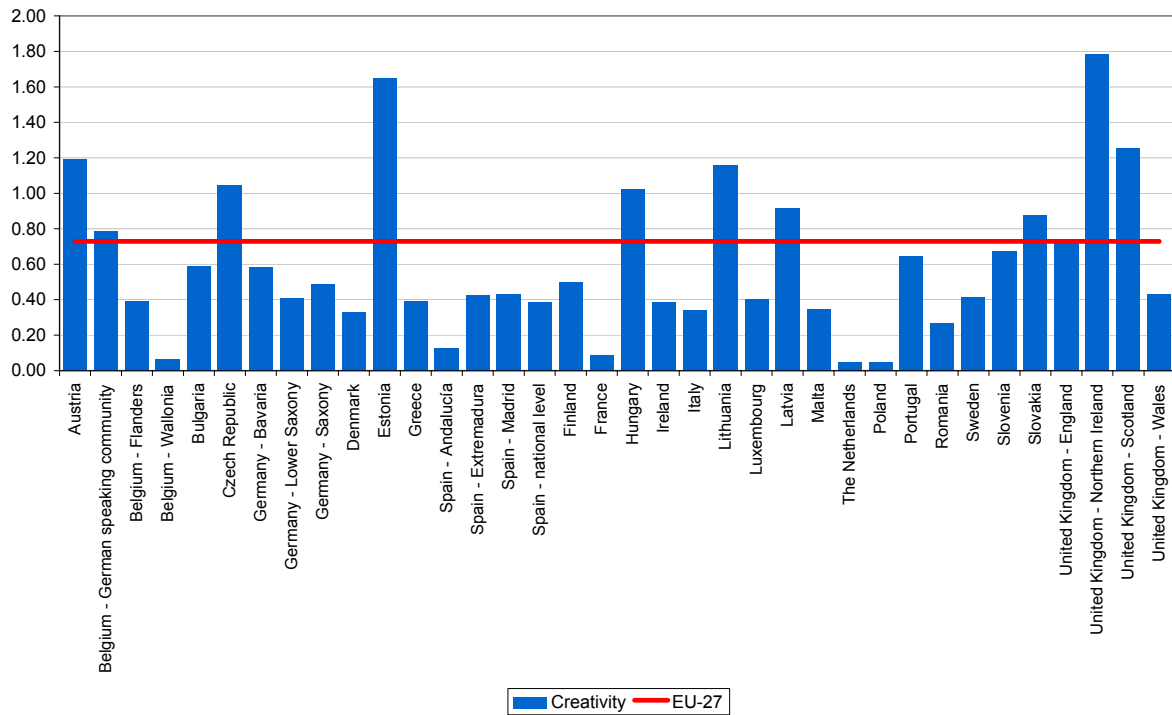


Figure 4: Relative occurrence of Creativity in school curricula in Europe (EU27)



Creativity is by far the dominant word, with occurrences ranging from 0.04 in the Netherlands and Poland to 1.78 in Northern Ireland. There are only few exceptions like in France, Andalusia, Netherlands and Poland where synonyms are more frequently used than Creativity. Innovation as a term only plays a minor role and is most prominent in Scotland and Hungary but even there it remains at a very low level with a relative occurrence of only 0.23 and 0.20 respectively.

Table 3: Relative occurrence of Creativity, Innovation and their synonyms in school curricula in Europe (EU27)

Country	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Austria	1.19	0.02	0.18	1.37
Belgium - German speaking community	0.79	0.00	0.33	1.12
Belgium - Flanders	0.39	0.04	0.33	0.74
Belgium - Wallonia	0.07	0.02	0.11	0.20
Bulgaria	0.59	0.00	0.17	0.76
Czech Republic	1.04	0.00	0.37	1.41
Germany - Bavaria	0.58	0.01	0.22	0.80
Germany - Lower Saxony	0.41	0.00	0.05	0.46
Germany - Saxony	0.48	0.03	0.13	0.64
Denmark	0.33	0.06	0.00	0.40
Estonia	1.65	0.03	0.23	1.90
Greece	0.39	0.00	0.26	0.66
Spain - Andalucía	0.13	0.14	0.34	0.60
Spain - Extremadura	0.42	0.11	0.30	0.83
Spain - Madrid	0.43	0.07	0.31	0.81
Spain - national level	0.39	0.03	0.30	0.72
Finland	0.50	0.00	0.43	0.93
France	0.09	0.09	0.61	0.78
Hungary	1.02	0.20	0.05	1.27
Ireland	0.39	0.04	0.26	0.68
Italy	0.34	0.11	0.10	0.55
Lithuania	1.16	0.01	0.01	1.18
Luxembourg	0.40	0.00	0.16	0.56
Latvia	0.92	0.00	0.25	1.16
Malta	0.35	0.05	0.11	0.50
The Netherlands	0.04	0.05	0.14	0.24
Poland	0.04	0.00	0.17	0.22
Portugal	0.65	0.03	0.50	1.18
Romania	0.27	0.03	0.03	0.32
Sweden	0.41	0.00	0.15	0.59
Slovenia	0.67	0.02	0.54	1.52
Slovakia	0.88	0.00	0.01	0.89
United Kingdom - England	0.73	0.04	0.14	0.91
United Kingdom - Northern Ireland	1.78	0.08	0.12	1.98
United Kingdom - Scotland	1.25	0.23	0.14	1.62
United Kingdom - Wales	0.43	0.06	0.08	0.58
EU-27	0.52	0.03	0.17	0.73

2. Results from the analysis of general curriculum documents

General curriculum documents of different type are available in most countries under review. The heading 'General documents' refers to relevant introduction texts extracted from curricula or introduction documents and / or further guidance documents and / or texts / documents dealing with relevant cross curricular issues.

The relative occurrence of the search terms Creativity and Innovation and their synonyms in these documents is at 1.29 compared to 0.73 for all curricula documents (including the subject-based curricula and general documents) which is an indication of a more frequent relative use of the search terms in the guidance and cross curricular documents compared to the subject-based curriculum documents.

The range is substantial with Sweden (0.00) and Poland (0.36) at the bottom end of relative occurrences and Slovenia (3.72) and Northern Ireland (2.17) at the top. In countries like France, Portugal and Slovenia the high relative occurrences are due to very high figure on the synonyms. These are five times above the average relative occurrences for synonyms (0.29) in Portugal (1.55), more than four times in France (1.33) and more than three times in Slovenia (0.98). With an average relative occurrence of 0.14 Innovation is rarely mentioned but the highest relative occurrence is in Hungary (0.51).

Some countries rank high in terms of the relative occurrence of the search terms on both types of curriculum documents. These are countries and regions like the German-speaking community in Belgium, the Czech Republic, Estonia, Hungary, Lithuania, Portugal, Slovenia, Northern Ireland and Scotland in the UK. Others show very high relative occurrences on the 'general documents' and relatively low figures in the subject-based curricula (e.g. Italy, Malta). Both results may be an indication for the high importance given to the cross curricular and general framework and guidance documents in these countries with respect to the definition of Creativity as a key objective of teaching and learning and its high importance in compulsory education in general.

Figure 5: Relative occurrence of Creativity, Innovation and their synonyms in 'general curriculum documents' in Europe (EU27)

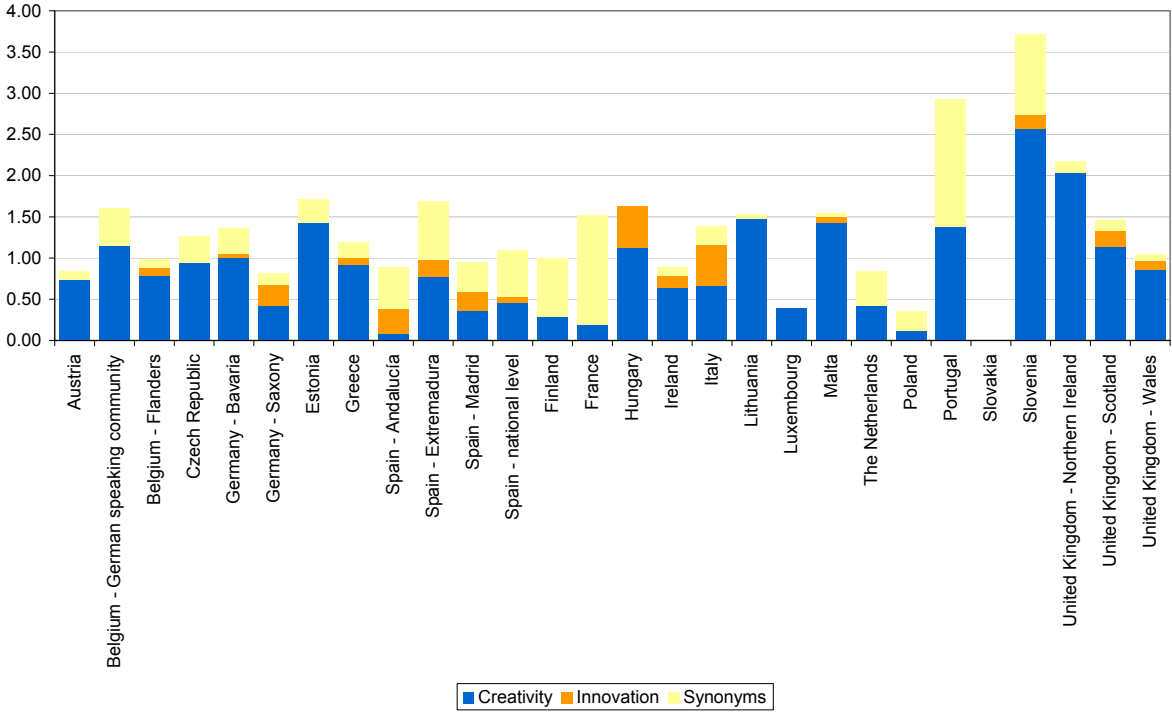


Table 4: Relative occurrence of Creativity, Innovation and their synonyms in ‘general curriculum documents’ in Europe (EU27)

Country	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Austria	0.73	0.00	0.10	0.83
Belgium - German speaking community	1.15	0.00	0.46	1.61
Belgium - Flanders	0.79	0.10	0.10	0.89
Czech Republic	0.95	0.00	0.32	1.26
Germany - Bavaria	1.00	0.04	0.31	1.35
Germany - Saxony	0.42	0.26	0.14	0.81
Estonia	1.43	0.00	0.29	1.72
Greece	0.91	0.09	0.18	1.19
Spain - Andalucía	0.08	0.31	0.50	0.89
Spain - Extremadura	0.76	0.22	0.71	1.69
Spain - Madrid	0.35	0.24	0.35	0.95
Spain - national level	0.46	0.08	0.57	1.10
Finland	0.29	0.00	0.71	1.00
France	0.19	0.00	1.33	1.52
Hungary	1.12	0.51	0.00	1.62
Ireland	0.64	0.15	0.10	0.89
Italy	0.66	0.50	0.22	1.38
Lithuania	1.48	0.00	0.05	1.53
Luxembourg	0.39	0.00	0.00	0.39
Malta	1.43	0.08	0.04	1.54
The Netherlands	0.42	0.00	0.42	0.85
Poland	0.12	0.00	0.24	0.36
Portugal	1.38	0.00	1.55	2.92
Sweden	0.00	0.00	0.00	0.00
Slovenia	2.57	0.16	0.98	3.72
United Kingdom - Northern Ireland	2.03	0.00	0.14	2.17
United Kingdom - Scotland	1.14	0.20	0.13	1.46
United Kingdom - Wales	0.85	0.12	0.08	1.05
EU-27	0.85	0.14	0.29	1.29

Note: No documents identified for the following countries: Belgium – Wallonia, Bulgaria, Germany - Lower Saxony, Denmark, Latvia, Romania, Slovakia and United Kingdom – England.¹⁶

3. Results from subject-based curricula analysis for compulsory education (primary and secondary school subject curricula)

The analysis in this section refers to the subject-based curricula for all types of compulsory education (primary and secondary schools) in the European countries, i.e. the analysis of curricula directly referring to school subjects and excluding any general and cross curricular documents.

¹⁶ For the case of England, it should be noted however that creativity and critical thinking are amongst the seven cross-curriculum dimensions identified for key stages 3 and 4. See <http://curriculum.qcda.gov.uk/key-stages-3-and-4/cross-curriculum-dimensions/index.aspx>

Compared to the general curriculum documents analysed above the relative occurrence of the search terms and their synonyms in the subject-based curricula documents is at a lower level with 0.70 compared to 1.29 occurrences per thousand words. In countries like Estonia (1.92), Northern Ireland (1.92), Scotland (1.72), the Czech Republic (1.51) and Austria (1.49) the search terms occur most frequently in relative terms and more than twice as often – in some countries almost three times as often – than on average (0.70) when considering all EU Member States. Countries like Poland (0.20), Wallonia (Belgium) (0.20) and the Netherlands (0.24) achieve the lowest figures.

Again, Creativity achieves the highest values (0.50 for the EU27) followed by the synonyms (0.16) and Innovation (0.03) which hardly occurs as an expression in these documents.

Figure 6: Relative occurrence of Creativity, Innovation and their synonyms in subject-based curricula documents for primary and secondary education in Europe (EU27)

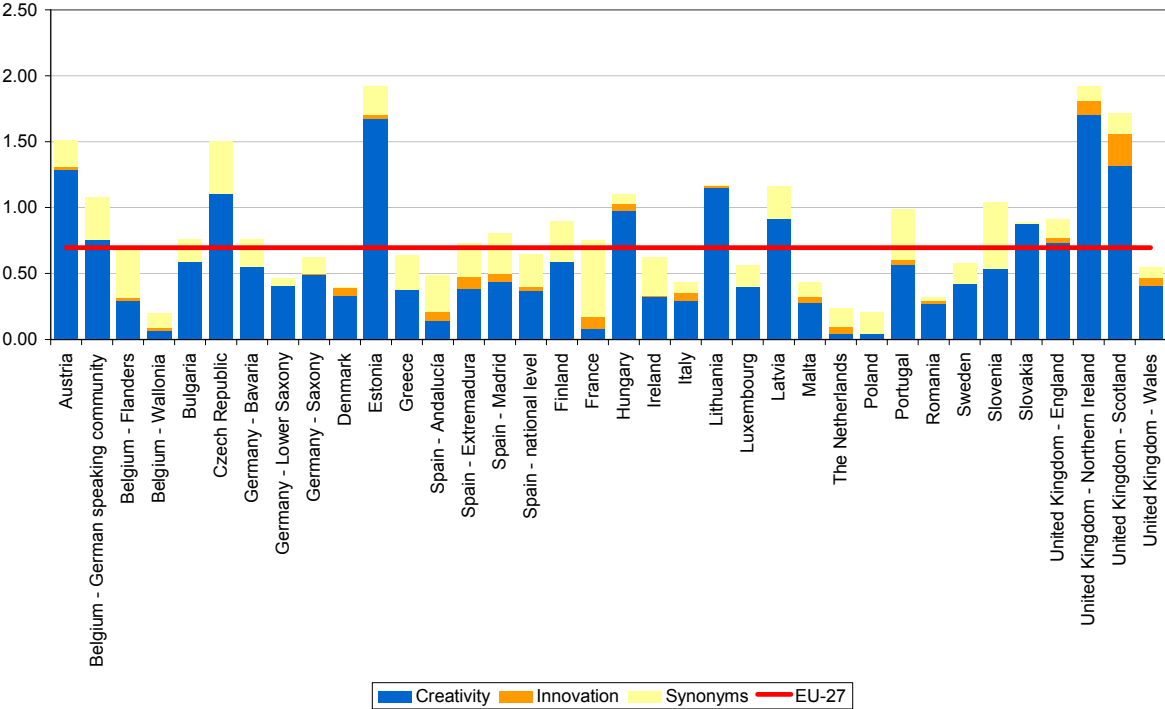


Table 5: Relative occurrence of Creativity, Innovation and their synonyms in subject-based curricula documents for primary and secondary education in Europe (EU27)

Country	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Austria	1.29	0.02	0.20	1.49
Belgium - German speaking community	0.75	0.00	0.32	1.08
Belgium - Flanders	0.29	0.02	0.39	0.71
Belgium - Wallonia	0.07	0.02	0.11	0.20
Bulgaria	0.59	0.00	0.17	0.76
Czech Republic	1.10	0.00	0.40	1.51
Germany - Bavaria	0.55	0.00	0.21	0.76
Germany - Lower Saxony	0.41	0.00	0.05	0.46
Germany - Saxony	0.49	0.00	0.13	0.62
Denmark	0.33	0.06	0.00	0.40
Estonia	1.67	0.03	0.22	1.92
Greece	0.38	0.00	0.26	0.64
Spain - Andalucía	0.15	0.06	0.28	0.49
Spain - Extremadura	0.38	0.10	0.25	0.73
Spain - Madrid	0.44	0.06	0.30	0.80
Spain - national level	0.37	0.03	0.25	0.65
Finland	0.59	0.00	0.31	0.90
France	0.08	0.09	0.58	0.75
Hungary	0.98	0.05	0.07	1.10
Ireland	0.32	0.01	0.29	0.63
Italy	0.30	0.05	0.08	0.43
Lithuania	1.15	0.01	0.01	1.17
Luxembourg	0.40	0.00	0.16	0.57
Latvia	0.92	0.00	0.25	1.16
Malta	0.28	0.05	0.11	0.44
The Netherlands	0.04	0.05	0.14	0.24
Poland	0.04	0.00	0.17	0.20
Portugal	0.57	0.04	0.39	0.99
Romania	0.27	0.03	0.03	0.32
Sweden	0.42	0.00	0.15	0.61
Slovenia	0.53	0.01	0.51	1.36
Slovakia	0.88	0.00	0.01	0.89
United Kingdom - England	0.73	0.04	0.14	0.91
United Kingdom - Northern Ireland	1.70	0.11	0.11	1.92
United Kingdom - Scotland	1.32	0.25	0.15	1.72
United Kingdom - Wales	0.41	0.06	0.08	0.55
EU-27	0.50	0.03	0.16	0.70

4. Results for primary schools¹⁷

Again and as already stated for the overall situation, the term Creativity is also rather frequently mentioned in primary school curricula in many European countries. However, this does not apply to Innovation which is hardly used as a term in primary school curricula. The use of synonyms varies between the countries but remains at a lower level with an average relative occurrence of 0.16. The only exceptions where significant higher relative occurrences of synonyms can be found are France (0.58), Czech Republic (0.40), Flanders (0.39) and Portugal (0.39).

The average relative occurrence of all search terms together is at 0.68 which is almost identical to the value for all school curricula (0.73) (see Table 6). There is a huge variance between the countries. The overall range of all search terms (Creativity, Innovation and synonyms) is from 0.00 in Wallonia, Belgium and the Netherlands to 1.92 in Estonia.

Creativity is the by far the dominant search term in primary education. Innovation as a term only plays a very minor role but is most prominent in Northern Ireland. Even there it remains at a very low level with a relative occurrence of only 0.25. The overall average relative occurrence of Innovation across all countries is at only 0.02. For Creativity the country with the highest relative occurrence is Estonia, the lowest values can be found in Wallonia, France and Andalucía and only one third of the regions and countries¹⁸ show above average relative occurrences on Creativity (see Table 6).

¹⁷ The basis for analysis in this chapter and the ones on secondary schools and subject groups is the results from the frequency analysis of the search terms in the subject-based curricula since many of the 'general documents' can not be allocated to a school type and / or subject for which the analysis had to be undertaken.

Documents for Belgium - German speaking community, Estonia, Finland, Hungary, Latvia, Portugal, Slovenia, Sweden and United Kingdom - Scotland are only available for both school types (primary and secondary schools) together. These have been included for this part of the analysis. For Czech Republic, Denmark and Italy documents available for primary and secondary education together have been excluded from this analysis because there are also documents separately for primary schools available.

¹⁸ German speaking Community in Belgium, Czech Republic, Estonia, Madrid, Hungary, Lithuania, Slovakia, England, Northern Ireland

Figure 7: Relative occurrence of Creativity, Innovation and their synonyms in primary school curricula in Europe (EU27)

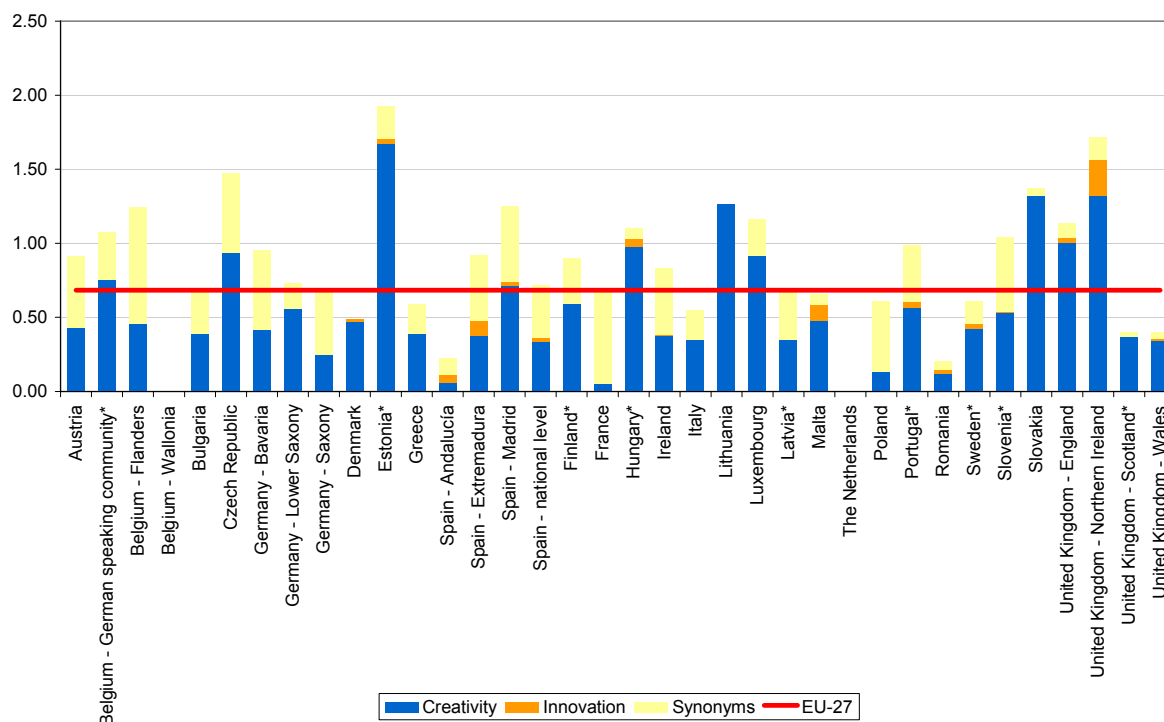
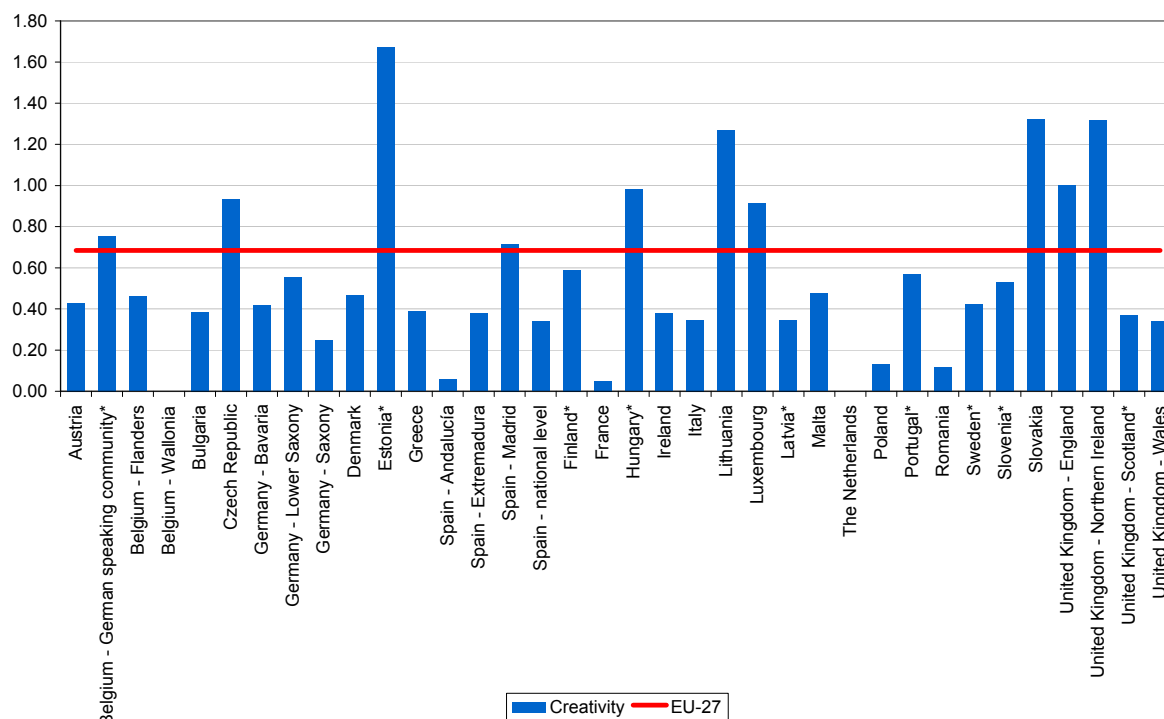


Figure 8: Relative occurrence of Creativity in primary school curricula in Europe (EU27)



Note: Documents for Belgium - German speaking community, Estonia, Finland, Hungary, Latvia, Portugal, Slovenia, Sweden and United Kingdom - Scotland are only available for both school types (primary and secondary schools) together. These have been included for this part of the analysis. For Czech Republic, Denmark and Italy documents available for primary and secondary education together have been excluded from this analysis because there are also documents separately for primary schools available.

Table 6: Relative occurrence of Creativity, Innovation and their synonyms in primary school curricula in Europe (EU27)

Country	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Austria	0.43	0.00	0.48	0.91
Belgium - German speaking community	0.75	0.00	0.32	1.08
Belgium - Flanders	0.46	0.00	0.79	1.25
Belgium - Wallonia	0.00	0.00	0.00	0.00
Bulgaria	0.39	0.00	0.31	0.69
Czech Republic	0.94	0.00	0.53	1.47
Germany - Bavaria	0.42	0.00	0.54	0.96
Germany - Lower Saxony	0.56	0.00	0.17	0.73
Germany - Saxony	0.25	0.00	0.44	0.69
Denmark	0.47	0.02	0.00	0.49
Estonia	1.67	0.03	0.22	1.92
Greece	0.39	0.00	0.20	0.59
Spain - Andalucía	0.06	0.06	0.11	0.23
Spain - Extremadura	0.38	0.10	0.44	0.92
Spain - Madrid	0.72	0.02	0.51	1.25
Spain - national level	0.34	0.02	0.36	0.72
Finland	0.59	0.00	0.31	0.90
France	0.05	0.00	0.64	0.69
Hungary	0.98	0.05	0.07	1.10
Ireland	0.38	0.01	0.45	0.83
Italy	0.35	0.00	0.20	0.55
Lithuania	1.27	0.00	0.00	1.27
Luxembourg	0.92	0.00	0.25	1.16
Latvia	0.35	0.00	0.35	0.69
Malta	0.48	0.11	0.07	0.66
The Netherlands	0.00	0.00	0.00	0.00
Poland	0.13	0.00	0.48	0.61
Portugal	0.57	0.04	0.39	0.99
Romania	0.12	0.03	0.06	0.21
Sweden	0.42	0.03	0.15	0.61
Slovenia	0.53	0.01	0.51	1.04
Slovakia	1.32	0.00	0.05	1.37
United Kingdom - England	1.00	0.03	0.10	1.14
United Kingdom - Northern Ireland	1.32	0.25	0.15	1.72
United Kingdom - Scotland	0.37	0.00	0.03	0.40
United Kingdom - Wales	0.34	0.01	0.04	0.40
EU-27	0.43	0.02	0.23	0.68

5. Results for secondary schools

At an overall level the results for secondary schools are very similar to the ones for primary schools with an average relative occurrence of all the search terms of 0.69 (compared to 0.68 in primary school curricula), 0.52 (0.43) for Creativity, 0.03 (0.02) for Innovation and 0.14 (0.23) for the synonyms.

The same applies to the range of values between the countries for Innovation and the synonyms in secondary. For Innovation the range is from 0.00 in many countries to 0.25 relative occurrences in Northern Ireland. The selected synonyms do not occur at all in the secondary school curricula of Denmark, Lithuania and Netherlands and reach the highest value in Flanders with a relative occurrence of 0.79.

In secondary schools, a large variation in the use of the term Creativity can be observed between the countries with the by far highest value of 3.15 for England and the lowest values of 0.04 for the Netherlands.

Again 10 countries and regions show relative occurrences of Creativity above the European average, namely Austria, German speaking Community in Belgium, Czech Republic, Estonia, Hungary, Lithuania, Luxembourg, Slovakia, Northern Ireland and Wales. These are very similar to those with above average performance in primary school curricula.

Figure 9: Relative occurrence of Creativity, Innovation and their synonyms in secondary school curricula in Europe (EU27)

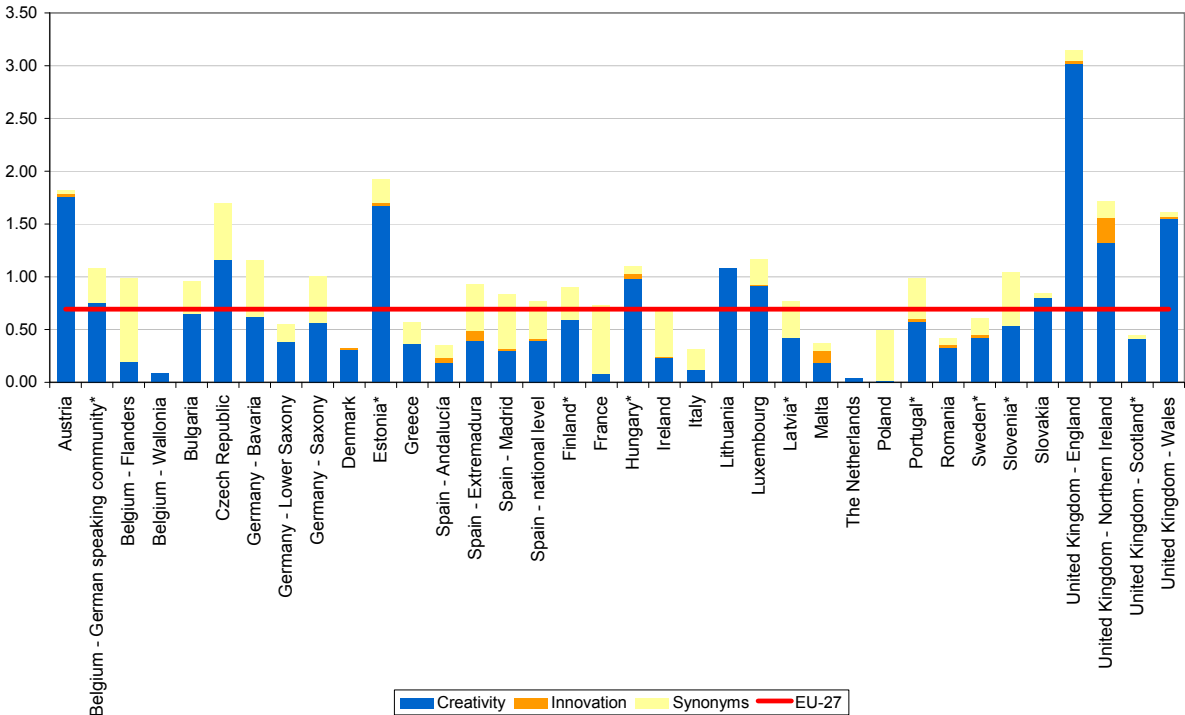
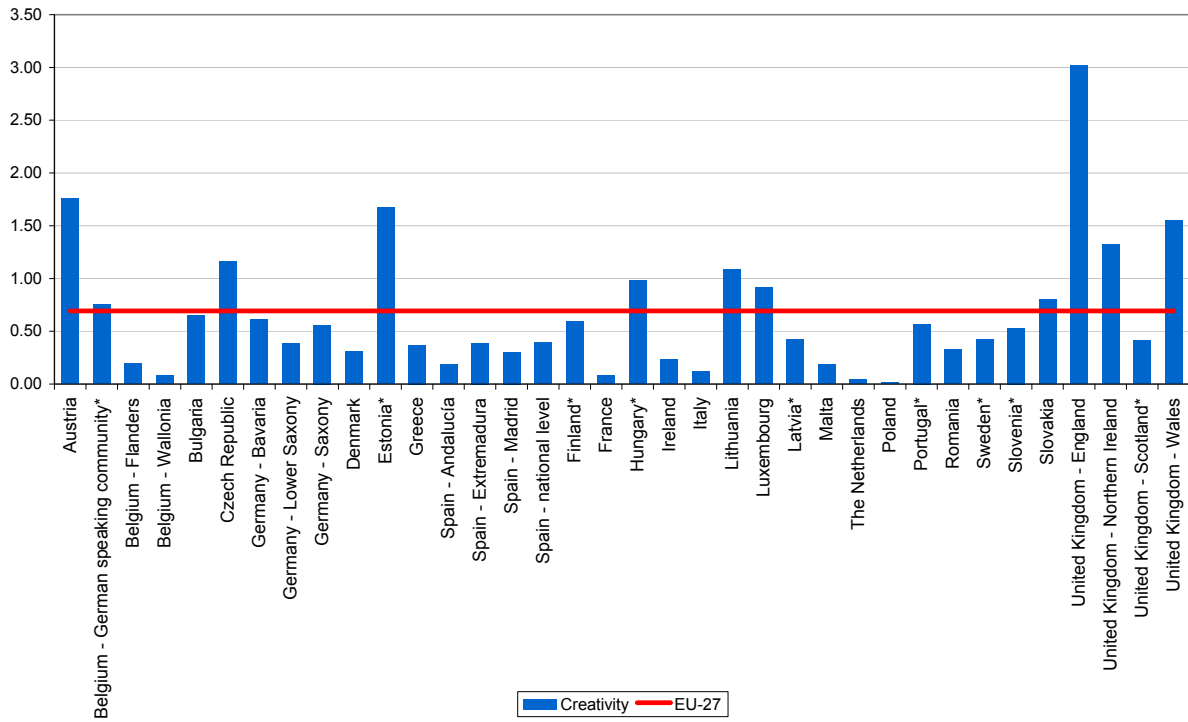


Figure 10: Relative occurrence of Creativity in secondary school curricula in Europe (EU27)



Note: Documents for Belgium - German speaking community, Estonia, Finland, Hungary, Latvia, Portugal, Slovenia, Sweden and United Kingdom - Scotland are only available for both school types (primary and secondary schools) together. These have been included for this part of the analysis. For Czech Republic, Denmark and Italy documents available for primary and secondary education together have been excluded from this analysis because there are also documents separately for secondary schools available.

Table 7: Relative occurrence of Creativity, Innovation and their synonyms in secondary school curricula in Europe (EU27)

Country	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Austria	1.76	0.03	0.03	1.82
Belgium - German speaking community	0.75	0.00	0.32	1.08
Belgium - Flanders	0.19	0.00	0.79	0.98
Belgium - Wallonia	0.09	0.00	0.00	0.09
Bulgaria	0.65	0.00	0.31	0.95
Czech Republic	1.16	0.00	0.53	1.70
Germany - Bavaria	0.62	0.00	0.54	1.15
Germany - Lower Saxony	0.38	0.00	0.17	0.55
Germany - Saxony	0.56	0.00	0.44	1.00
Denmark	0.31	0.02	0.00	0.33
Estonia	1.67	0.03	0.22	1.92
Greece	0.37	0.00	0.20	0.57
Spain - Andalucía	0.18	0.06	0.11	0.35
Spain - Extremadura	0.39	0.10	0.44	0.93
Spain - Madrid	0.30	0.02	0.51	0.83
Spain - national level	0.39	0.02	0.36	0.77
Finland	0.59	0.00	0.31	0.90
France	0.08	0.00	0.64	0.73
Hungary	0.98	0.05	0.07	1.10
Ireland	0.23	0.01	0.45	0.69
Italy	0.11	0.00	0.20	0.31
Lithuania	1.08	0.00	0.00	1.08
Luxembourg	0.92	0.00	0.25	1.16
Latvia	0.42	0.00	0.35	0.77
Malta	0.19	0.11	0.07	0.37
The Netherlands	0.04	0.00	0.00	0.04
Poland	0.01	0.00	0.48	0.49
Portugal	0.57	0.04	0.39	0.99
Romania	0.32	0.03	0.06	0.41
Sweden	0.42	0.03	0.15	0.61
Slovenia	0.53	0.01	0.51	1.04
Slovakia	0.80	0.00	0.05	0.85
United Kingdom - England	3.02	0.03	0.10	3.15
United Kingdom - Northern Ireland	1.32	0.25	0.15	1.72
United Kingdom - Scotland	0.42	0.00	0.03	0.45
United Kingdom - Wales	1.55	0.01	0.04	1.61
EU-27	0.52	0.03	0.14	0.69

When comparing results for primary and secondary education it becomes apparent that the relative occurrences of all the search terms are nearly identical (0.69 in secondary compared to 0.68 in primary school curricula). Differences can be identified for Creativity where relative occurrences for primary school are at 0.43 and 0.52 for secondary school curricula but for

the synonyms the relative occurrence is higher for primary (0.23) compared to 0.14 in secondary school curricula.

Northern Ireland, Czech Republic, Bavaria and Lithuania rank at the top for primary as well as for secondary school curricula when it comes to the relative occurrences of Creativity. Slovakia and Madrid have high relative occurrences for primary school but lower results for secondary school. There are three countries which have high occurrences of the search terms for secondary school curricula but lower results for primary: Austria, England and Saxony.¹⁹

6. Results by subject groups

In order to allow an overview of the relevance of creativity according to school subjects, the study team defined so called subject groups and allocated the multitude of different subjects from the school curricula in all 27 EU Member States to these eight subject groups. The allocation of subjects to subject groups is depicted in the following overview providing some examples of subjects allocated to each subject group.

As can be noted in Figure 13, the word 'creativity' is most common in the arts subjects and least common in most other subjects. This could be interpreted in various ways: a) the natural place of creativity in the arts; b) the lack of attention to creativity across the curriculum by curriculum text developers.

Table 8: Allocation of subjects from primary and secondary school curricula in Europe (EU27) to subject groups

Abbreviation	Name of subject group	Examples of subjects included
A	Arts	Art, Music, Drama, Wood work, History of Arts
L	Languages	Mother tongue, Modern foreign languages, Greek, Latin, National Language and Literature
M	Mathematics	Mathematics
NS	Natural Sciences	Biology, Chemistry, Physics, Nature
SS	Social Sciences	History, Geography, Social studies, Civic education, Philosophy
P	Physical Education	Physical Education
ICT	ICT	ICT, Media, Computer science, Design and Technology, Technology
O	Other	Religious Education, Ethics, Social, Personal and Health Education, Home economics

Note: Curricula documents for Italian upper secondary as well as for primary education in Poland could not be allocated to a specific subject group and have been allocated to subject group 'other' – please compare Annex 2 for a detailed overview of the allocation of subjects to the subject groups.

¹⁹ Other countries have high relative occurrences for primary as well as for secondary school curricula as documents could not be divided by school types (e.g. Estonia, Scotland, Latvia or Hungary)

Overall, Creativity shows the highest number of relative occurrences in all subject groups followed by the synonyms and Innovation comes last and remains at very low values.

The subject group “Arts” shows the highest overall relative occurrences (total: 2.24), which are mainly on Creativity (1.66) followed by its synonyms (0.55).

The subject groups “ICT” (1.13) and “Physical Education” (0.78) follow next while all other subject groups find themselves below the average.

Figure 11: Relative occurrence of Creativity, Innovation and their synonyms in school curricula according to subject group in Europe (EU27)

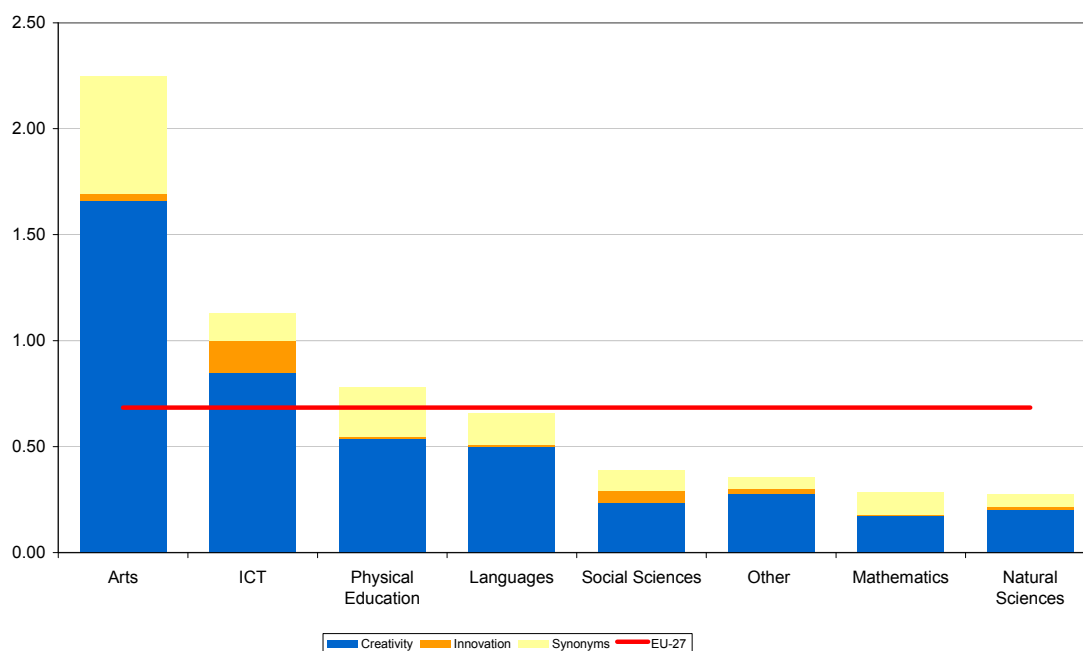


Table 9: Relative occurrence of Creativity, Innovation and their synonyms in school curricula according to subject group in Europe (EU27)

Subject group	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	All terms (1)+(2)+(3)
Arts	1.66	0.03	0.55	2.24
ICT	0.85	0.16	0.13	1.13
Physical Education	0.54	0.01	0.23	0.78
Languages	0.50	0.01	0.15	0.66
Social Sciences	0.24	0.05	0.10	0.39
Other	0.28	0.02	0.06	0.35
Mathematics	0.17	0.01	0.10	0.28
Natural Sciences	0.20	0.02	0.06	0.28

When differentiating according to school type it becomes apparent that the relative occurrences for both, primary and secondary schools are at rather similar levels for all subject groups with secondary school slightly above primary schools in most subjects. Only the subject groups Arts and ICT achieve figures above the average.

Figure 12: Relative occurrence of Creativity, Innovation and their synonyms in school curricula according to subject group and school type in Europe (EU27)

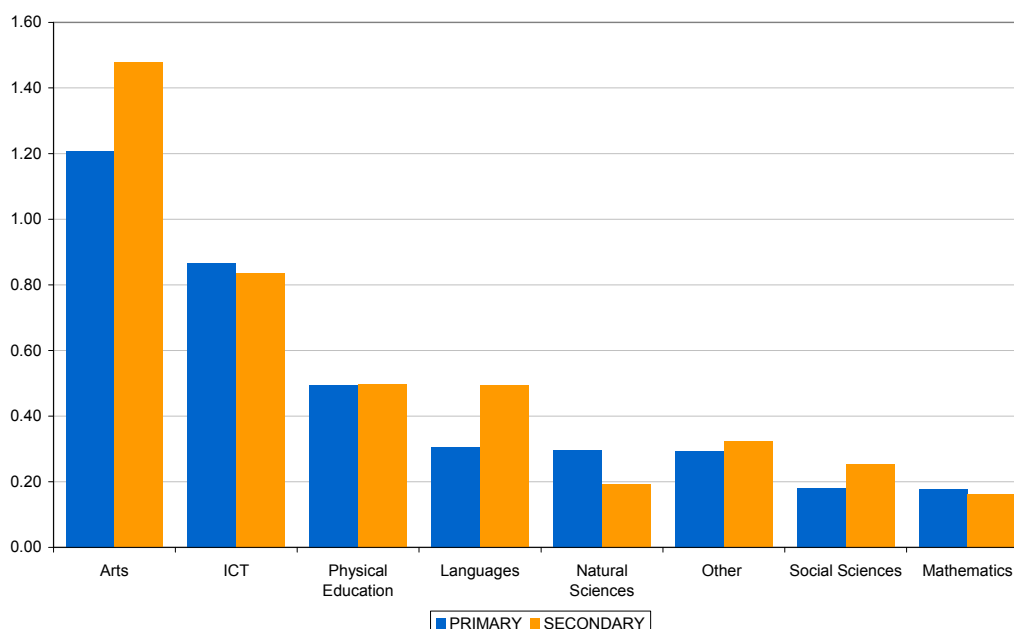


Table 10: Relative occurrence of Creativity, Innovation and their synonyms in school curricula according to subject group and school type in Europe (EU27)

Subject group	Primary	Secondary
Arts	1.21	1.48
ICT	0.87	0.84
Physical Education	0.49	0.50
Languages	0.31	0.49
Other	0.30	0.19
Natural Sciences	0.29	0.32
Social Sciences	0.18	0.25
Mathematics	0.18	0.16

Note: Curricula documents for subjects which are only available for all school types (primary and secondary together) have been excluded from this part of the analysis.

The most striking results occur when turning towards the country view and analysing the total number of relative occurrences, i.e. Creativity, Innovation and the selected synonyms. These are briefly described below for each subject group.

Arts: With an average relative occurrence figure of 2.24 this subject groups achieves the by far highest values of all subject groups. Extremely high values are achieved in the following countries: Latvia (5.87), Scotland (5.80), Finland (4.57), Estonia (4.34), Lithuania (3.85) and Slovakia (3.83).

ICT: In ICT the average relative occurrence is at 1.13 with countries like Austria (2.85), Lithuania (2.81), Czech Republic (2.79) and Northern Ireland (2.29) reaching the by far highest values.

Physical Education: Physical Education has an average value slightly above the European average with a relative occurrence of 0.78. Countries ranking at the top include Latvia (1.94), Northern Ireland (1.66), Austria (1.47) and the Czech Republic (1.09).

Languages: This subject group comes fourth with an average relative occurrence of 0.66. Frontrunners with relative occurrences significantly above the average are the Czech Republic (2.67), Northern Ireland (1.97), Estonia (1.77) and Austria (1.46).

Social Sciences: This subject group comes up with very low relative occurrences of the search terms at an average of only 0.39 with the exception of Northern Ireland which reaches a very high relative occurrence of 1.81 in social sciences.

Natural Sciences: The situation is similar in this subject group with an average of relative occurrences of 0.28 and two countries with high figures, namely Northern Ireland (2.19) and Austria (1.49).

Mathematics: Finally, the subject group Mathematics with similarly low average figures (0.28) shows three frontrunners: Estonia (1.37), Sweden (1.11) and Finland (1.07).

Table 11: Relative occurrence of Creativity, Innovation and their synonyms in subject curricula according to subject group and countries in Europe (EU27)

Subject groups								
	A	L	NS	SS	P	O	ICT	M
Austria	2.10	1.46	1.46	0.73	1.76	0.56	2.85	0.86
Belgium - German speaking community	1.68	1.19	0.00	0.00	1.68	0.00	1.40	0.20
Belgium - Flanders	0.00	0.12	0.07	0.03	0.00	n.a.	0.00	0.08
Belgium - Wallonia	2.74	0.00	0.17	0.37	0.68	n.a.	0.00	0.00
Bulgaria	2.79	0.56	0.12	0.42	0.23	0.13	0.04	0.15
Czech Republic	2.98	2.67	0.00	0.34	1.09	0.00	2.79	0.00
Germany - Bavaria	0.49	1.01	0.35	0.13	0.49	0.31	0.10	0.06
Germany - Lower Saxony	0.58	0.58	0.24	0.19	0.64	0.16	n.a.	0.34
Germany - Saxony	0.62	0.69	0.20	0.27	0.73	0.29	0.42	0.19
Denmark	0.51	0.42	0.18	0.27	0.17	0.29	0.47	0.02
Estonia	4.34	1.77	0.94	0.17	0.70	n.a.	n.a.	1.37
Greece	0.90	0.47	0.29	0.21	1.19	0.18	0.37	0.04
Spain - Andalucía	n.a.	0.22	0.20	0.14	n.a.	0.00	0.00	0.10
Spain - Extremadura	1.65	0.15	0.20	0.13	0.83	0.00	0.46	0.13
Spain - Madrid	1.33	0.20	0.20	0.23	0.89	n.a.	0.21	0.37
Spain - national level	1.25	0.08	0.28	0.28	0.48	0.00	0.58	0.43
Finland	4.57	0.30	0.00	0.32	0.00	0.00	n.a.	1.07
France	0.31	0.07	0.06	0.00	0.05	0.00	0.13	0.00
Hungary	2.02	2.04	0.61	0.55	0.00	0.28	0.00	0.66
Ireland	0.83	0.19	0.10	0.06	0.62	0.41	n.a.	0.19
Italy	2.76	0.43	0.10	0.09	0.60	0.10	0.00	0.00
Lithuania	3.85	0.60	0.34	0.63	0.14	0.35	2.81	0.28
Luxembourg	0.83	0.58	0.17	0.88	0.14	0.00	1.23	0.02
Latvia	5.87	1.02	0.02	0.21	1.94	0.03	0.00	0.00
Malta	1.03	0.37	0.05	0.10	0.00	0.17	0.21	0.25
The Netherlands	0.51	0.06	0.00	0.03	0.00	n.a.	n.a.	0.02
Poland	0.00	0.00	0.00	0.00	0.00	0.09	0.34	0.00
Portugal	1.66	0.24	0.29	0.21	0.69	n.a.	0.17	0.23
Romania	0.97	0.10	0.41	0.59	0.06	0.19	0.81	0.26
Sweden	2.04	0.11	0.00	0.00	0.00	0.77	0.60	1.11
Slovenia	1.97	0.74	0.04	0.16	0.61	0.57	0.48	0.23
Slovakia	3.83	0.66	0.30	0.38	0.46	2.69	1.23	0.43
United Kingdom - England	1.30	0.97	0.78	0.18	0.73	0.77	1.04	0.27
United Kingdom - Northern Ireland	2.78	2.01	2.19	1.81	1.66	0.88	n.a.	0.59
United Kingdom - Scotland	5.80	0.67	0.83	0.46	n.a.	0.27	3.66	0.61
United Kingdom - Wales	1.55	0.36	0.15	0.12	0.71	1.38	0.47	0.04
EU-27	1.66	0.50	0.20	0.24	0.54	0.28	0.85	0.17

Key:

Subject group abbreviation	Name of subject group		
A	Arts	SS	Social Sciences
L	Languages	P	Physical Education
M	Mathematics	ICT	ICT
NS	Natural Sciences	O	Other

7. Results from the co-locator analysis

Co-locators are the words appearing most often nearby the search terms and in a pre-defined distance to the term (e.g. ten words before and after the search term). By examining co-locators one can identify and summarise those words which hold a (significant) relationship with the search terms (Creativity, Innovation and their synonyms).

The following table presents the most important co-locators for the term Creativity²⁰ in all around 1,200 school curricula documents analysed in this study. These are the co-locators which occur most frequently and in a substantial number of subject curricula in the European countries and regions.

It becomes apparent that Creativity is very strongly used in relation to capacity building, empowerment, problem solving, self expression and (personal) development of pupils and students. This is illustrated by words which are used closely to the search term like: awareness, capacity, independence, initiative, learning, personality, responsibility, skills, solutions, understanding or thinking.

Other co-locators which occur frequently refer to activities like: activation, initiation, communication, designing, developing, encouraging, experimenting, expressing, learning, (problem) solving, writing (texts), working or understanding.

Other co-locators include school subjects with Art ranking top followed by Music and Mathematics. Another group of co-locators refer to the target groups of teaching and learning: pupils and students.

Frequent co-locators in European school curricula
Activity
Art / artistic
Autonomous
Aware / awareness
Capacity
Communicate / communicative
Creative / Creativity
Critical
Culture
Design
Develop / development
Encourage
Experiment / experimental
Expression
Ideas
Imagination / imaginative
Independence / independent
Initiative
Innovation / innovative
Language
Learn / learning
Mathematics

²⁰ Innovation and the synonyms occur rarely in the curricula texts not allowing for a meaningful co-locator analysis.

Music
Opportunities
Personality
Practical / practice
Problems
Process
Pupil
Responsible
Skills
Solution
Solving
Spirit
Story
Student
Text
Think / thinking
Understand / understanding
Use / using
Work / working
Write / writing

IV. Summary and Conclusions

The summary and conclusions are based on the results from the frequency analyses of the search terms Creativity and Innovation and their synonyms, as presented in the previous chapters of this report and on the detailed analysis from the Country/Region Reports which can be obtained from IPTS.

The conclusions are presented under the following headings:

- Creativity and Innovation on the educational agenda,
- Definition and conceptualisation of Creativity and Innovation,
- Linking of Creativity and Innovation in specific subjects,
- Focus on the use of Creativity and Innovation,
- Use of Information and Communication Technologies (ICT).

For reasons outlined earlier in this report, it is difficult to compare and draw inferences from the results which reach beyond the single countries and regions. However, the study team tried to draw some general conclusions concerning the roles of Creativity and Innovation in school curricula for compulsory education and how these are framed within the EU Member States' learning objectives and/or school curricula at primary and secondary levels.

Creativity and Innovation on the educational agenda

Creativity and Innovation feature in the curricula of primary and secondary schools in Europe but to different extents across countries. The use of average European figures on the relative occurrence of the search terms reveals important differences between countries. Most of the EU Member States and regions analysed (20 out of the 36 studies of countries and regions) show relative occurrences of the search terms Creativity and Innovation and their synonyms in their compulsory education curricula which are above the European average of 0.73.

11 countries and regions show high, 17 medium and only 8 countries and regions rather low relative occurrences of the search terms in compulsory education school curricula.

Table 12: Relative occurrences of the search terms and synonyms in primary and secondary school curricula (general curriculum documents and subject curricula) in Europe (EU27): country groupings

High (Relative occurrence >1.0)	Medium (Relative occurrence >0.5 - <1.0)	Low (Relative occurrence <0.5)
Austria Belgium - German speaking community Czech Republic Estonia Hungary Lithuania Latvia Portugal Slovenia United Kingdom - Northern Ireland United Kingdom - Scotland	Belgium - Flanders Bulgaria Germany - Bavaria Germany - Saxony Greece Spain - Andalucía Spain - Extremadura Spain - Madrid Spain - national level Finland France Ireland Luxembourg Slovakia Sweden United Kingdom - England United Kingdom - Wales	Belgium - Wallonia Germany - Lower Saxony Denmark Italy Malta The Netherlands Poland Romania

This shows that Creativity, Innovation and synonyms are referred to in school curricula in most European countries.

The term Innovation is hardly used and does not play a major role in school curricula texts anywhere in Europe. The situation with respect to Creativity is different. With an average relative occurrence of 0.43 in primary schools, figures for Creativity are more than 20 times higher than they are for Innovation. As regards figures for synonyms, those for Creativity are twice as high as they are for Innovation. In secondary schools, the result is similar: the relative occurrence of Creativity (relative occurrence: 0.52) is 16 times higher than the one for Innovation and for synonyms, the figure for Creativity synonyms is 5 times higher than the one for Innovation synonyms.

Creativity and Innovation and their selected synonyms are mentioned more than average in some countries' curricula (e.g. Austria, Czech Republic, Hungary, Slovenia, the Baltic States, and Portugal) than others (e.g. Denmark, Italy, the Netherlands, Poland and Romania). To some observers, this may appear counter-intuitive: they would argue that education systems that emphasise personal development through an open pedagogy must de facto allow for more Creativity and Innovation than those that tend to focus on more traditional didactic methods. Furthermore, evidence from, for example, the teachers' survey²¹ suggests that more teachers in Italy than any other country consider that the development of students' creativity plays an important role in their curriculum, while Estonian and Hungarian teachers are among those who disagree most strongly with the statement. Such apparent discrepancies only serve to underline the importance of measured interpretation of results, the need for multiple perspectives, the relativity of definitions and use of the terms Creativity

²¹ 'Creativity and Innovation Creativity in Schools in Europe: A survey of Teachers', December 2009, figure 5. <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=2940>

and Innovation and their application in classrooms, the complexity of education systems and the differences between policy and practice.

The study results also show that in several countries (e.g. France, the Czech Republic, Flanders (Belgium), the Spanish regions and Portugal), synonyms of the search terms play an important role which is probably due to language specifics in these countries (compare Annex VI.1 for a complete list of search terms).

However, one has to bear in mind that national curricula serve different purposes in different countries. In some countries, they are statutory, formal and prescriptive; in others they only constitute a general framework to be filled with content and further refined by the schools themselves. The legal status of school curricula varies between countries, which poses further limitations on their direct comparison.

In many countries, national school curricula are supplemented or re-interpreted by regional, local, school and teacher/class curricula or schemes of work. This means that caution must be exercised in drawing conclusions from national curricula.

Country Report 'Netherlands':
The role of national school curricula

The national school curricula in the Netherlands describe attainment targets (Kerndoelen). Kerndoelen are not prescriptive and allow pedagogical freedom, though they do determine topics and what skills students need to have. They do not, however, determine teaching methods and Dutch schools are autonomous. They can develop and refine these national targets in their own curricula and school plans and incorporate Innovation and Creativity within their lessons according to their own pedagogical methods.

Country Report 'Sweden':
The role of national school curricula

The national school curriculum in Sweden is relatively short and outlines the direction, aims and criteria for assessment. It describes the topics to be dealt with within the subjects and the overall aims for each subject, but the schools themselves develop their own, detailed curriculum according to these standards.

The Swedish school system is decentralised. Since the early 1990s, each municipality (Sweden has 290 municipalities) is responsible for the provision of education within their area (but with a certain degree of control from the national authorities regarding quality, goals and aims, grades etc.).

Definition and conceptualisation of Creativity and Innovation

In the school curricula analysed, Creativity is mostly used broadly and is considered as a skill, like 'creative thinking' or 'creative problem solving'. It is seen as an integral part of the learning process that helps children and young people to be successful learners, confident individuals, responsible citizens and effective contributors. Creativity is thus seen as a required skill that should be encouraged and developed in all subjects within the agreed curriculum. It is also used narrowly and in relation to Arts subjects, referring to 'artistic' creativity. Only in a few cases and in the context of a few subjects (e.g. handicrafts, metalwork) Creativity is conceptualised in relation to handling materials. The Country Report

for Ireland presents a good example, showing the spectrum of definitions and conceptualisations of Creativity and the contexts in which these emerge.

Country example 'Ireland': Definition and conceptualisation of Creativity

1. Firstly, Creativity is used in relation to Arts subjects – Visual arts, Music, Drama, and Dance as an aspect of Physical Education. Creativity is primarily about self-expression, spontaneity, fun and enjoyment. Experiencing is the primary aim, and the learning of skills is secondary. Such artistic creativity is subjective and intuitive, and does not have to justify itself.

2. Creativity is also used in relation to the more academic subjects, such as Social Environmental and Scientific Education which comprises the subjects Geography, History and Science. Creativity includes the usage described above. However, its conceptualisation is broadened to encompass not merely the fun and expression of ideas, but also a creative reflection and examination of ideas where they may become a topic of discussion – to be argued, justified and critiqued in the class. In the more academic subjects, for example when thinking about and trying to resolve issues in the social and environmental sciences, the focus is on creativity as reflective, discursive and reasoned, and heading towards objectivity.

3. Creativity is also used in relation to the more technological subjects, such as, in the Irish curriculum, Metalwork. Here, creativity is conceptualised in the context of handling materials and making objects with the use of tools. Such practical creativity requires ingenuity, where ingenuity is seen, in this instance, as the exercise of creativity to complete a task within the constraints of a set goal and given tools and materials.

Overall, the first two ways of conceptualisation seem to emerge most frequently and appear in most countries and regions. This can be illustrated by the Lithuanian curricula analysis.

Country example 'Lithuania': Definition and conceptualisation of Creativity

There are two main definitions of Creativity: it is defined as a creative task for pupils and as a development of creativity as a personal characteristic. The former is very common in Art, Music, Languages, and Technologies and is focused on the implementation of creative tasks. The latter is common in almost all subjects and is associated with the broader aims of the education: to develop creative and intellectual personalities. Innovation is associated to understanding of the innovations and their importance to the society.

Linking of Creativity and Innovation in specific subjects

The use of Creativity (against innovation which hardly occurs as term) can be found in almost all school curricula but more frequently in subjects like Arts or Music. However, there are variations across the countries which are further described below.

While in some countries (e.g. especially in Northern Ireland, Scotland) Creativity and the synonyms are frequently mentioned in all subject groups, the term hardly appears in any of the subject groups (including Arts) in other countries (e.g. in Wallonia, Lower Saxony, Denmark, France, the Netherlands, Poland). In most countries we are being faced with a situation of high relative occurrences in the subject group Arts and mostly substantially smaller relative numbers of occurrences in the other subject groups, which vary depending on the country or region without showing any clear pattern.

Region example 'Northern Ireland': Example of a country with school curricula where Creativity is mentioned with high relative occurrences in almost all subjects

Relative occurrences of the words Creativity, Innovation and synonyms (and their stems) in school curricula by subject in Northern Ireland

Subject of curriculum	All terms (1)+(2)+(3)	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	No. of words per curriculum
Per 1,000 words					
TOTAL	1.98	1.78	0.08	0.12	60,589
General documents ²²	2.39	2.21	0.00	0.18	14,752
Total for 'subjects'	1.92	1.70	0.11	0.11	45,837
PRIMARY SCHOOL	1.14	1.00	0.03	0.10	29,941
Art	2.08	2.08	0.00	0.00	4,331
Drama	3.51	3.01	0.00	0.50	1,995
Language and Literacy	0.57	0.57	0.00	0.00	5,308
Mathematics and Numeracy	0.00	0.00	0.00	0.00	4,200
Music	3.15	3.15	0.00	0.00	1,587
Personal Development and mutual understanding	0.23	0.23	0.00	0.00	4,407
Physical Education	2.00	1.34	0.22	0.45	4,492
The world around us	0.00	0.00	0.00	0.00	3,621
SECONDARY SCHOOL	3.40	3.02	0.25	0.13	15,896
Art and Design	7.65	7.65	0.00	0.00	915
Local and Global Citizenship	1.11	1.11	0.00	0.00	898
Technology and Design	2.29	2.29	0.00	0.00	873
Drama	2.44	2.44	0.00	0.00	819
Employability	6.06	2.42	1.21	2.42	825
English with Media Education	5.81	4.84	0.97	0.00	1,033
Geography	1.97	1.97	0.00	0.00	1,015
History	2.34	2.34	0.00	0.00	855
Home Economics	6.60	6.60	0.00	0.00	606
Irish with Media Education	5.42	4.52	0.90	0.00	1,107
Mathematics with Financial Capability	3.29	3.29	0.00	0.00	913
Modern Languages	4.24	3.39	0.85	0.00	1,180
Music	0.91	0.91	0.00	0.00	1,097
Personal Development	1.31	1.31	0.00	0.00	762
Physical Education	3.23	3.23	0.00	0.00	929
Religious Education	1.73	1.73	0.00	0.00	1,156
Science	2.19	2.19	0.00	0.00	913

²² 'General documents' refers to relevant introduction texts of the primary school syllabus and the Rationale and the Statutory Requirements of the secondary school syllabus (cf. bibliography).

Country example 'Netherlands': Example of a country with school curricula where Creativity is mentioned with very low relative occurrences in almost all subjects

Relative occurrences of the words Creativity, Innovation and synonyms (and their stems) in school curricula by subject in the Netherlands

Subject of curriculum	All terms (1)+(2)+(3)	Occurrence of CREATIVITY (1)	Occurrence of INNOVATION (2)	Occurrence of all Synonyms (3)	No. of words per curriculum
Per 1,000 words					
TOTAL	0.24	0.04	0.05	0.14	380,218
General documents ²³	0.85	0.42	0.00	0.42	2,360
Total for 'subjects'	0.24	0.04	0.05	0.14	377,858
PRIMARY SCHOOL	0.00	0.00	0.00	0.00	3,562
Art and Culture	0.00	0.00	0.00	0.00	285
Dutch	0.00	0.00	0.00	0.00	877
English	0.00	0.00	0.00	0.00	282
Fries language	0.00	0.00	0.00	0.00	500
Mathematics	0.00	0.00	0.00	0.00	466
World orientation	0.00	0.00	0.00	0.00	897
Physical Education	0.00	0.00	0.00	0.00	255
LOWER SECONDARY SCHOOL	0.40	0.15	0.01	0.24	78,589
Art and Culture	4.61	1.34	0.00	3.26	5,209
Dutch	0.31	0.20	0.00	0.10	9,764
English	0.00	0.00	0.00	0.00	7,339
Human & Nature	0.00	0.00	0.00	0.00	15,941
Human & Society	0.22	0.11	0.05	0.05	18,578
Mathematics	0.08	0.08	0.00	0.00	12,794
Physical Education	0.00	0.00	0.00	0.00	8,964
UPPER SECONDARY SCHOOL	0.20	0.01	0.06	0.12	295,707
Art	1.84	0.00	0.00	1.84	8,157
Biology	0.00	0.00	0.00	0.00	23,192
Chemistry	0.00	0.00	0.00	0.00	17,838
Dutch	0.00	0.00	0.00	0.00	8,138
Economy	0.33	0.00	0.33	0.00	30,256
Geography	0.25	0.09	0.15	0.00	32,441
History	0.23	0.00	0.07	0.17	60,552
Human society	0.08	0.00	0.00	0.08	36,096
Mathematics	0.09	0.00	0.00	0.09	46,839
Modern foreign languages	0.10	0.05	0.00	0.05	20,149
Physics	0.17	0.00	0.00	0.17	12,049

²³ 'General documents' refers to relevant introduction texts extracted from the primary and lower secondary curriculum (compare bibliography).

Focus of the use of Creativity and Innovation

Analysing the results as to the target group or person addressed in the curricula clearly indicates that most occurrences – whether they are in primary or secondary education - focus on the pupil's learning experience and projected outcomes, i.e. the focus clearly is on the pupil/student and the learning process.

In general guidance documents, one can also identify references to teachers as a target group.

Region example 'England': Teacher-orientation of general guidance documents

In addition to curricula documents for each subject, the National Curriculum website <http://curriculum.qcda.gov.uk/> contains further guidance documents regarding cross-curricular issues for Key Stages 1 and 2. Furthermore, teachers get background information on the concept of Creativity which is based on the definition of Creativity from the National Advisory Committee's report (DfEE, 1999): 'First, they [the characteristics of creativity] always involve thinking or behaving imaginatively. Second, overall this imaginative activity is purposeful: that is, it is directed to achieving an objective. Third, these processes must generate something original. Fourth, the outcome must be of value in relation to the objective'. On the website, teachers can find information which gives them help in developing a curriculum that supports creativity and critical thinking, and they can also access several case studies and other resources.

Use of Information and Communication Technologies (ICT)

Mention of ICT is, in most cases, restricted to a few subjects and rarely connected to Creativity. Sometimes ICT is referred to indirectly in the curricula, using expressions like 'computer', 'new media' and 'media competence' or is referred to as a tool to be used throughout the teaching and learning process.

Where ICT as a subject exists, it is comprehensively mentioned in the corresponding curricula. There is no clear overall pattern, or relationship with Creativity, amongst the other curricula. Some subject curricula (e.g. Social Studies, Art, and Science in several countries) mention ICT briefly, whilst other subject curricula do not mention it at all.

In several countries, ICT is seen as a cross-curricular issue and included in general introductory documents (e.g. Wales, England, Northern Ireland, France, and Luxembourg) and it is sometimes linked to Creativity. In other countries and regions, dedicated regional plans and programmes are referred to, which are in place to promote the use of ICT in schools in general.

Region example 'Wales': ICT as a cross-curricular issue

ICT is primarily seen as a tool that pupils use across the curricula to aid their work, including creative work. There is little reference to the creative potential of ICT in its own right. Although the ICT syllabus for secondary schools may have few occurrences of the selected keywords because the syllabus concentrates on techniques and tool utilisation, the cross-curricular document on Primary and Secondary Skills in ICT applies to all subjects. This document includes instructions such as "*learners apply their ICT skills to investigate, manipulate, develop or realise creative ideas. They select appropriate software and equipment as an aid to designing and making.*" Thus ICT is seen as an important part of the curriculum, including the creative elements.

The relevance of general introductory, guidance and cross curricular documents

In most countries, relevant general introductory documents, guidance and cross-curricular documents could be identified in addition to the subject-based curricula documents. As outlined above, these documents are of particular relevance in some countries since they define overarching issues and topics like 'ICT', or 'Creativity' as a competence to be achieved and sometimes provide guidance for schools and teachers on these issues. The following extracts from different Country/Region Reports serve as examples and illustrations.

Region examples 'England, Wales, Northern Ireland':

Relevance of general introductory, guidance and cross-curricular documents

There is no statutory guidance on teaching methods or materials. However, extensive non-statutory guidance is available to support schools and teachers in implementing the curriculum. However, even those subjects that do not explicitly encourage creativity within the relevant subject documentation would be expected to include creative activities or concepts as a result of the emphasis on creativity in the cross-curricular documents.

Region example 'Andalucía':

Relevance of general introductory, guidance and cross-curricular documents

Although Creativity is not mentioned that often in subject curricula, importance is given to Creativity in Andalucía's primary school education. The General Dispositions of the Decree which regulates primary education for the region, states that: "The aim of primary education is to provide pupils with an education which permits them to reinforce their personal development and well-being, acquire the basic cultural skills related to oral expression and comprehension, reading, writing and calculating as well as to develop social abilities, working and studying habits, an artistic sense, creativity and affection".²⁴

Country example 'France':

Relevance of general introductory, guidance and cross-curricular documents

The common core is regarded as the nation's glue ('le ciment de la nation'), a set of values, skills, languages and practices. Based on the eight European key competences, the common core applies to both primary and lower secondary schools and to all subjects. All subjects are expected to contribute to their acquisition. There are seven areas of knowledge and competence, the seventh of which is 'autonomy and initiative' ('autonomie et sens de l'initiative'). It is one of two inter-disciplinary competences, the other being social and civic competence, both of which are said to suffer from a lack sufficient attention in schools.

In countries like the Netherlands, the low numbers of relative occurrences of the search terms Creativity and Innovation and their synonyms can be explained by the fact that the national curricula documents (Kerndoelen) only provide a framework. Their concrete development and further refinement in specific school and subject curricula are carried out autonomously by the individual schools themselves. In addition, Creativity and Innovation in school education are also stimulated by a variety of other measures.

²⁴ "La finalidad de la educación primaria es proporcionar a todos los niños y niñas una educación que permita afianzar su desarrollo personal y su propio bienestar, adquirir las habilidades culturales básicas relativas a la expresión y comprensión oral, a la lectura, a la escritura y al cálculo, así como desarrollar habilidades sociales, hábitos de trabajo y estudio, el sentido artístico, la **creatividad** y la afectividad."

<http://www.juntadeandalucia.es/averroes/impe/web/contenido?pag=/contenidos/B/ApoyoAlCurriculo/CurriculoDeEstado/Seccion/LaordenacionEducacionPrimariaLOE>

Country Report ‘Netherlands’:
The role of ‘Kerndoelen’ and further measures for the stimulation of Creativity and Innovation in school education

Kerndoelen determine topics and what skills students need to have, though they are not prescriptive and do not determine pedagogical methods. They allow pedagogical freedom. Dutch schools are free to incorporate innovation and creativity within their lessons according to their own pedagogical methods. They make this explicit in their school plans.

The Dutch Ministry of Education also stimulates creativity and innovation in education using other policy measures. For example, the Dutch Social Innovation Agenda for Education is part of a government project entitled “The Netherlands: country of entrepreneurship and innovation” (Nederland Ondernemend Innovatieland).²⁵ The Social Innovation Agenda for Education provides the Dutch government’s integrated view on innovation in education. The main objective is to strengthen the innovative power of the educational field to deal with future challenges.

General conclusions on the use of Creativity, Innovation and their synonyms in school curricula

General conclusions for the whole of Europe as to the occurrence and use of the terms Creativity, Innovation and their synonyms in school curricula must be rather general.

Subjects level conclusions: The subjects (here: subject groups) which contain most references to Creativity, Innovation and their synonyms are the Arts, followed by ICT and Physical Education. Languages come fourth, but in terms of relative occurrences, this subject group already ranks below the average.

Conclusions according to school types: there are hardly any differences at the overall European level in the relative occurrences of Creativity, Innovation and their synonyms, with almost identical relative occurrences for all search terms and the synonyms in both primary and secondary school. As already mentioned in the main part of this report, Creativity always achieves the highest values followed by its synonyms, whereas Innovation can be found at the tail end.

Country-specific analysis and conclusions on the use of Creativity, Innovation and their synonyms in school curricula

A country-specific analysis provides further information and insights for countries which score the highest with respect to the occurrence of Creativity, Innovation and their synonyms in their school curricula.

The study results show that Creativity is higher on the educational agenda in some countries and regions where it is used frequently and meaningfully in the curricula. In Northern Ireland, for instance, “Being Creative” is one of five thinking and capability skills placed at the heart of the curriculum at both primary and secondary level (The Northern Ireland Primary Curriculum, Section 1.6 and Statutory Requirements for Key Stage 3, Section 2.6). For nearly all subjects “developing critical and creative thinking skills” is specified as a required skill. Similarly, the ability to “demonstrate creativity and initiative” is seen as a learning outcome in the vast majority of subjects.

²⁵ http://www.ez.nl/Onderwerpen/Meer_innovatie/Nederland_Ondernemend_Innovatieland

Other countries with high relative occurrences of the search terms – predominantly because of high occurrences of the term Creativity - in both types of school curricula are Estonia (1.90), Scotland (1.62), the Czech Republic (1.41), Austria (1.37), Lithuania and Portugal (each 1.18). In the Czech Republic, the synonyms contribute to the high overall relative occurrence figures much more strongly than in most other countries.

In Estonia, Creativity (but not Innovation) is strongly emphasised in school curricula. This can be observed across various subjects, e.g. Crafts and the Arts, with relative occurrence figures of 4.23 and 6.46 for Creativity. It can also be observed in languages like Estonian as a second language and Russian, with relative occurrences of 2.75 and 2.49. Here it is referred to as a teaching goal, a crucial skill to be developed or an essential type of activity, and also mentioned as a required study result.

In Scotland, the document that introduces the Scottish syllabuses provides clear guidance on the importance of Creativity in the learning process itself and how to inculcate creativity as a skill in pupils, in all subjects within the agreed syllabus. Creativity is considered important in both the teaching and learning aspects of the Scottish education system to help children and young people to be successful learners, confident individuals, responsible citizens and effective contributors.

In the Czech Republic, Creativity is present in definitions of high-level objectives of the country's educational plan. It is considered to be a significant feature of the personal development of students.

For primary school curricula, the frontrunner Northern Ireland (overall relative occurrence: 1.72) is followed by the Czech Republic (1.47) and Slovakia (1.37). For secondary school curricula, the corresponding countries/regions and figures are: England (3.15), Austria (1.82) and Northern Ireland (1.72).²⁶

In England, Creativity is promoted for many subjects like Art and Design and Modern Foreign Languages. Here, it is referred to as a 'Key concept' and as a 'Key process' and is mentioned in the 'Attainment targets'. Detailed descriptions in 'explanatory notes' give a clear idea how Creativity is framed in the subjects' context.

In the Austrian school curricula, Creativity is referred to under a dedicated heading "creativity and design" which appears in all subject curricula.

In secondary school curricula in Luxembourg, Creativity is described as a "skill in everyday life and professional life which is becoming increasingly important."

The approach used for the study has revealed how and where Creativity and Innovation are written into national curricula and identified those countries, subjects and phases where Creativity and Innovation receive particular attention and, conversely, those where Creativity and Innovation appear to be missing or weak.

Of course, the fact that the terms and synonyms occur in official documents is no guarantee that practice in schools will coincide with official intentions, even if statutory. This is especially true if, as is the case with Creativity and Innovation, it is difficult to test and certify performance in these areas. For this reason, this study is only one element of a series of activities designed to examine the place of Creativity and Innovation in schools and it will be

²⁶ Estonia with a relative occurrence of 1.92 is not listed here because for this country a differentiation of the analysis according to school types was not possible. The relative occurrence figure refers to the combined results of primary and secondary school curricula which had to be taken instead.

interesting to compare results across the different studies. Of particular note, for example, is the finding from this study (Table 12) that Creativity and Innovation are mentioned more than average in some countries' curricula (e.g. Austria, the Czech Republic, Hungary, Slovenia, the Baltic states, and Portugal) than others (e.g. Denmark, Italy, the Netherlands, Poland and Romania). To some observers, this may appear counter-intuitive: they would argue that education systems that emphasise personal development through an open pedagogy must de facto allow for more Creativity and Innovation than those that tend to focus on more traditional didactic methods, 'filling empty vessels' with prescribed content. Furthermore evidence from, for example the teachers' survey (see 'Creativity and Innovation Creativity in Schools in Europe: A survey of Teachers', December 2009, figure 5) suggests that more teachers in Italy than any other country consider that the development of students' creativity plays an important role in their curriculum, while Estonian and Hungarian teachers are among those who disagree most strongly with the statement. Such apparent discrepancies only serve to underline the importance of measured interpretation of results, the need for multiple perspectives, the relativity of definitions and use of the terms Creativity and Innovation and their application in classrooms, the complexity of education systems and the differences between policy and practice.

V. Annexes

1. Identification of Curricula

The national curriculum of **Austria** for the different school types (primary, lower secondary and upper secondary school) has been downloaded from:

www.bmukk.gv.at/schulen/unterricht/lp/lp_abs.xml.

The curricula are differentiated according to school type and subject, i.e. for each subject in primary as well as lower and upper secondary school a subject-based curriculum exists and each of them has been analysed individually. Further guidance documents are provided on the above websites and provide more information on the homework pupils are supposed to carry out, ways of planning the education process in classes including the definition of core and extension parts, proposals for and examples of exercises etc.

Belgium – German speaking community: The Decree from June 16, 2008 establishes essential skills and curriculum guidelines in education.²⁷ It can be found at: http://www.dgparlament.be/PortalData/4/Resources/Datenbank/2004_2009/2007-2008_BR_127_50230doc.pdf. Freedom of education (a constitutional principle in Belgium) implies that each school organising authority or body is free to choose or to draft its own curricula for its schools. All curricula guidelines are provided as annexes to the decree. A differentiation by school types was not possible but the study team was able to split this document to carry out an analysis on subject level. The introduction and Chapter 1 of each subject curriculum have been analysed separately as general documents.

The curriculum of **Flanders (Belgium)** can be found at: <http://www.ond.vlaanderen.be/dvo/>. For primary education each subject curriculum also contains general parts whereas the documents for secondary education only state the end terms on what knowledge, attitude and skills students should have. For lower secondary education, curricula are available for grade one and two have been merged to make a school type analysis possible. It was not possible to identify the year of publication of the curricula documents.

The curriculum of **Wallonia (Belgium)** can be found at: <http://www.enseignement.be>. The curricula give only general orientations and cities and/or regions are supposed to adapt these to their needs. All analysed curricula are presented in the same way including the following chapters: Introduction, Transversal knowledge (as means for solving problems, understanding messages, etc.), Specific knowledge (relating to specific subjects, e.g. in ancient languages: Latin language structure differences compared to Greek language structure), Glossary.

The national curriculum of **Bulgaria** can be found at: http://www.minedu.government.bg/top_menu/general/. Curricula documents are available for all class levels and have been merged according to school types by the study team to make a comparison possible. Due to technical problems to convert the documents from pdf files to txt files not all paragraphs within the documents could be analysed.

Please note: According to a government decision lower secondary education now ends after the 7th class, and no longer after 8th class. This is not yet reflected in the curricula programmes and will take place gradually during the years to come. Some programmes still refer to "7th and 8th class".

²⁷ Dekret zur Festlegung von Kernkompetenzen und Rahmenplänen im Unterrichtswesen

The national curriculum of **Czech Republic** can be found at: http://rvp.cz/informace/wp-content/uploads/2009/09/RVPZV_2007-07.pdf.²⁸ The curriculum document has been split by the study team to allow for a subject-based analysis. This resulted in an additional group of documents “Primary & Secondary” which contains the introductions to each subject, i.e. these parts can only be allocated to subjects but not to a school type.

The national curriculum of **Denmark** can be found at:

<http://www.uvm.dk/Uddannelse/Folkeskolen/Fag%20proever%20og%20evaluering/Faelles%20Maal%202009/Faghaeftenummerering.aspx>. Documents have been split by the study team to allow for a subject-based analysis. This resulted in an additional set of documents “Primary & Secondary” which contains the general parts of each subject curriculum, i.e. the parts can only be allocated to subjects but not to a school type.

The national curriculum of **Estonia** can be found at:

<https://www.riiqiteataja.ee/ert/act.jsp?id=1008388>. Additional supporting documents for the curricula can be found on the National Examinations and Qualifications Centre website: <http://www.ekk.edu.ee/valdkonnad/oppekavad/pohikooli-ja-gumnaasiumi-riiklik-oppekava>. All curricula are provided in one single document for Estonia. A differentiation by school types was not possible but the study team split this document to allow for an analysis on subject level. Parts of the curriculum which could not be allocated to subjects, e.g. national curriculum texts on ‘cross cutting issues’ and the introduction, have been grouped under ‘general documents’ and analysed separately.

The national curriculum of **Finland** can be found at:

http://www.oph.fi/ops/perusopetus/pops_web.pdf. The descriptions in the Finnish curriculum do not differentiate between primary and secondary education which made a differentiated analysis according to school types not possible. However, the study team was able to split this document to allow for an analysis on subject level.

The national curriculum of **France** for both primary and secondary school can be found at <http://eduscol.education.fr/pid23391/programmes-ecole-college.html>.

For primary and secondary school, general objectives are presented in a separated document called “Préambule” which describes general aims for each stage and in the “Socle commun de connaissances et de compétences”. The curricula are complemented by “additional notes for teachers”. For secondary education compulsory subjects have been analysed and in addition the general preamble for foreign languages²⁹ as well as the two foreign languages English and German (stage³⁰ 1 and 2). The documents for foreign languages are available as scans only and have been converted by the study team with OCR software so the documents could also be analysed.

The curricula of **Bavaria (Germany)** for primary education can be found at: <http://www.isb.bayern.de/isb/index.asp?MNav=3&QNav=4&TNav=0&INav=0&Fach=&LpSta=6&STyp=1>. The ones for lower and upper secondary can be accessed at: <http://www.isb-gym8-lehrplan.de/contentserv/3.1.neu/q8.de/index.php?StoryID=26418>. Documents are available for different class levels and have been merged by the study team on school type level where necessary to allow for a subject-based analysis according to school type. For lower secondary education only documents for Gymnasium have been included in the

²⁸ An English translation of the national curriculum can be downloaded from here: http://rvp.cz/informace/wp-content/uploads/2009/09/RVP_ZV_EN_final.pdf

²⁹ Langues vivantes, Préambule commun, parler 1, parler 2.

³⁰ Parlier.

analysis (the other forms of secondary schooling in Germany – Hauptschule and Realschule - have been left out since the situation there is comparable).

The curriculum for **Lower Saxony (Germany)** can be found at <http://db2.nibis.de/1db/cuvo/ausgabe/index.php?mat1=16>. The curricula are differentiated according to school type and subject, i.e. for each subject in primary as well as lower and upper secondary school a subject-based curriculum exists and each of them has been analysed individually. For lower and upper secondary school only documents for Gymnasium have been included in the analysis. Hauptschule and Realschule have been left out.

The curriculum of **Saxony (Germany)** can be found at: <http://www.sachsen-macht-schule.de/apps/lehrplandb/>. Further general documents could be identified on the above mentioned website. They provide overall objectives and concepts for teaching and learning together with further information on cross-subject learning and teaching. Documents for secondary education could not be split according to lower and upper secondary education. Only the documents for Gymnasium have been included in the analysis (the other forms of secondary schooling in Germany – Hauptschule and Realschule - have been left out since the situation there is comparable).

The national curriculum of **Greece** for primary and secondary education can be found at: <http://www.pi-schools.gr/programs/depps/> and www.ypepth.gr/docs/prog_spoud_lyk_2001_2.doc. The curricula documents are divided into two main sections: the interdisciplinary single framework program of study and the analytic curriculum of studies. Documents have partly been split by the study team to make an analysis on subject level and on school type level possible. The Teacher's book, student's book and the exercises book have not been included in the analysis.

The National Core Curriculum of **Hungary** ("Nemzeti Alaptanterv") can be found at: <http://www.okm.gov.hu/main.php?folderID=391>. It is a legal document: the Government Decree 243/2003 on Issue, Implementation and Application of the National Curriculum. The National Core Curriculum concerns primary, lower and upper secondary compulsory education (year 1-12, ages 6-18) in an integrated manner. The study team split this document to make an analysis on subject level possible.

The national curriculum of **Ireland** for primary education can be found at: http://www.ncca.ie/en/Curriculum_and_Assessment/Early_Childhood_and_Primary_Education/Primary_School_Curriculum/Download_Primary_School_Curriculum/Primary_School_Curriculum.html and for secondary education at: <http://www.education.ie/home/home.jsp?maincat=17216&pcategory=17216&ecategory=17233&language=EN>. Where available, documents on subject level 'Syllabus' and 'Guidelines' have been merged. Documents are analysed in English only, i.e. curricula for Gaeilge (Gaelic) are not included in the analysis. Non core subjects in secondary education have not been included in the analysis (Greek, Latin, Spanish, Italian and Hebrew).

In **Italy** primary schools are asked to follow the curricula of 1985 (<http://www.edscuola.it/archivio/norme/programmi/elementare.html>) and to combine it with the Indicazioni (http://www.pubblica.istruzione.it/normativa/2007/allegati/dir_310707.pdf) "Indicazioni" in Italian means "guidelines", the indicazioni (which cover schools with pupils from ages 6 to 14) are to be used as an implementation to the curricula of 1985. The same applies for lower secondary curriculum from 1979.

In the first cycle of education, starting from school year 2009/2010, the previous "Indicazioni nazionali per i piani di studio personalizzati nella scuola primaria" and "Indicazioni nazionali per i piani di studio personalizzati nella scuola secondaria di 1° grado" (allegato C), attached to legislative decree 19 February 2004 (please see allegato B and C in

http://www.edscuola.it/archivio/norme/decreti/dlvo059_04.htm) can be adopted by schools together with the "Indicazioni per il curricolo" (Ministerial Decree, 31 July 2007).

With the age of 14 (having passed all exams) students are asked to choose what to study in upper secondary education. They can choose among different forms of schooling for which curricula have been included in the analysis. Several documents had to be excluded from analysis due to technical reasons (documents are only offered with security restrictions which do not allow using them for further analysis as part of the study).

The guidelines (Indicazioni) which cover both, primary and secondary education were split by study team to make an analysis on subject level possible. The national curriculum texts for primary and for lower secondary education were copied by study team from the websites referred to above according to subjects.

The national curriculum of **Latvia** can be found at:

<http://visc.gov.lv/saturs/vispizgl/programmas.shtml>. A differentiation between school types was not possible – relevant class levels of the curricula documents are shown in brackets in the country report only. The documents for 'Textile Specialisation' which is meant for girls and for 'Wood-Processing Specialisation' which is meant for boys have been merged to 'Home Economics'. The following not compulsory subjects for minorities have not been included in the analysis: Belarusian or Ukrainian (mother tongue), Latvian and Literature for minorities and Literature in Belarusian or Ukrainian.

The national curriculum of **Lithuania** can be found at: <http://www.pedagogika.lt/index.php?-469374926>. Primary and secondary education curricula are part of the same document "Primary and basic education framework programs". The document has been split for primary and secondary education by the study team to make an analysis on subject and on school type level possible.

The national curriculum of **Luxembourg** for primary education can be found at: http://www.men.public.lu/publications/primaire/programmes_manuels_scol/plan_etudes/plan_etudes.pdf and for secondary education at:

http://www.myschool.lu/portal/server.pt?space=CommunityPage&cached=true&parentname=MyPage&parentid=2&in_hi_userid=2&control=SetCommunity&CommunityID=1385&PageID=0. Curricula are available in French, German or Luxembourgish and were analysed as they are available in the respective language. Documents for primary education have been split by the study team. For secondary education documents for different class levels and/or documents which are available in several parts (introduction, basic, programme) have been merged (the year of publication could not be identified). Further documents are available only for some selected subjects and/or class levels. They have not been included since this would have biased the analysis.

The national curriculum of **Malta** for primary education can be found at: http://www.curriculum.gov.mt/primary_syllabi.htm and for secondary education at: http://www.curriculum.gov.mt/secondary_syllabi.htm. Recently there have been updates for some curricula documents which could not be taken into account as they have been published after the study team had completed the analysis. In addition to the Music curricula for primary and secondary school there is also one document addressing both school types which has been excluded from analysis as well.

The Netherlands: Documents for primary education can be found at: <http://www.slo.nl/primair/kerndoelen>, for lower secondary education at: <http://ko.slo.nl/00001/> and for upper secondary education at: <http://www.examenblad.nl/>. The documents analysed provide "attainment targets" (Kerndoelen) and as such are not equivalent to "traditional" curricula. In the Netherlands there is no national curriculum and the structures as well as the

content of school curricula are to be developed under the responsibility of the schools themselves. Documents for upper secondary education have been merged for the different school types (VMBO, HAVO, VWO) to make an analysis possible. No analysis could be carried out for the following subjects in upper secondary education because on the above mentioned website no documents were provided: General Physics, Nature, Life and technology, Informatics, Culture and Art and Economy and Business.

The national curriculum of **Poland** was created in 2008 and can be found at: http://bip.men.gov.pl/index.php?option=com_content&view=article&id=221&catid=26&Itemid=49. Documents for primary school could be differentiated between classes 1-3 and 4-6 but no subject level splitting was possible. The curriculum for secondary school has been split by the study team to make an analysis on subject level possible.

A description of skills which students are supposed to attain according to the national curriculum of **Portugal** can be found at: http://sitio.dgjidc.min-edu.pt/recursos/Lists/Repositrio%20Recursos2/Attachments/84/Curriculo_Nacional.pdf. Due to the revision of the curricula there are no official updated documents available. All curricula competence guidelines for Portugal are provided in one single document. The study team split this document to allow for an analysis on subject level. A differentiation by school types (cycles) is not possible as some information for each subject is addressing all cycles.

The national curriculum of **Romania** can be found at: <http://www.edu.ro/index.php/articles/c41/> and <http://www.edu.ro/index.php/articles/c42>. These websites provide more than 150 different documents which have been merged according to school type to allow for an analysis according the subjects for each school type.

The national curriculum of **Slovakia** can be found at: <http://www.statpedu.sk/sk/filemanager>. Documents are provided according to school type and subjects. For secondary education there are three different types of documents: Documents for 'Gymnazium' include both lower secondary (first 4 years) and upper secondary (last 4 years) teaching and documents in the groups lower secondary and upper secondary education include documents other than 'Gymnazium'.

The national curriculum of **Slovenia** can be found at: http://www.mss.gov.si/si/delovna_podrocja/osnovnosolsko_izobrazevanje/program_osnovne_sole/obvezni_predmeti_v_devetletni_osnovni_soli. The document consists of the syllabus for the 9-year elementary school, national subject curriculum for compulsory and optional subjects along with the definitions of cross curricular content. As all curricula refer to both primary and secondary schools in an integrated way, the study team split this document to allow for an analysis on subject level together for both school types.

In **Spain** the central government fixes the national core curriculum, which amounts to 55% of the timetable in the Autonomous Communities with a second official language and to 65% for the remainder of the regions / communities. Curricula are designed differently in every region in Spain but all are based on the same National Law (Organic Law for Education). The Decree developed by the region is the framework for the schools and educational centres. Based on this framework they develop themselves the Educational Project and the Curricular Project for each specific centre.

Different reports have been produced for Spain: One report contains the analysis of the curricula documents at national level and there are also case reports available for the regions of Extremadura, Andalucía and Madrid which complement this report with regional level examples.

The **national curriculum of Spain** for primary education can be found at: <http://www.boe.es/boe/dias/2006/12/08/pdfs/A43053-43102.pdf> and for secondary education at: <http://www.boe.es/boe/dias/2007/01/05/pdfs/A00677-00773.pdf>. The documents have been split by the study team to make an analysis on subject level possible (the same has been made for the documents in the regions which follow the same structure).

The curriculum of **Andalucía** for primary education can be found at: <http://www.juntadeandalucia.es/boja/boletines/2007/156/d/updf/d1.pdf> and <http://www.juntadeandalucia.es/boja/boletines/2007/171/d/updf/d1.pdf>.

For secondary education they are made available at:

<http://www.juntadeandalucia.es/boja/boletines/2007/156/d/updf/d2.pdf>, and <http://www.juntadeandalucia.es/boja/boletines/2007/171/d/updf/d2.pdf>.

For primary education subject groups summarising several subjects have been analysed.

The curriculum of **Madrid** for primary education can be found at:

http://www.madrid.org/dat_capital/loe/pdf/curriculo_primaria_madrid.pdf and for secondary education at: http://www.madrid.org/dat_capital/loe/pdf/curriculo_secundaria_madrid.pdf.

The curriculum of **Extremadura** can be found at:

<http://www.juntaex.es/consejerias/educacion/dg-calidad-equidad-educativa/regulacion-ides-idweb.html>.

The national curriculum of **Sweden** can be found at:

<http://www3.skolverket.se/ki03/front.aspx?sprak=SV&ar=0910&infotyp=15&skolform=11&id=2087&extrald=>. The curriculum is relatively short and outlines the direction, aims and criteria for the assessment of marks. The Swedish school system is decentralised. Since the early 1990s, each municipality (Sweden has 290 municipalities) is responsible for the provision of education within their area (of course with a high degree of control from the national authorities regarding quality, goals and aims, grades etc.). The Swedish National Agency for Education is now reviewing the current curricula and syllabuses. New syllabuses and knowledge requirements will be introduced successively in 2011/12.

The curriculum deals with primary and secondary education together which made a differentiation between school types impossible. The study team split this document to carry out an analysis on subject level.

The curriculum of **England** for both primary and secondary education can be found at: <http://curriculum.qcda.gov.uk>. The documents for primary school also include the programme of study for subsequent key stages. The study team therefore had to delete these parts when processing the texts for the analysis. In addition, the QCA provides the curriculum for compulsory subjects but not for areas of entitlement in key stage 4. As a result, compulsory subjects are covered for both key stages 3 and 4, whereas areas of entitlement are just covered for key stage 4. The study team decided to merge the programme of study for KS3 and 4 for compulsory subjects in secondary school in order to allow for comparing subjects.³¹

The curriculum of **Northern Ireland** for primary and secondary education can be found at: <http://www.nicurriculum.org>. Documents for primary (key stage 1+2) and secondary education (key stage 3) are provided in one document and the study team split these documents to make an analysis at subject level possible. Documents for key stage 4 have not been included as documents are not available on the website for all subjects (http://www.nicurriculum.org.uk/key_stage_4/).

³¹ A revised curriculum for Primary schools, following the Rose review of the primary curriculum, had to come into force from September 2010. At the time of writing, it seems that all changes in the curriculum for England have been frozen.

The curriculum of **Scotland** can be found at:

<http://www.ltscotland.org.uk/curriculumforexcellence/experiencesandoutcomes/index.asp>

Primary and secondary education is referred to in an integrated manner which made a division by school type impossible. Cross curricular documents have been included in the analysis as well.

The curriculum of **Wales** can be found at:

<http://wales.gov.uk/topics/educationandskills/curriculumassessment/arevisedcurriculumforwales/nationalcurriculum/?lang=en>.

The curriculum was re-structured “to focus more on skills; focus on the learner” though documents “Skills across the curriculum” and “Learning across the curriculum” are included in the analysis. The document for primary education has been split by the study team to make an analysis on subject level possible. For secondary education the documents for analysis include the curricula for the different subjects and their accompanying guidance documents.

2. Wordlist

The list of words presented in the table below provides an overview per country of the translations that have been used for Creativity and Innovation and the list of synonyms (with translation in English) which have been selected per each country.

	Austria	Belgium - German speaking community	Belgium - Flanders	Belgium - Wallonia	Bulgaria	Czech Republic
CREATIVITY	KREATIV*	KREATIV*	Creati*	Créativ* and Créatif*	КРЕАТИВ*, СЪЗИДАТЕЛ* and ТВОРЧЕС*	TVOŘIV* and kreativ*
INNOVATION	INNOVAT*	INNOVAT*	Innovat* and vernieuw*	INNOVA* and Novat*	ИНОВАТ* and НОВАТОР*	INOV*
Synonym 1	Einfallsreich*	EINFALLSREICH*	invent*	Invent*	въобра*	ZLEPŠ*
Synonym 2	Risikoreich*	RISIKOREICH	Inspir*	Origin*	предприемач*	obnov*
Synonym 3	Initiativ*	INITIATIV*	Fantas*	Avant-garde	инициатива*	podnik*
Synonym 4	Erfind*	ERFIND*	Initiat*		изобрет*	objev*
Synonym 5	Originell*	ORIGINELL*	Ingen*			
Synonym 6			Origin*			
Meaning	Meaning	Meaning	Meaning	Meaning	Meaning	Meaning
Synonym 1	imaginative	imaginative	Inventive	Invent*	Imagin*	improvement
Synonym 2	risk-taking	risk-taking	Inspiring	Origin*	entrepreneurship	update/renew
Synonym 3	initiative	initiative	Imaginative	cutting edge	initiative	entrepreneurship
Synonym 4	Invent*	INVENT*	Initiative		invent*	discovering
Synonym 5	Origina*	ORIGINA*	Ingenious			
Synonym 6			original			

	Germany	Denmark	Estonia	Greece	Spain	Finland
CREATIVITY	KREATIV*	Kreativ*	LOOV* and Looming*	δημιουργικ*	CREATIV*	LUOV*
INNOVATION	INNOVAT*	Innovat* and Nyskabend*	UUEND* and Innova*	καινοτομ* and Πρωτοπορ*	INNOVA*	INNOVA*
Synonym 1	Einfallsreich*	opfindsom*	Kujutus*	πρωτοβουλ*	IMAGINA*	KEKS*
Synonym 2	Risikoreich*	Iderig*	Leiu*	Νεωτερι*	EMPREND*	ALOIT*
Synonym 3	Initiativ*	Entrepreneur*	Ettevõte*	εφευρετ*	INVEN*	YRIT*
Synonym 4	Erfind*	Initiativ*		αυθεντικ*	ASUNCIÓN DE RIESGOS	OMAPERÄI*
Synonym 5	Originell*			αποτολμ*	INVESTIG*	MIELIKUVITEL*
Synonym 6						KYLÄHULLU*
Meaning	Meaning	Meaning	Meaning	Meaning	Meaning	Meaning
Synonym 1	imaginative	imaginative	Imagination	initiative	IMAGINATION	making findings
Synonym 2	risk-taking	imaginative	Invention	modern	ENTREPRENEURSHIP	making initiatives
Synonym 3	initiative	Enterprising	Entrepreneurship	invent	INVENTION	entrepreneurship
Synonym 4	Invent*	Initiative		original	RISK-TAKING	originality
Synonym 5	Origina*			RISK-TAKING	INVESTIGATION	imagination
Synonym 6						Making unconventional but innovative findings

	France	Hungary	Ireland	Italy	Latvia	Lithuania
CREATIVITY	Créativ* and Créatif*	Kreativ*, Kreatív* and Alkotókészség	CREATIV*	CREATIV*	RADOŠ*	Kūryb*
INNOVATION	INNOVA* and Novat*	innov* and Újít*	INNOVAT*	INNOVA*	JAUNIN* and INOV*	Inovac* and Inovat*
Synonym 1	initiat*	Vállalkozóké*	Cutting-edge	NOVI*	ORIĢIN*	Versl*
Synonym 2	expérim*	Invenció*	Entrepreneurship*	RINNOV*	TRADICIONAL*	Novator*
Synonym 3	indépend*	Találék*	Groundbreaking*	INVENT*	NOVIT*	Išrad*
Synonym 4	Invent*	Feltalál*	Invent*	INTRAPREN*	izgudro*	Nauj*
Synonym 5	imagin*		Origina*	ORIGINA*	tēlain	Original*
Synonym 6			Risk-taking	ESTR*		
Meaning	Meaning	Meaning	Meaning	Meaning	Meaning	Meaning
Synonym 1	initiative	entrepreneurship	Cutting-edge	novelty	originality	entrepreneurship
Synonym 2	experiment	Inventive	Entrepreneurship*	renovation	unconventionality	groundbreaking
Synonym 3	independent	Ingenious	Groundbreaking*	inventiveness	novelty	invention
Synonym 4	inventive	Inventive	Invent*	entrepreneurship	invent	novelty
Synonym 5	imagination		Origina*	originality	imaginative	original
Synonym 6			Risk-taking	inspiration		

	Luxembourg	Malta	The Netherlands	Poland
CREATIVITY	Kreativ*, Créativ* and Créatif*	Kreattiv* and CREATIV*	Creati*	KREATYWN*
INNOVATION	Innova* and Novat*	Innovazzjoni* and INNOVAT*	Innovat* and vernieuw*	INNOWAC*
Synonym 1	Neierung	Tiġdid*	invent*	INWENC*
Synonym 2	Invent*	Sogru*	Inspir*	POMYSŁOW*
Synonym 3	Origin*	nivvintaw	Fantas*	ODKRYWC*
Synonym 4	Avant-garde	Intraprenditorija	Initiat*	WYNALAZ*
Synonym 5		Holqien	Ingen*	POSTĘPOW*
Synonym 6	Einfallsreich*, risikoreich, initiative*, erfind*, originell*	Cutting-edge, Entrepreneurship*, Groundbreaking*, Invent*, Origina*, Risk-taking	Origin*	TWÓR*
Meaning	Meaning	Meaning	Meaning	Meaning
Synonym 1	renewal	To renew	Inventive	Inventiveness
Synonym 2	Invent*	Risk -taking	Inspiring	ingeniousness
Synonym 3	Origin*	invent	Imaginative	being able to make discoveries
Synonym 4	cutting edge	Entrepreneurship	Taking initiative	being able to make inventions
Synonym 5		To create	Ingenious	progressiveness
Synonym 6	Imaginative, risk-taking, initiative, invent*, origina*	Cutting-edge, Entrepreneurship*, Groundbreaking*, Invent*, Origina*, Risk-taking	original	creative/create

	Portugal	Romania	Sweden	Slovenia	Slovakia	United Kingdom
CREATIVITY	criat*	CREATIV*	Kreativ*	KREAT* and ustvarjal*	kreativit*, kreatív* and tvoriv*	CREATIV*
INNOVATION	inova*	INOVA* and NOVATO*	Innovat* and Nyskapa*	INOVA*	inovác*, inováč* and inovatív* ⁿ	INNOVAT*
Synonym 1	emprende*	INVENTIV*	Idérik*	Iniciat*	origináln*	Cutting-edge
Synonym 2	INVEN*	INGENIO*	Uppfinning*	Nov pristop*	originalit*	Entrepreneurship*
Synonym 3	original*	ÎNNOIRE*	Påhitt*	domiš*	iniciatív* ⁿ	Groundbreaking*
Synonym 4	INICIAT*	ORIGINAL*	fantasifull	Sodob*	jedinečn*	Invent*
Synonym 5	AUTONOM					Origina*
Synonym 6						Risk-taking
Meaning	Meaning	Meaning	Meaning	Meaning	Meaning	Meaning
Synonym 1	Entrepreneurship	INVENTIVE	Rich of ideas	initiative	original	Cutting-edge
Synonym 2	invent	INGENUOUS	Invent*	new approach	originality	Entrepreneurship*
Synonym 3	ORIGINALITY	RENEWAL	Invent*	imaginative	initiative	Groundbreaking*
Synonym 4	INITIATIVE	ORIGINAL*	Imaginative	cutting edge	unique	Invent*
Synonym 5	AUTONOMY					Origina*
Synonym 6						Risk-taking

European Commission

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Title: The Role of Creativity and Innovation in School Curricula in the EU27: A content analysis of curricula documents

Authors: Gregor Heilmann and Werner B. Korte

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Technical Note

Abstract

This report presents an original analysis of the frequency and location of the terms creativity and innovation and relevant synonyms in the obligatory schooling curricula documents from the EU Member States. In total, 37 countries and/or regions were studied and about 1,200 curricula documents were identified and analysed. Given national and/or regional differences in the educational systems and in the status of curricula documents, certain restrictions and limitations had to be taken into account when comparing and drawing inferences from the results. However, a major finding of the study is that Creativity and Innovation – the latter to a much lesser extent – effectively feature in the curricula of primary and secondary education in Europe, though major differences across countries have been observed

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