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Creativity in Schools: A Survey of Teachers in Europe

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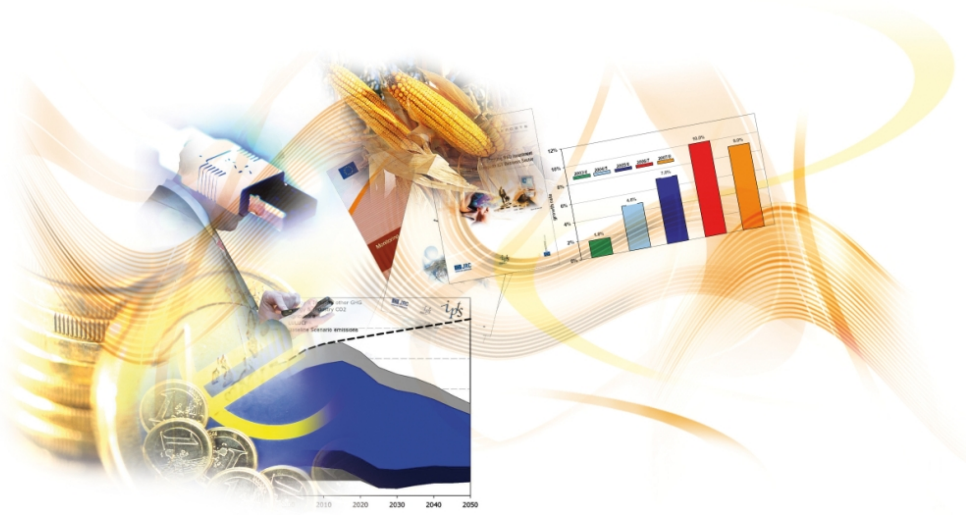

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[1] The Institute for Prospective Technological Studies (IPTS) is one of the seven research institutes that make up the European Commission's Joint Research Centre (JRC).

Preface

This report has been prepared by the Institute for Prospective Technological Studies (IPTS) in collaboration with DG Education and Culture, Directorate A, Unit A1. It presents the analysis of an online survey of teachers in Europe which was conducted by IPTS and European Schoolnet. The analysis of the data of the survey was carried out with the support of Isidro Maya Jariego and Maria José Jurado from the University of Seville.

The report is part of a project on 'Creativity and Innovation in Education and Training in the EU27 (ICEAC)'. 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]
- An analysis of curricula by Empirica;
- This 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 booklet on good practices by Futurelab and IOE;
- A validation workshop (held in Seville on 1-2 June 2010);
- A final report.

More information on the project can be found at:
http://is.jrc.ec.europa.eu/pages/EAP/iceac.html

More information on current and past 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

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

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Executive summary

Main messages

This report examines how teachers in Europe perceive and understand creativity, foster creativity through their teaching; use ICT to encourage creativity; and what kind of context and support are necessary for teachers to cultivate creativity in their students. This analysis is part of a bigger study (ICEAC) which 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 the primary and secondary levels of compulsory schooling in Europe.

Data was gathered from teachers across 32 countries at different school levels. The scope of the analysis presented here is limited to responses (7,659 in total) from teachers teaching in obligatory schooling (ISCED levels 1 and 2) in EU 27. The data was collected through an online survey which was posted on the eTwinning website and promoted through national and European channels. The survey was online from mid-September to mid-October 2009. The results of this survey are not representative of the teacher population in Europe due to the following biases: under or over representation of some countries, the online mode of administering the survey and reliance on voluntary participation, amongst others. Despite these limitations, this survey is unique as it is the first time that such a high number of teachers' opinions on creativity in the EU27 have been collected.

This survey shows that teachers have an encompassing view of creativity. Almost all teachers believe that creativity can be applied to every domain of knowledge and that creativity can be applied to every school subject. However, fewer teachers are convinced that creativity is not only relevant to visual arts, music, drama and artistic performance. While the majority of the teachers surveyed were active in promoting creativity in their teaching, they were more likely to support activities and skills which are more obviously linked to creative learning, such as learning how to learn. Other activities which are also instrumental for creative learning, such as play and multi-disciplinary work, were deemed less relevant.

Based on these results, we argue that there is a discrepancy between how teachers perceive creativity and the way they claim to foster creativity during their teaching. Teachers' opinions on creativity in education are stronger than their practices. This implies that there is a lot of room for improvement in the way creativity is fostered in schools. While more training is required on how creativity could be fostered at school, we argue that creative practices should be institutionalised. Creative practices are often not allocated enough time and space because they do not fit the educational agenda. Educational policy documents need to raise awareness on the benefits not only of creativity for learning, but also of linking teaching practices and methods with creative outcomes, so that teachers can become reflective practitioners able to discern how a teaching method or activity can stifle or trigger creativity in their students.

The way creativity should be assessed is often not addressed in educational objectives and policies. Our data shows that only half of the respondents agree that creativity can be assessed. Formal testing remains the predominant way of assessing students in Europe, although other methods of evaluation may also be observed. One of the priorities identified by the Manifesto for Creativity and Innovation (EC, 2009) is that initiative, which is highly connected to risk-taking, must be rewarded in order to foment entrepreneurship. To engage in change, one must be ready to run some risks and evaluation of risks is a fundamental criterion

for success. Innovative ways of assessment, such as portfolios and allowing students to test and give each other feedback, are still under used. These results suggest that more effort should be dedicated to encouraging teachers to combine different methods of assessment, including self and peer assessment by students. If we want to enhance creativity in schools, students should be given significant time and space to investigate, test and revise their work and that of their peers.

There is clear evidence that a vast majority of teachers agree that ICT can be used to enhance creativity and to improve teaching. Although usage of ICT is largely related to more traditional technologies a shift to new tools is slowly picking up. The technologies that teachers agreed were important for learning may be divided into three main clusters: conventional technologies, interactive technologies and more user active Web2.0 technologies, with the first receiving highest preference from teachers and the latter the least. This suggests that the potential of Web2.0 technologies for learning is somehow still unclear for the teachers surveyed.

In terms of resources used by teachers, while textbooks are the preferred teaching resource in schools, the Internet has become widely-used. Data also highlights that teachers tend to combine different resources in their teaching, with more than two-thirds claiming to use various modes of ICT. Opportunities brought about by ICT, especially by Web2.0 applications, could be instrumental in enabling teachers to create their own material and resources and share them with their fellow teachers. Notwithstanding the wide access to the Internet across Europe, only a quarter of the respondents claimed that the quality of ICT in their schools was excellent. This suggests that while access to ICT is an important focus for policies, ensuring that the ICT provided is of good quality and continuously maintained is equally important.

Developments in pedagogy training should be addressing more specific needs arising from our societies. There is an urgent need to provide basic ICT training and also digital competence training so that teachers become confident and critical users of ICT. Topics covered during ICT training should reflect current ICT usage and new applications in the market. Training should address how technology tools can be used to enable innovative teaching and how these technologies can support creative learning.

In terms of creativity, while teacher training is widespread across Europe, both in terms of ITT and CPD, our results show an imbalance in the provision of courses on creativity during teacher training. As creativity and innovation are a priority for European policy-makers, due to the benefits they can have for growth and development, the Members States should promote and support training for teachers on how to foster creativity in learners. This training should focus on eradicating recurrent myths about creativity and on offering a direct link with educational practices, enabling teachers to reflect and discern which of the activities that take place in the classroom are more likely to encourage creativity.

We also argue that policy-makers and teachers should have an understanding of what creativity is, what it implies for education and how it can be applied in practice. This should be stated and promoted through curricula, teacher training and good practices exchange. As the Europe 2020 Strategy recommends, school curricula should focus on creativity with a view to creating a European economy based on knowledge and innovation (EC, 2010a). To achieve this goal, Member States should commit to re-thinking curricula in order to clearly enable creative learning practices.

Main findings

Perception and understanding of creativity

- Almost all the surveyed teachers believed that creativity could be applied to every domain of knowledge (98%) and that creativity could be applied to every school subject (96%).
- The teachers were less convinced about the over-arching applicability of creativity, as may be noted from the lower percentage agreement to the statement that creativity is not restricted to visual arts, music, drama and artistic performance (86%). However, despite this minor discrepancy, in general they tended to have an encompassing view of creativity.
- Almost nine out of ten teachers in this survey endorsed a democratic view of creativity, by sustaining that everyone could be creative (88%). At the same time, one fifth of the respondents still believed that creativity was an inborn talent (21%).
- An impressive majority of the teachers surveyed (95%) believed that creativity was a fundamental skill that should be developed in school.
- Only slightly more than two-thirds of teachers (70%) believed that creativity could be taught and only half (50%) thought it could be assessed.

Practices of creativity in the classroom

- More than nine out of ten teachers said they fostered skills and abilities in their students which could nurture creativity. Primary school teachers were more likely to foster such activities.
- Results highlight some discrepancy between teachers' positive views and their actual pedagogical practices. While more than three quarters of the respondents sustained that thinking skills were developed (83%), and that active and participative learning (80%) and learning how to learn (73%) took place in their classrooms, less than half of the respondents claimed that play (46%) and multi-disciplinary work (41%) also took place.
- Textbooks are still the number one resource used in classrooms (85%) by the teachers in our study. Almost three out of four teachers (72%) use the Internet to download material. Textbooks as resources are mostly preferred by respondents teaching in Bulgaria and Lithuania and least preferred by teachers in the United Kingdom.
- Formal tests remain the predominant form of assessment (76%). At the same time, an impressive majority claimed to reward behaviour which fosters a creative culture.

Perception and usage of ICT in classrooms

- The vast majority of surveyed teachers claimed that technology had improved their teaching (85%) and that ICT could be used to enhance creativity (91%) across different school levels.
- Internet has become an important tool for teachers to update their own knowledge for use in their lessons (90%), to prepare handouts and material (89%) and to search for teaching material (87%).

- Only half of the teachers (53%) claimed they let their students use a wide range of technologies to learn (videos, mobiles, cameras, educational software, etc). Teachers in Denmark and Romania were the most likely to let their students were the most likely to let students use a wide range of technologies to learn, as opposed to Finland and Estonia, who were the most reluctant to do so.
- More than half of the teachers surveyed (54%) disagreed that mobile phones could be important for learning. Teachers teaching Media Education, Psychology and Cross-curricular Subjects and teaching in Denmark and United Kingdom were the ones mostly likely to agree about the importance of mobile phones for learning.
- Computers (98%), educational software (93%), online collaborative tools and videos (both 89%) were deemed the most important technologies for learning.
- More than half of our respondents also content that more interactive sites, such as music/photo/video/slide sharing sites and blogs are important for learning.
- Web2.0 technologies were the applications least recognised as important for learning with less than half of the respondents agreeing on their importance. Male teachers were more likely to agree on the importance of Web2.0 technologies for learning (24%), in comparison to female teachers (20%). Teachers in Portugal and Denmark were the teachers who mostly recognised the importance of Web2.0 for learning, as opposed to teachers in Finland and Czech Republic who were the least to recognise the importance for learning of such technologies.
- More than half of the teachers in this survey (58%) claimed that they had not received any teacher training on how to use ICT in the classroom. Teachers who had received ICT training had more positive views on the importance of Web2.0 technologies for learning.
- Only a quarter of our sample (25%) agreed that the quality of ICT in their school was excellent.
- Scepticism about the potential benefits of digital gaming for learning was also observed. Less than half of the respondents (47%) agreed that digital games were important for learning and only 17% of the respondents used them as resources in their teaching.

Support necessary for teachers to foster creativity in their students

- A large number of respondents (77%) have undergone initial teacher training (ITT) and an even higher number (87%) undertake continual professional development (CPD) courses.
- Large variations between countries were observed: in Sweden and Finland almost all teachers had undergone ITT (both 96%), while in the Czech Republic, Spain and Italy percentages were much lower (respectively: 67%, 66% and 60%).
- Less than a quarter of the respondents (23%) agreed that they had learnt how to teach during initial teacher training.
- Spain is one of the countries with the highest percentage of teachers who continue to train while on the job and Finland the one with the lowest.
- More than half of the teachers surveyed (56%) claimed that creativity was not covered in their teaching training. Nine out of 10 respondents (90%) would like to receive such training. Teachers in Estonia and Slovakia were the ones most reporting that

creativity had been covered in their teacher training, while teachers in France and Hungary were the least declaring they had received training on creativity.

- While more than half of the teachers (57%) claimed they had received training in innovative pedagogies, only 44% had received training on creativity and 42% on how to use ICT in class. About 90% of respondents declared they would like to receive some further training.
- More than half of the teachers for 15 out of the 27 Member States[3] thought they had to cover too much content.
- According to our respondents, schools in Europe tend to foster discipline (80%), reward effort/perseverance (78%); and support extra-curricular activities (77%). The least fostered factors are: student initiatives (55%), mix of academic work and play (51%), and risk-taking (35%).
- Three quarters of respondents (73%) stated that they needed more institutional support.
- Above half of the teachers lamented a lack of resources (57%) and recognised that their schools needed more financial support (89%). This lack of resources and funds could possibly explain why teachers tend to prepare their own resources, as mentioned above.
- Respondents also asked for more technical support (78%). One quarter believed that the quality of ICT in their school was excellent but more than half (57%) believed it was not.

[3] These are Bulgaria, Cyprus, Estonia, Finland, France, Germany, Ireland, Latvia, Luxembourg, Malta, Portugal, Romania, Slovakia, Slovenia, and Spain.

1 Introduction

The importance of creativity for education and society has been emphasised from many sources. Already 10 years ago, the OECD recognised creativity as the core of the knowledge society (OECD, 2000). Creativity is viewed as a resource for economic development (Florida, 2002) and a means for social regeneration (Banaji, Burn, & Buckingham, 2006). Academics and educationists, from Vygotsky (2004) to Sawyer (2006a), Amabile (1989) and Robinson (2001) argue for the immense benefits of creativity for learning. In Europe, creativity is seen as the centre of the knowledge triangle: education-research-innovation (European Council, 2009). This strategic framework for European cooperation in Education and Training emphasises the need to address the enhancement of creativity and innovation, including entrepreneurship, at all levels of education and training. Creativity is seen as the sparkle for innovation, which is in turn acknowledged as one of the key drivers of sustainable economic development.

The year 2009 has been the European Year of Creativity and Innovation. One of its outputs was the Ambassadors' Manifesto (EC, 2009), where engagement in creativity is seen as a condition for Europe to be at the forefront. According to Barroso, creativity can ensure long and sustainable economic growth and provide new answers to the current economic crises (Villalba, 2009). The Manifesto considers investment in knowledge as vital in order to move ahead and thrive creativity (EC, 2009). The EU2020 proposal recommends focus in school curricula on creativity, innovation and entrepreneurship (EC, 2010a).

The 2009 European Year of Creativity and Innovation gave rise to the ICEAC study on Creativity and Innovation in Education and Training in EU Member States,[4] developed by JRC-IPTS[5] in collaboration with DG Education and Culture. The objective of this study is to provide a better understanding of how innovation and creativity are framed in the national and/or regional objectives and applied in practices of education at primary and secondary level of compulsory school (ISCED levels 1 and 2). The study consists of: a literature review on the role of Creativity and Innovation for education (Ferrari, Cachia, & Punie, 2009); an analysis of the relevance of creativity and innovation in school curricula; the present survey with teachers; a round of 80 interviews with educational stakeholders; and a booklet of good practices.

There is a widespread consensus from stakeholders on the relevance of the teacher for fostering or hindering learners' (and therefore youth) creative potential (Beghetto, 2005; Esquivel, 1995; Ng & Smith, 2004; Wyse & Spendlove, 2007). Understanding teachers' perception of creativity and their current teaching practices is thus essential for any development of policy lines on creativity and innovation for education in Europe.

In this report, we explore the perceptions of teachers in Europe about creativity for learning and their reflection on their own teaching practices. The first objective of the survey was to understand how teachers frame and conceptualise creativity. The second was to collect information on their current teaching practices and on the kind of systemic support they

[4] For further information please refer to: http://is.jrc.ec.europa.eu/pages/EAP/iceac.html

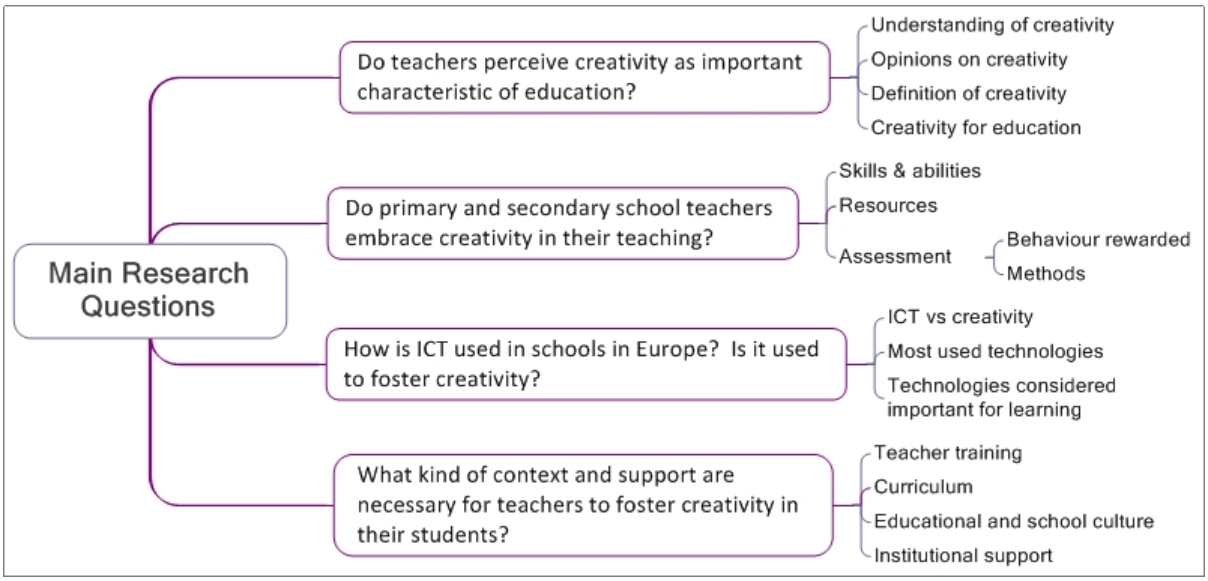
[5] The Institute for Prospective Technological Studies (IPTS) is one of the seven scientific institutes of the European Commission's Joint Research Centre (JRC). The mission of IPTS is to provide customer-driven support to the EU policy-making process by developing science-based responses to policy challenges that have both a socio-economic as well as a scientific/technological dimension.

receive and need. A particular emphasis has been given to ICT, so as to get a better understanding of current ICT practices and the potential of ICT applications to foster creativity in students. In addition, the conditions necessary for the nurturing of creativity at schools have also been analysed.

This data has been collected through an online survey posted on the eTwinning platform[6] and advertised through various European and national channels (national Lifelong Learning Agencies, Ministries of Education, and national EU permanent Representations among others). In total, 12, 893 teachers from 32 countries responded to the survey, namely from the EU 27 plus Croatia, Former Yugoslav Republic of Macedonia, Iceland, Norway and Turkey. A previous brochure analysing the preliminary results of the survey (Cachia, et al., 2009) focused on teachers from the EU 27, which amounted to 9460 responses. As a consequence of the scope of the study, this report focuses on 27 Member States of the European Union and compulsory school (ISCED levels 1 and 2), amounting to a total of 7, 659 responses.

This report presents the results of this online consultation. In the first part, the theoretical background of the study is presented. In the second part, the methodological aspects are discussed and the sample is illustrated. The third part highlights the main findings: 1) teachers' opinions on creativity for learning; 2) embracing of creative practices by teachers; 3) use of ICT and teachers' opinion of its potential for creativity and for learning; 4) support that teachers receive and need for a more creative and innovative education (see Figure 1).

Figure 1: Research questions



[6] eTwinning is a project which connects schools around Europe. It aims to encourage schools in Europe to collaborate on joint projects using Information and Communication Technologies (ICT): www.etwinning.net

1.1 Background

Creativity is a complex concept with a loose meaning. As Beghetto (Beghetto, 2005) points out, creativity in education is often used but seldom defined. In an attempt to disentangle the wide range of claims about creativity, Banaji and al. (2006) compiled a detailed literature review distinguishing several rhetorics about creativity, elaborating discourses and theories taken from different contexts, fields and traditions.

A similar argument is followed by Sawyer (2006a), who identifies several myths about creativity. While Banaji and al. hold a neutral and descriptive position, Sawyer tries to disprove these myths. Runco (1999) maintains that many educational stakeholders, such as teachers, parents, and children, hold a tacit knowledge about creativity manifested in opinions and expectations, which is in sharp contrast with what the research is showing – and which can have detrimental effects on any attempts to foster creativity in schools. For Sharp (2004), the current myths about creativity held by teachers lead to a shared misunderstanding of the issue and Beghetto (2007a) warns against teachers strong beliefs about creativity, as these misconceptions and pitfalls result in a marginalisation of creativity in the classroom.

Teachers tend to prefer standardisation over uniqueness (Beghetto, 2007b) thus promoting reproduction of notions over understanding. Moreover, literature on creativity highlights teachers' negative attitudes towards behaviours and attributes which are generally associated with creativity (Kampylis, Berki, & Saariluoma, 2009). Research also reports contradictions in teachers' conceptions of creativity. When learners understand that teachers value creativity, they are more prone to being creative, but teachers' ability to foster students creativity largely depends on the kind of training they have received (Fasko, 2001).

1.2 Defining creativity

In this report, *creativity* is defined as a product or process that shows a balance of originality and value. It implies the ability to make unforeseen connections and to generate new and appropriate ideas. It is understood as a transversal skill which could be developed in everybody. A distinction is highlighted between "big C" and "little c" creativity (Craft, Jeffrey, & Leibling, 2001), the first one referring to the creativity of the genius, such as Mozart and Einstein, the second one pertaining to the everyday life, being the ability of common people to solve daily problems in an unexpected way, or to see things with a fresh perspective.

In the field of education it is more common and appropriate to speak about "little c" creativity, and about the possibility to foster learners creative potential (Runco, 2007). Under this light, *creative learning* can be seen as any learning which involves understanding and new awareness, which allows the learner to go beyond notional acquisition, and focuses on thinking skills. It is the ability of making connections between things which were not connected before, of seeing relationships between unrelated items. It puts the learner at the centre of the learning process, favouring understanding over memorisation and mere content acquisition. The creative learning experience is opposite to the reproductive experience.

A literature review carried out by IPTS (Ferrari, et al., 2009) highlighted a series of factors that support creativity in education. These factors have been called *enablers* and are the circumstances or support mechanisms that make creativity and innovation more likely to thrive. Enablers have been identified in the following areas: assessment; culture; curriculum; individual skills; teaching and learning format; teachers; technology and tools. For each area,

factors have been identified which could foster or hinder creativity. If all positive factors (enablers) are present, it is still not possible to deduce that creativity and innovation are happening, as teachers and students will still have to actively engage in the creative and innovative process, but rather it means that creativity is more likely to thrive under these circumstances. On the contrary, if all factors are negative, there is still a chance for creativity to blossom, but both teachers and students will find it more challenging to engage in creative learning and teaching. Enablers are therefore indicators of the kind of environment which could nourish creativity for education.

2 Method

2.1 Research Instrument

The research instrument was an anonymous online survey, containing a short introduction to the topic and 29 close-ended questions. The survey contained 94 items divided into three major sections: demographics and factual items, such as the length of teaching experience of the respondent;[7] teaching practices, including use and opinions on ICT; and opinions about creativity for learning. All sections were based on a review of the literature on creativity and innovation undertaken by JRC-IPTS (Ferrari, et al., 2009).

The section on teaching practices was based on enablers, questions were asked on the following areas (in order of appearance in the survey): curriculum; individual skills; assessment; pedagogical practices; teacher training; ICT; resources; systemic support; and school culture. This section did not mention creativity but was designed to understand what the current practices followed by teachers are and whether these practices are fostering or hindering creativity.

The majority of the questionnaire items – except for the demographics section – were five-point Likert-type scales (from strongly agree to strongly disagree / from always to never). As Infopoll, the software that was used to conduct the survey, did not allow ordinal ranking scales, the original questionnaire had to be adapted to suit the tool. As a consequence, for some areas (in particular *individual skills* and *school culture*), the Likert-type scale lead to a desirability bias, as respondents tended to provide socially desirable answers for those items.

The questionnaire was drafted by IPTS and developed with European Schoolnet. It took around 20-30 minutes to complete. It was first tested internally within both organisations and then tested with twelve teachers from different nationalities and genders to check the clarity of its items. The survey was then translated from English into the other 22 languages of the European Union.

In this report, we only present the analysis of a selection of items which is based on the four research questions presented in Figure 1.

2.2 Collection of Data

The questionnaire was launched by European Schoolnet on the eTwinning platform (www.etwinning.net) and was available online from 15 September 2009 until 15 October 2009. The survey was promoted in a variety of ways: at European level, dissemination was ensured through the eTwinning central platform, newsletter and the weekly Back to School campaign; through European Schoolnet teachers' newsletter; through DG EAC website; and through the 2009 European Year of Creativity and Innovation website. At national level, it was disseminated via the eTwinning National Support Services (NSS); National Lifelong Learning Agencies; National Ministries of Education; and Regional Representations in Brussels. To increment response rates, teachers were invited to a raffle to win a trip to Stockholm to participate to the Closing Conference of the 2009 European Year of Creativity and Innovation. Ten trips were awarded.

[7] The first question was asking if the respondent was a teacher or not, in case of a negative answer, the participant was directed to a "thank you" page.

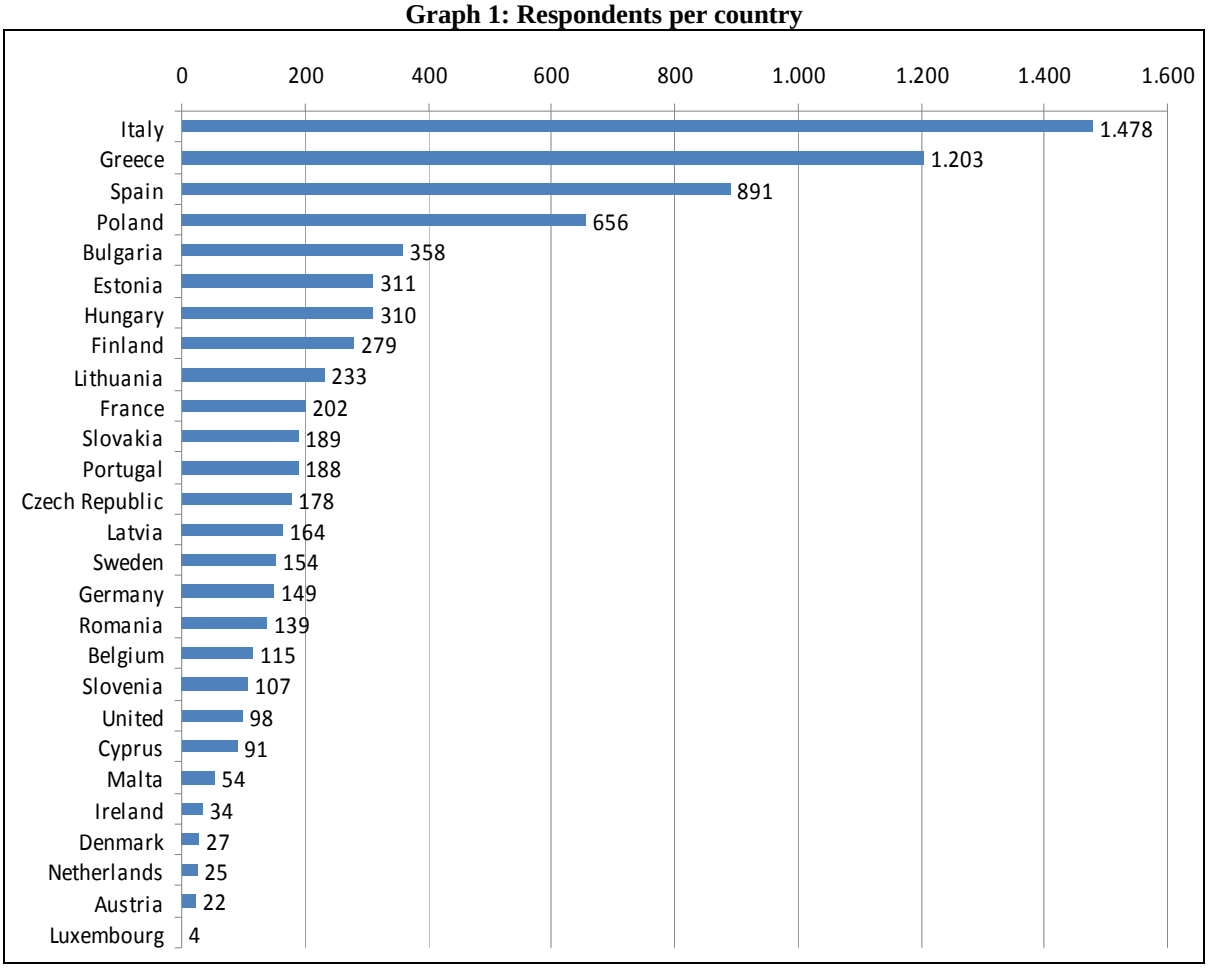
2.3 Participants

For the purpose of this report, responses of teachers from EU27 and teaching obligatory schooling (ISCED levels 1 and 2) have been analysed (N= 7650). This was done in order to ensure better comparability between countries and to be able to see similarities and trends emerging from other parts of the ICEAC study, in particular the analysis of school curricula and interviews with educational stakeholders. The summarised demographic information detailing gender, age, years of experience, qualifications and subjects taught can be seen in Appendix 1: Demographic data

Country

Participants were asked to specify the country in which they teach; only one answer was possible out of a closed list of countries. Results are presented in Graph 1.

Graph 1: Respondents per country



Q3: Which country do you teach in?
Base: All respondents

It may be observed that there is a strong southern-European concentration of respondents, as almost half of them (46%) come from three countries: Italy, Greece and Spain. Five countries have a very low number of responses: Ireland (34), Denmark (27), Netherlands (25), Austria (22), and Luxembourg (4). The survey population was compared with the European teacher

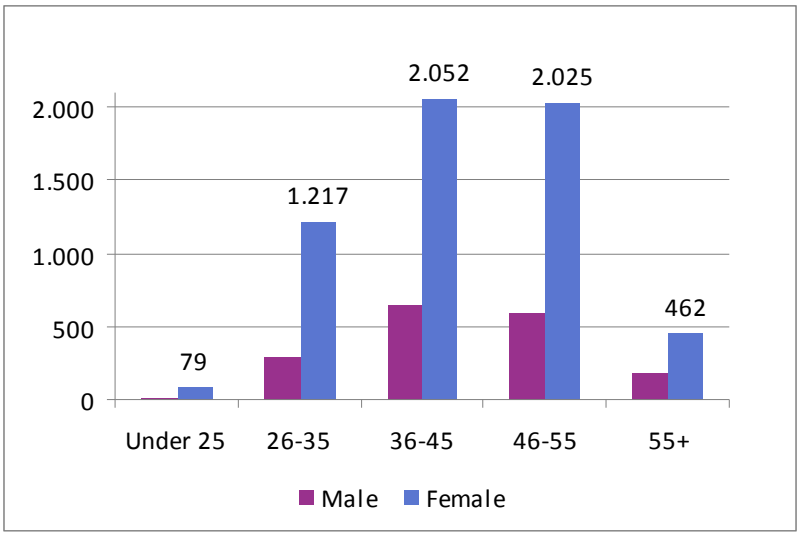
population.[8] The teacher population of each Member State was calculated as a percentage of the total teacher population of the EU 27. This percentage was compared with the percentage of responses by country of the survey sample (see Table 4 in Appendix 1: Demographic data). From this comparison, it is clear that the UK is by far the most under-represented country (teacher population: 29% of EU27 teacher population; responses: 1% of the survey total responses). Germany (11% against 2%) and France (8% against 3%) are also under-represented. Greece is the most over-represented country (2% against 16%).

Several reasons can explain the differences in participation. The channels for the promotion of the survey varied from country to country and its advertising depended largely on national agencies. Another influencing factor could be related to some countries' higher or lower participation rate in eTwinning, this being one of the channels through which the survey was disseminated. Moreover, European initiatives enjoy higher popularity in some national education systems and some countries, such as Greece, have more established teachers' networks and mailing lists.

Gender and Age

The gender and age distribution of respondents is displayed in Graph 2. Reflecting the gender unbalance of the teacher population, female respondents are largely predominant in all age groups and account for 77% of the total sample. The majority of respondents (70%) are aged between 36 and 55 and have a teaching experience of more than 10 years (71%). The sample is therefore composed of a rather experienced and not so young teacher population.

Graph 2: Gender and age distribution of respondents



Q10: Please specify your gender
Q11: How old are you?
Base: All respondents

There are certainly differences in the age groups of the sample according to the country of teaching. Malta, the United Kingdom, Ireland, Belgium and Estonia have the higher numbers

[8] Data for the teacher population in Europe was extracted from the Eurostat Data of the Labour Force survey 2006.

of respondents below 25, while in the Netherlands, Sweden and Denmark many of the teachers who answered to the survey are above 56 years old.

Subjects Taught

The most taught subject by survey respondents is Modern Foreign Languages (MFL), with almost a third (29%)[9] of participants choosing this subject as an option (See Graph 21 in Appendix 1: Demographic data). This confirms an ongoing trend in the high participation of language teachers in European projects and could partly reflect the high MFL teacher population participating in eTwinning. A quarter of participants declare to teach a Primary school subject. The third most selected subject is ICT/Informatics, chosen by 14% of respondents. There is no over-representation of teachers teaching subjects which are generally taught of being more creative: visual arts and music were respectively selected by around 5% of participants, drama and theatre studies by about 3%.

2.4 Limitations

The reader needs to be alerted to a series of limitations in the survey, in particular related to: the geographical unbalance of responses; the online only mode of administering and advertising it; the fact that it was answered on a voluntary basis; the uncontroversial topic it addresses.

Despite the high response rate, the survey cannot be considered as being representative of the teacher population in Europe. This is mainly due to the highly varied number of respondents received per country as can be noted in Graph 1 and in Table 4.

In addition, the fact that the survey was conducted online and promoted through the eTwinning site could have created a bias attracting respondents who are more prone to using ICT. Respondents from eTwinning amount to 38% of the total sample. It has than to be reminded that the survey was answered on a voluntary basis, the sample is thus representing teachers who are willing to take part into surveys. Given the topic of creativity is not a controversial one its title (What does creativity mean to you?) could have attracted those teachers who tend to have a positive attitude towards the theme.

Conclusions and results of this study should be considered in the light of these limitations: the population of the survey is therefore not representative of European teachers or of teachers as a working category. It represents teachers from European countries who are using technology and who wanted to express their opinions on creativity through our survey. Despite all the biases discussed above, this study is still unique, due to its very large sample size. It is the first time that a survey has collected such a high number of teachers' opinions on creativity from every European country.

[9] Participants could choose more than one subject. Percentages are therefore relative to the total of the survey's population.

3 How do teachers perceive and understand creativity?

The discursive position of teachers towards creativity was investigated through a series of questions which aimed at framing how the respondents conceptualise creativity. As shown from the literature, the rhetorical stances held by teachers are to be taken into account for any possible policy or practices trying to foment creativity in learners, so as to have a shared consensus of what creativity is and what it implies for education. In the questionnaire, items were presented in a random order. In this report, for more clarity, we have clustered them into four categories: domain of creativity; creativity and personal characteristics; definition of creativity; creativity and education.

3.1 Creativity can be applied to every domain of knowledge

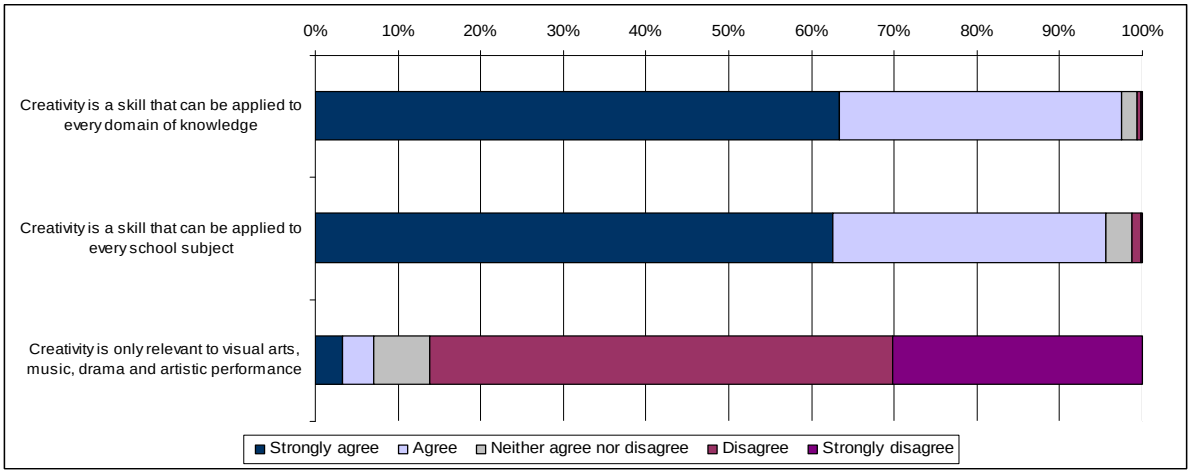
There is an enduring debate over the field of knowledge that creativity belongs to, in particular opinions are polarised whether creativity is domain specific or domain general (Plucker & Beghetto, 2004), or, in other words, if creativity is relevant only to certain domains of knowledge (e.g. the arts) or to every domain of knowledge. Despite the recognition of the applicability of creativity to several sectors, there is still a tendency to perceive creativity as arts-based (Sawyer, 2006b).

Three statements of the questionnaire belong to this category:

1. Creativity is a skill that can be applied to every domain of knowledge;
2. Creativity is a skill that can be applied to every school subject;
3. Creativity is only relevant to visual arts, music, drama and artistic performance.

Responses highlight that teachers have an encompassing view of creativity, with the majority of them endorsing a vision of creativity as a cross-cutting skill (see Graph 3). Almost all teachers who took part in our survey (98%) believe that creativity can be applied to every domain of knowledge, with as many as 65% strongly agreeing and 33% agreeing. Only 0.6% disagreed or strongly disagreed. An overwhelming majority also think that creativity can be applied to every school subject (96%). It can be noted that there is a 2% difference between the agreement on the two statements, despite their similarity. For the respondents, domains of knowledge are not precisely reflected into the school subject division.

Graph 3: Teachers opinions on the domain of creativity



Q26: Do you agree with the following statements?
Base: All respondents

When confronted with the third statement, 86% of respondents claim that creativity is not restricted to visual arts, music, drama, and artistic performance, with 31% strongly disagreeing and 56% disagreeing. This confirms that teachers tend to have a positive, wide view of the topic and consider creativity as being applicable to several fields and domains. Nevertheless, when the question explicitly mentions arts, teachers are not so strongly convinced about the over-arching applicability of creativity, as is shown in the difference of 12% points between statement one (Creativity is a skill that can be applied to every domain of knowledge) and three (Creativity is only relevant to visual arts, music, drama and artistic performance). It can also be noted that the distribution of data significantly differs, as 65% strongly agree that creativity is for all domains of knowledge (statement one) but only 31% strongly disagree that creativity is only art-related (statement three). As reported elsewhere in the literature, teachers hold contradictory conceptions of creativity (Fasko, 2001; Kampylis, et al., 2009; Runco, 2003; Westby & Dawson, 1995). This pitfall of creativity is a very important one to tackle, as understanding creativity as relevant for the arts only allows for teachers' withdrawal from an engagement in developing students' creative potential across the curriculum (Kampylis, et al., 2009). Moreover, it implies a vision of creativity as artistic production only and not as a thinking skill or the ability to make unexpected connections.

In our sample, a significant relationship was found between teachers' opinions on the statement 'Creativity is only relevant to visual arts, music, drama and artistic performance' and some subjects that teachers teach.[10] Specifically, a trend is noticeable in almost all art subjects, with the exception of music, where teachers hold opinions which are slightly diverging from the rest of the sample. Among the respondents teaching Drama/Theatre Studies, History of Arts and Visual Arts there are higher percentages of teachers strongly disagreeing that creativity is only relevant to arts, with percentages ranging from 39% to 44% (against 30% of the total sample strongly disagreeing with the statement). At the same time, this subject group shows agreement percentages with the statement which are higher than the total sample: percentages vary between 8 to 11%, against 7% of the total sample. This means that the teachers who took part in the survey and teach Drama/Theatre Studies, History of Arts and Visual Arts have stronger opinions than the rest of the sample on the link between creativity and arts, as the distribution is higher than the rest of the sample at the two ends of the agreement spectrum. This result can be interpreted as the sign of dichotomised beliefs on the role of creativity in schools. Those art teachers believing on the relevance of creativity for the arts only probably think it is in their remit to develop learners' creative potential. At the same time, the form of creativity they are going to foster is possibly linked to artistic and self-expression. On the contrary, those art teachers who strongly believe creativity is not restricted to the realm of arts are more likely to believe that creativity is also a thinking skill and are likely asking for the recognition of creativity across the curricular board.

3.2 Everyone can be creative

Another item with polarised opinion between researchers is the understanding of creativity as either a characteristic of eminent people only – the rhetoric of the "creative genius" – or of everyone – the democratic view of creativity (Banaji, et al., 2006; Beghetto & Kaufman, 2007; Robinson, 2001; Shneiderman, 2000). This distinction has also been referred to as "little c" or "big C" creativity (Craft, et al., 2001), as mentioned in the introduction.

To this category belonged four statements in the survey:

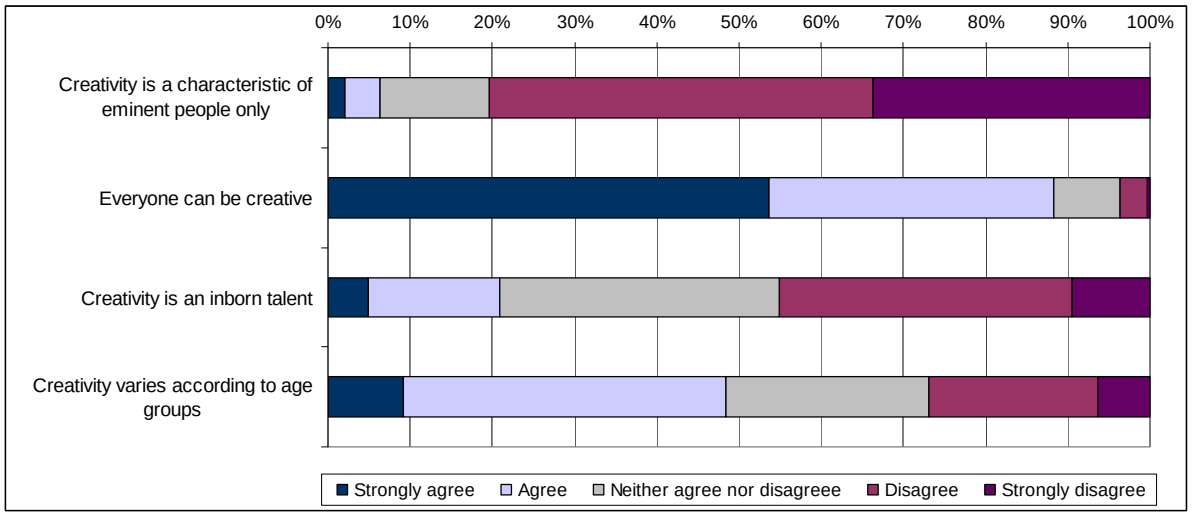
1. Creativity is a characteristic of eminent people only (Big C creativity);

[10] This was done running a Pearson's chi-square test.

2. Everyone can be creative (Little c creativity);
3. Creativity is an inborn talent (Big C creativity);[11]
4. Creativity varies according to age groups (Little c creativity).

Respondents again showed a tendency towards positive, wide and democratic understanding of creativity. Teachers refuse an elitist view of creativity, since they do not perceive it as a characteristic of eminent people only (80% disagreeing or strongly disagreeing with this statement). An even higher percentage endorses a democratic view of creativity, with 88% sustaining the statement that everyone can be creative.

Graph 4: Teachers opinions on creativity and personal characteristics



Q26: Do you agree with the following statements?
Base: All respondents

Regarding the statement on creativity as an inborn talent, teachers' answers were rather distributed on the agreement spectrum. While almost half of them do not think that creativity is an inborn talent (45% strongly disagreeing or disagreeing with this statement), a fifth of them (21%) think it is. Within those who strongly disagree that creativity is an inborn talent, 98% also think that everyone can be creative. This implies that these respondents view creativity as a skill that can be developed and fostered in each person. It is not a gift of nature but depends on nurture. At the same time, of those who strongly agree that creativity is an inborn talent, 85% also think that everyone can be creative. These results show that these respondents perceive creativity as a talent that every child is endowed with from birth, supporting the widespread opinion of the natural creativity of children.

A rather polarised distribution of opinions can be noted in the fourth statement: almost half of the teachers (48%) maintain that creativity varies according to age groups and above a quarter that it does not. It can be remarked that also within the research on the field there are conflicting opinions on this statement. Sawyer (2006b) maintains that conceptions of creativity are changing over time and space, and that in particular in Europe the idea that children are more creative than adult came about in the Romantic period. To him, this notion is a myth which contrasts with reality. At the opposite of this position there is the claim that schools (Robinson, 2006) and educators (Malaguzzi, 1987) kill and restrict the natural creative attitude of young kids. Many other researchers, in particular educators, sustain that

[11] This statement can also be interpreted as belonging to the "little c" argument when respondents also think that everyone can be creative.

being creative has different meanings for adult and children and that the definition of creativity has to vary according to age groups. Meador and Runco's studies (Meador, 1992; Runco, 2003) demonstrate that there is a decrease in the uniqueness and originality of young people from the age of pre-adolescence, due to the rise of self-awareness and the need to conform to their peer group.

A correlation can be found between some demographics data and positive views of creativity.[12] [13] The most positive views on creativity are held by respondents who teach Drama (with a median of 93%, drama teachers' agreement is of 98%);[14] whereas the least convinced are those of Informatics/ICT (89%).[15]

Negative views of creativity were also correlated to demographics answers. Men are more likely to think that creativity is an inborn talent, only relevant to visual arts, music, drama and artistic performance, and is a characteristic of eminent people only (within the male group, the agreement with these statements is 11% against 9% for females). Those more strongly convinced of these statements are teaching Home Economics (14%), Religion/Theology (13%), Environmental Education (12%), and Physical Education (12%).[16]

3.3 Creativity is seen as the ability to produce something original

Creativity has been defined by researchers as the "ability to produce work that is both novel and appropriate" (Sternberg & Lubart, 1999). For a product or a process to be creative, it has to be at the same time new and valuable. The balance between the two concepts is important: something original which has no value could also have negative characteristics (Beghetto, 2005). In the educational field, and in particular with the changing meaning of creativity applied to young people as discussed above, the concept of value is hard to frame. Children and young people are creative, but their creative processes are less likely to be innovative breakthroughs which have a value for the whole of society. When speaking about creativity for the young, it is important to understand that the judges of the value of the creative process or output should be the young people themselves, and that the creative process or product is valuable for them (Craft, 2005; Runco, 2003). This adaptation of the definition of creativity to the educational context and to the young age of pupils is reflected in the opinions of the teachers who took part in our survey, as the majority of them are convinced of the originality that lies behind creativity but not so much on the value.

Teachers were confronted with three statements regarding the definition of creativity:

1. Creativity is the ability to produce something original;
2. Creativity is about finding connections between things that have not been connected before;
3. Creativity is the ability to produce something of value.

---

[12] The profile of respondents has been analysed for those who agreed or strongly agreed with the following statements: Creativity is a skill that can be applied to every knowledge domain; Creativity is a skill that can be applied to every school subject; Everyone can be creative. The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the above items.

[13] A Pearson chi-square test was computed.

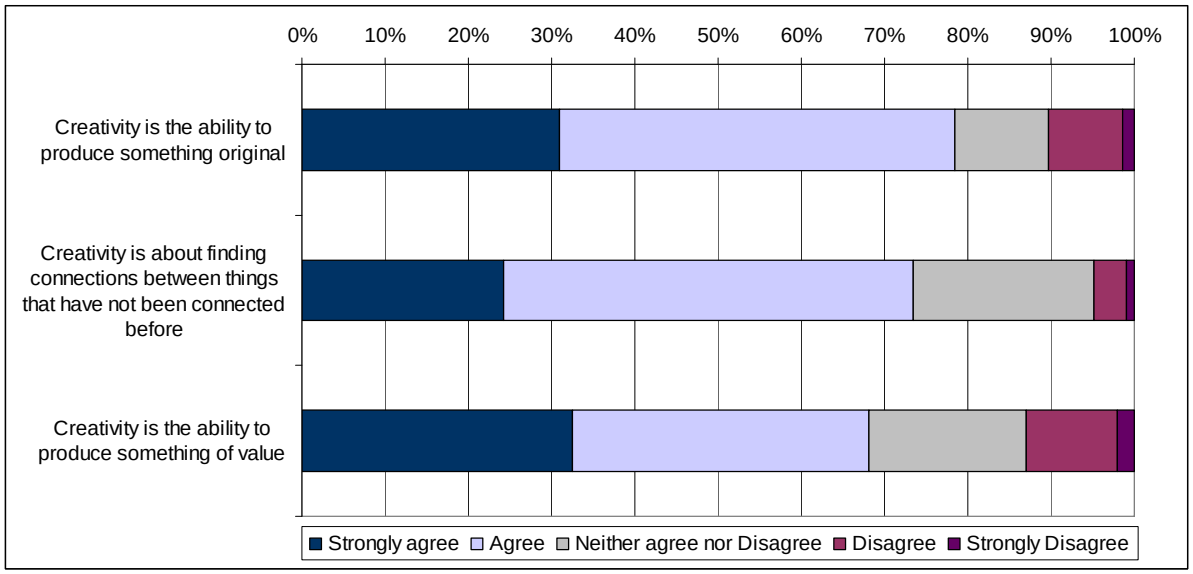
[14] Chi-square= 31,125, df = 9, p = .0001.

[15] Chi-square= 40,637, df = 9, p = .0001.

[16] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the following items: Creativity is an inborn talent; Creativity is only relevant to visual arts, music, drama and artistic performance; Creativity is a characteristic of eminent people only.

Replies are presented in Graph 5.

Graph 5: Teachers opinions on definitions of creativity



Q26: Do you agree with the following statements?
Base: All respondents

The first statement collected the higher agreement among respondents, with 79% agreeing or strongly agreeing that creativity is the ability to produce something original. Teachers are largely convinced (73%) that creativity is about finding connections between things that have not been connected before. It can be noted that while only 5% disagreed with this statement, as much as 10% do not endorse the view of creativity as the ability to produce something original. Respondents are less convinced about the definition of creativity as being the ability of producing something of value: 68% agreed or strongly agreed and 13% disagreed or strongly disagreed. This could be due to the lack of definition of the term "value", as who is going to judge the value of the creative output of learners? Society as a whole, teachers or learners themselves? (Craft, 2005). It can be noted that the importance of understanding creativity as the ability to produce something of value can be linked to the sense of initiative and entrepreneurship. The ability of judging the value of new and original ideas or products is a central characteristic of entrepreneurs, as the ability to persuade others of the worth of their own ideas (Sternberg & Lubart, 1993).

3.4 Creativity is a fundamental skill to be developed in schools

As argued by several researchers and by our previous studies (Craft, 2005; Ferrari, et al., 2009; Runco, 2003), creativity is an essential skill for personal development and it enhances the learning process. Teachers were therefore faced with three statements concerning creativity for education, namely:

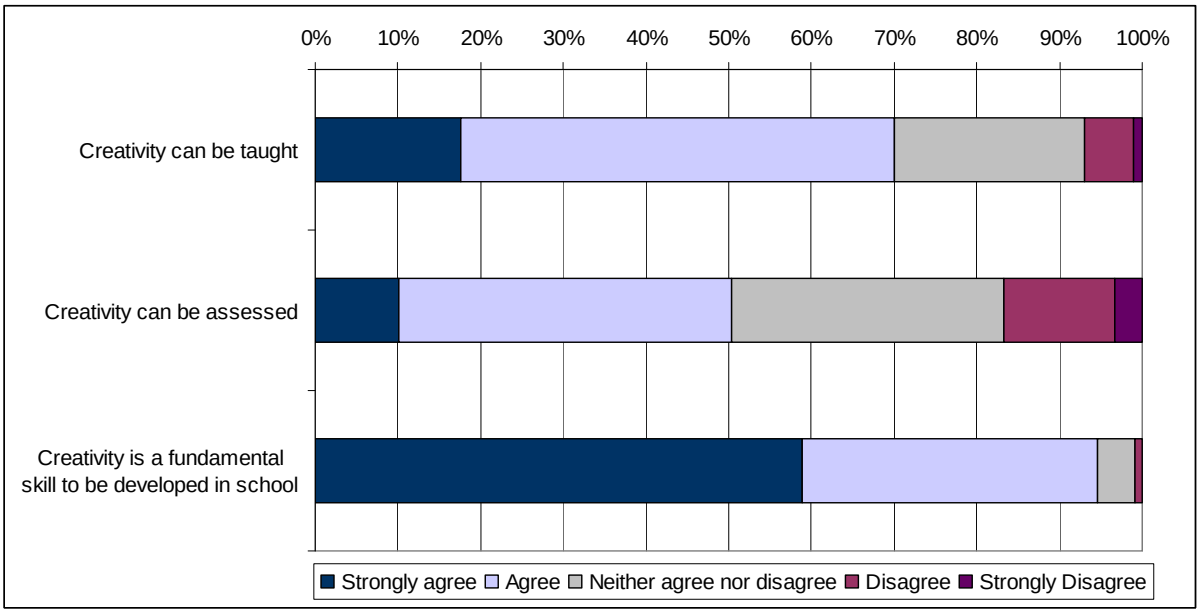
1. Creativity can be taught;[17]
2. Creativity can be assessed;
3. Creativity is a fundamental skill to be developed in school.

[17] After having analysed the survey, having taken part into conferences on the topic and especially after discussion with teachers during an eTwinning workshop, we now believe that it would have been more appropriate to ask whether creativity can be transmitted.

As depicted in Graph 6, almost all teachers (95%) believe that creativity is a fundamental skill to be developed in school, with teachers having taught for more than 20 years being even more convinced. A relation was found between negative answers to this statement and statements on creativity. Those who believe that creativity is not a fundamental skill to be developed in school hold significantly different opinions on creativity from the rest of the sample. They are much more convinced that creativity is an inborn talent (41% of this group against 21% of the total sample), and that creativity cannot be taught (28% against 7%) nor assessed (31% against 17%). Almost a quarter of them (24%) consider that creativity is not about making connections between things that have not been connected before, against only 5% of the total sample. In the educational field, one of the most common and shared definition of creativity is actually recognising creativity as the capacity of learners of seeing new relationships and making connections.

Respondents have a more nuanced opinion on the feasibility of teaching creativity (70% believing it can be taught). There is a positive correlation[18] between agreement on the statements 'Creativity can be taught' and 'Everyone can be creative' or 'Creativity is an inborn talent': the more respondents believe that everyone can be creative, the more they agree that creativity can be taught.[19] Those endorsing the view of creativity as an innate capacity are less convinced on the possibility of teaching for creativity.

Graph 6: Teachers opinions on creativity for education



Q26: Do you agree with the following statements?
Base: All respondents

Only half of respondents (50%) think that creativity can be assessed, 33% opted for neither agree nor disagree, 13% disagreed and 3% strongly disagreed.

A high number of respondents (33%) is not sure if creativity can or cannot be assessed, choosing the 'neither agree nor disagree' option. Also, 11% of the total sample decided not to answer this question. These results convey the difficulty of respondents in answering this

[18] A Pearson chi-square test was computed.
[19] Chi-Square=909,188, d:=16, p=,000.

question.[20] This concurs with the research conducted by Rogers and Fasciato (2005) which studied this question more in-depth and found that teachers interpreted this question in two distinct ways, namely: can creativity be assessed and should creativity be assessed (Rogers & Fasciato, 2005). Teachers considering that creativity can be assessed, understood creativity as a skill, while the other group of teachers considered creativity as innate and thus, did not believe that creativity can be acquired. Again, we may argue that this question demonstrates the implicit understanding of creativity amongst teachers. If teachers do not agree the creativity can be assessed, it is highly probably that these teachers do not intend to assess creativity. The study above also highlights that even when teachers agreed the creativity may be assessed, they still felt that they lacked a set of criteria and guidance on how to assess creativity as a skill.

[20] This view is confirmed by discussion with teachers who took part in the workshop with eTwinning mentioned above.

4 Do teachers foster creativity in their classrooms?

An important step towards fostering the creative potential of learners lies in pedagogies and practices for teaching. As the literature on the topic reports, specific pedagogies and methods tend to foster creativity, while others tend to inhibit it (Craft, 2005; Runco, 2003). The Robinson report is also very critical on current assessment practices, as the way that learners are judged and evaluated at present could stifle their creative potential (NACCCE, 1999). As assessment has a back-wash effect on teaching methods, it is critical to understand how it is done and if it kills creativity in the classroom (Beghetto, 2005). For this purpose, the section of the questionnaire dedicated to teaching practices included questions on activities that are taking place in the classroom, resources that are most used but also to ways of assessing students and types of behaviour which are privileged.

4.1 Creative activities and skills nurtured in classrooms in Europe

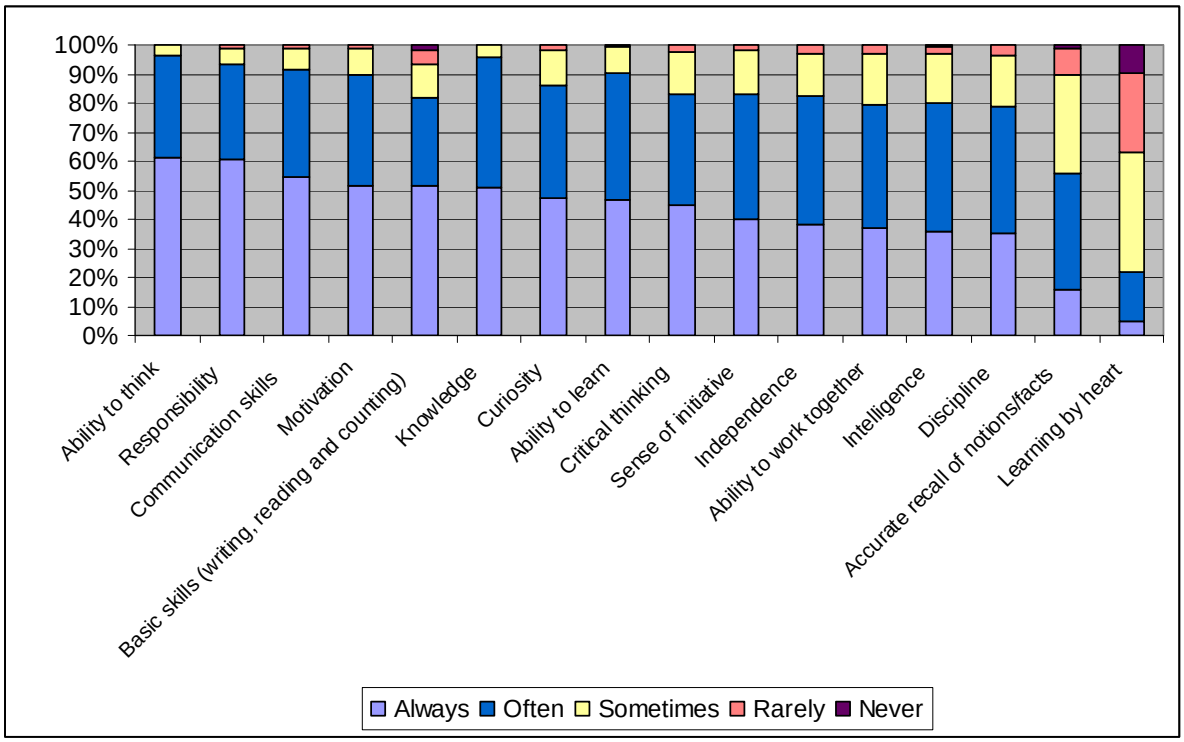
When asked which skills and abilities they foster in their students, a high proportion of teachers responded positively to the activities which are understood to foster creativity: ability to think (96%); communication skills (91%); ability to learn (90%); motivation (89%); and curiosity (86%) amongst others (see Graph 7). The teachers who are more inclined to foster skills and abilities which are related to creativity are younger than 25 years of age (96%) and have been teaching for less than a year (96%).[21] Respondents in Luxembourg (100%),[22] Bulgaria (97%) and Lithuania (96%) are more likely to foster skills and abilities related to creativity than respondents in Czech Republic (77%), Sweden (82%) and Poland (86%).[23]

[21] The percent numbers are relative to the total number of respondents per age category who replied 'agree' or 'strongly agree' to items related to fostering creativity in the questions: How often do you foster the following skills and abilities in your students?

[22] Respondents from Luxembourg only amounted to 4.

[23] The percent numbers are relative to the total number of respondents per age category who replied 'agree' or 'strongly agree' to items related to fostering creativity in the questions: How often do you foster the following skills and abilities in your students?

Graph 7: Skills and abilities fostered in class by teachers

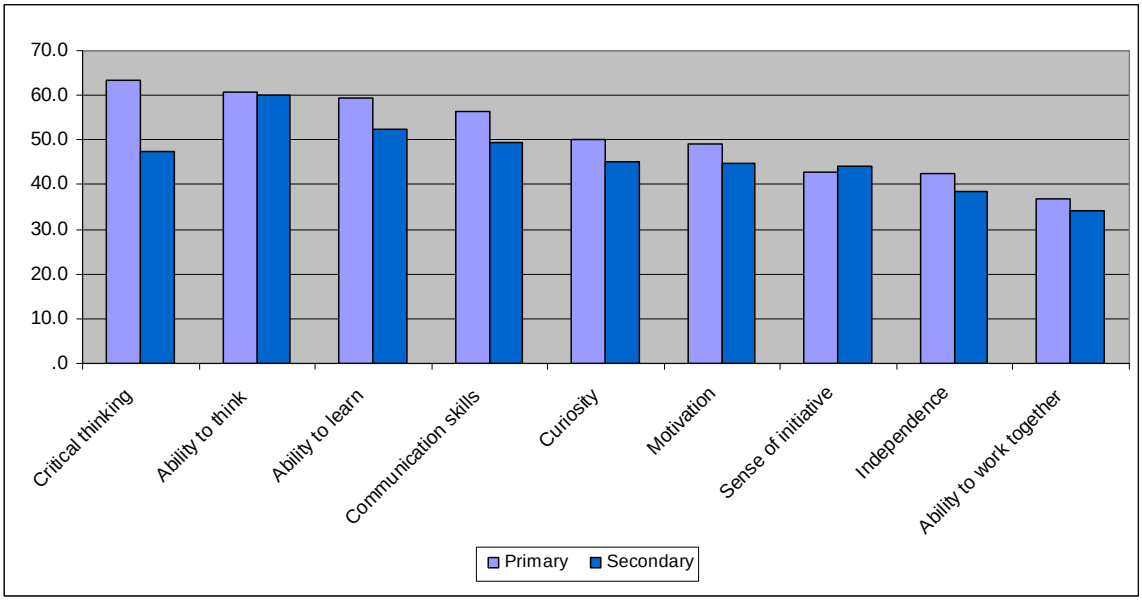


Q15: How often do you foster the following skills and abilities in your students?
Base: All respondents

In general, respondents teaching in primary schools (92%) are slightly more proactive in fostering skills and abilities connected to creativity than secondary school teachers (81%).[24] As can be noted in Graph 8, with the exception of the 'ability to think' and 'sense of initiative', higher percentage of primary teachers claim to *always* foster the listed skills and abilities in their students. Some differences across levels may be noted in specific skills. While two thirds of respondents from primary school claim to always foster critical thinking (63%), only less than half of the teachers from secondary school claim to foster this skill (47%). When it comes to priorities of which skills teachers foster in schools, we may observe that 'ability to think' and 'ability to learn' are the highest priorities for both school levels, followed by critical thinking, communication skills and curiosity.

[24] The percent numbers are relative to the total number of respondents per type of education category who replied 'agree' or 'strongly agree' to items related to fostering creativity in the questions: How often do you foster the following skills and abilities in your students?

Graph 8: Skills and abilities 'always' fostered in class by teachers according to school level



Q15: How often do you foster the following skills and abilities in your students?
Base: Only respondents who have ticked 'always'

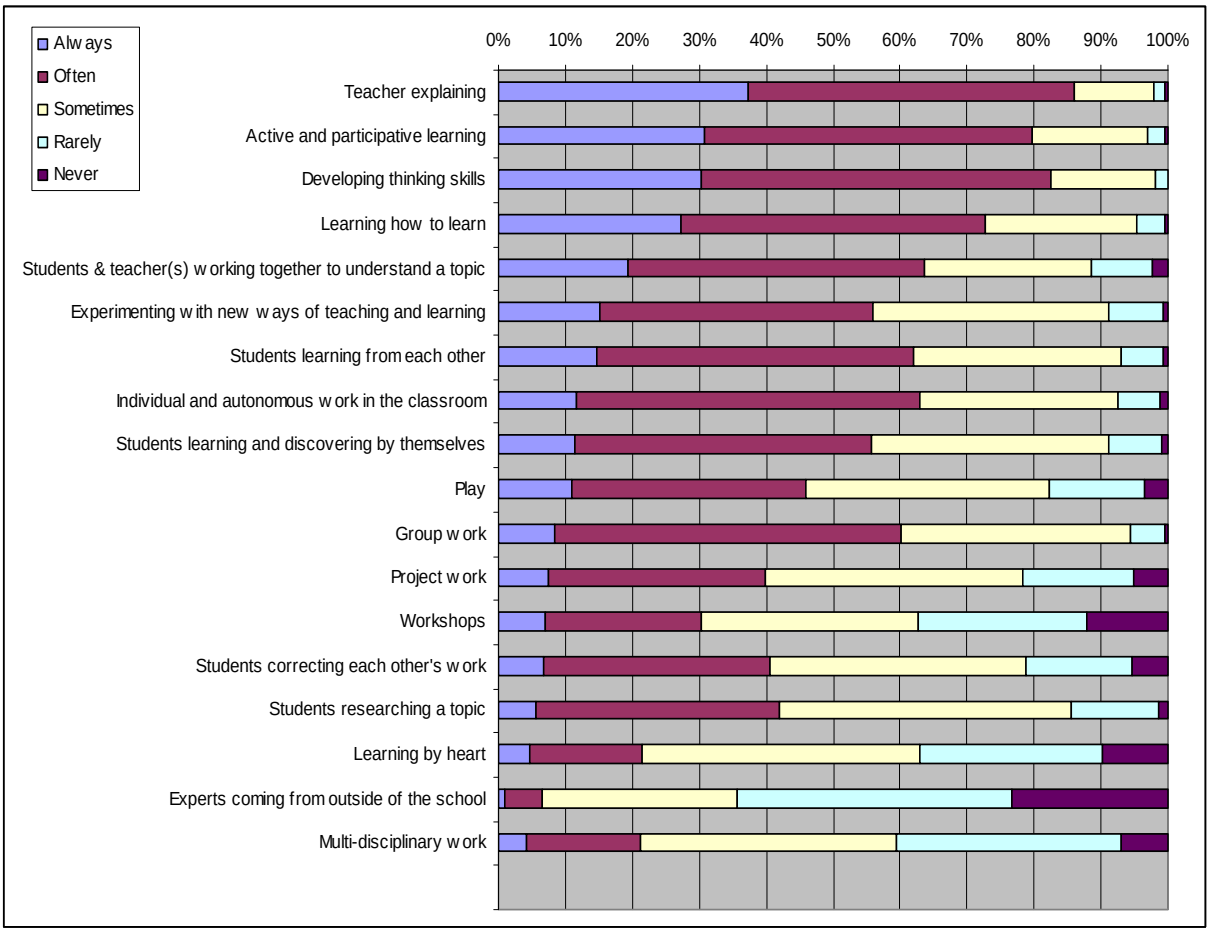
In terms of activities which take place in the classroom, a great majority of teachers surveyed claim to encourage learning activities which are likely to allow students to be creative. As can be noted from Graph 7, developing thinking skills (83%), active and participative learning (80%) and learning how to learn (73%) were the activities mostly rated by teachers. Around two thirds of the respondents also claim that in their classrooms students are given the opportunity to learn from each other (62%) and to work in groups (60%). Teachers in primary schools (81%) were also more likely to foster such activities than teachers in secondary schools (74%).

Only less than half of the respondents allow play (46%) and multi-disciplinary work (41%) to take place in their classroom. The significant link between play and creative thinking skills has been demonstrated in various studies (Howard-Jones, Taylor, & Sutton, 2002; Lieberman, 1977), as yet, teachers in our survey show that they are not fully exploiting the potential of play and multi-disciplinary work for the development of students' learning and creativity. Our respondents also echoed certain conventional ways of approaching teaching with more than eight of ten respondents (86%) claiming that the *teacher explaining* was an activity which often or always took place in class and that *discipline* (79%) was a skill they often or always foster in their students. Only half of the teachers (56%) surveyed allowed students to learn and discover by themselves. This shows that traditional and conventional aspects of teaching still play an important role for our respondents. While discipline and teacher explaining are important factors for education, they could also limit creative learning, especially because they do not allow other activities or skills which are more likely to foster creativity to take place in the classroom, for instance students' participation and engagement in the learning process.

To a certain extent, these results highlight a discrepancy between teachers' positive views on creativity for education and their actual pedagogical practices. Albeit teachers agree on the importance of creativity for schools, they disregard some items which could enable creativity

in the classroom. This suggests a gap between what teachers voice explicitly and some of their inner and tacit opinions on education and how these are practiced during teaching.

Graph 9: Activities taking place in the classroom



Q16: Which activities take place during your lessons?
Base: All respondents

The lack of understanding of creativity could significantly limit the fostering of creative learning. Teachers need to be able to identify creative processes when they take place, but this can only happen if teachers are knowledgeable about the processes of creativity. More than half of respondents (56%) claim that creativity has not been covered in their teaching training. The majority of our respondents (90%) would indeed like to receive such training.

4.2 Textbooks are still the preferred teaching resource but Internet has also become an indispensable resource

Another important aspect we considered in trying to elicit how teachers nurture creativity is getting to know what resources are used in class. Our results show that textbooks are still the number one resource used by the teachers surveyed (85%), followed by resources produced by themselves (81%) and material downloaded from the Internet (72%). This shows that while textbooks remain an important resource, the Internet is also increasingly becoming another important resource for teachers. Games (26%) and digital games (17%) were the least preferred resources.

Usage of textbooks as a resource has some relation with age and years of experience. We observe that teachers who have been teaching less than one year (89%) and who are less than

25 years are of age (86%) are surprisingly the ones mostly using textbooks as resource. In comparison, those who have been teaching between 1 – 4 years (81%) and are between 26-35 years old are the one least agreeing that they always or often use textbooks as a resource. Textbooks are most preferred by teachers in Bulgaria and Lithuania (both 91%) and least preferred by teachers in United Kingdom (33%).[25,26] When it comes to subjects, textbooks are mostly used by teachers teaching languages (classical languages 93%; modern foreign languages 92%) and least used in subjects in media education (61%) and design and technology (64%). It is also interesting to note that textbooks are also substantially used in subjects like physical education (67%) and drama / theatre studies (80%). Usage of textbooks across school levels does not vary.

It is well known that creative and effective teachers do not restrain their lessons to textbooks but rather rely on a series of resources, which include ICT, realia (i.e. real objects), manipulatives (i.e. resources that can be manipulated) and other innovative resources (Simplicio, 2000). Results of this study show that teachers who took part in the survey do combine different resources in their teaching, as well as utilising various modes of ICT with more than two-thirds claiming to use technologies (63%) and website (62%). However, it is also evident that textbooks are still considered fundamental in the educational systems. Two thirds of our respondents (64%) *always* or *often* follow textbooks in their teaching. Perhaps the most surprising result is that textbooks are mostly preferred by young teachers and least preferred by those who have been teaching for few years. A reason for such a result could be supervision of teachers in their first year of teaching. However, more research to understand why textbooks are preferred by younger teachers could be useful.

The high popularity of textbooks also demonstrates that the role of publishers, often undermined by policy makers, may be determining the way specific subjects are taught. In some cases, textbooks are imposed on the teacher by the school system, syllabi or the curricula of the country. In other cases, teachers could also be pressured by a conventional school environment (including colleagues, head teachers and parents) in which textbooks are considered a more reliable source of knowledge to legitimise what is done in class. Nonetheless, the fact that a high proportion of teachers also create their own resources shows that a good majority of our respondents are aware of the limits of textbooks and do try to find other resources to be more effective in the classroom.

4.3 Creative behaviour is highly rewarded but less aptly assessed

Assessment is an essential component of learning and teaching, as it allows the quality of both teaching and learning to be judged and improved. As noted by Robinson Report the problem with assessment is how it is done, as current methods at best do not take into account creativity, and at worst they stifle it (NACCCE, 1999). In this study, we asked various questions to gauge how teachers assess students, so as to analyse whether such methods could enable creativity in schools.

When asked how teachers assess their students, formal tests was the predominant form of assessment with more than three-fourths of our sample (76%) claiming that they often or always assess in this way (see Graph 10). According to Wyse and Jones (2003), formal summative testing narrows school provision at the expense of creativity. Despite the amount

[25] The percent numbers are relative to the total number of respondents per country who replied 'always' or often' to the statement: What resources are you using in your lessons: Textbooks.

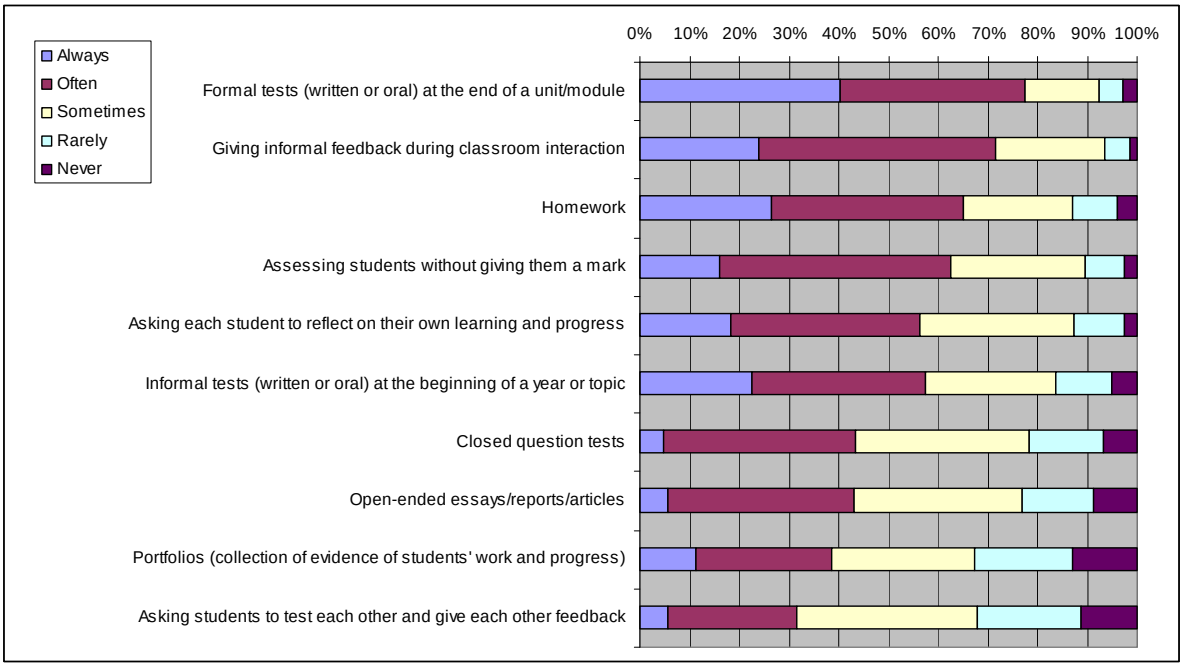
[26] Respondents in United Kingdom amounted to 98.

of time required to prepare students for examinations, there is no evidence that summative testing, in comparison to other methods of assessment, is better at raising standards. On the contrary, the statutory assessment system is considered to divert teaching from activities that would improve teaching and learning quality and attainment (Wyse & Torrance, 2009). National or end-of-year tests place enormous pressure on teachers and students, who focus on getting a better grade rather than on innovative practices (NACCCE, 1999).

In spite of the emphasis on formal testing, it may be observed that a good majority of teachers surveyed are also proactive in assessing students in more creative ways, such as assessing students without giving them a mark (63%) and asking students to reflect on their own learning and progress (56%). Portfolios (39%) and asking students to test each other and give each other feedback (31%) are less preferred methods of assessment with only a low proportion of teachers claiming to use them. As observed by Lindström (2006), if we want to enhance creativity at school, students should be given time to investigate, test and revise their work, discuss it with their peers and to make critical assessment of their own work. This practice is also supported as a method for raising learners achievement, as the framework of 'Assessment for Learning' demonstrates: students learn better when given the opportunity to develop critical skills through self-assessment and peer-assessment (Black, Harrison, Lee, Marshall, & Wiliam, 2004).

Given assessment often determines the priorities of education (NACCCE, 1999), it is important that teachers are encouraged to utilise different methods of assessment throughout the whole educational process, from informal judgement to written assignments. The potential of technology in enabling assessment through documentation of processes, collaborative assessment, and changes of behaviour across time has been highlighted by previous studies (Rogers & Fasciato, 2005; Rogers & Stables, 2001). Our results suggest that teachers surveyed do use different methods of evaluating their students, nonetheless, preference for more conventional ways of assessment has been observed. Only 8% of teachers across all subjects claim they never or rarely assess their students through formal examinations.

Graph 10: Method of Assessment

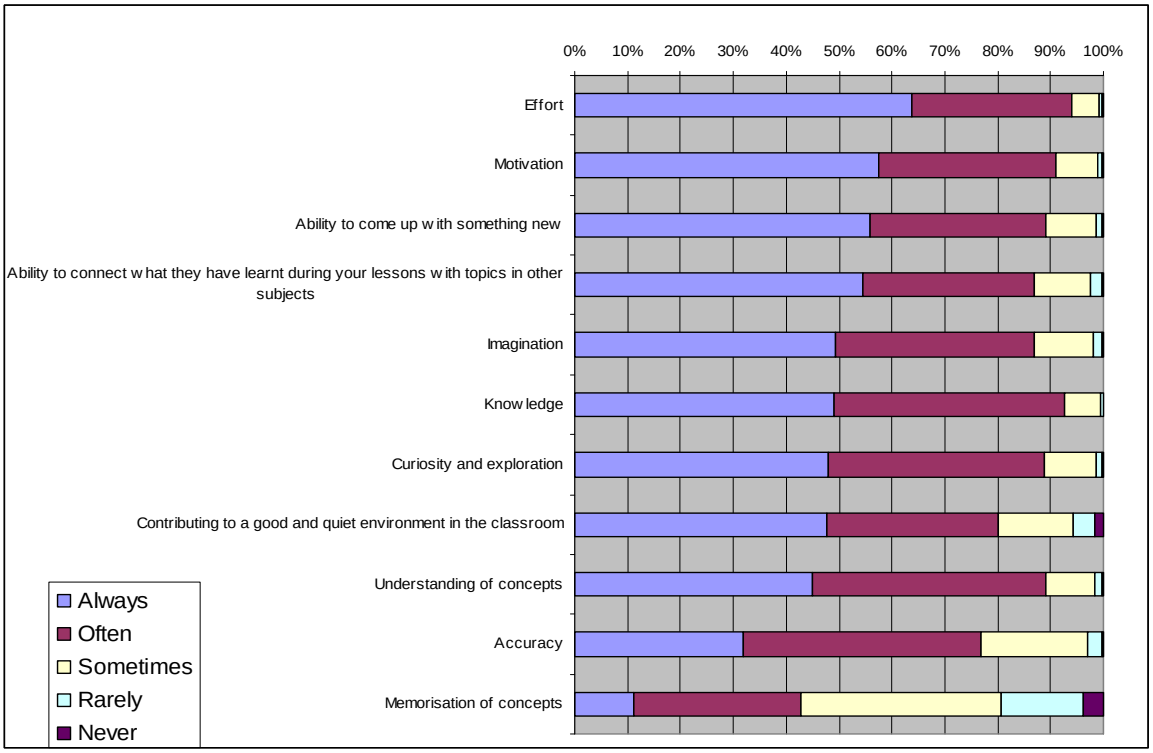


Q19: How often do you assess your students in the following ways?
Base: All respondents: 7,659 (EU27)

Apart from the different methods of assessment, we also asked teachers what behaviour they rewarded in their students (see Graph 11). There is a major agreement that knowledge (93%) and effort (94%) should be rewarded. In addition, other kinds of behaviour instrumental for fostering a creative culture were also highly rewarded by teachers, such as motivation (91%); ability to come up with something new (89%); ability to connect what students have learnt during lessons with topics in other subjects (87%); curiosity and exploration (89%); and imagination (87%).

Comparing these two sets of data, we can observe different results in terms of rewarding creative behaviour and methods of assessment. While respondents in our survey are highly in favour and reward various types of creative behaviour, they are less innovative when it comes to methods of assessment.

Graph 11: Behaviour rewarded



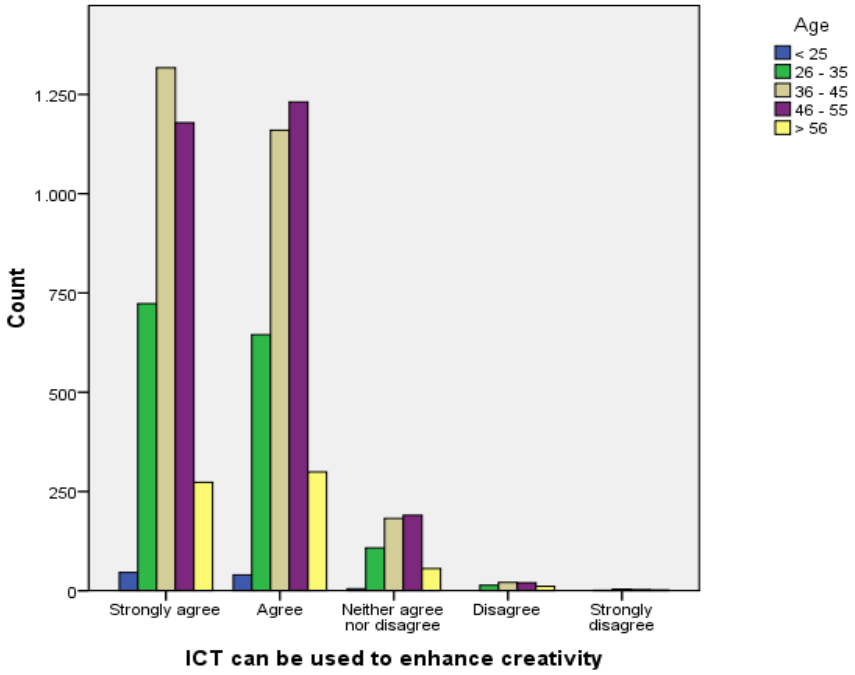
Q17: Do you reward the following behaviour in your students?
Base: All respondents

5 How is ICT used in schools? Is it used to foster creativity?

5.1 ICT can be used to enhance creativity but conventional usage predominates

The vast majority of teachers who responded to our survey (85%) claim that technology has improved their teaching. This shows that a high proportion of teachers surveyed understand the potential of technology for teaching. Technology is endowed with an immense potential to innovate education (Blandow & Dyrenfurth, 1994; Ruiz i Tarrago, 1993). There is an impressive high agreement amongst teachers (91%), that ICT can be used to enhance creativity across different school levels. Teachers who are between 36 – 55 years old (see Graph 12) and who have been teaching over 20 years were the ones mostly agreeing that ICT can be used to enhance creativity.[27]

Graph 12: ICT can be used to enhance creativity by age category



Q28: Can ICT be used to enhance creativity?
Base: All respondents

In terms of ICT usage for teaching and learning, teachers mostly use the Internet to access information to update their own knowledge for use in their lessons (90%), to prepare handouts and material (89%) and to search for teaching material (87%) (see Graph 13). Teachers in Portugal and Cyprus (both 96%) were the most likely to use ICT to access information, prepare handouts and search for material.[28,29]

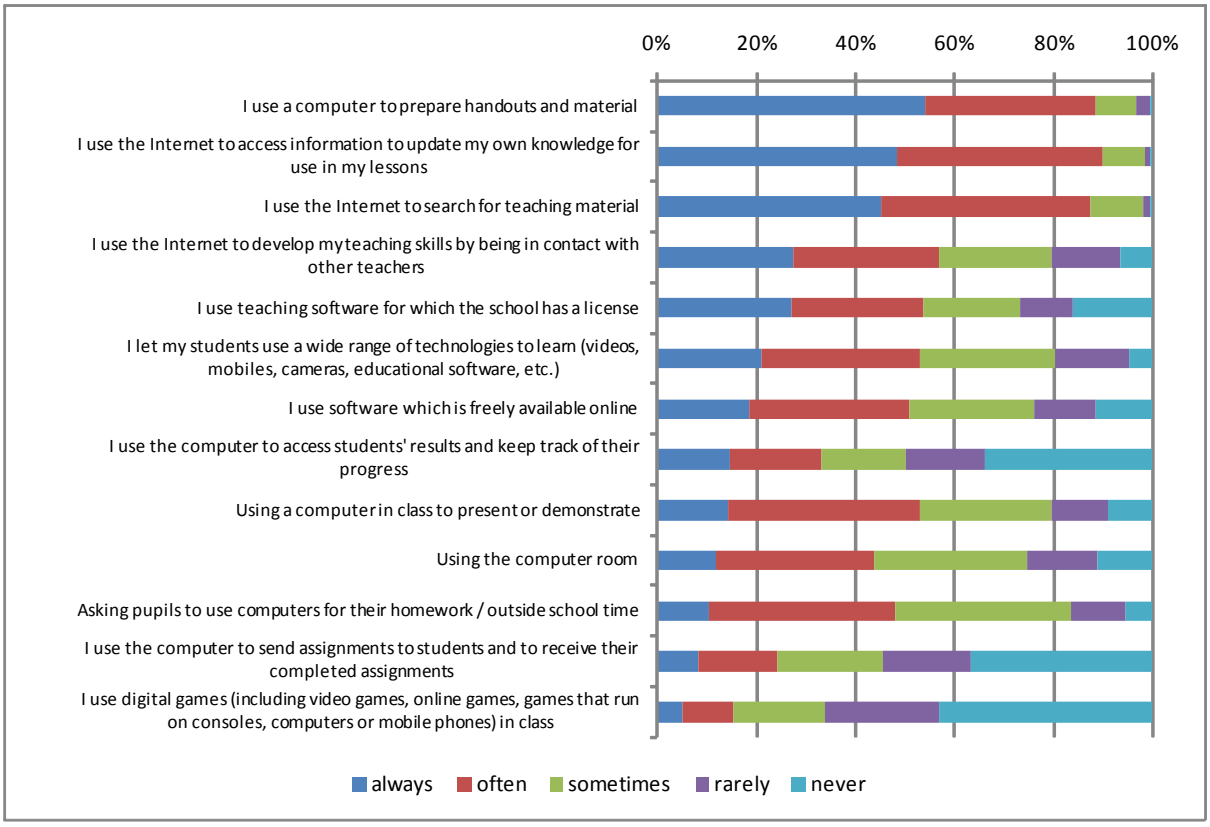
[27] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: Can ICT be used to enhance creativity?

[28] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: How can you use ICT for teaching and learning?

[29] Respondents per country: Portugal: 182; and Cyprus: 90.

As can be noted in Graph 13, the Internet has become an important tool for teachers to access information. Nonetheless, only half of the teachers (53%) claim to let their students use a wide range of technologies to learn (videos, mobiles, cameras, educational software, etc). This suggests that teachers prefer to stay in control of the technologies used in the classroom. Teachers in Denmark (74%), Romania (73%) and UK (71%) were the most likely to let their students use a wide range of technologies to learn, as opposed to Finland (29%), Estonia (32%) and Czech Republic (36%) who were the most reluctant to do so.[30,31]

Graph 13: Use of ICT for teaching and learning



Q20: How do you use ICT for teaching and learning?
Base: All respondents

[30] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: How can you use ICT for teaching and learning?

[31] Respondents per country: Denmark: 26; Romania: 135; UK 96; Finland 272; Estonia 306; and Czech Republic 177.

5.2 Mobile phones not endorsed as tools for creative learning

More than half of teachers (54%) disagree (with 16% strongly disagreeing and 38% disagreeing) that mobile phones could be important for learning. Teachers between 46-55 years old (54%) were the most likely to disagree that that mobiles are important for learning, while teachers under 25 years where the least likely to disagree (48%). In contrast, in terms of years of experience those who have been teaching between 1-4 years were the most likely to disagree that mobiles are important for learning (59%), while teachers who have been teaching for less than a year were the least likely to disagree (50%). The contrasting change within such a short period of experience suggests that a major change of perception seem to occur amongst our respondents in the first five years of teaching experience. Future research in this area is needed to understand what exactly happens in the first few years of teaching.

Teachers teaching Media Education, Psychology and Cross-curricular Subjects were the ones mostly likely to agree about the importance of mobile phones for learning. Opinions about the relevance of mobile phones for learning varied between countries, with teachers in Denmark (62%) and United Kingdom (43%) the ones most agreeing and teachers in Slovenia, Germany and Lithuania (all at 9%) the least agreeing.[32,33] Agreement on the importance of mobile for learning did not vary between across school level.

Literature shows that there seems to be a strong belief that mobile phones are 'huge distraction' from education (Prensky, 2004), and hence, they are often prohibited from schools. Prensky explores various case studies of how mobile phones have been used for learning (e.g. Japanese lessons from Enfour's TangoTown) or could be used in the future (e.g. conducting pop quizzes, spelling, math tests or to poll students' opinions). Mobile phones can add new dimensions to teaching and learning processes due their wide range of attributes, such as talk, text, still camera, video, radio and the internet (Kukulska-Hulme & Traxler, 2005). The freedom of mobility also provides opportunities for learning outside the teacher-managed classroom (Naismith, Lonsdale, Vavoula, & Sharples, 2004) and brings the real world to the classroom in subjects like science (Ekanayake & Wishart, 2010).

Teachers' scepticism about the benefits of mobile phones for education, contrasts heavily with the eLearning discourse and with students' beliefs. A recent study analysing what teens (13-19 year olds) would like to change about wireless services and devices show that they would like to have mobile phones which are personalised to fit their lifestyle, with 66% claiming to want mobile phones which present opportunities to be educated anywhere in the world (Harris Interactive, 2008).

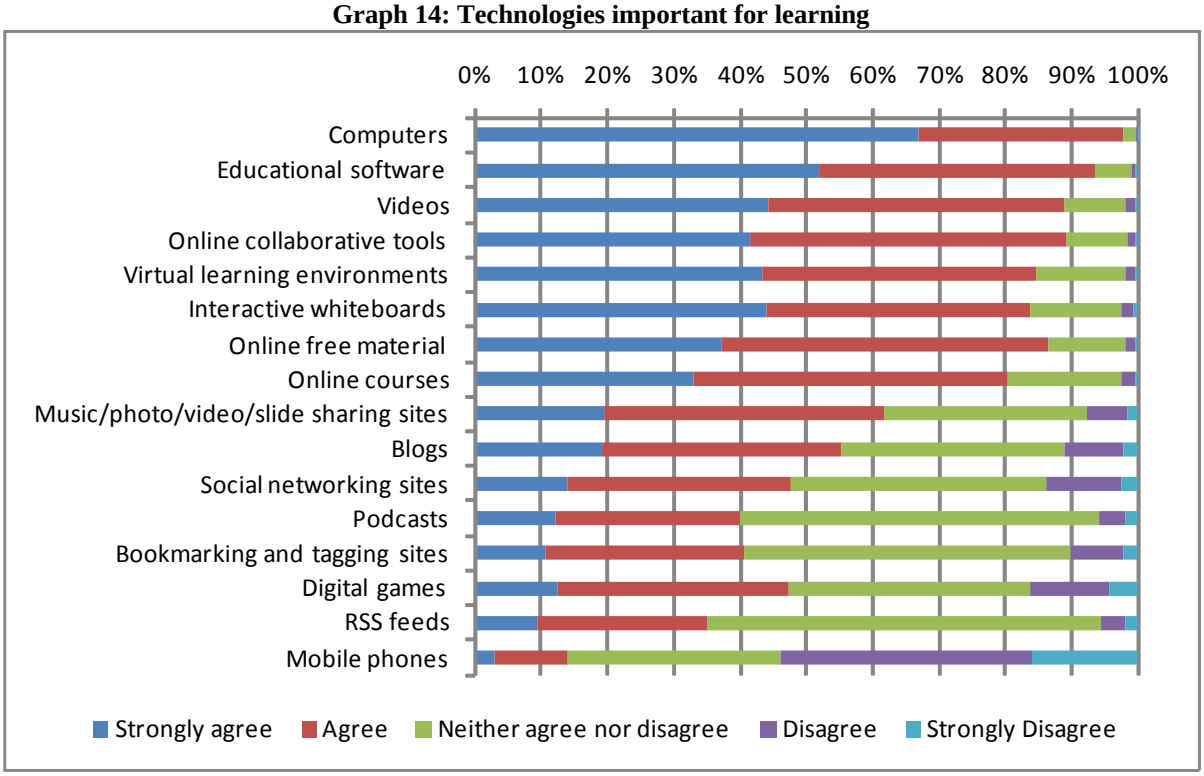
5.3 The potential of social computing applications remains untapped

When asked which technologies are important for learning, computers (98%), educational software (93%), online collaborative tools (such as Wikipedia) and videos (both 89%) were ranked as the top technologies by our respondents (see Graph 14).

[32] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: Do you consider these technologies to be important for learning? Mobile phones.

[33] Respondents per country: Denmark: 27; United Kingdom: 98; Slovenia: 107; Germany: 149; and Lithuania: 233.

Graph 14: Technologies important for learning



Q21: Do you consider these technologies to be important for learning?
Base: All respondents
Note: For the online collaborative tool item Wikipedia was given as an example

Agreement about which technologies are important for learning starts decreasing for items related to multimedia and Web2.0 applications. As can be noted from the above graph, teachers' opinions on which technologies are important for learning may be divided into three main clusters: conventional technologies, interactive technologies and more user active Web2.0 technologies. Highest agreement was noted in relation to conventional technology, namely computers, educational software, videos, online collaborative tools (such as Wikipedia),[34] virtual learning environments, interactive white boards, online free material and online courses. Music, photo, video and slide sharing sites and blogs seem to be the entry technologies for more interactive applications. This may be due to various reasons, for instance, the fact that these technologies allow some levels of interactivity, but still participation of the users is not as high as the other Web2.0 technologies. Only less than half of the respondents believe that social networking sites (SNS) (48%), podcasts (40%) and bookmarking and tagging sites (41%) are important for learning as can be noted in Graph 14. The importance of Web2.0 technologies for learning is somehow still fuzzy for teachers surveyed.

Teachers between 26-35 years old were the ones most likely to sustain that the listed technologies, across the three clusters, are important for learning, while teachers over 56 years old were the ones least agreeing.[35] Teaching experience reflected a similar pattern. Teachers who have been teaching for less than a one year were the ones most likely to agree about the importance of the listed technologies for learning and the ones who have been

[34] The use of online collaborative tools such as Wikipedia for learning has probably been understood by respondents as a passive one.

[35] Mobile phones were not taken into account in this cluster analysis. For analysis of mobile phones please refer to section 6.2.

teaching over 20 years the least likely to agree. This demonstrates that the importance of technology for teaching is more recognised by young teachers than by older ones.

Male teachers were more likely to agree on the importance of technologies for learning (24%) when it came to Web2.0 technologies, in comparison to female teachers (20%).[36] Also, the importance of technologies in Cluster 2 for learning was mostly demonstrated by teachers in primary school (46%), and less in secondary school (41%).[37]

The importance of technology, across the three technology clusters, was most recognised by teachers in Portugal and least by teachers in Finland (see Table 1). The importance of Web 2.0 technologies for learning is less agreed upon by teachers in this survey. It is mostly acknowledged by teachers in Portugal, Denmark and United Kingdom and least by teachers in Luxembourg, Finland and Czech Republic.

Table 1: Technologies important for learning according to country[38]

	Highest Agreement	Least Agreement
Cluster 1: Conventional Technology	Luxembourg (100%)	Finland (50%)
	Malta (92%)	Austria (52%)
	Portugal (91%)	Sweden (55%)
Cluster 2: Music, photo, video and slide sharing sites and blogs	Portugal (73%)	Finland (18%)
	Malta (66%)	Luxembourg (25%)
	Netherlands (64%)	Sweden (31%)
Cluster 3: Web2.0	Portugal (46%)	Luxembourg (0%)
	Denmark (46%)	Finland (6%)
	United Kingdom (35%)	Czech Republic (8%)

Q21: Do you consider these technologies to be important for learning?
Base: All respondents

The perception that new technologies are less relevant for learning is important to highlight because it also shed lights on why some creative processes might not take place. As argued by Prensky (2005), all students have something in their lives which engages them, they enjoy doing and they are good at, 'something that has an engaging, creative component to it' (p. 62). This is often linked to technology and may vary from downloading songs, to playing video games or sharing resources through the Internet, such as pictures or videos. However, such engagement with technology is often ignored at school, resulting in what Prensky calls students becoming 'enraged', as opposed to 'engaged'. Today's education is still based on the notion that student 'must eat' what they are fed. This contrasts strongly with the reality offered by new technologies, which empower young users to choose what they want and to create their own personalised identity.

The limited uptake of social computing in formal education may have significant implications for creative learning. In this survey we have tried to pinpoint where some of the problems with such an uptake are, so as to be able to provide adequate policy options in this area. Primarily, we have asked about teachers' training on ICT. It is well known that teachers, who

[36] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: Do you consider these technologies to be important for learning?

[37] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: Do you consider these technologies to be important for learning?

[38] Respondents per country: Luxembourg: 4; Malta: 54; Portugal: 188; Netherlands: 25; Denmark: 27; United Kingdom: 98; Finland: 279; Austria: 22; Sweden: 154; and Czech Republic: 178.

are not conversant with the technologies they use in their teaching, may not feel comfortable with showing their lack of expertise in front of their students. If a teacher cannot read, it would be difficult to identify whether a book is bad or whether his/her reading is inadequate to judge the book (Shaffer, 2006). When it comes to ICT, similar behaviour may be noted. More than half of the teachers in this survey (58%) claim that they have not received any teacher training on how to use ICT in the classroom. Many teachers today recognise that a new generation of computer literate learners demand 'sophisticated e-learning resources' and 'support from their instructors' (Wang, Huang, Jeng, & Wang, 2008), however, it is not always clear how they should integrate technology in their teaching.

When we compare results between those who have received ICT training and the entire sample, some difference may be noted in the way respondents agreed on whether the listed technologies are important for learning (See Table 5 in Appendix 2). Difference in opinion is mostly noted in the percentage of teachers agreeing and strongly agreeing with bookmarking and tagging sites as important technologies for learning. Such results suggest that there is a positive relation between ICT training and teachers' opinions on the importance of new technologies for learning. This suggests that teachers require more training on how ICT could be used to enhance teaching and learning. However, it is also important to highlight that training should be more focused and tailored on how new technologies may enable teachers to be effective in their teaching and how they could use technologies to nurture creativity in their students is needed.

Secondly, we have also asked about the quality of the ICT in schools. As early as 2006, a European-wide survey had already shown that almost all European schools (96%) had Internet access (Korte & Hüsing, 2007). The same study shows that in no country the figure goes below 90%. Notwithstanding the wide access, only one-fourth of our sample (25%) agreed that the quality of their ICT in their school is excellent.

Our results show that while conventional technologies are considered to be the most important technologies for learning, some new applications, such as blogs and music, photo, video and slide sharing sites are increasing in their importance in education. We also highlight that the potential of Web2.0 technologies for creative learning is not as yet understood by teachers in this survey. The lack of adequate ICT training for teachers and the quality of ICT in schools could be some barriers for the limited uptake. It is important to highlight the need for training which takes into account the affordances of: new online applications, tools which allow teachers to be more effective in their teaching; tools which allow students to be more creative. While ICT may be used as an extension of other teaching tools, it also has the potential to develop new ways of doing things, through which creativity may be developed.

5.4 Teachers sceptic about the benefits of digital gaming for education

Scepticism about the potential benefits of digital gaming for learning may also be observed with only less than half of the respondents (47%) agreeing that digital games are important for learning and only 17% of the respondents using them as resources in their teaching.[39] [40] Respondents in Denmark (73%) and Portugal (68%) were the most likely to agree that digital games are important for learning, as opposed to Slovakia (25%) and Belgium (26%). [41]

When asked how teachers use ICT for teaching and learning, two-thirds of teachers (66%) claim to never or rarely use digital games (including video games, online games, games that run on consoles, computers or mobiles phones) in classroom. Only 15% of teachers claim to use digital games often or always in their teaching and learning, while 19% content they use them sometimes. In United Kingdom (44%) and Denmark (31%), teachers were among the most likely to use digital games often or always in their teaching and learning, as opposed to France (6%) and Czech Republic (7%).[42,43]

These results contrasts substantially with another study conducted by European Schoolnet which showed that 70% of the respondents claim they use games and 80% said that digital games have a place in schools (Wastiau, Kearney, & Vanderberghe, 2009). The expansion of the sample to include 27 European countries, in comparison to eight countries selected by the previous study could be a major reason for the difference in results.[44] Another study conducted in UK by FutureLab shows that while the majority of teachers in their study (72%) had never played computer games in their leisure time, only 36% of primary teachers and 27% of secondary teachers claimed to have used games in the classroom (Sandford, Ulicsak, Facer, & Rudd, 2006). It is important to mention that both of the above studies highlight the positive impact on student motivation brought about by the use of games.

Results in this study show that while a small proportion of the respondents disagree or strongly disagree (16%) that games are important for learning, more than one third of the respondents claim that they neither agree nor disagree (37%). In comparison, one third of the respondents (37%) from the Futurelab study claim that they would not consider using games

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[39] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: Do you consider these technologies to be important for learning? Digital Games.

[40] The percent numbers are relative to the total number of respondents who replied 'agree' or 'strongly agree' to the question: What resources are you using in your classroom: Digital Games.

[41] Respondents per country: Denmark: 26; Portugal: 188; Slovakia: 189; Belgium: 115.

[42] The percent numbers are relative to the total number of respondents per country who replied 'always' or 'often' to the questions: What resources are using in your lessons? Digital Games.

[43] Respondents per country: United Kingdom: 96; Denmark: 26; France: 197; and Czech Republic: 177.

[44] The eight countries for this study were: Austria, Denmark, France, Italy, Lithuania, the Netherlands, Spain and UK.

in classroom. Our data demonstrates that in our sample, while only a small proportion of teachers do not believe that games could be useful for learning, one third of respondents were unable to decide whether games could be useful or not for learning.

6 What kind of context and support are necessary for teachers to foster creativity in their students?

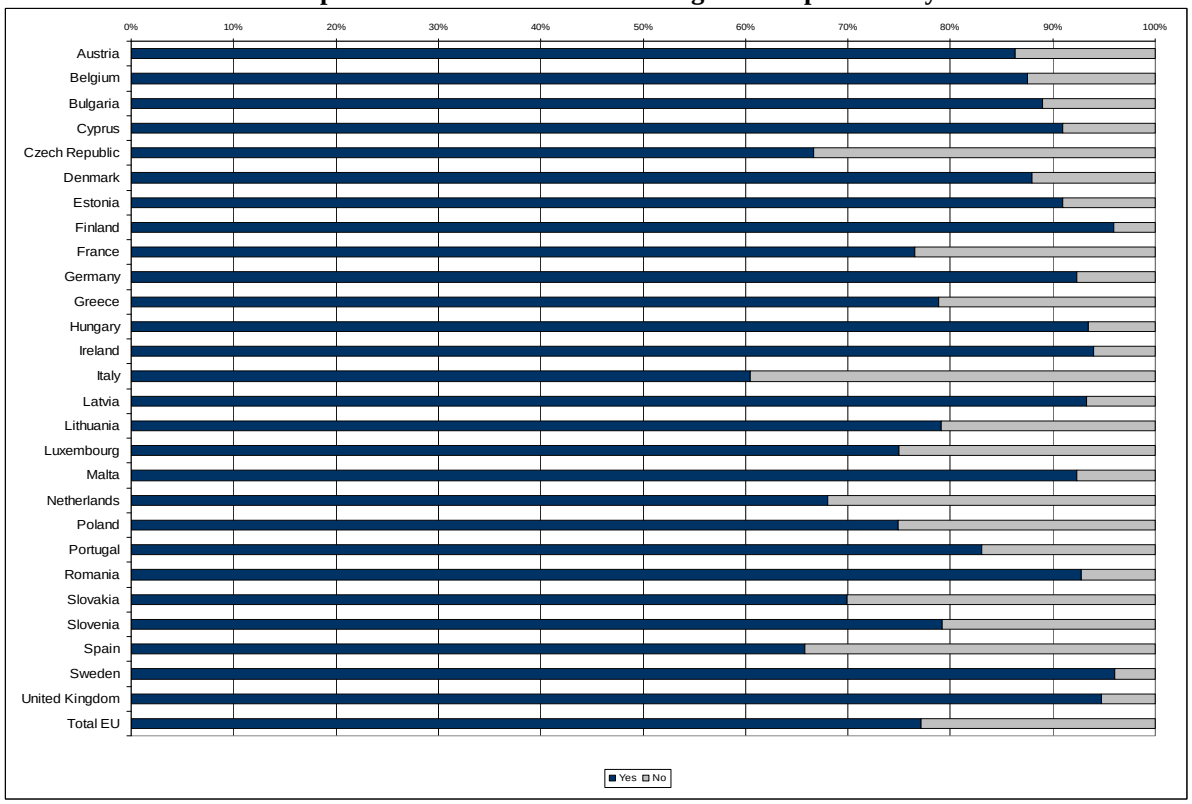
Teachers can support the creative potential of their students in a myriad of ways (Runco, 2007) by, for instance, being a model of creative attitude, solving problems in an original fashion, communicate values which foster a creative mindset. But they can also inhibit it, for instance with pedagogical practices that focus on notion acquisition and repetition (Simplicio, 2000), with testing for factual knowledge (Beghetto, 2005), or simply by using squelchers (Davies, 1999). Behaviours and attitude of teachers largely depend on the support they receive and on the kind of institutional environment they belong to. In this report, four areas have been identified to understand the support and environment where teachers are asked to operate, namely: teacher training, curriculum, educational and school culture and institutional support.

6.1 Teacher training can make a difference in how creativity is understood but more training is needed

Teacher training is central to promote creativity in education. It raises awareness on the importance of creativity for learners and should support teachers in implementing creative and innovative pedagogies and practices in their teaching. A large number of respondents (77%) have undergone initial teacher training (ITT) and an even higher number (87%) is undertaking continual professional development (CPD) courses.[45]

[45] According to Eurydice Key data on Education, CPD is among the duties of teachers in over half of all European Countries (Eurydice, 2009).

Graph 15: Teachers who have undergone ITT per country



Q3: Which country do you teach in?
Q19: What do you think of the following statements? I have undergone Initial Teacher Training
Base: All respondents

There are large variations between countries (see Graph 15). In Sweden and Finland, for instance, almost all teachers have undergone ITT (both 96%), while in the Czech Republic, Spain and Italy percentages are much lower (respectively: 67%, 66% and 60%).[46] A significant difference can be found according to the age groups respondents teach to. As many as 83% of Primary school teachers who took part in the survey received ITT. The percentage lowers to 79% for lower secondary school respondents and to 76% for upper secondary ones.

Despite these high figures, only 23% of respondents deem to have learnt how to teach during initial teacher training, as shown in Table 2. The percentage of respondents who selected "not applicable" matches the percentage of respondents who declare not to have undergone initial teacher training, thus confirming that 23% of respondents did not undergo initial teacher training. More than half of the sample (54%) claim not to have really learnt how to teach during their ITT.

Table 2: Teachers opinions on a statement on ITT

	Yes	No	Not applicable
During my initial teacher training I really learnt how to teach	23%	54%	23%

Q19: What do you think of the following statements? During my initial teacher training I really learnt how to teach
Base: All respondents

[46] Respondents per country: Sweden 154; Finland: 279; Czech Republic: 178; Spain: 891; Italy: 1478.

Compared to figures for ITT, there is a reverse distribution of answers for Spain and Finland regarding CPD, as shown in Graph 16. Spain is one of the countries with the higher percentage of teachers who continue to train while on the job (98%) and Finland with the lowest (77%).[47] Teachers teaching in primary schools continue to be the most trained of the sample: 91% of them claim to follow CPD courses, against 88% of lower secondary and 86% of upper secondary.

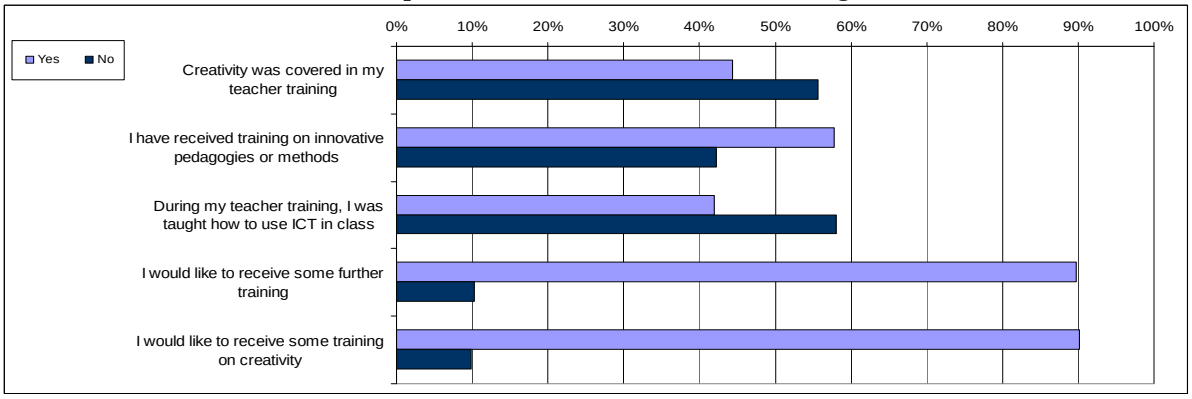
Graph 16: Teachers who undergo CPD per country

Q3: Which country do you teach in?
Q19: What do you think of the following statements? I still do training courses as part of my professional development
Base: All respondents

Three statements addressed the content of the teacher training that respondents have received, without differentiating ITT from CPD. While 57% claim to have received training in innovative pedagogies, only 44% have received training on creativity and 42% on how to use ICT in class. About 90% of respondents declare they would like to receive some further training and about the same percentage would like specifically to receive some training on creativity, as depicted in Graph 17.

[47] Respondents per country: Finland: 279; Spain 891.

Graph 17: Statements on Teacher Training



Q19: Regarding teacher training, what do you think of the following statements?
Base: All respondents (EU27)

From the analysis of our data, it can be stated that training has an impact on teachers' conceptualisation of creativity: those respondents that state that creativity was not covered in their training hold more biased and negative views of creativity. As shown in Table 6(See Appendix 2), opinions on creativity were compared between those who underwent training on creativity and those who did not.

While many of those who received training on creativity consider creativity to be applicable to every domain of knowledge (68%), only 33% of those who did not receive training believe so. Similarly, 58% of creativity-trained teachers are strongly convinced that everyone can be creative, compared to a 37% of non-trained. 97% of teachers who received training on creativity believe that creativity is a fundamental skill to be developed in school, and only 86% of those for whom creativity was not covered in teacher training. Very similar answers and distributions between the two groups can be seen for the statement confining creativity to the art-domain.

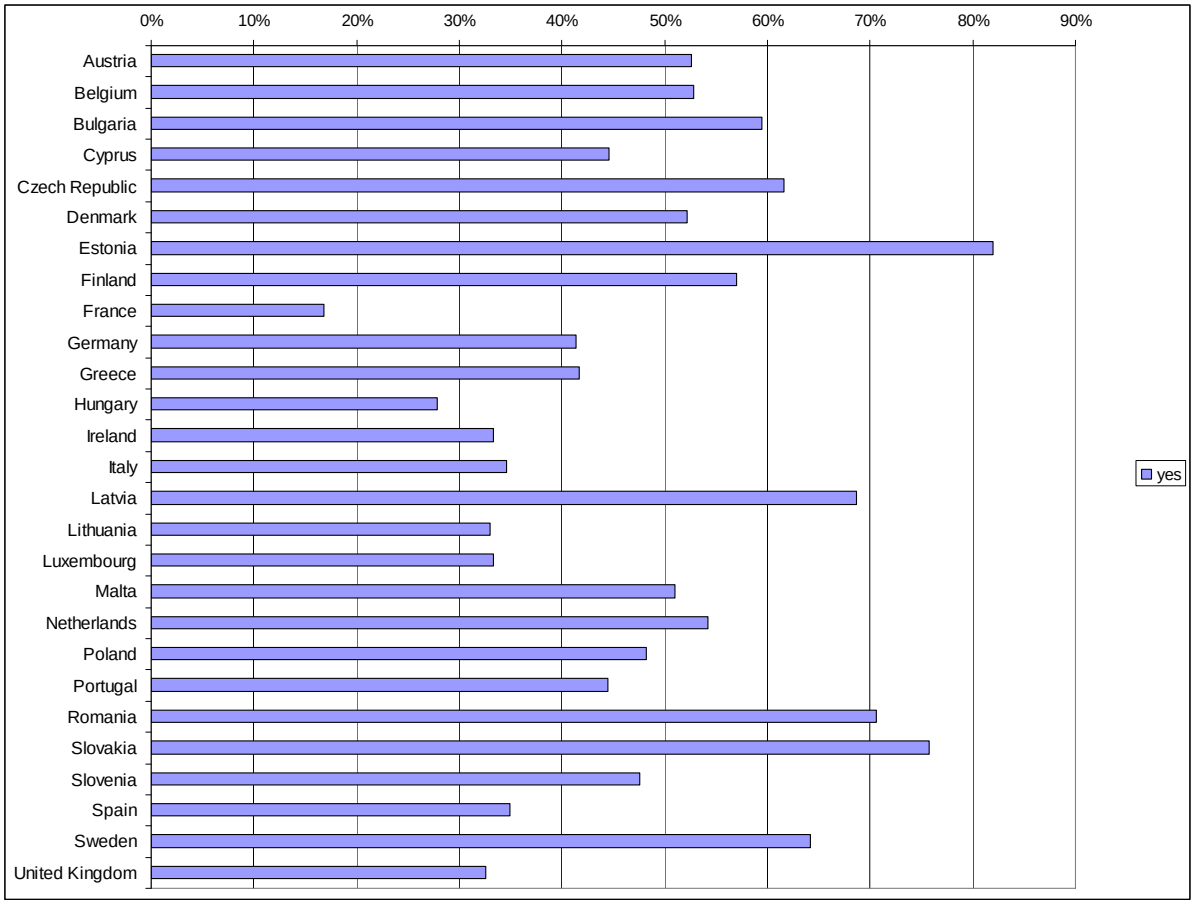
This suggests that teacher training on creativity has an effect on teachers' opinions on creativity, as there are differences in teachers' understanding of the topic according to whether they have been trained or not. Nevertheless, more targeted training is necessary to extirpate the most entrenched myths on creativity, such as the belief that creativity is only relevant for arts, as for this item training was not significantly changing the opinions of teachers.

The coverage of creativity in teacher training is obviously varied among countries, as curricula for teacher education depend on the individual member state system. The variation according to country of teaching is illustrated in Graph 18. In Estonia (82%),[48] Slovakia (76%) and Latvia (67%), a great number of teachers report that creativity was covered in their teacher training. In France (17%) and Hungary (28%) a minority of teachers declare to have received training on creativity.[49]

[48] The percent numbers are relative to the total number of respondents per country who replied 'yes' to the question 'Creativity was covered in my teacher training'.

[49] Respondents per country: Estonia: 311, Slovakia: 189; Latvia: 164; France: 202; Hungary: 310.

Graph 18: Creativity in teacher training: country analysis



Q3: Which country do you teach in?

Q19: Regarding teacher training, what do you think of the following statements? Creativity was covered during my teacher training

Base: All respondents (EU27)

Differences in approaches regarding teacher training on creativity are to be tackled if Europe wants to promote and foster creativity and innovation at all levels of education and training. Member States should attempt to enhance training and take into consideration good practices from the forefront countries of the Union, thus recognising the centrality of teacher training for educational change and the necessity of creativity for learning.

6.2 In many countries creativity is playing a role in the curriculum

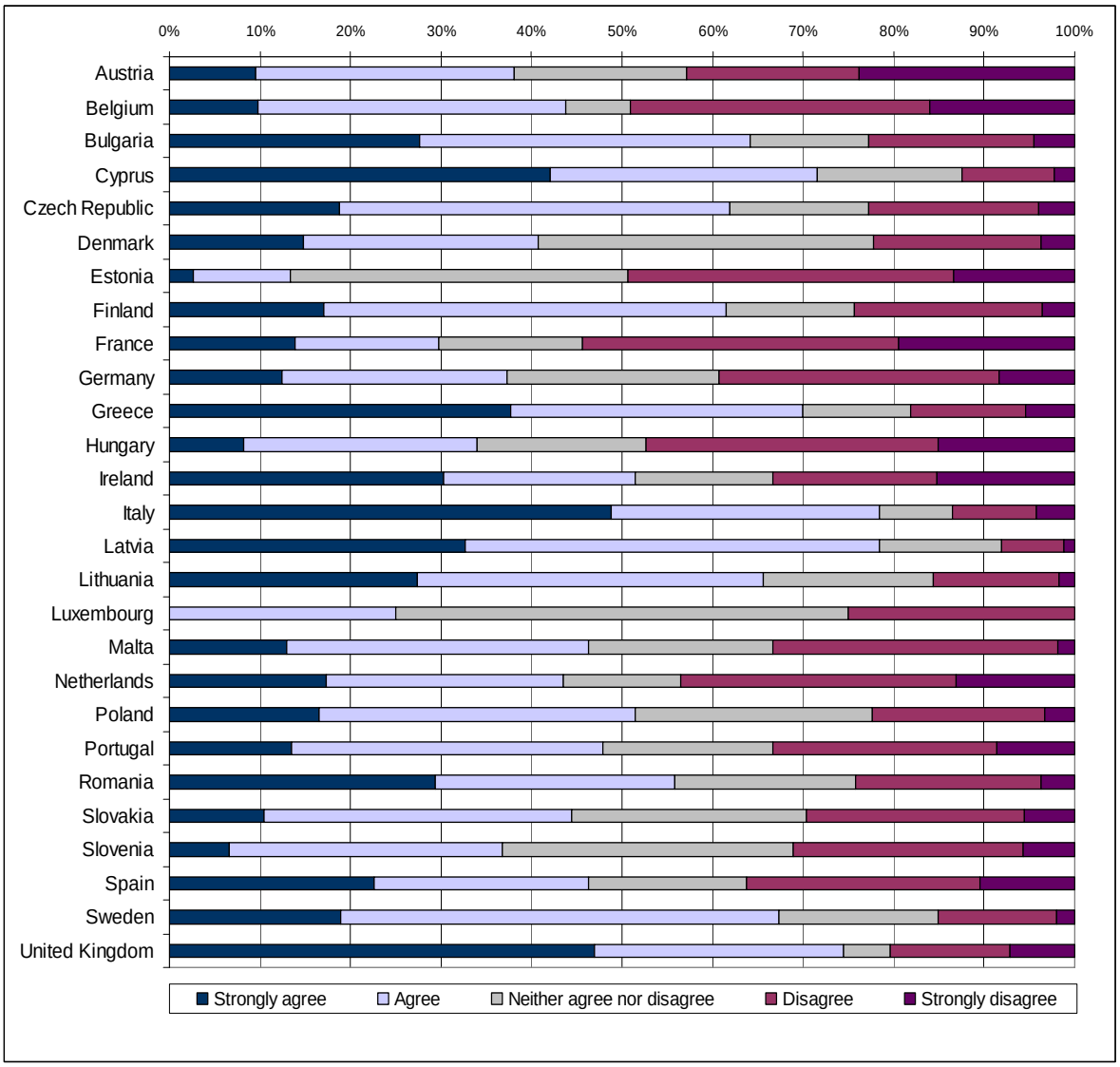
School curricula are, at the same time, a pedagogical and political act. Their pedagogical endeavour lies in the effort to translate domains of knowledge into programmes of study (Craft, 2005); while their political strand arises in the setting of priorities and focuses which show the vision of society that policy-makers have and envisage (Williamson & Payton, 2009). Country or regional bodies regularly update or adapt school curricula to fit the current social and political circumstances (Hall & Ozerk, 2010) and, albeit to a minor extent, didactical trends.

Curriculum have been criticized for not highlighting the importance of creativity across all subject areas and along all age groups (Craft, 2005), for giving more importance to some subjects and also for putting teachers under the pressure to cover too much content (NACCCE, 1999). Respondents to our survey were asked to give their opinions on a series of statements regarding the curriculum of the country they teach in.

Teachers were asked if creativity plays an important role in the curriculum. As curricula are country related, it does not seem appropriate here to discuss about a European average, even if it can be stated that respondents perceive creativity to play a role in curricula in many countries.

The Member States were there seems to be a higher shared consensus on the role of creativity in the curriculum are Italy and Latvia (both 78%), United Kingdom (74%) and Cyprus (72%). In Italy and United Kingdom, almost half of respondents strongly agree with the statement, 49% and 47% respectively (see Graph 19).[50]

Graph 19: Role of creativity in the curriculum per country



Q3: Which country do you teach in?
Q14: Regarding the curriculum you follow, do you agree with the following statements? The development of students' creativity plays an important role in the curriculum
Base: All respondents (EU27)

[50] Respondents per country: Italy: 1478; Latvia: 164; UK: 98; Cyprus: 91.

Teachers in primary schools (61%) were more likely to agree that the development of students' creativity play an important role in the curriculum than teachers from secondary schools (56%). Respondents from France (54%), Estonia (49%), Belgium (49%), and Hungary (47%) concur in thinking that creativity does not play a central role in the curriculum. The country with the strongest opinion on the irrelevance of Creativity for the curriculum is Austria (24%).[51]

Teachers were asked if they think they have to cover too much content, as this is one of the reasons that could detriment the development of creative activities in the classroom (NACCCE, 1999). As Craft (Craft, 2005) points out, if the curriculum is covered in a reasonable amount of time there is more space for other activities, including deepening the understanding of a specific topic or area which arose students' interests. On the contrary, over-burdening the curriculum results in a race against the clock, with teachers and pupils rushing to cover content without developing deep understanding and transversal skills. More than half of the teachers for 15 out of the 27 Member States[52] think they have to cover too much content with Malta (80%), Estonia (77%) and Bulgaria (76%) ranking as the highest. In contrast, only 37% of teachers from the Czech Republic and 39% from Austria claim having to cover too much content.[53]

6.3 Educational and school culture are not yet supporting teachers in fostering creativity

The environment has a direct influence over the creative behaviour of people (Amabile, Conti, Coon, Lazenby, & Herron, 1996). A nurturing environment will not only benefit learners, but also teachers in their attempt to foster the creative potential of their students. This is why the educational and school cultures are fundamental in pivoting creativity.

The Robinson Report "All Our Futures" (NACCCE, 1999) warned against the unbalance of subjects within the curriculum, as the distinction between core and foundation subjects reflects a view that some areas are more important than others. This goes against the entitlement of every pupil to develop their abilities in possibly every field, as likely the progress in more academic or scientific subjects, for instance Maths, will be prioritised to the detriment of other ones, such as Arts or Physical Education. This distinction is not only seeded in the curriculum as a document, but largely depends on the educational culture one is surrounded with. Almost three quarter of respondents (70%) declare that some subjects are seen as more important than others. Agreement with this statement was highest from teachers in UK, Austria and Cyprus (all at 86%). Disagreement that some subjects are seen as more important than others emerged mostly from teachers in the Czech Republic and in Lithuania, with one third of respondents disagreeing with this statement.[54]

Moreover, certain values seem to be more in line with a kind of school culture that fosters creativity. Although the issue is wide and complex, and would best be answered by means of qualitative research, an attempt was made to understand what factors are mainly fostered in school. There is certainly a desirability bias in the answers, nevertheless some trends emerge. According to respondents, schools where they work tend to foster discipline (80%); reward effort/perseverance (78%); and support extra-curricular activities (77%).

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[51] Respondents per country: France: 202; Estonia: 311; Belgium: 115; Hungary: 310; Austria: 22.

[52] These are Bulgaria, Cyprus, Estonia, Finland, France, Germany, Ireland, Latvia, Luxembourg, Malta, Portugal, Romania, Slovakia, Slovenia, and Spain.

[53] Respondents per country: Malta: 54; Estonia: 311; Bulgaria: 358; Czech Republic: 178; Austria: 22.

[54] Respondents per country: UK: 98; Austria: 22; Cyprus; 91; Czech Republic: 178; Lithuania: 233.

The least fostered items according to respondents are: students' initiatives (55%), mix of academic work and play (51%), risk-taking (35%).[55] It seems to be meaningful that the first item to appear is discipline, as this is probably the number one priority for many schools. It is true that there should be a threshold of tolerance and that misconduct is never to be allowed, nevertheless if discipline is at the core of the school culture regardless of the behaviour of its students, there might be an over-emphasis on the phenomenon, which diverges focus and effort on other issues. While the item "rewarding of effort and perseverance" could either hinder or foster creativity, it is clear that "students' initiatives" and "mix of academic work and play" would be better placed higher in the agenda. There is still a tendency to perceive education as something serious, where play does not have any place, and where students' initiatives might be seen as disruptive.

Although risk-taking is one of the central traits of creative personalities (Russ, 1996), it is quite understandable that the item is not likely to be particularly fostered in schools. The ambiguity of the term is reflected in teachers responses, as this item shows the highest percentage of teachers neither agreeing nor disagreeing (42%). One of the priorities identified by the Manifesto for Creativity and Innovation (EC, 2009) is the reward of initiative to foment entrepreneurship, which is highly connected to risk-taking. To engage in change one needs to be ready to run some risks and evaluation of risks is a fundamental criterion to succeed.

It should be noted that even if there was a large consensus on "creativity", with 73% of teachers believing this is fostered in their school; agreement on "divergent thinking and other thinking skills" was much lower (57%). It would be interesting to dig into the kind of creativity which is fostered in schools and to map what it means for other educational stakeholders to foster creativity.

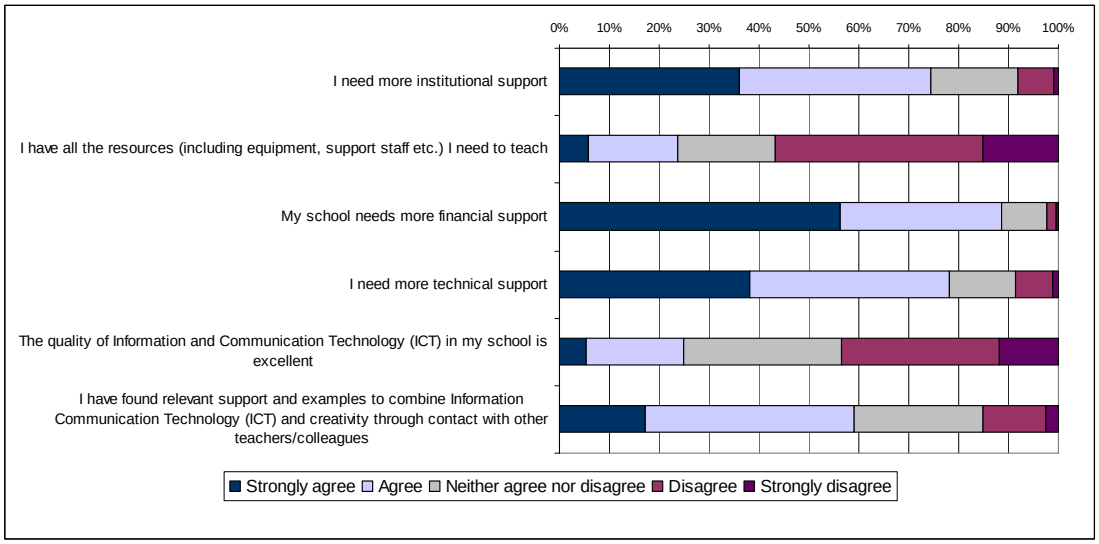
6.4 Institutional support is needed by teachers

The last category of support that was identified is what is called here institutional support, referring to the financial, technical, technological and pragmatic support that teachers receive. Questions were asked on the state of institutional support, technical support, financial support for schools, support from networking, quality of ICT and quality of resources in schools.

Teachers can often be isolated practitioners charged with multiple, sometimes conflicting responsibilities and might feel disconnected from the rest of the educational world (Baker, 1999). Their loneliness is reflected in the opinions expressed in our survey, displayed in Graph 20. Three quarters of respondents state to need more institutional support, 36% being strongly convinced of this.

[55] Number of respondents who agreed and strongly agreed with the list of items listed under the question: Are these factors fostered in your school?

Graph 20: Support



Q23: Do you agree with the following statements?
Base: All respondents

Above half of the teachers who took part in our survey lament lack of resources (57%) and recognise that their school needs more financial support (89%, with 56% of respondents strongly agreeing with the statement). Support can come as well in terms of resources that teachers can rely upon, going from equipment to support staff (for instance, Learning Assistants). The lack of resources and funds can possibly explain why teachers tend to prepare their own resources (81% of teachers claiming they always or often do this), as mentioned above.

Respondents claim they need more technical support (78%). One quarter believe that the quality of ICT in their school is excellent but a high proportion (57%) disagrees with this statement. A large number of respondents (59%) maintain to have found relevant support and examples to combine Information Communication Technology (ICT) and creativity through contact with other teachers/colleagues.

7 Conclusions

This report analyses how the teachers in Europe who replied to this survey perceive and understand creativity, foster creativity through their teaching; use ICT to foster creativity; and what kind of context and support are necessary for teachers to foster creativity in their students. This analysis is part of a bigger study (ICEAC) which 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 the primary and secondary levels of compulsory schooling.

This examination of teachers' opinions on creativity shows that **teachers have an encompassing view of creativity.** Almost all teachers believe that creativity can be applied to every domain of knowledge and that creativity can be applied to every school subject. However, fewer teachers are convinced that creativity is not only relevant to visual arts, music, drama and artistic performance. Similarly, while the large majority of teachers do not take an elitist view of creativity, one fifth of the respondents still think that creativity is an inborn talent. This data is congruent with previous results from other studies which have also reported contradictions in teachers' perceptions and understanding of creativity (Fasko, 2001; Kampylis, et al., 2009; Runco, 2003; Westby & Dawson, 1995).

Teachers from Europe who took part in the survey are more convinced of the link between **originality and creativity** than of the one between **creativity and value**. Although it is true that the value of an original outcome or process in the context of education needs to be adapted to the age group and abilities of learners, it has been argued that *value* is the basis of **entrepreneurship** and that students needs to be made aware of the worth of their thoughts and production in order to be able to judge them and to be able to develop entrepreneurial skills.

The second question was examined by looking at teachers' practices. The majority of the teachers surveyed were active in promoting creativity in their teaching. However, they were more likely to support activities and skills which are more obviously linked to creative learning, such as learning how to learn. Other activities which are also instrumental for creative learning, such as play and multi-disciplinary work were deemed less relevant. This implies that there is a lot of room for improvement in the way creativity is fostered in schools. While more training is required on how creativity could be fostered at school, some practices should be institutionalised. It is often the case that creative practices are not allocated any time and space because they do not fit in the educational agenda.

Based on these results, we argue that there is a **discrepancy between how teachers perceive creativity and the way they claim to foster creativity during their teaching**. Teachers' opinions on creativity in education are indeed much stronger than their practices. If creativity is to be nurtured at European schools and promoted as the centre of the knowledge triangle, the different interpretations of creativity in diverse cultural settings and subjective interpretations of creative education by teachers should be taken into account in educational policies and objectives. In many countries, education policies and objectives mention the need for creative learning, but do not provide an encompassing working definition of creativity or instructive guidelines on how it should be promoted at school.

The **way creativity should be assessed is often not addressed** in educational objectives and policies. Our data shows that only half of the respondents agree that creativity can be assessed. One third of the respondents were uncertain about this question and opted for a neutral answer. This suggests that half of our respondents are not convinced that creativity can be assessed. Research in this area has demonstrated that teachers who do not agree that creativity can be assessed, often believe that creativity is innate and cannot be judged (Rogers & Fasciato, 2005). One of the priorities identified by the Manifesto for Creativity and Innovation (EC, 2009) is that initiative, which is highly connected to risk-taking, must be rewarded in order to foment entrepreneurship. To engage in change, one must be ready to run some risks and evaluation of risks is a fundamental criterion for success.

A relation was observed between teachers who had received training on creativity and their perception and practices of creativity. In terms of perception, trained teachers held a more encompassing view of creativity. Despite this relation, it was also observed that some of the most deeply rooted myths have not yet been eradicated. **This demonstrates that training on creativity should be improved.** Similarly, teachers who claimed that creativity had been covered in their training were more like to foster play and multi-disciplinary work in their classroom than those who did not. Notwithstanding the positive effect of training on creativity, only half of our respondents had received any. A high majority of the respondents in this study would like to receive such training.

In terms of resources used by teachers, our study shows that **while textbooks are the preferred teaching resource in schools, the Internet has also become a source widely used by teachers**. Data also highlights that teachers tend to combine different resources in their teaching, with more than two-thirds claiming to use various modes of ICT. The importance of books as resources in Europe is widespread across all subjects. It may be the case that, in most European educational systems, textbooks are imposed on the teachers by the school system, syllabi or the curricula of the country. Parents might also have a tendency to put pressure on teachers to use textbooks. This is not to say that textbooks hinder creative teaching, but rather to highlight some consequences of such a choice. For instance, the role of publishers, which is often dismissed by policy makers, could be determining the way specific subjects are taught. We also argue that there is a **need for more formal and informal online resources which could enable teachers in their work**. In addition, various opportunities brought about by ICT, especially by Web2.0 applications, could be instrumental in enabling teachers to create their own material and resources and share them with their fellow teachers. This demonstrates the increasing importance in teachers' lifelong learning of online learning environments and platforms such as eTwinning, which allow collaboration and communication at a European level. It also suggests the need for more knowledge and support for effective pedagogical strategies addressing the use of ICT in schools (Ala-Mutka, et al., Forthcoming, 2010)

Creative behaviour is highly rewarded by teachers who took part in the survey but less aptly assessed. Results show that while formal testing remains the predominant way of assessing students in Europe, other methods of evaluation may also be observed. Nonetheless, there is still ample space for improvement, especially because more innovative ways of assessment, such as portfolios and allowing students to test and give each other feedback, are still under used. These results suggest that more effort should be dedicated to encouraging teachers to combine different methods of assessment, including self and peer assessment by students. If we want to enhance creativity in schools, students should be given significant time and space to investigate, test and revise their work and that of their peers.

With regard to the third question, there is clear evidence that a vast majority of teachers agree that **ICT can be used to enhance creativity and to improve teaching**. Usage of ICT has largely been based on extension of previously used tools and resources, though the shift to new tools is slowly picking up. The technologies that teachers agreed were important for learning may be divided into three main clusters: conventional technologies, interactive technologies and more user active Web2.0 technologies. Highest agreement was noted in relation to conventional technology, namely computers, educational software, videos, online collaborative websites (such as Wikipedia), virtual learning environments, interactive white boards, online free material and online courses. Music, photo, video and slide sharing sites and blogs seem to be the entry technologies for more interactive applications and more than half the respondents sustained that they were important for learning. In comparison, social networking sites (SNS) (48%), podcasts (40%) and bookmarking and tagging sites (41%) are the technologies least considered to be useful for learning. This suggests that the **potential of Web2.0 technologies for learning is somehow still unclear for teachers** surveyed. We argue that it is important to highlight teachers' reluctance towards new technologies because it sheds some light on why some creative processes and innovative teaching may not be taking place in schools.

There is an urgent **need to provide basic ICT training and also digital competence training so that teachers become confident and critical users of ICT.** Our analysis shows that more than half of the teachers have not received any teacher training on how to use ICT in the classroom. Research demonstrates that if teachers are not conversant with new technologies they will be inhibited from using them in their teaching. In addition, we also argue that topics covered during ICT training should reflect current ICT usage and new applications in the market. Notwithstanding the wide access of Internet across Europe, only a quarter of the respondents claimed that the quality of ICT in their schools was excellent. This suggests that while access to ICT is an important focus for policies, ensuring that the ICT provided is of good quality and continuously maintained is equally important.

We have argued that developments for **pedagogy training** need to address what it means to be educated in our times (Loveless, 2007). Primarily, the provision of new ICT applications is fundamental if we want teachers and students to use these applications. Secondly, training on how these applications can be used to enable teaching is important. And thirdly, if we want students to become creative and innovative with technology, teachers need to know how to support this level of learning (Loveless, 2007). As argued by de Freitas & Oliver (2006) in their study on games, creative learning through gaming requires substantial effort from teachers, in order to achieve positive results.

In terms of the fourth research question, our results show that **teachers need a nurturing context and environment and more support** if they are to engage in creative and innovative teaching. This support can be offered in a variety of ways, from curricula to an inspiring school environment.

While teacher training is widespread across Europe, both in terms of ITT and CPD, our results show an imbalance in the provision of courses on creativity during teacher training. As creativity and innovation are a priority for European and Member States' policy-makers, due to the benefits they can have for growth and development, the **Members States should engage in providing training for teachers on how to foster creativity in learners**. This training should focus on eradicating recurrent myths about creativity and on offering a direct

link with educational practices, enabling teachers to reflect and discern which of the activities that take place in the classroom are more likely to encourage creativity.

We also argue that policy-makers and teachers should have an understanding of what creativity is, what it implies for education and how it can be applied in practice and that this should be stated and promoted through curricula, teacher training and good practices exchange. As the **Europe 2020 Strategy** recommends, school curricula should focus on creativity with a view to creating a European economy based on knowledge and innovation (EC, 2010a). To achieve this goal, **Member States should commit to re-thinking curricula in order to clearly enable creative learning practices.** Our research suggests that different aspects of the curriculum need to be tackled. The amount of content that teachers are asked to cover during a school year could be a major barrier for creative learning. Curricula and other educational policy documents need to raise awareness on the benefits not only of creativity for learning, but also of linking teaching practices and methods with creative outcomes, so that teachers can become reflective practitioners able to discern how a teaching method or activity can stifle or trigger creativity in their students. Moreover, curricula should allow flexibility, time and space to develop transversal skills and not overload teachers and learners with content. Finally, the shape and focus of curricula will remain unchanged if assessment is not tackled. Changes in assessment that take transversal competences into account and allow for creative approaches from learners to take place are of high priority.

As mentioned above, the findings described in this report are part of a bigger study and it is in this context that they should be interpreted. However, they do provide some understanding of how creativity is interpreted and practised by teachers in Europe who willingly replied to our survey. Hence, though more research is required in this field, this report provides some evidence of what is happening in terms of creativity in education in Europe and some policy options which could already be incorporated at European level.

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Appendix 1: Demographic data

Table 3: Demographic data

	N = 7650	
	#	%
Gender		
Female	5848	77.2
Male	1727	22.8
Total	7566	100%
Age		
Under 25	91	1.2
26-35	1,519	19.9%
36-45	2,723	35.7%
46-55	2,653	34.7%
55+	649	8.5%
Total	7,635	100%
Years of experience		
Less than 1 year	47	0.6%
1-4 years	605	7.9%
5-10 years	1,551	20.3%
10-20 years	2,562	33.5%
20 years +	2,875	37.6%
Total	7,640	100%
Qualifications		
Bachelors degree in education	2,381	21.9%
Bachelors degree in a subject other than education	2,510	23.1%
Masters in Education	1,920	17.6%
Initial Teacher Training Certificate Post Graduate Certificate in Education	1,428	13.1%
Masters in a subject other than education	1,913	17.6%
Mphil in a subject other than education	294	2.7%
Mphil in education	180	1.7%
Phd in a subject other than education	147	1.4%
Phd in education	111	1.0%
Total	10,884	100%

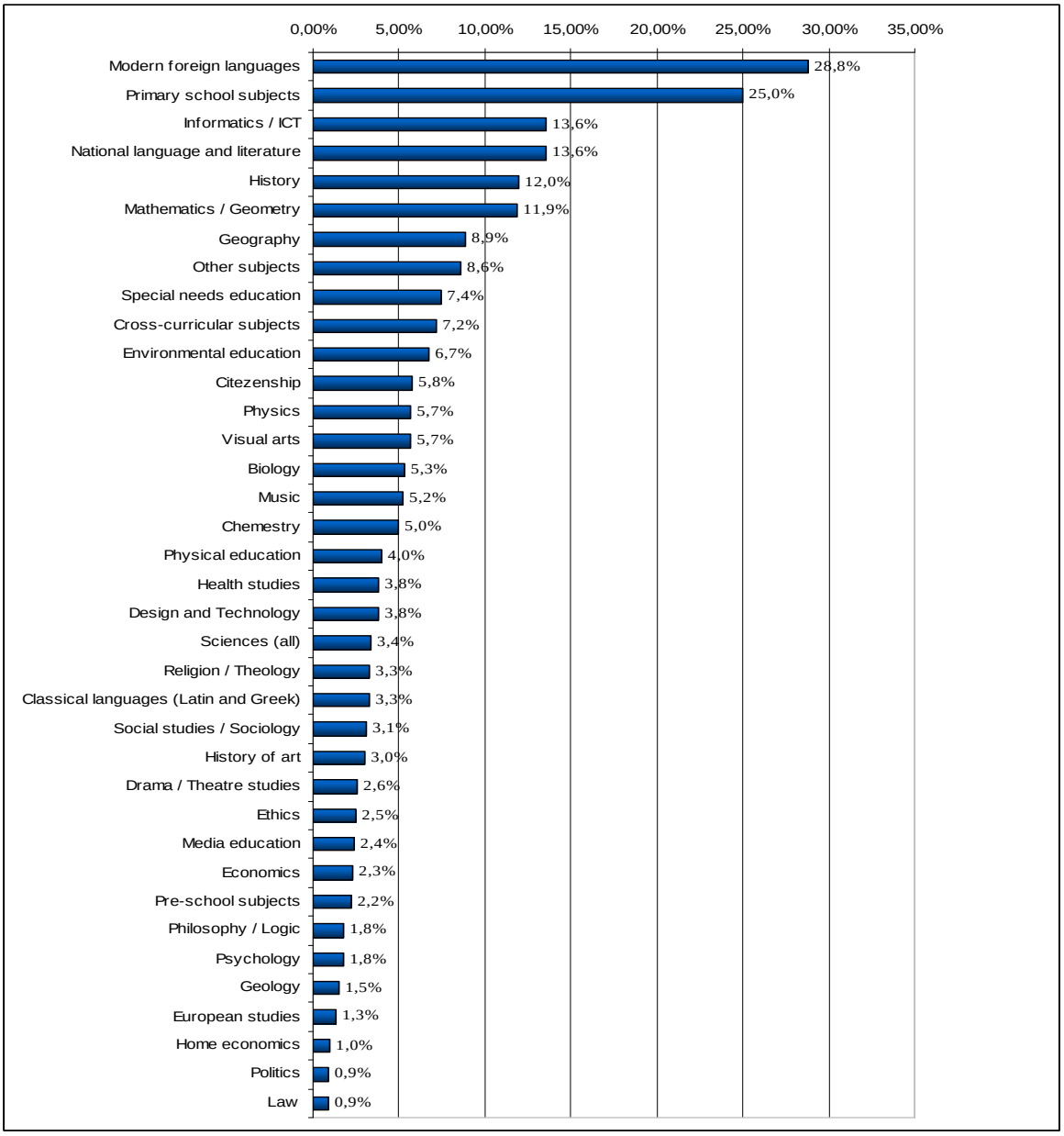
Base: All respondents

Table 4: European Teacher Population against Survey population

	Teacher Population		Survey population	
	n	%	n	%
Austria	68363	1%	22	0%
Belgium	70044	1%	115	2%
Bulgaria	186618	2%	358	5%
Cyprus	16091	0%	91	1%
Czech Republic	293506	2%	178	2%
Denmark	233308	2%	27	0%
Estonia	35473	0%	311	4%
Finland	101297	1%	279	4%
France	1006763	8%	202	3%
Germany	1399158	11%	149	2%
Greece	206553	2%	1.203	16%
Hungary	291475	2%	310	4%
Ireland	110806	1%	34	0%
Italy	1240321	10%	1.478	19%
Latvia	103534	1%	164	2%
Lithuania	157190	1%	233	3%
Luxembourg	2103	0%	54	0%
Malta	13456	0%	4	1%
Netherlands	471193	4%	25	0%
Poland	968449	8%	656	9%
Portugal	300638	2%	188	2%
Romania	404038	3%	139	2%
Slovenia	56776	0%	107	1%
Slovakia	161641	1%	189	2%
Spain	494880	4%	891	12%
Sweden	290081	2%	154	2%
United Kingdom	3545554	29%	98	1%
Total European Union (27 countries)	12229307	100,0%	7.659	100,0%

Q3: Which country do you teach in?
Data compared with Eurostat Labour Force survey 2006.
Base: All respondents

Graph 21: Subjects taught



Q7: Which subjects do you teach? Please tick all that apply
Base: All respondents

Appendix 2: Tables

Table 5: Comparison between teachers who have received ICT training and the entire sample

	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Blogs	177	2,4%	653	8,7%	2.532	33,7%	2.701	36,0%	1.450	19,3%
Blogs * ICT training	50	1,7%	221	7,6%	966	33,2%	1096	37,7%	574	19,7%
Social networking sites	203	2,7%	840	11,2%	2.873	38,4%	2.526	33,8%	1.036	13,9%
Social networking * ICT training	53	1,8%	263	9,1%	1074	37,1%	1037	35,8%	466	16,1%
Podcasts	140	2,0%	283	4,0%	3.878	54,2%	1.988	27,8%	869	12,1%
Podcasts * ICT training	44	1,6%	103	3,7%	1.515	54,7%	756	27,3%	354	12,8%
Bookmarking and tagging sites	163	2,2%	575	7,9%	3.599	49,2%	2.199	30,1%	772	10,6%
Bookmarking * ICT training	47	1,7%	183	6,5%	1321	46,6%	933	32,9%	352	12,4%
Digital games	325	4,3%	903	12,0%	2.747	36,5%	2.619	34,8%	929	12,3%
Digital Games * ICT training	91	3,1%	332	11,4%	1057	36,3%	1057	36,3%	372	12,8%
RSS feeds	138	1,9%	259	3,6%	4.244	59,3%	1.853	25,9%	664	9,3%
RSS feeds * ICT training	46	1,7%	77	2,8%	1617	58,2%	751	27,1%	285	10,3%
Mobile phones	1.215	16,1%	2.843	37,7%	2.429	32,2%	829	11,0%	216	2,9%
Mobile * ICT training	433	14,9%	1073	36,9%	974	33,5%	343	11,8%	84	2,9%

Q21: Do you consider these technologies to be important for learning?
Base: All respondents

Table 6: Comparison between teachers who have received training on Creativity and those who have not (*): Statements on Creativity

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Creativity is a skill that can be applied to every domain of knowledge	68,4%	30,3%	1,0%	0,3%	0,0%
*Creativity is a skill that can be applied to every domain of knowledge	33,3%	54,9%	11,8%	0,0%	0,0%
Creativity is a skill that can be applied to every school subject	69,1%	28,5%	2,1%	0,4%	0,0%
*Creativity is a skill that can be applied to every school subject	40,0%	44,0%	8,0%	8,0%	0,0%
Creativity is a fundamental skill to be developed in school	66,0%	31,2%	2,0%	0,6%	0,1%
*Creativity is a fundamental skill to be developed in school	40,0%	46,0%	10,0%	4,0%	0,0%
Everyone can be creative	58,3%	34,1%	5,6%	1,8%	0,2%
*Everyone can be creative	37,3%	33,3%	15,7%	13,7%	0,0%
Creativity can be taught	19,8%	54,8%	19,1%	5,0%	1,3%
*Creativity can be taught	7,8%	51,0%	37,3%	2,0%	2,0%
Creativity can be assessed	13,1%	44,9%	27,5%	11,5%	2,9%
*Creativity can be assessed	5,9%	45,1%	35,3%	11,8%	2,0%
Creativity is an inborn talent	6,4%	16,6%	32,8%	34,8%	9,5%
*Creativity is an inborn talent	3,9%	23,5%	39,2%	27,5%	5,9%
Creativity is only relevant to visual arts, music, drama and artistic performance	4,8%	4,9%	8,1%	55,4%	26,8%
*Creativity is only relevant to visual arts, music, drama and artistic performance	2,0%	11,8%	13,7%	43,1%	29,4%
Creativity is a characteristic of eminent people only	3,1%	5,2%	14,7%	46,0%	31,0%
*Creativity is a characteristic of eminent people only	2,0%	8,0%	10,0%	50,0%	30,0%

Q19: Regarding teacher training, what do you think of the following statements? Creativity was covered in my teacher training
Q26: Do you agree with the following statements?
Base: All respondents

European Commission

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Abstract

This report examines teachers' perceptions about creativity for learning and their reflection on their own teaching practices. Teachers' opinions where collected through an online survey which gathered data from 32 countries and at distinct school levels. For the scope of this report, only responses from teachers from EU27 and teaching in obligatory schooling were examined (ISCED levels 1 and 2). This amounts to a total of 7,659 responses. Almost all surveyed teachers have an encompassing view of creativity: 98% believe that creativity can be applied to every domain of knowledge and 96% that creativity can be applied to every school subject. Almost nine out of ten teachers in this survey endorse a democratic view of creativity sustaining that everyone can be creative (88%). Teachers' opinions on creativity in education are much stronger than their practices. While teachers claim to foster many skills that are connected to creativity, traditional teaching and assessment methods and resources are still predominant. The vast majority of surveyed teachers claim that technology has improved their teaching (85%) and that ICT can be used to enhance creativity (91%).

Internet has become an important tool for teachers to update their own knowledge for use in their lessons (90%), to prepare handouts and material (89%) and to search for teaching material (87%). Notwithstanding the high importance attributed to technology, its use seems to be still teacher-led. Only half of the teachers (53%) claim to let their students use a wide range of technologies to learn (videos, mobiles, cameras, educational software, etc). Moreover, the potential of Web2.0 technologies is still untapped and more than half of teachers surveyed (54%) disagree that mobile phones could be important for learning. Teachers claim to need more support and are willing to undergo more training. Teacher training on the use of ICT for education was received by less than half of respondents. Only one-fourth of our sample (25%) agreed that the quality of ICT in their school is excellent. Only less than a quarter of respondents (23%) deem to have learnt how to teach during initial teacher training.

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