Does the type of ICT training teachers pursue matter?

Briefing Papers, published monthly, aim to present the findings of the *Survey of Schools: ICT in Education* on a specific topic and to relate them to the results of European Schoolnet projects on the topic.

Survey of Schools: ICT in Education provides detailed, up-to-date and reliable benchmarking on ICT in school education across Europe, painting a picture of the use of technology for learning in schools: from the provision of infrastructure to teachers' and students' use, confidence and attitudes.

Based on over 190,000 responses from students at grade 4, 8 and 11 in general and vocational education, their teachers and head teachers, in schools randomly selected in around 30 European countries, the *Survey* questionnaires were administered online and answers analysed during the school year 2011-12.

The *Survey*, commissioned by the European Commission (Directorate General Communications Networks, Content and Technology), was conducted in partnership between European Schoolnet and the University of Liège (the Service d'Approches Quantitatives des faits éducatifs, Department of Education).

The survey and all the Briefing Papers are available here: **www.eun.org/observatory/surveyofschools**

The next Briefing Paper will be published in **September 2013.**

European Schoolnet is the network of 30 European Ministries of Education, based in Brussels. As a not-for-profit organisation, we aim to bring innovation in teaching and learning to our key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners.

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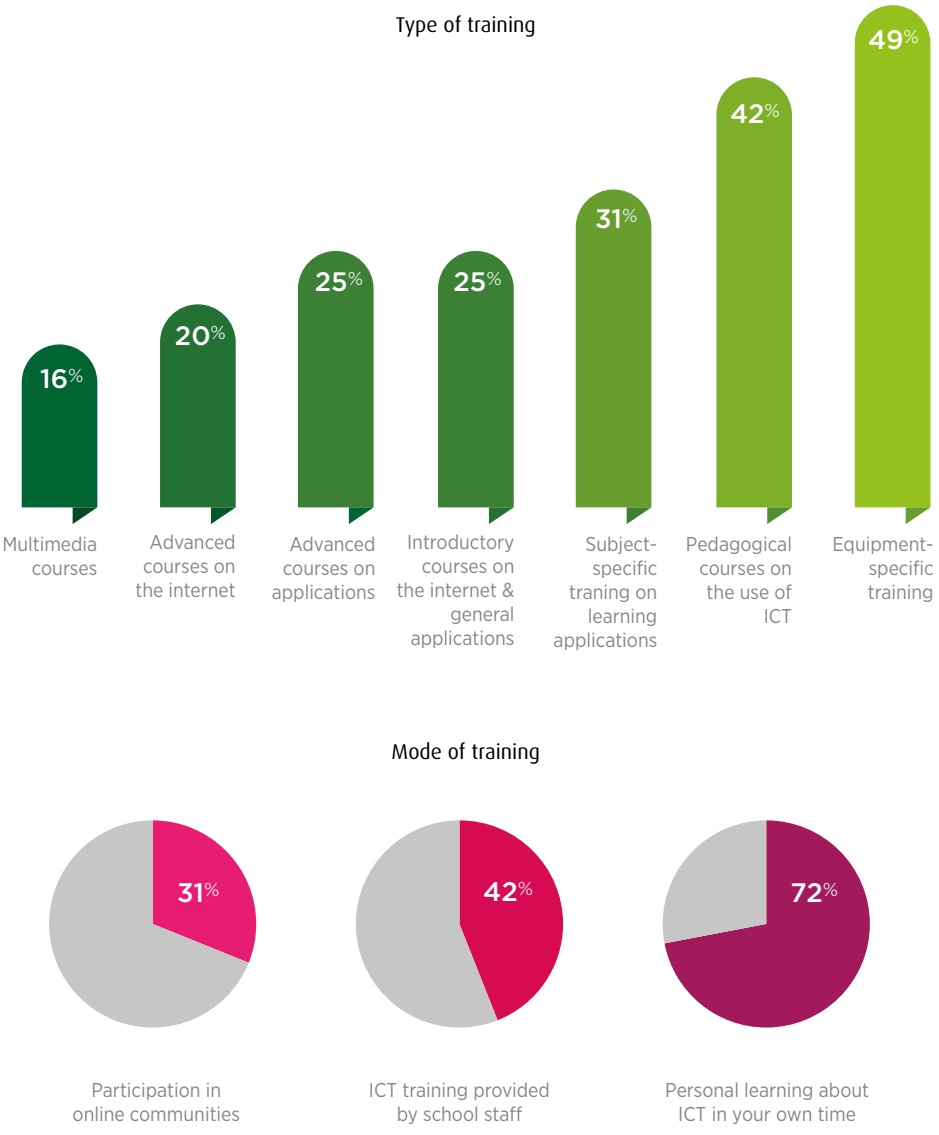
What are the types and modes of ICT-related professional development most often pursued by teachers across Europe?

The *Survey's* results show that on average at EU level the majority of students at grade 11 (general education) are taught by teachers who have participated in equipment specific training (around 50%) in the past two years, while a slightly smaller proportion of around 40% of students are taught by teachers who have engaged in pedagogical training on the use of ICT.

We know from research that there is a relationship between the digital competence and use of ICT by teachers. Participation in professional development activities, aimed at developing teachers' digital competence, can therefore significantly influence teachers' use of ICT (Fredriksson et al. 2008; Valiente 2010). It is for this reason that we decided to investigate different types and modes of training (see figure 1 below) in relation to teachers' ICT use in the classroom.

FIG. 1: Percentage of grade 11 (general education) students taught by teachers who engaged in professional development, by type and mode of training (2011-12)



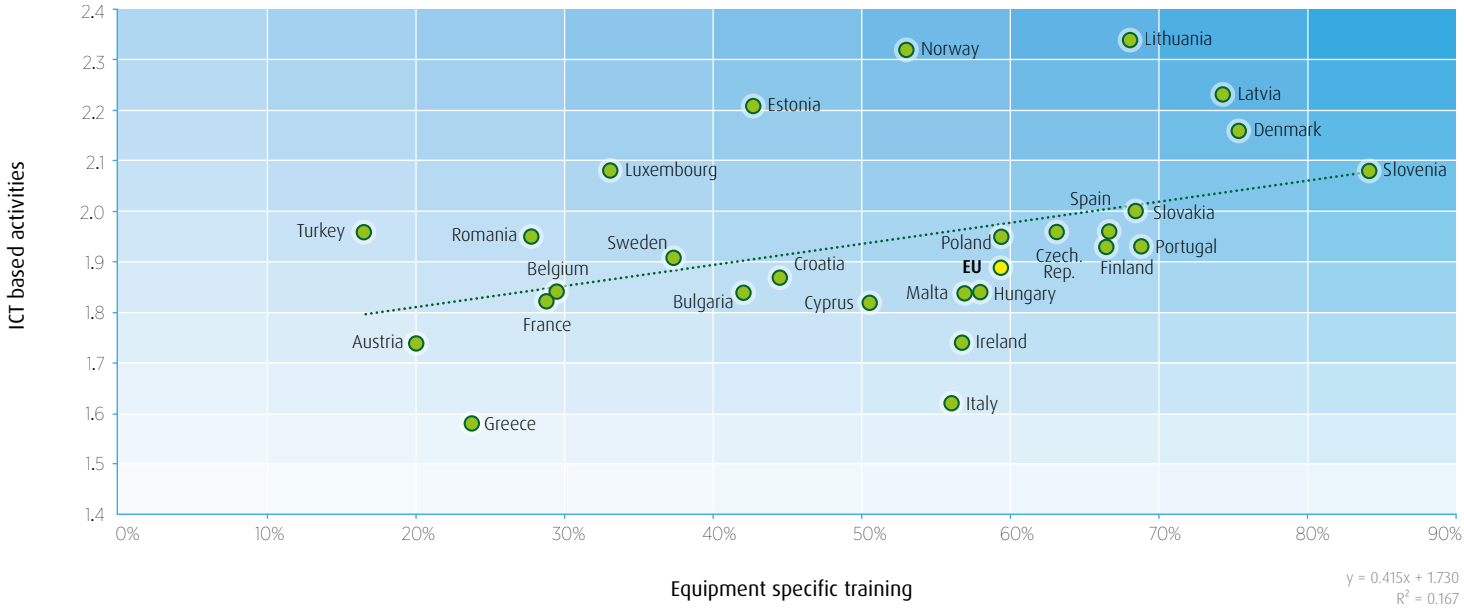
MORE PRECISELY:

The *Survey* asked teachers whether they had participated in various types of ICT related professional development in the past two school years. The percentage of students taught by teachers who have participated in equipment-specific training is even higher at grades 4 and 8 (around 60%) and lower at grade 11 (vocational education – around 40%). Regarding pedagogical training, the situation at grade 11 (vocational education) is very similar as presented here for grade 11 (general education), yet the percentage of students taught by teachers who have participated in such training is larger at the lower grades 4 and 8 (around 50%).

Is participating in equipment-specific or pedagogical training more likely to coincide with teachers' frequent use of ICT with the class?

If we look first at the training most followed by teachers, the loose scattering in figure 2 illustrates that, at country level, there is a only a moderate relationship (0.42 correlation) between the percentage of students at grade 11 (general education) taught by teachers who have recently participated in equipment-specific training, and the frequency of teachers' ICT based activities with the class.

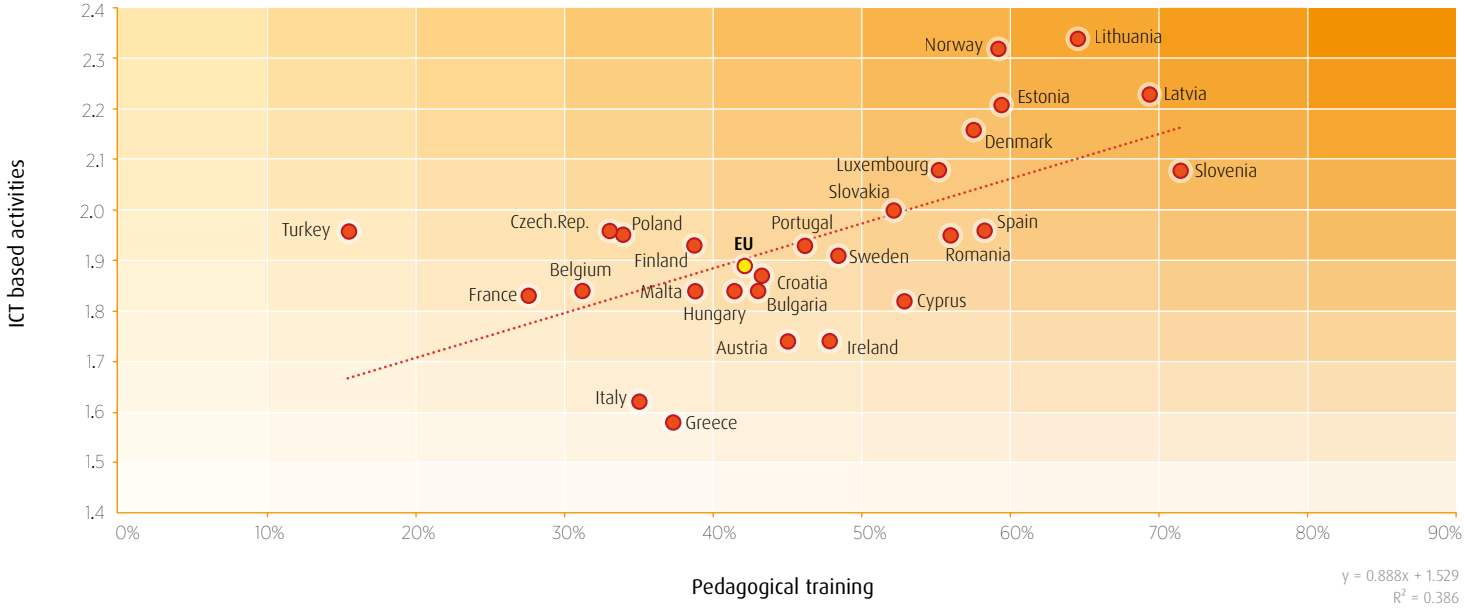
FIG. 2: Relationship between equipment specific training and frequency of teachers' ICT activities with the class (grade 11 general education, 2011-12)



Conversely, if we look at the mapping of countries in figure 3, we see quite a different story. Here, the positioning of countries in a steeper slope shows a stronger positive relationship (correlation 0.62) between the percentage of students at grade 11 (general education) taught by teachers who have recently participated in training on the pedagogical use of ICT, and the frequency of teachers' ICT based activities with the class. This means that there is a closer relationship between pedagogically oriented, compared to equipment specific training, and teachers' use of ICT based activities.

The countries in which the highest percentage of students are taught by teachers who have participated in professional development on the pedagogical use of ICT, and also those with the highest mean score of teachers' ICT based activities with the class, are all the Baltic countries, Norway, Denmark, and Slovenia.

FIG. 3: Relationship between pedagogical training on the use of ICT and frequency of teachers' ICT activities with the class (grade 11 general education, 2011-12)



MORE PRECISELY:

The teachers' questionnaire asked about the frequency of a set of ICT based activities in the class. For each activity, the respondent had to specify how often they do it on a four-level scale (1 = 'never or almost never'; 2 = 'several times a month'; 3 = 'at least once a week'; and 4 = 'every day or almost every day'). A factor analysis of the frequency of the set of activities yielded one scale, "ICT-based activities" still ranging from 1 to 4 and with the same subdivision as above.

Does the type of training pursued count when considering teachers' use of ICT based activities?

Interestingly, while it is the case that teachers engaging in equipment-specific, pedagogical, subject-specific and multimedia training tend to use ICT for teaching and learning more than those who do not participate in any type of training, teachers who have engaged in advanced types of training on applications and on the internet are even more likely to use ICT with the class (see the table below for the results of the regression analysis). As we see from figure 1, a much smaller percentage of students at EU level are actually taught by teachers who participate in advanced training courses on the internet (20%) or specific applications (25%). Yet, it is this currently small group of ICT savvy teachers who use their ICT expertise with the class the most.

On the other hand, the analysis also shows that pursuing introductory courses on the internet and general applications does not seem to make a significant difference to the frequency of teachers' ICT activities with the class. This therefore suggests that participating in basic training is not enough to bring about an increase in teachers' use of ICT. Facilitating as many teachers as possible to eventually reach the required level to be able to benefit from more advanced ICT related professional development is more likely to encourage technology-enhanced learning in the classroom.

What difference does the mode of training have on teachers' use of ICT based activities?

The *Survey's* findings clearly reveal (see the regression analysis displayed in the table below) that, among the various modes of training, teachers who participate in professional development courses via online communities, are most likely to engage in ICT based activities for teaching and learning purposes. These might be online platforms, blogs, forums or other social networking sites where teachers can exchange professional experience and materials. However, as we can observe from figure 1, only around 25% of students at grade 11 (general education) are taught by teachers who have actively taken part in an online community for professional development purposes. Seeing as research reveals that teachers prefer informal methods of training (Balanskat, A., & Gertsch, C. 2010), and OECD's TALIS report highlights the importance of online professional collaboration as a potential driver for change in teachers' practice, more should be done to encourage teachers to participate in online communities.

Conclusion

This Briefing Paper has illustrated that education stakeholders should be advised that providing and encouraging more teachers to engage in pedagogically focused training on how to effectively reach learning outcomes using ICT, is likely to be more beneficial than investing solely in equipment based training. Moreover, basic training is not sufficient to bring about an increase in the use of ICT in the classroom. What is needed is for more teachers to reach and benefit from a more sophisticated level of ICT training, preferably with a strong pedagogical orientation, if the use of ICT based activities is to become a common reality in classrooms across Europe.

However, using ICT based activities frequently with the class is of course not alone enough to guarantee learning. Indeed, researchers such as Mayer (2010) agree that it is not the technological medium itself, but rather the instructional method used, which causes effective learning.

It would seem wise therefore, in the light of this analysis, to harness the clear potential of online communities for professional exchanges between teachers on pedagogical methods, which can lead to positive changes in teachers' practice.

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Regression model showing the relationship between teachers' use of ICT in class and types and modes of training (grade 11 general education, 2011-12)

Relationship between teachers' use of ICT in class and **type** of training	
Advanced applications training	0.20***
Advanced internet training	0.18***
Multimedia	0.12***
Pedagogical training	0.10
Subject specific training	0.08***
Equipment specific training	0.08***
Intro internet applications	-0.03
Intercept	*1.74****

Number of observations: 5257 | Explained variance: 0.14

Relationship between teachers' use of ICT in class and **mode** of training	
Online communities	0.30***
Training during own time	0.18***
Training by school staff	0.14***
Intercept	*1.67****

Number of observations: 5359 | Explained variance: 0.11

*** $p < 0.001$

References:

Balanskat, A. Gertsch, C. (2010), Digital Skills Working Group: Review of National Curricula and Assessing Digital Competence for Students and Teachers: Findings from 7 Countries, European Schoolnet, Brussels.

Fredriksson, U., Jedeskog, G. and Tjeerd, P. (2008), "Innovative Use of ICT in Schools based on the Findings in ELFE Project", Education & Information Technologies, Vol. 13, No. 2, pp. 83-101.

Mayer, R. E. (2010), "Learning with Technology", in Dumont H., Istance, D. and Benavides, F., (eds.), The Nature of Learning, Centre for Educational Research and Innovation, OECD publishing, pp. 179-196.

Valiente, O. (2010), "1-1 in Education: Current Practice, International Comparative Research Evidence and Policy Implications", OECD Education Working Papers, No. 44, OECD Publishing.

Project Focus: eTwinning and professional development

The Project Focus page links the main findings from the *Survey of Schools: ICT in Education* analysed in each issue of the *Briefing Papers* with one specific project coordinated by European Schoolnet.

As this issue introduces the main findings from the *Survey of Schools: ICT in Education* in relation to types and modes of teacher training and their link to the use of ICT activities in the classroom, we asked Anne Gilleran, Senior Adviser, and Santi Scimeca, Senior Project Manager at European Schoolnet, to describe how eTwinning is contributing to the continuous professional development (CPD) of teachers across Europe, managing to keep the pedagogical element at the forefront of its objectives.

eTwinning (www.etwinning.net) is the largest online community for teachers in Europe with in excess of 200,000 registered users and 100,000 schools. eTwinning offers the possibility to teachers to find partners for online collaborative project work; to take part in specialist communities dealing with different pedagogical topics; to engage in a variety of CPD activities, and to feel part of a teachers' professional development community.

'Like any adventure, the amount a person gets out of it is directly related to their degree of involvement in it. For those who wish, eTwinning can change the way they teach.' **Anne Gilleran**

'eTwinning adds something extra to the lessons: not only do you get to know about the way of life and the habits of other countries, but you also feel that you have made new friends and that you are in contact with each other on a regular basis. When you add to this that making contact is very easy and that the projects are easily integrated into the lesson programme, I just don't understand why many teachers don't dare to take the first step. Just take that step: I promise you won't regret it!' **Paulein de Fosse, NL**

@ Cecile Gouzee BEFR NSS - Images taken during PDW Aachen

Q: What kind of continuous professional development does eTwinning offer to teachers?

eTwinning offers a wide variety of CPD opportunities, to which about 20,000 teachers participate every year. Training is both online and face-to-face, at national and European level, formal and non-formal. This variety is, in our opinion, the main added value with respect to more traditional CPD trainings. For example, at European level, we have the Learning Events, and the eTwinning Ambassadors Training Courses, both developed online, and face-to-face opportunities such as seven CPD workshops a year, an annual conference with up to 500 teachers and a mini conference with about 200 participants.

In many of the 34 countries, the activities mainly concern topics such as initiating and managing an eTwinning project, using technological tools within project work, exploring pedagogical approaches etc. In some of these countries, notably Poland, Greece and Spain, these courses are recognized for official career credits for teachers.

In general, we can say that eTwinning offers an environment for CPD aimed at teachers. In addition to the opportunities described above, already being part of a teachers' network and sharing practice, for instance via the Teachers Rooms or eTwinning Groups, constitutes an ideal setting for informal and rapid learning. Teachers feel part of a community of learners and practitioners where learning is a never-ending process, outside a traditional scheme where professional development happens in a predefined and pre-structured context.

Q: Would you describe eTwinning CPD activities as pedagogical? Why and how are they so?

Very much so! The 'why' is because eTwinning is very much aimed at the pedagogical work of teachers. It promotes both Project Based Learning and an Inquiry Based Learning approach to teaching by the means of eTwinning projects; it promotes discussion and debate on pedagogical methodologies to enhance both the work of teachers and the learning of pupils. It is particularly strong in promoting the learning of 'soft skills' among both teachers and pupils such as team-working, active inquiry, decision making, acquisition of digital skills.

The 'how' is because each opportunity for CDP promotes various aspects of pedagogy. The Learning Events for example are run either around ideas for a particular subject, such as Maths 2.0 or more general topics such as the Pedagogical Value of eTwinning. The same goes for the workshops in the various professional development workshops, conferences and seminars.

Q: Results from the Survey shows that teachers who participate in online communities for professional discussion are more likely to use ICT in the class than those who do not. However, the proportion of teachers active in online communities is still rather small. What can be done to encourage teachers to collaborate online?

We think the engagement of people online and in particular teachers is dependent on a number of different factors including cultural variables, time available, recognition granted and ICT skills. Above all, teachers need to feel safe online, be assured the community they are involved in is secure and that their opinions and contributions stay inside the 'walls' of the community to which they belong. As teachers become more confident in this type of environment, other rewards such as digital certificates for achievements, opportunities to show and talk about their work and giving visibility for what they do, become important factors. All the incentives for affirming people that we use in the physical world, are just as important in the virtual one.

eTwinning is part of Comenius, the EU programme for schools. Currently 34 countries are involved in eTwinning, in each of these countries there is a National Support Service (NSS) and the coordination at European level is carried out by the Central Support Service, run by European Schoolnet on behalf of the European Commission. Teachers interested in joining the eTwinning community should register to the eTwinning portal at http://www.etwinning.net

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