TECHNOLOGY-ENHANCED COLLABORATIVE LEARNING

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

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 of technology, and their confidence and attitudes towards ICT.

Based on over 190,000 responses from students at grade 4, 8, and 11 in general and vocational education, from their teachers and head teachers, in schools randomly selected from approximately 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 a 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

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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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How often are students engaged in collaborative work in the classroom?

Among education researchers and practitioners, there is a growing consensus towards the positive role of collaborative work in the classroom, which is seen as a way to engage students in the learning process and prepare them for the challenges of the labour market and adult life. But to what extent are students in Europe engaged in group work? How is the use of computers linked to it? And what are the opinions of education stakeholders towards the role of ICT in students' collaboration? Results from the *Survey of School: ICT in Education* can help us answering some of these questions.

The *Survey* revealed that in the European Union more than 40% of grade 11 students in general and vocational education are engaged in group work daily or at least once a week. However, behind this encouraging figure, which includes activities with and without the use of computers, we can find significant discrepancies from one country to another. As shown in Figure 1, the extraordinary case of Denmark - where 80 to 90% of students are engaged in collaborative work at least once a week - stands next to countries where this percentage is just a little above 20%. In the majority of countries, grade 11 students in vocational education are slightly more engaged in group work than their peers in general education.

FIG. 1: Percentage of grade 11 students who engage in group work daily or at least once a week (2011-12)

■ Grade 11 in general education   ■ Grade 11 in vocational education
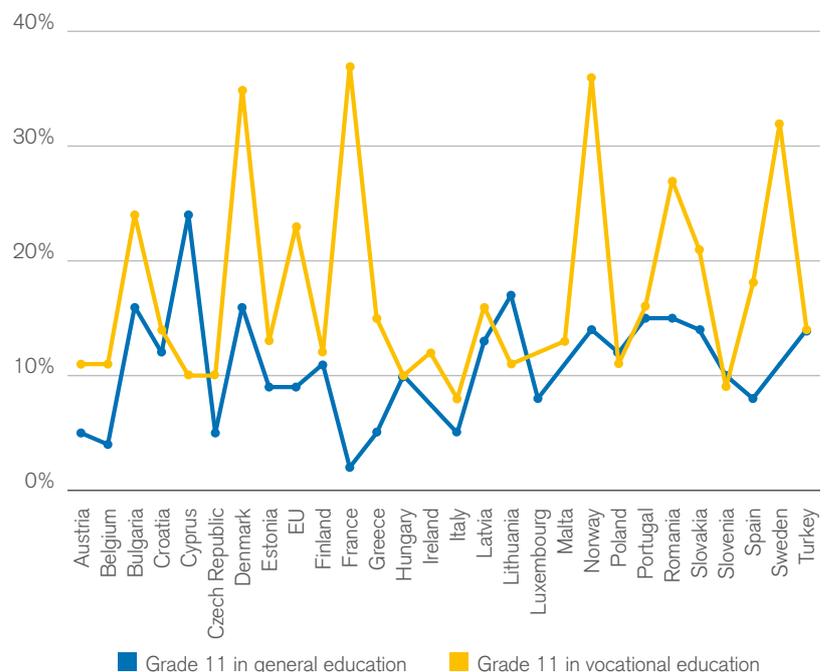
More precisely:

Vocational education data in Ireland and Malta are missing because these two countries do not have separate vocational schools.

# How often do students use computers when engaging in collaborative work?

Although the use of technology in pedagogy is quickly becoming a reality for a significant number of students, computers are rarely used to facilitate group work. Results from the *Survey* show that, in the European Union, between 25 to 33% of students at grade 11 use at least one computer device of any kind (school desktops and laptops or student's own laptop; with or without internet connection) for learning purposes on a daily basis. However, the use of computers when working in groups is a daily practice for only 7% and 3% of students at grade 11, in general and vocational education respectively.

Figure 2 shows the percentage of grade 11 students by country who engage in group work using computers daily or at least once a week. As an overall pattern, the frequency of students' engagement in group work using computers daily or at least once a

week is quite low, with an EU average of 23% in general education and just 9% in vocational education. Additionally, about 82% of vocational education students never or almost never use computers while working in group, compared to 42% of students in general education (detail not shown in the figure).

In all countries, with the exception of Cyprus, Slovenia and Lithuania, students in general education are more engaged in group work than their peers in vocational education. For most countries, and compared to Figure 1, referring to any type of group work within the classroom, the gap between general and vocational education is quite large. This is especially true in the case of France (with a gap of 34 percentage points in the use of computers for group work), Norway (34 percentage points), Sweden (21 percentage points) and Denmark (19 percentage points) (note that figures are unrounded).

FIG. 2: Percentage of grade 11 students who engage in group work using computers daily or at least once a week (2011-12)

Grade 11 in general education   Grade 11 in vocational education
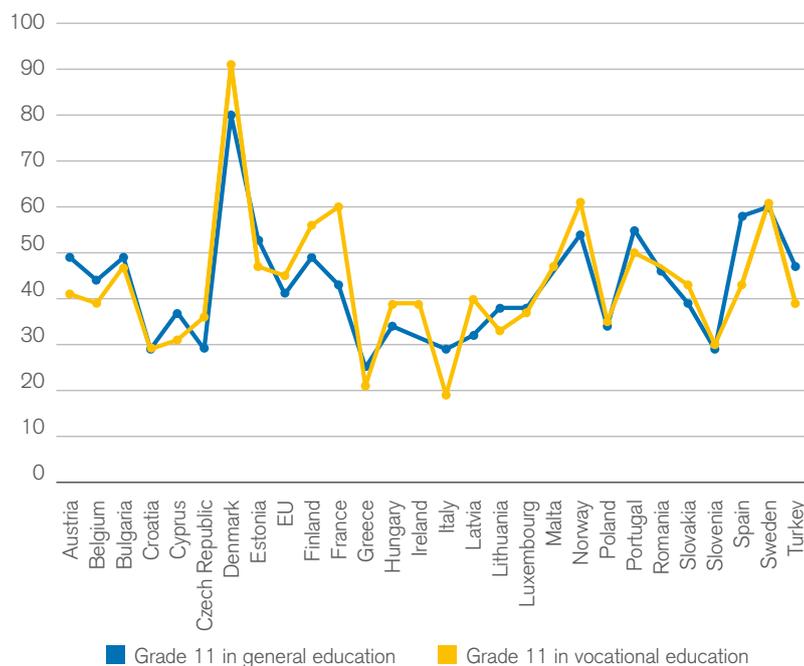
To which extent do education stakeholders agree on the importance of ICT for collaborative work?

As highlighted in the previous section, if group work is similarly frequent at grade 11 in general and vocational education, group work using computer is a rare occurrence and is predominantly found in general education. Therefore, it is interesting to explore whether different opinions of education stakeholders – students, teachers and school heads – can explain such discrepancy in school practices.
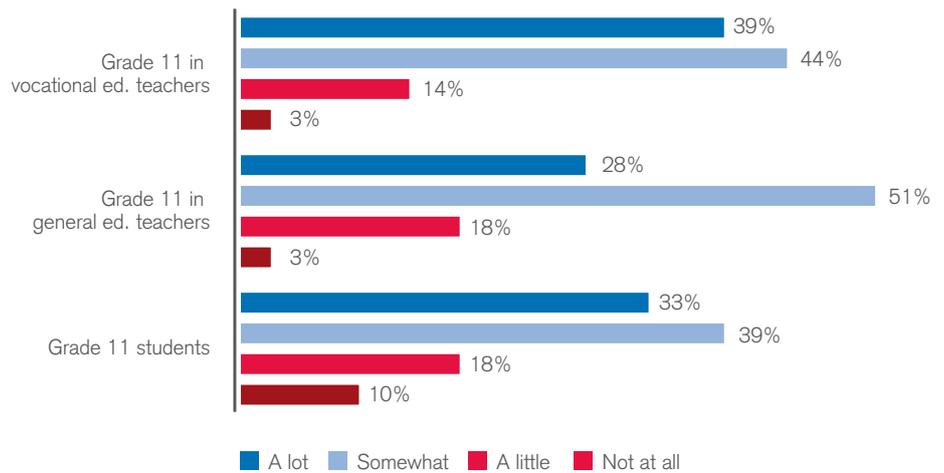
More precisely:

Given the structures of the respective questionnaires, the *Survey* allows comparing the perceptions of students with those of teachers, as well as the views of teachers with those of school heads. Even though the results come from the teacher and school head questionnaires, all data are computed at student level.

As shown in Figure 3, compared to students, teachers seem to have more positive opinions on the role played by ICT in facilitating students' collaborative work. When asked how much the use of ICT enables them to work better with others, about 40% of students at grade 11 (both in general and vocational education) replied 'somewhat' and 33% replied 'a lot'. However, a higher number of these students are taught by teachers who believe that ICT facilitates collaborative work between students 'somewhat' (51%) and 'a lot' (28%).

Whether general and vocational education students have the same perceptions, teachers in vocational education seem to be more enthusiastic about the usefulness of ICT for collaborative work than their colleagues in general education.
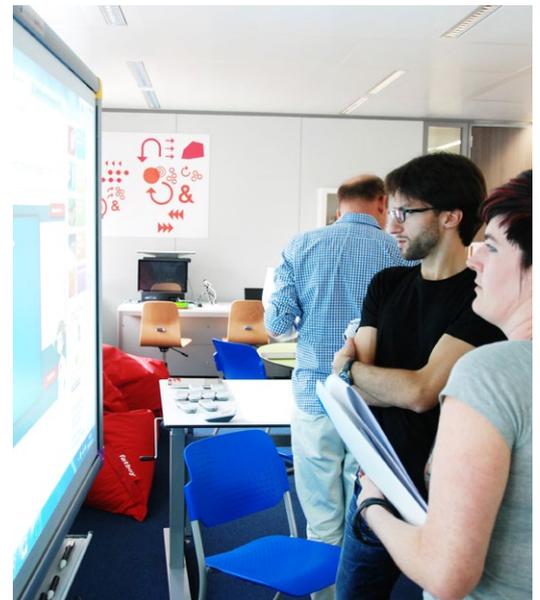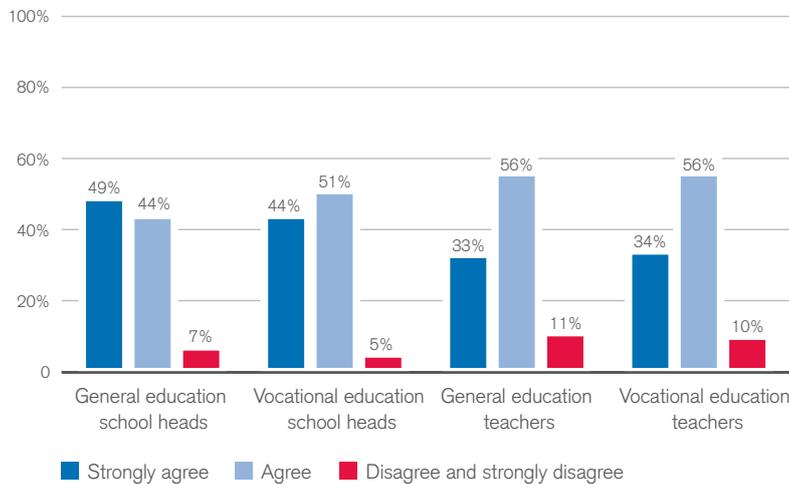
FIG. 3: Opinions of grade 11 teachers and students on the positive role played by ICT in facilitating collaborative work (EU level, 2011-12)

Grade 11 in vocational ed. teachers: 39% / 44% / 14% / 3%

Grade 11 in general ed. teachers: 28% / 51% / 18% / 3%

Grade 11 students: 33% / 39% / 18% / 10%

■ A lot   ■ Somewhat   ■ A little   ■ Not at all

Additionally, at grade 11, school heads tend to be more enthusiastic than teachers regarding the extent to which ICT should be used for students to work collaboratively. As seen in Figure 4, only about 10% of students, both in general and vocational education, are taught by teachers who disagree or strongly disagree with the statement "ICT should be used for students to work in a collaborative way". When it comes to the opinions of school heads, this percentage decreases to 7% and 5%, respectively in general and vocational education.

School heads tend to be extremely positive: about 50% of students are in schools where the head 'strongly agrees' with the statement "Computers and the internet should be used for students to work in a collaborative way", while only a third of students are taught by teachers who 'strongly agree'. As far as the two types of education are concerned, in general education there are more students whose school heads have extremely positive opinions (49% as opposed to 44%) compared to vocational education, while there are no substantial differences among teachers in the two streams.

FIG. 4: Percentage of grade 11 students whose teachers and school heads believe that ICT facilitates collaborative work between students (EU level, 2011-12)

General education school heads: 49% / 44% / 7%

Vocational education school heads: 44% / 51% / 5%

General education teachers: 33% / 56% / 11%

Vocational education teachers: 34% / 56% / 10%

■ Strongly agree   ■ Agree   ■ Disagree and strongly disagree

Conclusions

Collaborative work seems to be a widespread practice in European schools, despite large differences between countries. Also the use of ICT in pedagogy is becoming more frequent, with a quarter to a third of grade 11 students using computers for learning at least daily. However, the practice of using ICT to facilitate group work seems to be quite rare, especially in vocational education.

The analysis above investigated whether such pattern depends on the opinions and attitudes of education stakeholders, namely students, teachers and school heads. Results show that students in the two streams (general and vocational education) have quite similar opinions, while vocational education teachers seem to be slightly more enthusiastic than their colleagues in general education with regards to the role played by ICT in facilitating group work. On the other hand, school heads in general education have slightly more positive opinions than their colleagues in vocational education.

These results do not seem to explain why the use of ICT for group work is so rare, nor the differences between general and vocational education in the use of ICT for group work. However, they show that there is an overwhelming consensus, especially among teachers and school heads, on the fact that ICT should be used for students to work in a collaborative way.

Attitudes and opinions, therefore, do not appear to be an obstacle for scaling up the use of ICT for collaborative work in the classroom. Additional analyses should investigate where the real obstacles are. Hypothetical explanations for the limited use of ICT in collaborative might include, among others, the nature and availability of equipment suitable for collaborative work as well as teachers' capacity to use the existing equipment for collaborative learning.

Project Focus: Creative Classrooms Lab project

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 focuses on collaboration, we talked with Anja Balanskat, Senior Manager - Evaluation and Analysis at European Schoolnet, and the manager of the Creative Classrooms Lab project. We asked Anja to present the project's 1:1 computing pedagogies, and explain how they can support collaborative work in and out of the classroom.

The CCL (Creative Classrooms Lab) project is a policy experimentation on the innovative and creative use of tablets in schools. It acts as an ideas lab bringing together policy makers, innovative teachers and industry suppliers to jointly develop innovative pedagogical scenarios and to carry out pilots based on these scenarios in 45 classrooms in 8 European countries.

Q1: What is the scope for collaborative work within the framework of 1:1 computing strategies and the Creative Classrooms Lab project?

Tablets are well suited for individual use and personalised learning especially in a 1:1 learning environment. Taking into account the mobile character of a tablet, the CCL project also investigates how to use tablets to support collaborative learning activities with students. The pedagogical scenarios developed during the project bring to the fore learning through collaborative work, an essential 21st century skill that encompasses teamwork, collective problem solving, social learning, peer-to-peer interactions, and extends to communication and interpersonal skills.

The "School to school collaboration" and "Collaboration and assessment" scenarios have been particularly designed to look at specific aspects of collaboration: how to best design collaborative activities between schools from different countries and how to assess students work and progress during collaborative activities.

Q2: Results from the *Survey* indicate that students, teachers and head masters have positive opinions and attitudes towards the use of ICT for collaborative work. However, such practice is quite rare in most European countries. What are the challenges encountered by teachers and learners in using tablets and 1:1 computing pedagogies within the Creative Classrooms Lab project?

Tablets have various functionalities that can support collaboration: apps for creating mindmaps, audio and video recordings for sharing presentations and project results. Students can use tablets to gather, store, retrieve and reflect on feedback, at any time, wherever they are.

However, the 1st year evaluation report highlights organisational challenges to collaborative work with tablets such as the length of the lessons and the classroom layout. Some CCL teachers think that the standard 50 minute lesson in secondary school is not long

enough to allow students to collaborate and produce digital outputs. Secondly, the use of tablets leads to the consideration of changing the learning space. In Flanders (Belgium) for example, one of the CCL teachers prefers working in a large space where the students start off in a horseshoe shape. They move seats to create content at smaller tables that enable them to collaborate easily. Assessing collaborative tasks to reflect the achievements of students was another challenge for teachers.

Q3: The Creative Classrooms Lab project is currently running its second cycle of pilots to test 1:1 scenarios in the classroom. What are the main lessons learnt from the pedagogical scenarios focusing on the use of tablets for collaboration?

Evidence around the scenario is only starting to emerge. The following features might form part of a successfully implemented collaborative learning scenario:

- Engaged students, actively contributing to tasks and more confident in working in groups
- A wide variety of purposeful activities that extend and challenge all students

- Appropriate, value-added and educationally justified use of tablets and tools
- Good relationships between students; students helping – teaching each other, and supporting strugglers and stragglers
- Evidence gathered of achievement both of the group and individuals in it
- Parents understand and support the collaborative approach

Creative Classrooms Lab

Find inspiration for collaborative activities using tablets.

[f] CCL Facebook community   @   http://creative.eun.org/scenarios