CO-LAB
Collaborative Education Lab

IBE EDUCATIONAL RESEARCH INSTITUTE

FINAL EVALUATION AND RECCOMENDATIONS REPORT

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Project
CO-LAB (http://colab.eun.org/) is a forward-looking project funded by the European Commission's Erasmus+ Programme, focused on making collaborative teaching and learning a reality in the classroom. Being able to collaborate effectively is a valuable 21st century skill, yet teaching about or through collaboration remains rare in schools because of a lack of understanding of what real collaboration in an educational setting means, and because existing policy conditions do not always enable it to flourish. Practitioners and policy makers need a dedicated space and time to experiment and better understand what collaborative teaching and learning means in terms of policy and practice. CO-LAB provides these stakeholders with that opportunity.

For more information, please, contact info@eun.org

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Partners

European Schoolnet Network of 34 European Ministries of Education | Belgium (coordinator)

NCCA - National Council for Curriculum and Assessment | Ireland

IBE Educational Research Institute | Poland

DGE - Directorate-General for Education (Direção-Geral da Educação) | Portugal

HITSA Information Technology Foundation for Education | Estonia

Go! HET GEMEENSCHAPSONDERWIJS - GO! Onderwijs van de Vlaamse Gemeenschap| Belgium

BMB Bundesministerium für Bildung | Austria

Index of abbreviations

CL	collaborative learning
CO-LAB	Collaborative Teaching and Learning Lab
CPD	continuous professional development
EUN	European Schoolnet
ITE	initial teacher education
MOOC	massive open online course

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1. Outline of the study

1.1. Scope of the study

The CO-LAB project was funded by the European Commission's Erasmus+ Programme, coordinated by European Schoolnet (EUN) and done in a partnership which consisted of ministries of education, teacher training organisations and research institutes from Austria, Belgium - Flanders, Estonia, Ireland, Poland, and Portugal. The Educational Research Institute is the project partner responsible for CO-LAB implementation in Poland as well as for the evaluation of the results of the entire project.

This study evaluates the results of the CO-LAB project for its participants and it provides insights into the practices of collaborative teaching and learning as well as its enablers and obstacles. On the basis of the study results, several policy recommendations have been formulated.

In an early stage of the CO-LAB project, a review of collaborative learning definitions was made and the following definition, developed by the UNESCO International Bureau of Education, was adopted:

Collaborative Learning is a process through which learners at various performance levels work together in small groups toward a common goal. It is a learner-centred approach derived from social learning theories as well as the socio-constructivist perspective on learning. Collaborative learning is a relationship among learners that fosters positive interdependence, individual accountability, and interpersonal skills. For collaborative learning to be effective, teaching must be viewed as a process of developing and enhancing students' ability to learn. The instructor's role is not to transmit information, but to serve as a facilitator for learning. This involves creating and managing meaningful learning experiences and stimulating learners' thinking through real-world problems. Yet, the task must be clearly defined and be guided by specific objectives. Sometimes cooperative and collaborative learning are used interchangeably but cooperative work usually involves dividing work among the team members, whilst collaborative work means all the team members tackle the problems together in a coordinated effort. (Adapted from: Seel 2012). 'Collaboration' is frequently included among key competences/competencies and 21st century skills.

Further analysis focused on the distinction between collaborative learning and cooperative learning. It was found that some distinctive features of collaborative learning, which distinguish it from cooperative learning, are:

- joining efforts towards a common goal
- interdependence
- focus on social competences as well as subject-related competences, especially communication
- focus on shared understanding of the problem and on the common goal or on its in-group discussion and negotiation
- learners' autonomy organising the work of the group and distributing group roles.

Moreover, some definitions put an emphasis on the initiative of the learners and reduced role of the teacher in deciding about group composition.

In the benchmark survey and parallel final survey, the above definition was operationalised into items – statements to check if teachers believe that these are the elements of collaborative learning and if they (declaratively) use them.

However, as the MOOC was released, it turned out that the understanding of collaborative learning was built around another definition – the Microsoft 21 Century Learning Design 21CLD Learning Activity Rubrics. The particularity of this approach is that it does not make a sharp opposition between cooperative and collaborative learning. In this approach, methods of group learning are seen as a continuum with four levels of cooperation/collaboration, from the least to the most collaborative. These are:

1. Working in pairs or groups
2. Shared responsibility for the result
3. Making substantive decisions together
4. Interdependence.

There are some similarities between the two approaches. For example, shared responsibility may be seen as close to joining efforts towards a common goal, and making substantive decisions together requires taking into account the understanding of the problem and goal (whether it's common, negotiated etc.). Still, this approach puts an emphasis on slightly different aspects and in particular interdependence is regarded here as the top level of collaboration, and not as its essential feature.

The 21CLD approach could not have been used in the benchmark and evaluation study, as when the questionnaire was developed and the survey was done, the partners did not yet now that the 21CLD rubric would be used. This is why the study does not clarify whether participants regarded these 4 levels as typical of collaborative learning, nor if and how often their learning activities met these criteria.

1.2. Research methods

The evaluation of the CO-LAB project was based on documents' review, survey studies and qualitative reports.

A **review of educational regulations** in project countries was done to set a context for the study of the use of group work and in particular of collaborative learning. Comparative **studies on education** (Eurydice and Talis) as well as some national studies were reviewed as background information about teachers' practice.

CO-LAB included **country workshops**, which were a source for qualitative data for the project evaluation. Project partners were asked to develop country reports from the workshops, including an analysis of workshop participants' opinions about collaborative learning. The **qualitative data from the country reports, as well as notes from partners' discussions** (during partners' meetings) were an important source of information about the enablers and obstacles for collaborative learning.

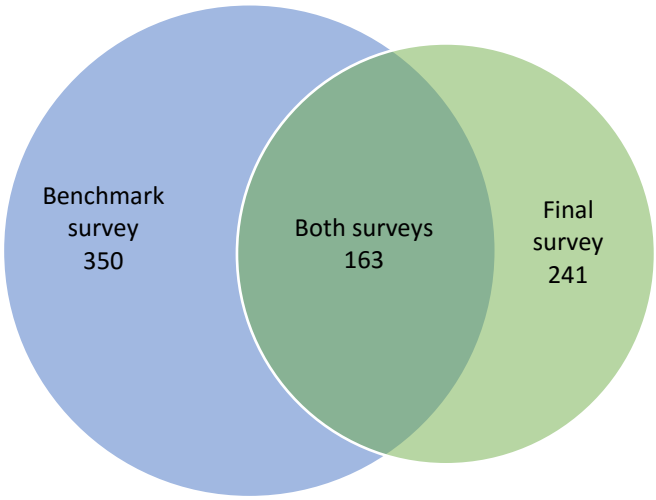
Another source of qualitative material were comments posted on Padlet by the MOOC participants. Five Padlets were selected for analysis by the EUN and only posts from CO-LAB countries were taken into account. Finally, in the case of Poland, an open-ended survey was conducted among initial teacher education students by the local partner – Warsaw University Faculty of Pedagogy, and excerpts from the answers were used in the analysis. **Survey research** was the main source of information about the project participants' opinions and practices and about the changes thereof, which may be attributed to CO-LAB. Two web-based surveys were performed among project participants: the **benchmark survey** in September 2016, right before the opening of the MOOC, and the **final survey** which started in June 2017 right after the last country workshops and was open until August 2017.

The benchmark survey was addressed to 823 people who had declared their interest in the project and was answered by 405, out of whom **350** were eligible for the study, being:

- either practitioners, i. e. teachers and teacher trainers who declared that they were going to take the MOOC
- or head teachers, school managers or policymakers (staff of educational authorities and institutions supporting education) – regardless of whether they were going to take the MOOC.

The final survey was addressed to all of the formerly registered project participants to whom the benchmark survey had been addressed (and not just to those who answered the benchmark survey), as well as to new participants who joined the project during its course. Altogether 1020 invitations to the final survey were sent and **241 complete** answers were obtained. Out of the respondents of the final survey, **163** also answered the benchmark survey. They constitute the group for comparisons of the declarations before and after CO-LAB.

Figure 1 Survey response



Source: CO-LAB benchmark and final surveys.

1.3. Participants' characteristics

The structure of the respondents by country is shown in the table below.

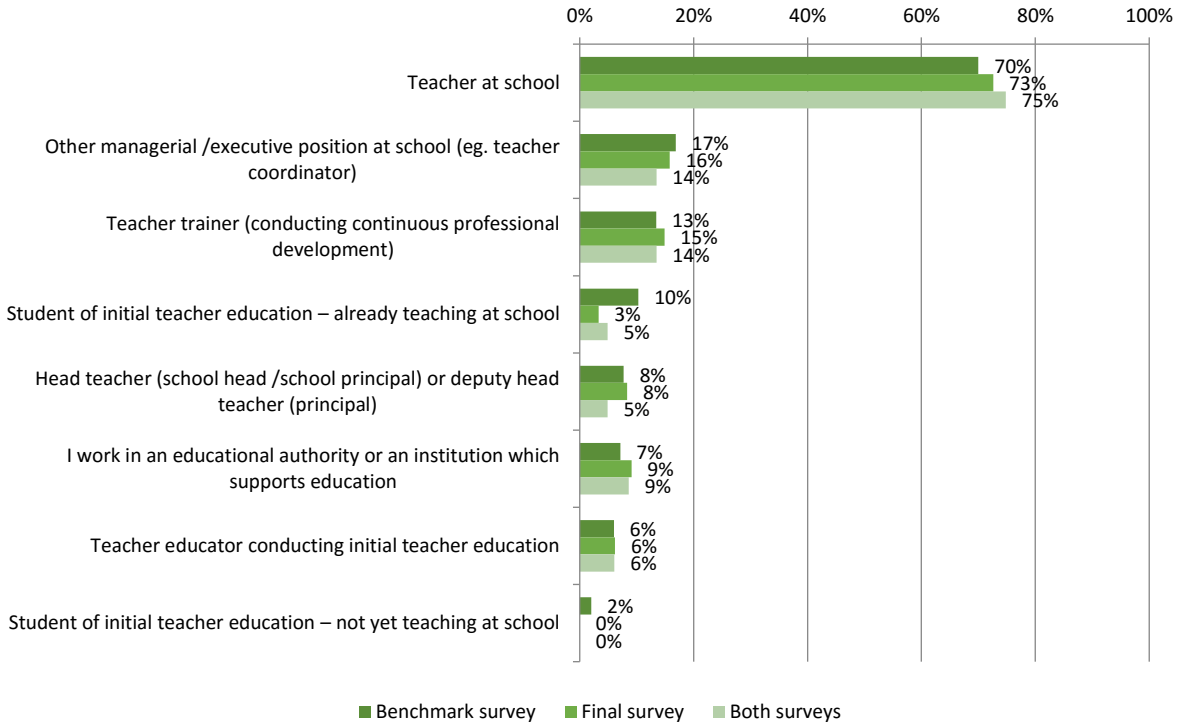
Table 1 Respondents by country

Country	Numbers of respondents			Structure by country		
	Benchmark survey - all	Final survey - all	Both surveys	Benchmark survey - all	Final survey - all	Both surveys
Austria	22	29	20	6%	12%	12%
Belgium	33	9	4	9%	4%	2%
Estonia	0	16	0		7%	
Ireland	40	27	16	11%	11%	10%
Poland	66	36	27	19%	15%	17%
Portugal	189	124	96	54%	51%	59%
Total	350	241	163	100%	100%	100%

Source: Benchmark survey (n=350) and final survey (n=299)

There are very small differences between the three analysed groups. Portuguese participants dominated in the project, constituting over a half of the respondents. On the other hand, participants from Estonia only took part in the final survey, so they are not taken into account in the pre-post comparisons.

Figure 2 Respondents' structure by position – benchmark and final surveys



Source: Benchmark survey (n=350) and final survey (n=241).

The majority of respondents were schoolteachers: 70% in the benchmark survey and 73% in the final survey. Other practitioners that were quite well represented were continuous professional development trainers (13% and 15%), while initial teacher educator trainers constituted only 6%. Another group of participants were students of initial teacher education (in the benchmark survey, those already teaching in schools constituted 10% and those without practice 2% of the surveyed group, and in the final survey all had some practice already). There was quite a high share of people performing managerial functions in schools, other than head teachers (17% and 16%) and a smaller share of head teachers and deputy head teachers (principals) (8%) as well as of policymakers (educational authorities and institutions supporting education – 7% and 9%). Comparing both surveys, it may be noted that the shares of different types of participants were very similar (with the exception of ITE students).

Table 2 Respondents' structure by position in countries – benchmark and final surveys

Positions - benchmark survey	Austria	Belgium	Estonia	Ireland	Poland	Portugal	Total
Head teacher or deputy head teacher	5%	6%		3%	6%	10%	8%
Other managerial / executive position at school (eg. teacher coordinator)	14%	24%		8%	9%	21%	17%
Teacher at school	59%	70%		18%	49%	90%	70%
Student of initial teacher education – already teaching at school	5%	0%		55%	18%	1%	10%
Student of initial teacher education – not yet teaching at school	0%	3%		10%	3%	0%	2%
Teacher trainer (conducting continuous professional development)	41%	15%		5%	23%	9%	13%
Teacher educator conducting initial teacher education	36%	0%		3%	12%	2%	6%
Working in an educational authority or an institution which supports education	36%	9%		10%	8%	3%	7%

Positions - final survey	Austria	Belgium	Estonia	Ireland	Poland	Portugal	Total
Head teacher or deputy head teacher	3%	0%	6%	7%	6%	11%	8%
Other managerial / executive position at school (eg. teacher coordinator)	17%	22%	0%	30%	19%	13%	16%
Teacher at school	52%	78%	88%	41%	58%	86%	73%
Student of initial teacher education – already teaching at school	0%	0%	0%	15%	11%	0%	3%
Student of initial teacher education – not yet teaching at school	0%	0%	0%	0%	0%	0%	0%
Teacher trainer (conducting continuous professional development)	41%	22%	0%	11%	22%	9%	15%
Teacher educator conducting initial teacher education	24%	0%	0%	7%	14%	1%	6%
Working in an educational authority or an institution which supports education	38%	11%	6%	11%	11%	2%	9%

Source: Benchmark survey (n=350) and final survey (n=299).

There were differences between countries as to the participants' positions, because of different approaches to project recruitment adopted by partners. The representation of different positions remained fairly coherent also within countries.

- In Austria, the majority of respondents were teachers, but they constituted a smaller proportion of respondents than in Belgium and Estonia. The majority of Austrian participants were teacher trainers, either in ITE or CPD, and the share of policymakers was also considerable.
- In Belgium, teachers were the majority, with CPD trainers in the second place and no ITE students or educators.
- In Estonia, almost all participants were teachers.
- In Ireland, the surveyed group had a majority of ITE students (already teaching in schools) at first, but in the final survey, there was a majority of teachers and school managers.
- In Poland, teachers constituted nearly half of the group, with a large share of teacher trainers (ITE and CPD) and ITE students.
- In Portugal, the vast majority of participants were teachers, there were few teacher trainers and no ITE students.
- Head teachers constituted between 3% and 10% (most often in Portugal) and other managers and policymakers between 3% and 10% in countries other than Austria, and 39% in Austria.

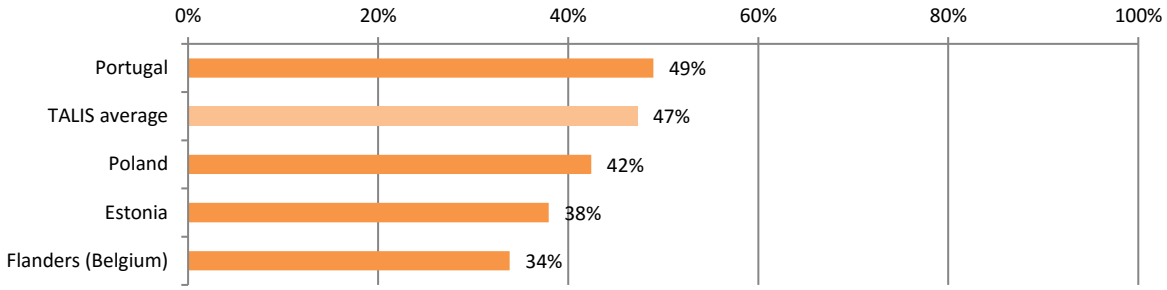
2. Documents review

2.1. Literature review

2.1.1. The use of cooperative or collaborative teaching and learning methods

Background knowledge on the use of cooperative and collaborative learning in project countries is available in the OECD TALIS 2013 study, in which four partner countries participated.

Figure 3 Percentage of lower secondary education teachers who report using work in small groups "frequently" or "in all or almost all lessons"



Source: OECD TALIS 2013 database

On average in all countries participating in TALIS, 47% teachers reported that their "Students work in small groups to come up with a joint solution to a problem or task" frequently or on all or almost all lessons. The declared frequency of use of work in small groups in Poland and Portugal was close to that average, while it was lower in Estonia and Flanders. It may be noted that the scale was subjective. It is not known what respondents meant by "frequently" and if there are cultural differences correlated with reporting a certain use as frequent.

Declared use of working in small groups may largely differ from practice. This was found out in studies conducted in Poland.

Case study: the use of group work in teaching in Poland

Detailed studies based on **observations of classroom practice** show that if indeed, 40% of Polish teachers use group work, as they declare it, they are likely to do it very rarely. Systematic observations of English language lessons in the final grade of primary schools in Poland showed that the group forms of work used at this stage of education are less likely than indicated by declarations of teachers and secondary school students. Working in pairs or groups constitutes **less than 10%** of the forms and methods used in the classroom (Muszyński, et al. 2015). Moreover, the results of research on teaching mathematics in lower secondary school show a large disparity between the conviction of teachers on the application of group work in class and the results of observations, which show that this method was not used in any of the 80 observed lessons (Karpiński et al., 2013). In another IBE study '*Study on Determinants of School Education',* researchers have identified that group forms of work (not combined with other forms) were used **only in 3%** of the tasks performed during lessons under observation.

In a study referring to science lessons, more than half of the surveyed students declared that they had never participated in any work on problem solving in a small group (Federowicz, 2015). Moreover, 45% of the teachers admitted that on every or almost every science lesson, students work individually with a textbook or workbook (Grajkowski, 2014).

Yet, a testing study conducted by IBE in 2015 on the use of IBE teaching tools in classroom practice in lower secondary schools of various subjects showed that **there is a change** observed in teaching practice, aiming at the implementation of specific teaching tools for collaboration work (under the form of working in pairs and in groups) (Bordzoł et al., 2015) .

From the above review of the research, it can be observed that Polish schools rarely use active methods, group work in particular, both as regards cooperative learning as well as more advanced collaborative learning. This pessimistic picture may be partially lightened by the introduced compulsory **group project** at lower secondary school level[1], carried out by teams of students. However, there are no studies that would show how it is actually implemented in Polish schools, and whether and to what extent it contains elements of collaborative learning.

It is also worth noting that some research studies reported a disparity between declarations of teachers' and students' statements concerning the application of group working. It may indicate that there is a certain level of teachers' awareness on its high value in teaching, its importance in the development of social skills and peer-to-peer learning of students.

2.1.2. Enablers of the use of collaborative learning identified in TALIS 2013

The variation in the use of learning in small groups is mostly attributable to **teachers** (87% of the variance), while differences between countries and schools account for the remaining differences. *Therefore, efforts to change teaching practices are more likely to have an impact if directed towards individual teachers*.

One of the ways to enhance teachers' interest and competence in the use of active learning techniques is **professional development**, which includes *participation in workshops, conferences, observation, qualification programmes, networking, individual and collaborative research and mentoring.* Teachers who take part in some of these types of CPD are more likely to report using at least one of the three teaching practices studied in TALIS (work in small groups, use of ICT or project based learning).

Teachers' feelings of being prepared in terms of pedagogy correlate positively with reported use of small group work, but only in a few non-European countries, while teachers' feelings of being prepared for content (their subject matter) do not correlate with the use of learning in small groups. However, **subjects** make a difference: with *some exceptions, humanities, mathematics and science teachers are less likely than teachers in other subject fields to report using practices involving small group work.* Results are diverse as regards humanities: in 7 countries, humanities teachers are more likely, and in 10 other countries less likely to report frequent use of learning in small groups.

2.1.3. Effectiveness of cooperative or collaborative teaching and learning

As quoted in the TALIS 2013 study, active teaching practices may be effective, but are not always effective for learning, since their effectiveness depends on how they are implemented. A comprehensive meta-analysis by John Hattie (Hattie, 2009) revealed that ***cooperative learning*** (its different forms such as collaborative vs. cooperative were not distinguished) was **more effective than individualistic learnin**g. It should be noted that the opposition between cooperation and competition was questioned, as both cooperative and competitive learning were more effective than individualistic approaches.

It was also found out that *cooperative learning* enhances students' interest as well as problem solving, but only if it is organised so that there is a high level of **student involvement**. There was no direct reference to collaboration, but possibly higher student involvement may be in place when students join their abilities, make decisions etc., so when learning is more advanced on the collaboration continuum. It is also possible however that student involvement comes from different factors, such as interesting tasks.

Moreover, cooperative learning was found out to be particularly effective *when there was individual accountability and group rewards.* This points to the importance of assessment, which takes into account both the individual and the group level, and may possibly be related to interdependence (in the case of which individual accountability is evident).

[1] With the 2017 educational reform lower secondary schools are being terminated and replaced with a longer primary school. It is not yet known if or how group project will be used.

2.1.4. School culture, teachers' collaboration and its enablers

According to the TALIS approach, school climate is a construct made up of factors of the quality of school life (with aspects such as freedom from abuse, absenteeism and other unwanted student and teacher behaviours) as well as *the overall **culture of the school** in terms of the quality of the **relationships between staff** and between staff and students and the levels of **co-operation**, respect and sharing that are present*.

Literature reviews performed for the TALIS study showed that a **positive school climate** *plays a major role in fostering effective teaching and learning* and is related to students' academic achievement. A broader understanding of the school climate includes or is closely related to **teacher cooperation/collaboration** and its preconditions. *It is important to consider to what extent the school staff shares a common set of beliefs about schooling, the degree to which staff have open discussions about difficulties, the extent to which there is mutual respect for colleagues' ideas and whether there is a culture of sharing success.* School climate also *influences job-related attitudes, including teacher stress and efficacy.* **School leaders** play an essential role in encouraging collaboration between teachers, other school staff, students and families.

When teachers work together, it has a positive impact on student learning, but research also showed that *the effectiveness of co-operative practices depends on the structure of the collaboration*. Two types of teacher cooperation were distinguished in TALIS:

1. *Exchange and co-ordination for teaching*, which includes: exchange of teaching materials with colleagues, engagement in discussions about the learning development of specific students, working with other teachers to ensure common standards for student assessment and attending team conferences;
2. *Professional collaboration* is about working together to improve practice. It is a deeper form, which includes: teaching jointly as a team in the same class, observation of other teachers' classes and providing feedback, engagement in joint activities (e.g. projects) across different classes and age groups and participation in collaborative professional learning.

Table 3 Percentage of lower secondary education teachers who report never doing the following activities (TALIS 2013)

	The exchange and co-ordination for teaching index				Professional collaboration index			
	Never exchange teaching materials with colleagues	**Never** engage in discussions about the learning development of specific students	**Never** work with other teachers in my school to ensure common standards in evaluations for assessing student progress	**Never** attend team conferences	**Never** teach jointly as a team in the same class	**Never** observe other teachers' classes and provide feedback	**Never** engage in joint activities across different classes and age groups (e.g. projects)	**Never** take part in collaborative professional learning
Flanders (Belgium)	3%	3%	10%	2%	65%	75%	9%	45%
Portugal	2%	2%	4%	0%	49%	71%	17%	13%
Average	**7%**	**3%**	**9%**	**9%**	**42%**	**45%**	**21%**	**16%**
Estonia	7%	1%	7%	2%	32%	33%	11%	6%
Poland	4%	0%	1%	1%	31%	17%	4%	4%

Source: OECD, TALIS 2013 Database, Table 6.15. http://dx.doi.org/10.1787/888933042086. [adapted] Countries are ranked in descending order, based on the percentage of teachers who report never observing other teachers' classes and providing feedback.

Almost all teachers cooperate (at least occasionally) at the basic level of exchange and coordination. There are small country differences in this respect. Deeper professional collaboration was less common and, based on teachers' declarations, it seems more frequent in Poland and Estonia than in Portugal.

The TALIS study identified enablers for teacher collaboration. These were the professional development activities, which afforded teachers *the opportunity to **network with other teachers and provide mentoring and coaching*** (to mentor one another). Networking and mentoring may help to promote a positive school climate, trust and collaboration.

2.2. Working in groups and collaborative learning in schools in national legislation

2.2.1. Collaboration and collaborative methods in national regulations

Transversal key competences may be integrated into the core curriculum in three ways: they may have cross-curricular status, they may be integrated into existing curriculum subjects or they may be introduced as separate curriculum subjects[2]. In the majority of European countries, civic and social competences are integrated into particular subjects, whereas in some countries, in additional, they have a cross-curricular character (among the CO-LAB project countries, these are: Poland, Estonia and Portugal). As regards learning through collaboration, in 2 project countries, core curricula do not provide any provisions on teaching and learning through collaboration or cooperation (Austria, Belgium). In 3 out of 5 CO-LAB project countries, the development of students' social skills is indicated in **core curricula**, although differently in different countries.

Thus i.e. in **Estonia,** the national curriculum highlights the importance of integrated and interdisciplinary studies, implementation of innovative learning and assessment methods as well as developing pupils' skills regarding cooperation and communication. Social competence is defined as one of the general competences, i.e. ability to function as an aware and conscientious citizen and to support the democratic development of society; to engage in cooperation with other people; to accept interpersonal differences and take them into account while interacting with people. It states: *The pupil is an active participant in the learning process who takes part according to his or her abilities in setting goals for his or her studies, studies independently and with companions, learns to value his or her companions and him or herself and to analyse and manage his or her studies*.

In **Poland,** one might identify 4 major acts covering teaching and learning through cooperation[3], where some of them refer to cooperation directly or in an indirect way. In the Regulation of the Minister of National Education, concerning the requirements for schools and educational institutions, one can find requirements for nursery schools and pre-schools related to the development of social skills, which also include the ability to work in a team. Thus, the requirements for pre-schools point that attitudes are shaped with respect to social norms, as described in the basic requirement *Pre-school shapes the attitude of responsibility of children for their own activities and activities of the group.*

The requirements of the core curriculum, which was in place during the project[4] for primary, secondary and post-secondary schools, do not include any implicit record on group working, although in general it is worded as follows: *Educational processes are organised in a manner conducive to learning - Students have an impact on the organisation and the process of learning. Students learn from each other*. The above mentioned elements (learning from one another and influencing the process of learning) are the elements of collaborative learning, so it may be considered as a basis to promote CL in the Polish school system. In the preamble to the core curriculum for primary schools, the teamwork is mentioned among the 7 most important skills acquired in the course of general education. The content curriculum for early childhood education (grades I-III) includes a section entitled Social Education, which draws attention to the education through collaborative learning (CL) with peers and adults.

According to the provision in the preamble to the core curriculum for lower secondary school and higher secondary school, teamwork is one of the eight most important skills acquired by a student in the course of general education at the third and fourth level of education. Moreover, the Education Act refers to the above mentioned compulsory lower secondary education group project and can be read as follows: *Lower secondary school students participate in the educational project, which is a team project, a planned action by students, aimed to solve a specific problem using a variety of methods*. In addition to the above, the Act indicates how the project should be implemented and assessed: it is required that assessment criteria include student behaviour and student participation in project implementation, which implies that social aspects are assessed as well as

[2] European Commission /EACEA/Eurydice, 2012. Developing Key Competences at School in Europe: Challenges and Opportunities for Policy– 2011/12. Eurydice Report. Luxembourg: Publications Office of the European Union

[3] 1.The Education Act; 2. Regulation of the Ministry of Education on the core curriculum of pre-school education and general education for different types of schools; 3. Regulation of the Ministry of Education requirements for schools and educational institutions; 4. Regulation of the Ministry of Education on assessing, classifying and promoting pupils and students.

[4] As of September 2017, the current core curriculum is being gradually replaced with a new core curriculum.

subject-related ones A properly implemented project can certainly be an example of a good practice in the application of collaborative learning.

Unfortunately, none of the objectives and **course content** for classes IV - VI of Polish primary schools, for lower and higher secondary schools have any direct references to learning with the use of work groups or teams. The same situation is observed in Estonia - general principles are not transferred into the syllabuses at school level.

Comparative research conducted by IBE (Grajkowski, Ostrowska, Poziomek, 2014) on the biology core curriculum for Poland, UK, France, Czech Republic and Estonia showed that the Polish core curriculum put less emphasis on the development of key (including social) competences, developing motivation to learn, the ability to control further education and bear responsibility for it, as well as on the project method, while it was more focused on mastering knowledge and skills.

As of 2017, a curricular reform is being implemented in Poland. An in-depth analysis of the new curriculum and of accompanying regulations was not performed within this project and only partial observations are noted. The requirements regarding social competences, ability to build relations and to cooperate remained almost unchanged. A change is that the new curriculum puts less emphasis on diversity as a value (among specific learning objectives). As to the regulated requirements[5] towards schools, they still include teacher collaboration, although some detailed requirements have been removed.

As regards the **Irish** system, CL is a principle of the Irish Primary Curriculum, which states "*While it is important that children experience a variety of classroom organisational frameworks, working collaboratively provides learning opportunities that have particular advantages. Children are stimulated by hearing the ideas and opinions of others, and by having the opportunity to react to them. Collaborative work exposes children to the individual perceptions that others may have of a problem or a situation. Moreover, the experience of collaborative learning facilitates the child's social and personal development, and the practice of working with others brings children to an early appreciation of the benefits to be gained from co-operative effort.*" The guidelines on in-school collaboration of teachers and management are stipulated, which is in favour of CL implementation in the teaching practice. As regards lower secondary level, the Framework for Junior Cycle includes that students will have opportunities and be encouraged to work independently and/or as part of a team, make decisions, implement ideas and take action, communicate and critically respond to text and dialogue, collaborate with others in the completion of tasks, engage in dialogue with their teachers and peers and evaluate their own learning, either as individuals or in collaboration with their peers. For upper secondary schools, five key skills were identified that were considered essential for all students (Information processing, Being personally effective, Communicating, Critical and Creative Thinking, Working with others) and as such are embedded in the learning outcomes of subjects and are subject to assessment as a part of the Leaving Certificate examination. Taking into account their characteristics, it can be noticed that they support learning environments that can incorporate collaborative learning.

In **Belgium-Flanders,** social competences – collaboration and cooperation being one of them – are mentioned as learning objectives in the core curricula. However, the attainment targets or learning objectives do not mention anything on the use of collaborative learning as a teaching methodology as this pertains to the educational freedom.

Collaborative learning is not a part of the core curriculum in **Portugal**, but the MoE is planning to put more emphasis on social competences in teaching a new subject – citizenship.

In **Austria,** collaborative learning is not foreseen in core curricula and generally, there are no defined teaching methods and the choice of methods is solely up to teachers as long as they follow the curriculum.

2.2.2. Assessment of collaboration in national regulations

As for **assessment** of students' social skills, its methodology and ways are not directly described in the regulations, neither in Poland, nor in Estonia, Austria or Belgium. In **Ireland,** junior and senior cycle specifications have recently been developed, incorporating a section that details how each subject supports the development

[5] Rozporządzenie Ministra Edukacji Narodowej z dnia 11 sierpnia 2017 r. w sprawie wymagań wobec szkół i placówek; Dz.U. 2017 poz. 1611

of key skills in teaching, learning and assessment. And thus, for all junior cycle subjects, all students must complete two Classroom-Based Assessments for each subject, as well as a final exam at the end of their 3 year cycle. These assessments should allow for the assessment of skills that cannot be evaluated traditionally, and they include collaboration.

In the case of **Poland,** the relevant regulation of the Ministry on the assessment, classification and promotion of students does not include the criterion of teamwork skills in the assessment of behaviours nor in the assessment of subjects. The system of external examinations also lacks any reference to the assessment of learning skills through cooperation or collaboration.

In **Estonia** – following the core curriculum - learning outcomes that express values are not assessed numerically but on a basis of a feedback from the teacher. Moreover, students shall be involved in the peer-assessment in order to analyse their learning and behaviour on the basis of their objectives, as well as to increase their motivation for learning.

It seems that a lot depends on the flexibility of teachers, how and when they are going to implement activities developing social skills among students. This is the case of Austria, Estonia, Belgium and Poland, where teachers have no indications on methods or instructions on how they should teach social skills. As there are no instructions for assessment of CL, teachers are allowed to assess a student using the methods they develop. Hence, the availability of tools for the assessment of CL (such as rubrics), whether shared publicly or between peers, is important. Support provided at school level and the willingness and positive attitude of headmasters in motivating and guiding their teaching staff would also be helpful.

2.2.3. System changes regarding collaboration

Education systems are undergoing changes, and so are the regulations, as a consequence. In Estonia, the core curriculum was changed formally in 2014, but it takes time for schools to adjust.

Recent reforms in **Irish** education resulted in students receiving quality learning opportunities, leading to a balance between learning knowledge and developing a wide range of skills and thinking abilities. Students are encouraged to take on collaborative roles in learning at all stages of education, which is expressed in policy documents, curriculum specifications and assessment arrangements. These documents are designed to build on current good practice in the system and to support the further development of effective teaching, learning and assessment practices.

In **Poland**, the last important curricular reform, called the introduction of the new core, took place in 2008. As a result, core competencies of students, as described by the European Commission documents, including the ability to work in a team, have become an obligation for teachers. However, they were not followed by changes in the objectives of education and teaching content. In 2016 and the first half of 2017, many amendments were introduced in the education law, including changes in the school system. One of these amendments concerned the replacement of junior secondary schools by a prolonged duration of primary school, which will last 8 years like before the introduction of those schools. Moreover, the 2008 curriculum of pre-primary education and general education is being gradually replaced with a new one, by amending the Regulation of the Minister of National Education of 14 February 2017 on the core curriculum for pre-school education and general education. By analysing the changes, it can be seen that in most cases, old records have been retained for shaping and developing teamwork, sometimes modifying them slightly or changing their location in the document. The revisions recommend the use of group work and development of described skills at both educational stages. However, it is worth noting that there is no description of working standards in a group / small group, so anyone implementing the recommendations in school practice can interpret them in their own way. A list of the most important social skills developed in primary school in grades IV-VIII can be found in item 6, i.e. teamwork, as well as a statement that it is highly important for the development of a young person and for their success in adult life to acquire social competences, such as communication and cooperation in a team (including virtual environments), participation in group projects and individual projects, as well as project organisation and management. The importance of project base learning is reinstated and there is no standard set for teamwork. It can therefore be said that the modification of the core curriculum has not brought anything new in terms of group work compared to previous regulations.

It is worth noting that the role of teamwork for teachers is still underlined, as it used to be. The Regulation of the Minister of National Education of 6 August 2015 on the requirements for schools and institutions state that *Teachers collaborate in planning and implementing educational* processes. If the school implements this provision in such a way that teachers, including teachers working in one school, work together in planning, organising, implementing, and modifying educational processes, teachers help each other and solve problems together, then this can be classified at the basic level as regards the implementation of the Regulation provisions. Higher level is possible to reach if *teachers help each other in evaluating and improving their own work, introducing changes in the course of educational processes (planning, organisation, implementation, analysis and improvement) and the above occurs as a result of teachers collaboration*.

The educational system in **Portugal** is currently under a big change. It addresses both the school level as well as the student level. A new profile has been approved for students, including new definitions of learning objectives and outcomes. In terms of core curriculum, it is under review, and the plan is to introduce a new subject called "Citizenship", where social skills will be the main focus. In addition, schools (and teachers in principle) got more autonomy as a result of so called curricular flexibility. During the following school year, approx. 200 schools will manage about 25% of the curriculum they teach and will – as a consequence - change pedagogical practices in order to reduce school failure. CL is considered to be one of the forms of the change, with adjustment of school timetables, work organisation, bigger flexibility for teachers to apply it. Thus, all of the changes are in favour of CL, as the ongoing reform of education allows each school to innovate on a large scale.

In **Austria,** the core curriculum was changed in 2016. Presently, discussions on the change in legal provisions on education are going on. They mainly address the issue of more school autonomy, when e.g. they would be able to choose their own teachers, establish school clusters with one headmaster/headmistress etc. Although important, they do not directly touch the issue of CL, which is subject to individual curricula.

3. Participation in CO-LAB

3.1. Participation in the project

Project partners gathered 1020 contacts of people who were interested in the project. In the majority of cases, these were individual contacts, but in Belgium, school contacts were provided. It should be noted that the total number of participants of the CO-LAB MOOC at the European Schoolnet Academy was higher: 2331 people worldwide registered to the MOOC, including 807 in the CO-LAB countries. Not all of the MOOC participants from the CO-LAB countries were project participants. Some people who registered to the MOOC may have lived in a project country and found the course on the internet without joining the whole project. The project participants were people recruited by the partners, who were invited to participate in the MOOC, as well as in the country workshops.

The EUN monitoring of the MOOC shows that in the CO-LAB countries, **55% of the people who registered to the MOOC completed the first module**. Out of the respondents of the final survey, **68% took part in the MOOC** (at least partially) and **80%** did **at least one module of the MOOC** or **took part in at least one workshop**. It is thus clear that the survey is not representative for the whole population of registered people. Although those who couldnot participate were also asked to answer the survey, their answers were less frequent. This survey is representative for the part of the population which was sufficiently engaged in CO-LAB to answer surveys.

In the case of the above mentioned 80%, it may be expected that they profited from CO-LAB, so they were taken into account in further analyses, unless stated otherwise. It seems that the respondents' position is correlated with whether they eventually took part in the project. Participation was the most frequent among CPD teacher trainers (92%), possibly because training is their everyday reality and because they might have been interested in new tools to use with teachers, whereas ITE educators took part a little less often (80%). Participation of policymakers (representatives of authorities or of institutions which support education) was as high as 82%. Those who participated the least often, worked in schools – such as teachers (80% respondents-teachers participated), head teachers (70%) and other managers (76%). The respondents could select more than one category to describe their position, so partially the same people are counted in the above figures.

3.2. Participation in the MOOC

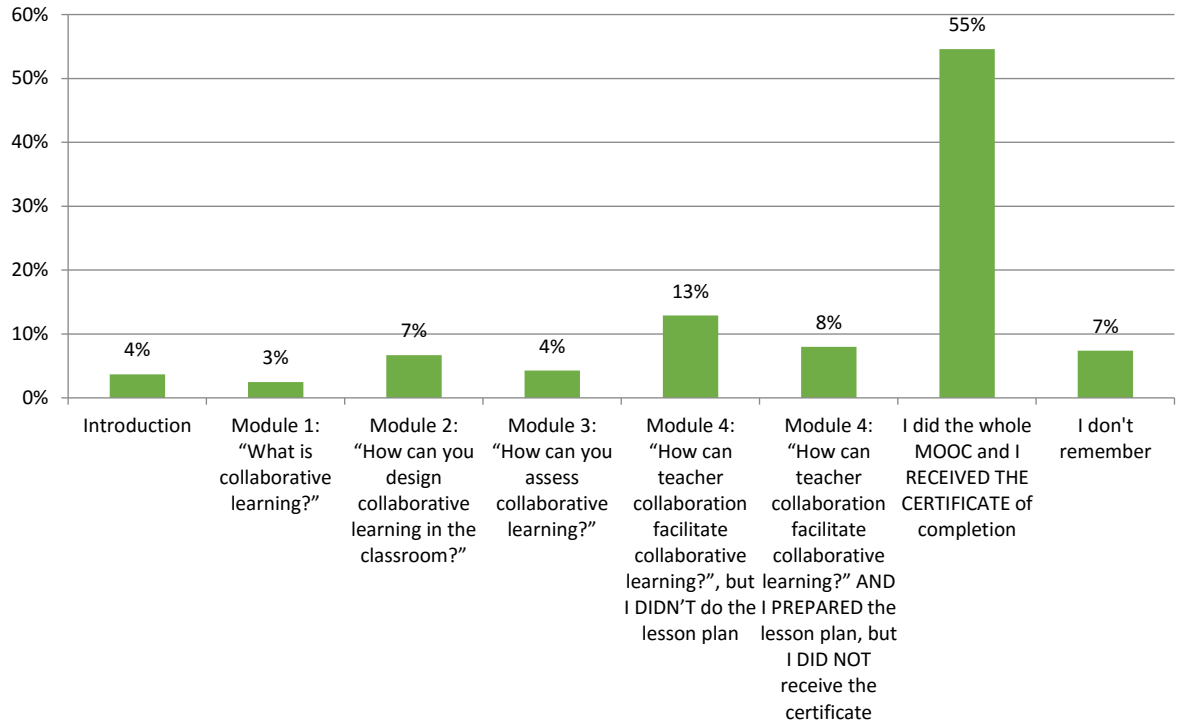
According to the EUN monitoring data, out of the 807 people in the CO-LAB countries, who registered to the MOOC, 496 started the course (61%) and 278 completed the whole course (34% of those who registered, i.e. 56% of those who started). This is a typical result for the EUN Academy MOOCs and it is higher than average completion rate in various MOOCs (Jordan, 2015).

In the final survey, project participants were also asked to answer whether they participated (at least partially) in the MOOC.Out of those who answered this survey, almost 68% answered that they did (including 6% who did not make it in October when the MOOC was "live" but looked at the course later) and 32% did not participate in the MOOC.

The share of actual participants seems high among survey respondents, but it may be expected that those who did not start the MOOC were less likely to answer the survey (even though the invitation was also directed to them). Thus, it cannot be assumed that the survey is representative for all project participants, but its results are similar to those of the EUN post-MOOC survey. Further analysis correlating participation in the MOOC, their participation in the surveys (the IBE benchmark and final survey and the EUN post-MOOC survey) as well as their answers in the surveys was not possible, since this data could not be matched due to data protection rules.

The MOOC was not directed to all of the project participants, but mainly to practitioners. As expected, participation rates were high among surveyed practitioners: 100% ITE students, 69% school teachers, 78% CPD teacher trainers and 67% ITE educators. Participation was not much lower among the surveyed decision makers, though few of them answered the survey: 55% surveyed head teachers (9 people), 66% other managers (25 people) and as much as 73% representatives of educational authorities and supporting institutions (16 people) took part in the MOOC.

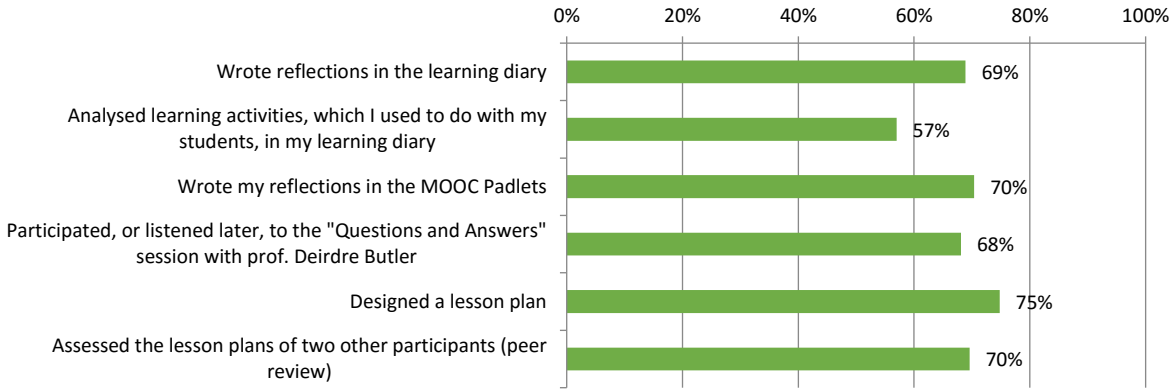
Figure 4 The last finished module of the MOOC among those who started the course



Source: Final survey (n=187)

Among those respondents who started the MOOC, **55%** finished the course and received the certificate of completion, while 17% dropped out no later than at module three, and 21% did all of the modules but didn't receive the certificate, mostly because they didn't do the final activity. The completion rate among respondents is very close to that from the EUN monitoring for all CO-LAB countries, where **56%** of those who started the MOOC completed it. **This indicates that the survey is representative in terms of actual participation**.

Figure 5 Active participation in the MOOC

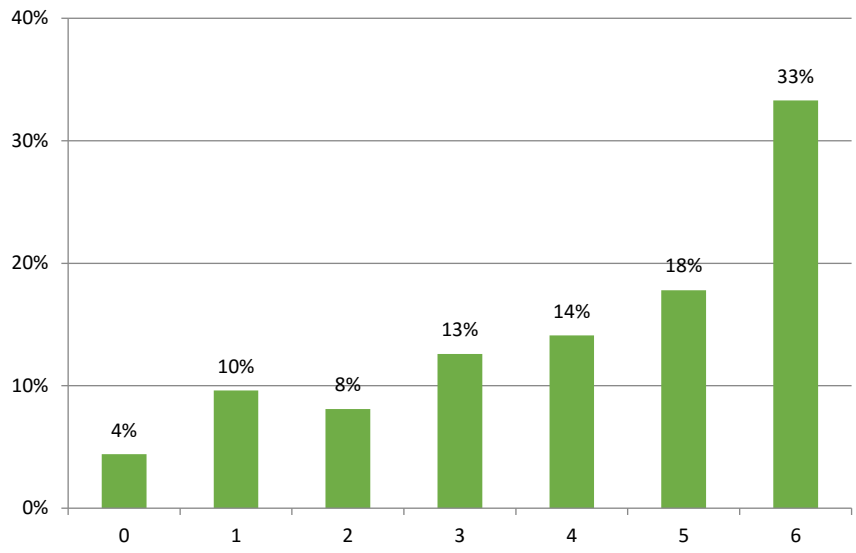


Source: Final survey (n=135)

The activity of those participants who did at least one module of the MOOC in the period while it was "live", was relatively high. Various forms of active participation were indicated by more than half and typically around 70% respondents. In particular, **75% designed a lesson plan** and 70% assessed the plans of other participants. The use of the learning diary was almost as popular (69%), whereas less people did the first non-obligatory activity, i.e. analysed their past practice in the diary (57% of all MOOC participants and 64% school teachers). Similarly,

70% shared their reflections in the MOOC Padlets and 68% took part in the additional "Q&A" session. Watching the videos was not taken into account in the analysis, because at least starting each video was obligatory to complete modules.

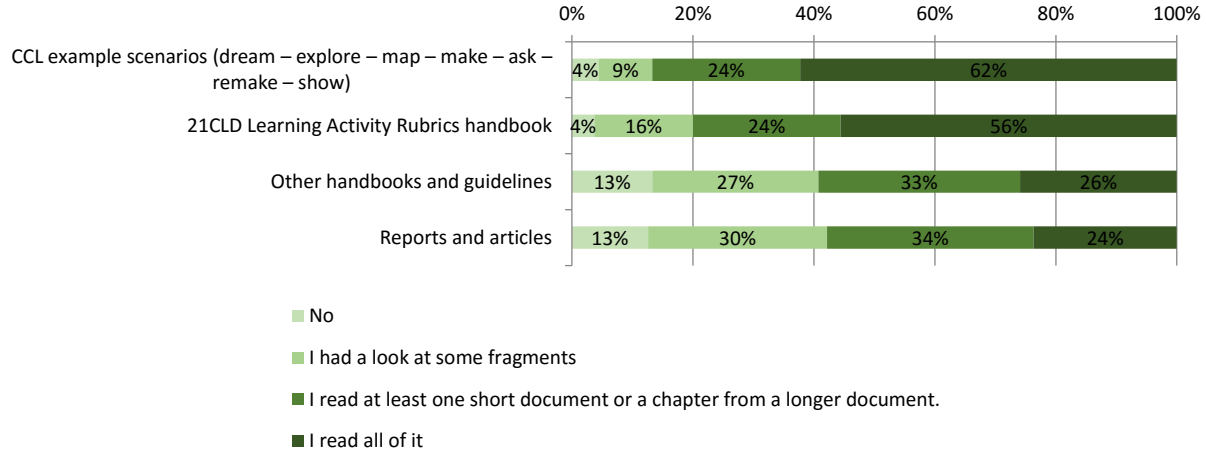
Figure 6 Active participation in the MOOC – number of types of activities



Source: Final survey (n=219)

Participants' activity was very diversified. While 14% did one or none of the above types of activities, 33% did all of them. On average, participants did 4,08 out of those 6 types of activities. Above average were **school teachers (4,45) and ITE students (4,5)**, while CPD teacher trainers' average was 3,68 and ITE educators' 3,5. Among practitioners, for whom the MOOC was designed in the first place and who could fully use the work with a learning scenario, **teachers and prospective teachers were more involved than teacher trainers/educators**. On the other hand, as expected, **head teachers** were the least active – though they completed at least a part of the MOOC, their average number of activity types was 2,5 and that of policymakers amounted to 2,7.

Figure 7 Reading the MOOC resources

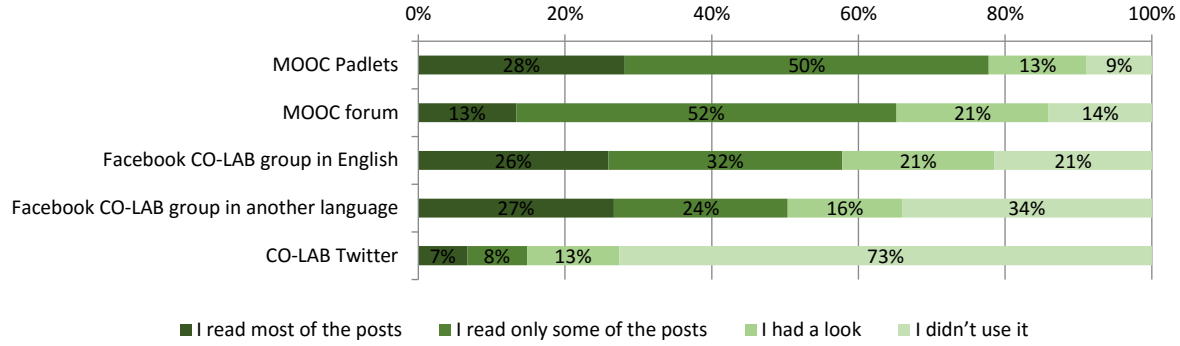


Source: Final survey (n=135)

There were several publications in the "Resource section" of the MOOC. They appeared to be very popular with the participants. According to declarations among those who did at least one module, 62% read all of the Creative Classroom Labs scenarios. The CCL scenarios were the most read in Portugal (65% declared reading all of them,

possibly some in the CCL project) but also in Ireland (50% read all of them). The 21 Century Learning Design handbook, which explains the four collaboration levels, is the main resource in this project and it was almost as popular – 56% declared reading all of it and there was almost no-one who did not at least have a look. Also, this resource was the most popular in Portugal, where 72% declared reading all of it. Other handbooks and guidelines were less popular but ¼ participants declared they read all of them.

Figure 8 Use of the online community tools



Source: Final survey (n=135)

A large part of the participants, who did at least one of the MOOC modules, used the CO-LAB online tools for communication – in most cases occasionally. The MOOC Padlets were the most popular: 28% of participants declared reading all the posts (it means a very large number of posts!) and 50% read some of them. The Facebook groups were also popular, while the forum was visited occasionally and the CO-LAB Twitter rarely attracted the participants.

Figure 9 Reading most or some of the posts in CO-LAB Facebook groups

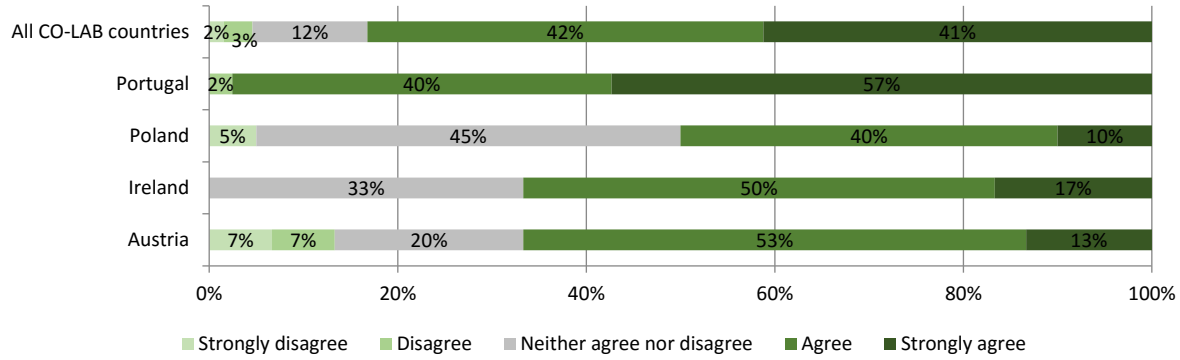
	Austria	Belgium	Estonia	Ireland	Poland	Portugal
Facebook CO-LAB group in English	40%	33%	50%	26%	24%	58%
Facebook CO-LAB group in another language	35%	0%	0%	0%	47%	41%

Source: Final survey (n=176)

The main CO-LAB group, run in English, was the most popular with Portuguese, Estonian and Austrian users, even though in Portugal and Austria there was also a group in another language. Only ¼ of the Irish participants used the English language group, even though there could not have been any language difficulties. The main group was not very popular in Belgium (where a group in Flemish might have been an alternative), nor in Poland, where on the other hand the group run in Polish attracted almost half of the surveyed participants.

Experience with the Polish group on Facebook shows that users were passive – they may have read the posts, but they very rarely communicated in the group. The minimal activity below the posts demonstrated that a Facebook group was not a space where participants wanted to have a discussion. This raises the question whether online tools help to build a virtual **community of learners**, which is addressed hereunder.

Figure 10 Agreement with the statement "Using the online platforms (Padlet, the Facebook group, forum or Twitter) gave me a feeling that we are a community of participants"



Source: Final survey (n=163). Country results shown only if n>=10.

The majority of participants who did at least one module and used the digital communication tools agreed or strongly agreed (83%) that the use of these tools gave them the feeling they were a community of participants. A comparison between countries reveals differences. Only 4 countries are compared: Portugal (82 respondents to this question), Poland (20), Austria (15) and Ireland (12), because in the other countries there was only 1 respondent who did no less than one module and used these tools. It turns out that the feeling of belonging to a virtual community of learners was strong in Portugal (almost all agreed or strongly agreed), but in the other project countries it was weaker, in particular few "strongly agreed". These differences should not be extrapolated on entire countries/cultures, because the participants' features may have played a role. In Portugal, the CO-LAB project followed the implementation of the Creative Classroom Lab Project, which promoted the use of ICT, so it is possible that participants of that earlier project were overrepresented.

All in all, the use of digital communication tools appears positive, but it **should not be overestimated** as a universal means to share reflections and build contacts in e-learning projects. It may be very helpful if it is adapted to participants' culture, needs and competences.

Table 4 Reasons of non-participation and not finishing the MOOC

	Did not start the course	Started but did not finish the course
I didn't have enough time, I had to do other tasks	62%	18%
The MOOC was for practitioners (teachers, trainers) and I'm not a practitioner.	12%	5%
I have forgotten to register to the MOOC	12%	n.a.
I didn't find the course interesting enough	3%	0%
I experienced technical difficulties	3%	3%
I experienced language difficulties	n.a.	9%
I did not find doing a peer review of my colleagues' work useful for my learning	n.a.	1%
I did not find doing a lesson plan useful for my learning	n.a.	0%

Source: Final survey (n=165). Participants, who didn't do the MOOC or dropped out before Module 4. N/a = item not asked to people who didn't start the course.

For those who registered to the MOOC but **did not participate**, the main reason for **not starting** the course was **lack of time (62%)**. Some of these respondents (12%) did not take the course because it was not relevant to them – they were not practitioners. The same amount forgot to register to the MOOC.

Those who started, but **dropped out,** were reluctant to give any reason. If any answer was given, lack of time was the most common (18%). Language difficulties were named in the second place, but still very rarely (5%).

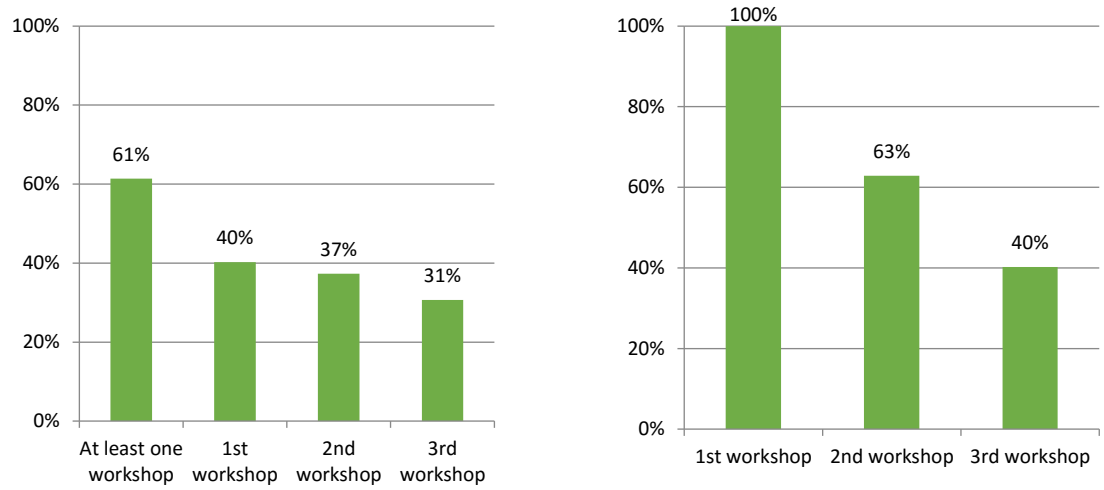
Yet this answer cannot be counted as representative because in 4 out of the 5 non-English speaking countries the survey, just like the MOOC, was done in English, so a language barrier may have existed in both cases.

There were very few people (3%) who did not finish the MOOC because of technical problems. This is a very positive result, taking into account the fact, that, as it is known from conversations with participants, technical problems occurred on two occasions. There were technical difficulties related to completing the final activity – lesson plan. The first problem was that for some users (possibly on some operational systems, but it is unknown) the Learning Designer did not function properly. The second difficulty was that some users experienced problems uploading their lesson plans on the EUN platform. Moreover, the final activity had to be done in two languages, that is why participants had to be split in two groups for the peer review of the scenarios – one group where the scenarios would be circulated in English, and another one in Polish. However, this did not work, because all scenarios were circulated in the entire population of participants, regardless of the language they were developed in, so some participants from different countries had to review a scenario written in a language which they did not speak, or they could not receive a proper review for the same reason.

3.3. Participation in the country workshops

Country workshops were designed as an opportunity for project participants to establish face-to-face contacts. Naturally, places were limited, so not all of the project participants could attend the workshops. However, as many as 57% respondents took part in at least one workshop.

Figure 11 Participation in country workshops (left) and retention of the participants of the first workshop (right)



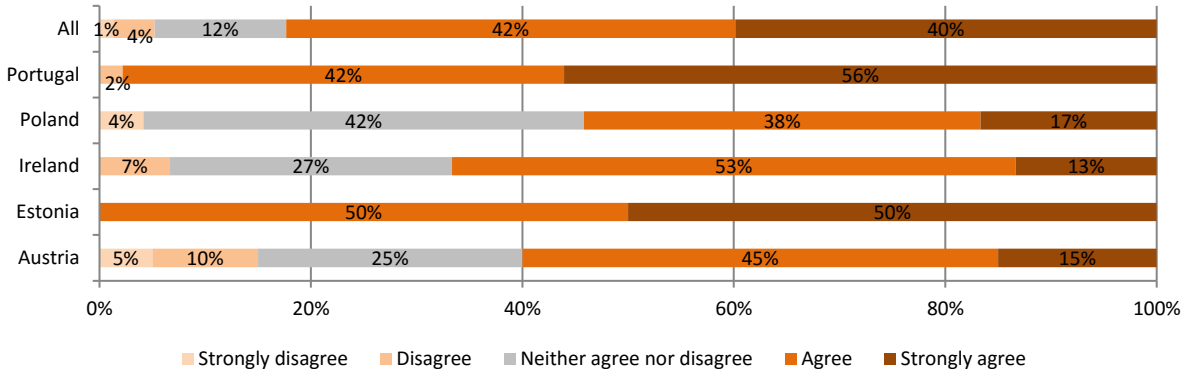
Source: Final survey (n=299, n=110)

The largest part of the respondents (40%) took part in the first introductory workshop, which was organised before the MOOC. Slightly less (37%) participated in the second one, soon after the MOOC, and even less in the debriefing workshop in June 2017 (31%). The rate of retention of participants of the first workshop was 63% at the second and 40% at the third workshop. **Only 13% respondents attended all three workshops** and 20% - two workshops.

Participation rate was relatively low in Portugal, where 56% respondents attended at least one workshop. This can be attributed to the fact that workshop capacities are limited, while there was a large number of project participants in the country. The highest participation rate was observed in Ireland and Poland, where 74% and 69% respectively took part in at least one workshop, and 22% and 25% in all the three of them.

As many as 82% of the participants agreed or strongly agreed that meeting other people during the workshops gave them a feeling that they were a community of participants in the project.

Figure 12 Agreement with the statement "Meeting other people during the workshops gave me a feeling that we are a community of participants in the project."



Source: Final survey (n=156). Country results shown only if n>=10.

Like in the case of online communication during the MOOC, meeting other people also gave the majority of workshop participants the feeling that they were a community of participants (82% agreed or strongly agreed).

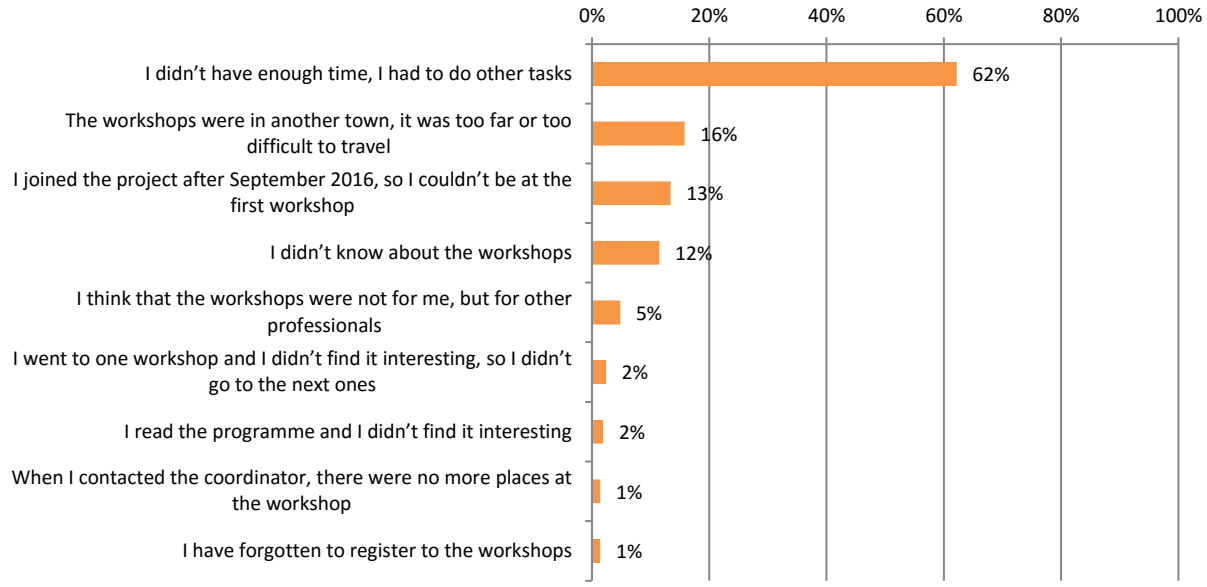
Differences between countries were similar in the assessment of both ways of communication. Again, this feeling was most frequent in Portugal, where both digital and face-to-face communication worked for the building of a community. It appears from the survey that workshops contributed very much to creating a community of participants in Estonia and Portugal, and to quite a high degree in Austria, Ireland and Poland.

Assessment of the workshops in this respect was similar in Ireland and in Poland: over half of them agreed that meeting people during the workshops gave them a feeling of being in a community, but quite few "strongly agreed". While positive answers were more frequent in Ireland, the difference between these countries was even larger when the contribution of digital communication to community building is assessed. In Austria, answers about workshops (as well as about the MOOC) were quite diverse: while the share of positive answers was close to that from Ireland, there were more negative answers than in other countries.

Opinions on whether digital communication related to the MOOC and whether the workshops gave people the feeling of belonging to a community of participants are individually correlated. Among people who used the digital tools and took part in the workshops, 72% ''agreed" or ''strongly agreed" to both and 26% ''strongly agreed'' to both.

Taking into account also the country differences, it may seem that answers depend on a culturally modified tendency to build communities. Yet, it may also come from the diverse methods of recruitment to the project - in particular, **in Portugal and Ireland the project was focused on a certain number of schools, of which some cooperated even before, whereas in Poland recruitment was open**. Thus these results needn't only reflect the impact of the workshops and of the virtual communication on establishing a community – **they may simply show how participants felt in relation to one another**.

Figure 13 Reasons of non-participation in one or more workshops



Source: Final survey (n=195)

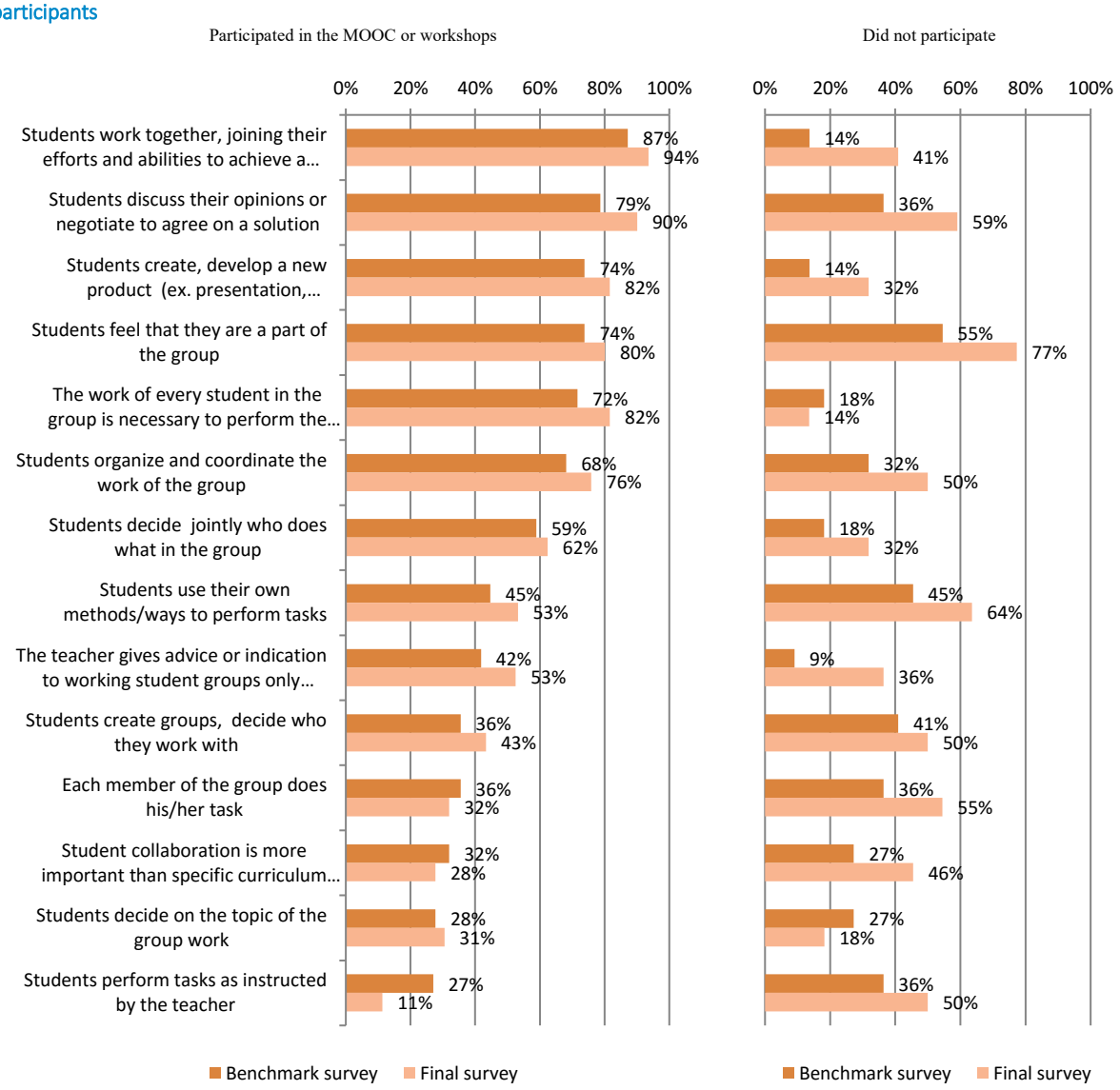
Like in the case of the MOOC, also **for those respondents who did not take part in one or more workshops, the main reason was the lack of time (62%).** Other reasons were much less common, with accessibility in the second place: 16% decided not to go to the workshops, because they were in another town and it was too complicated for them to travel. Some of those who did not attend (13%) joined the project after September 2016, so they could not be there at the first workshop. As many as **12% participants did not know about the workshops**, which implies that **communication** might not have been sufficient. This happened in Estonia and very rarely in other countries.

4. The concepts of collaborative learning

4.1. The understanding of collaborative learning and its changes throughout the project

Both in the benchmark and the final survey, respondents were given a list of features related to learning in groups and were asked to indicate which ones were necessary elements of collaborative learning. The figures below show how often participants indicated the features in each survey, and what were the individual changes. For the purpose of comparison, only those respondents who answered both surveys were taken into account – this is why figures are different from those presented in the benchmark survey report.

Figure 14 Features perceived by respondents as necessary elements of collaborative learning – eventual participants and non-participants



Source: Benchmark and final surveys.

As described before, 20% of the surveyed people did not take part in the MOOC nor did they attend any of the country workshops. This allows for comparison on how opinions changed among those respondents who

eventually took part in the project and those who did not. Respondents who actually participated in the project indicated more features of collaborative learning, both in the benchmark and final survey. Thus, generally, **out of those who registered, those who made an effort to participate from the beginning had a slightly more comprehensive concept about CL**.

Table 5 Frequency of changed opinions between the benchmark and final survey – participants and non-participants

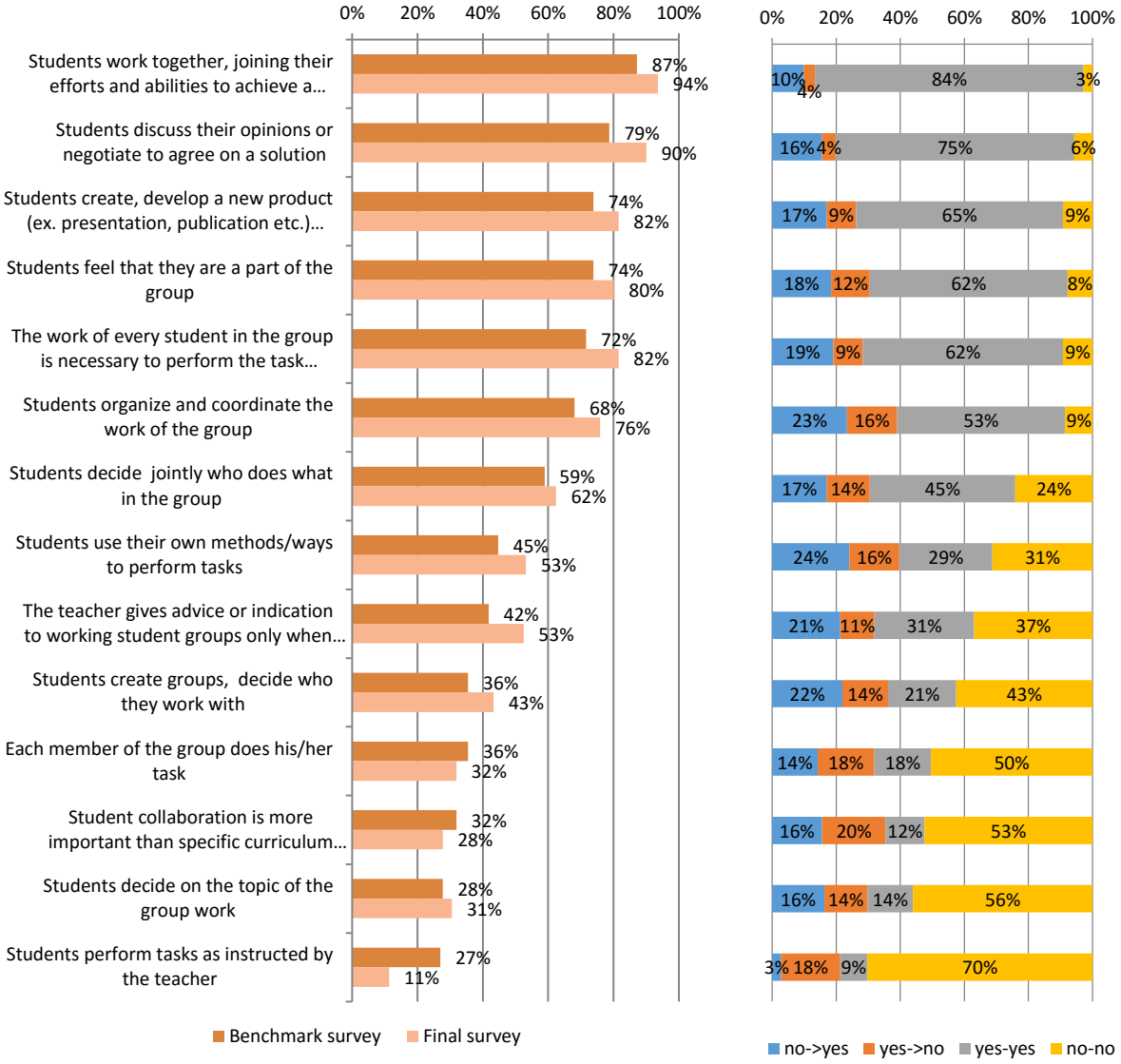
	Change - participants	Change - non participants
Students create groups, decide who they work with	36%	36%
Students decide jointly who does what in the group	31%	50%
Students decide on the topic of the group work	30%	18%
Students work together, joining their efforts and abilities to achieve a common goal	13%	41%
Students perform tasks as instructed by the teacher	21%	32%
Students organise and coordinate the work of the group	39%	36%
Each member of the group does his/her task	32%	41%
Students discuss their opinions or negotiate to agree on a solution	20%	45%
Students use their own methods/ways to perform tasks	40%	27%
Students create, develop a new product (ex. presentation, publication etc.) together	26%	64%
The work of every student in the group is necessary to perform the task (success depends on every student)	28%	45%
The teacher gives advice or indication to working student groups only when asked	32%	45%
Student collaboration is more important than specific curriculum content	36%	36%
Students feel that they are a part of the group	31%	50%

Source: Benchmark and final survey, only respondents who took both surveys. Cells colouring is automatic and relative to the values, from dark green (top value) to red (bottom value).

It is also notable that between September 2016 and June-August 2017, the ideas about what CL is changed in both groups, and that the **change of opinion was more frequent among the people who did not participate in the project** (the change is when they indicated a feature in the benchmark survey and did not indicate it in the final survey or the reverse). In particular, among non-participants changes were frequent as regards the very distinct features of collaborative learning such as striving towards a common goal, joint decision-making, interdependence, sense of belonging, or regarding a project based learning feature – developing a new product. Naturally, this does not mean that taking part in CO-LAB prevented anyone from changing their ideas about collaborative learning. It is probably that the concept of collaborative learning among those **who participated** was not only more **comprehensive** (included more features) but also more **consistent**, possibly based on **more reflection**.

Further in the report, results for those who participated in the MOOC or workshops are analysed, except from the analysis of the reasons of non-participation.

Figure 15 Features perceived by respondents as necessary elements of collaborative learning (actual participants of the MOOC and/or workshops who answered both surveys)

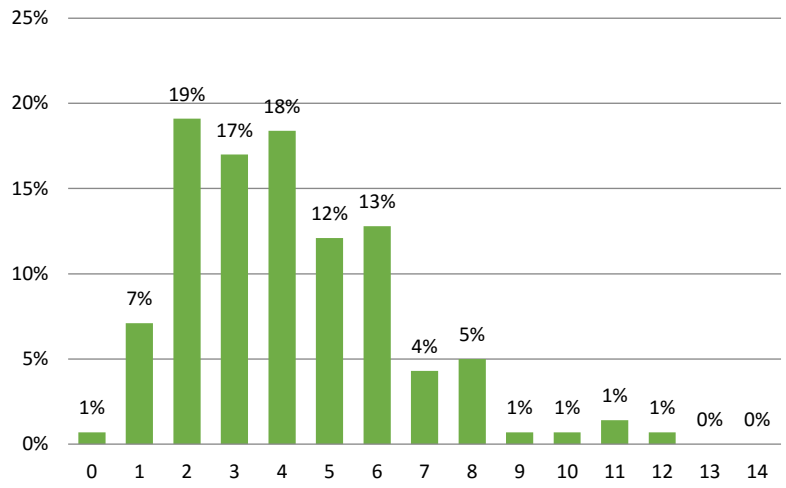


Source: Benchmark and final survey, only participants who took both surveys (n=141).

Comparing global results from the benchmark and final survey, it may seem that there were very small changes in participants' thinking about what collaborative learning is. However, if individual answers are compared, it appears that for each statement, the opinions of 13% to 40% participants changed, especially in other cases than the most popular statements. The seemingly small global changes stem from the fact that while some people began to consider a given feature as distinct of collaborative learning, other people thought so no more.

It should be also noted that while these changes happened between September 2016 and June-August 2017, during the CO-LAB project, we do not know if they are a result of CO-LAB or of other factors. Comparison with the results of the people who registered to the project but eventually did not participate, shows that some changes happened regardless of the project, so in the case of actual participants possibly both the project and other factors influenced the changes (other questions, directly asking about CO-LAB results, were also included in the survey and they are described further in the report).

Figure 16 Change in participants' opinions about CL features



Source: Benchmark and final survey, only participants who took both surveys (n=196). Figures on the chart are rounded.

The above chart demonstrates **to what degree participants' beliefs about CL changed.** It shows percentages of participants who changed their mind about one, two etc. statements out of 14 statements. Only 8%[6] did not change their thinking (no change or change in just one statement) and only 4% changed it to a large degree (9-12 statements), whereas **79% changed their mind as regards between 2 and 6 statements,** which may to some degree result from the participation in the project.

A large part of the participants had an adequate notion of collaborative learning even before the project. The majority recognised correctly, both before and after the course, one of the main features – that in CL students work collaboratively to achieve a common goal (87% in the benchmark and 94% in the final survey). 10% started to notice this aspect, only 3% upheld the belief that this is not necessary, while 4% stopped thinking that joining efforts was necessary in CL. This aspect is essential in the originally adopted definition of CL, but is not directly put into words in the 21CLD Rubric (although it is implied in it).

The majority of participants also agreed that in CL, students discuss to negotiate or agree on a solution. This shows that most participants notice the importance of **learners' communication** in collaboration. The global percentage increased by 11 percentage points (pp), mainly because over 15% started to think that such discussions were essential, while 4% ceased thinking so.

It was less common to regard **interdependence** (the notion that the work of every student is necessary to perform the task) as essential in CL. Slightly more than 3/4 participants thought so (72% in the benchmark survey and 82% in the final survey) and like in the case of previous statements, shifts towards this belief were more frequent (19%) than away from it (9%).

The largest shifts in thinking are observed in the case of statements in the middle of the ''popularity" ranking, i.e. those with which agreement or disagreement was far from unanimous, while opinions the most widely shared beliefs were also the stable ones. Participants' thinking changed particularly frequently as regards **students' influence on what the group is doing: organising the work of the group, the use of students' own methods to perform tasks** and the question whether the teacher gives advice only when asked. The prevalence of changes towards rather than away from these statements shows that, globally, **after CO-LAB more participants tend to accept learners' liberty in deciding on their own work** (however changes in the reverse direction also occurred). At the same time, more participants ceased than started to believe that tasks are performed as instructed by the teacher (which had already been a rare belief). Interestingly, the relatively unpopular belief that in CL students create groups (decide on group composition), gained some popularity, (from 36% to 43%) even though it was not directly expressed in the CO-LAB course.

6 Figures on the chart are rounded.

The belief that in CL students create or develop **a new product** together (i.e. presentation, publication etc.) remained quite popular, and shifts to this opinion (17%) were more frequent than the opposite (9%). Before the project, this belief was the most popular in Portugal (80%), Ireland (80%) and Poland (74%), and after the project there was an increase in these countries, as well as in Austria (from 44% to 78%).

Another change is that slightly more people ceased (20%) than started (16%) to believe that in CL student collaboration is more important than specific curriculum content. This may be regarded as a positive result if it is thought of as of a small step towards **decreasing one of the barriers – that of seeing CL as "appropriate for additional activities rather than 'essential learning'"**. On the other hand, some participants put more emphasis than before on collaboration itself and on learning social competences. Also, during country workshops, in some cases **voices were raised that the learning process is even more important than the learning outcome**, **as it teaches collaboration**, which is an important skill in 21st century, essential for the students' future and career. According to participants, features such as empathy were also developed among students who had to cooperate and deal with one another. An opinion was raised that effective school group activities are organised in such a way that each student is an important part of the process. These activities are not limited to working in a group, but rather should be an example of collaborative relationships, which is not easy to achieve.

Survey results demonstrate that participants' thinking about what collaborative learning is was diversified before the CO-LAB course as well as (somewhat differently) after the course. A common understanding of CL has not appeared. This may not seem a very positive result, but on the other hand achieving a common belief about CL was not the objective. What happened is that a part of the participants apparently reflected upon collaborative learning and changed their thinking, and this is what they were invited to do in the project. Still, the fact that there were participants who ceased thinking that some key features of CL were important shows that **the project had some success**, though **moderate, in building participants' understanding of the idea of collaborative learning and how it differs from cooperative learning or other forms of "group work"**.

The participants' comments in Padlet, after watching a video in the first module of the MOOC, i.e. at the early stages of their reflection on CL, show that there were different levels of understanding of collaborative learning. Some participants demonstrated very comprehensive understanding at the beginning of the course. For example, the ones who mentioned joining forces, interdependence, peer learning and the supportive role of the teacher:

> *In my opinion collaborative learning means that everybody learns from one another. You have to work in groups to complete an activity or project. The groups has to work intensively together to succeed. Collaborative means: making brainstorms and sharing ideas (…); searching for information (…); discussing and interacting. Teachers are there to support, to guide and help, without giving the right solution. To me, it's also important to evaluate the working process and not only the final product. It's learning by interaction [Padlet]*

> *In my opinion, collaborative teaching and learning must be based on the following principles: small groups enable face to face interactions, properly presented problems make students positively interdependent of each other, the responsibility for learning divided between individuals, who act as a group at the same time, work on a task must be accompanied by an analysis of group processes, so that students improve interpersonal skills. [Padlet]*

There were also participants who emphasised selected aspects of collaborative learning, such as working together towards a common goal or joint problem solving:

> *I think that collaborative learning is working together towards a common goal. The group works on each aspect of the project / task together. [Padlet]*

> *From my point of view, collaborative learning refers to a school context where students join in small groups, share and negotiate to achieve a common goal (solving a problem). [Padlet]*

Another aspect mentioned by a few participants was shared responsibility and interdependence. These features are understood distinctively in the 21 CLD Rubric model, but they were understood jointly at first by some participants:

> *Shared responsibility and interdependence – understood as the same thing [Padlet]*

Collaborative learning must involve collaborative and interdependent work sharing responsibility in the task division. [Padlet]

The notions of collaborative and cooperative learning are sometimes confused. This was noticeable in the MOOC Padlet, e.g.:

Cooperative learning is not a simple work in group. (…) Cooperative learning includes an interdependence among the students. They share responsibility, make decisions, help each other to reach a common aim, investigate, discuss together, evaluate. In this way they feel themselves a team that has a common goal. [Padlet]

This could have also been observed during the workshops. For example, in **Estonia** it was noticeable that participants understood that collaborative learning is related to communication and group work. In **Poland,** the wording *teamwork* or *cooperation in groups* dominated – the majority of participants identified CL as a work in groups, however with a different role of the teacher and the student in the process. Only a few really used the verb collaboration instead of cooperation of students. The CO-LAB course allowed some participants to clarify the understanding of CL:

The biggest discovery was for me ... that cooperation and collaboration are not the same (participant, PL) [Student - future teacher][7]

In **Austria** in turn, CL was linked with self-organised and self-paced learning and working of students in various roles and in teams, where students play different roles and can show what they are good at, as the focus is on students' strengths instead of their weaknesses and mistakes.

Some **Irish** teachers said that they had not really **understood that collaboration amounted to much more than putting students into groups** and that – despite general school culture supporting collaborative learning – subject-based teaching dominated, as mastery of content knowledge by students is a key concern for teachers. This also implies that **participants believed there was an opposition between collaborative learning and subject based learning**. While the survey results suggest that some participants stopped thinking that it is difficult to bring the subject curriculum and CL methods together, the study shows that there is still **too little knowledge about how CL can be used to carry out the subject matter (core curriculum)**.

In **Portugal,** a huge amount of resources related to collaboration, project-based learning and flipped classrooms were stored in order to get the project participants acquainted with the terminology and the usefulness of the methods.

Participants were aware that CL means a change in the methods of teaching students. They associated it with **a stronger focus on the learner** (which goes together with the increased acceptance of learners' freedom to choose methods, observed in the survey) as well as with **engagement** of different parties and their collaboration. They were also aware that **individual needs or skills** of students should be considered, especially when lessons and tasks are to be performed by children at an early stage of education or among students with disabilities.

Both the MOOC and the workshops contributed to a better understanding of the teaching and learning through collaboration. In most cases, the first workshops were introductory, encouraging participation in the project and explaining the concept of collaboration. However, only after the online training and subsequent workshops, the participants understood this method better, being able to differentiate it from the other methods, mentioned above. Thus, the definition of CL has become much clearer at least to some participants.

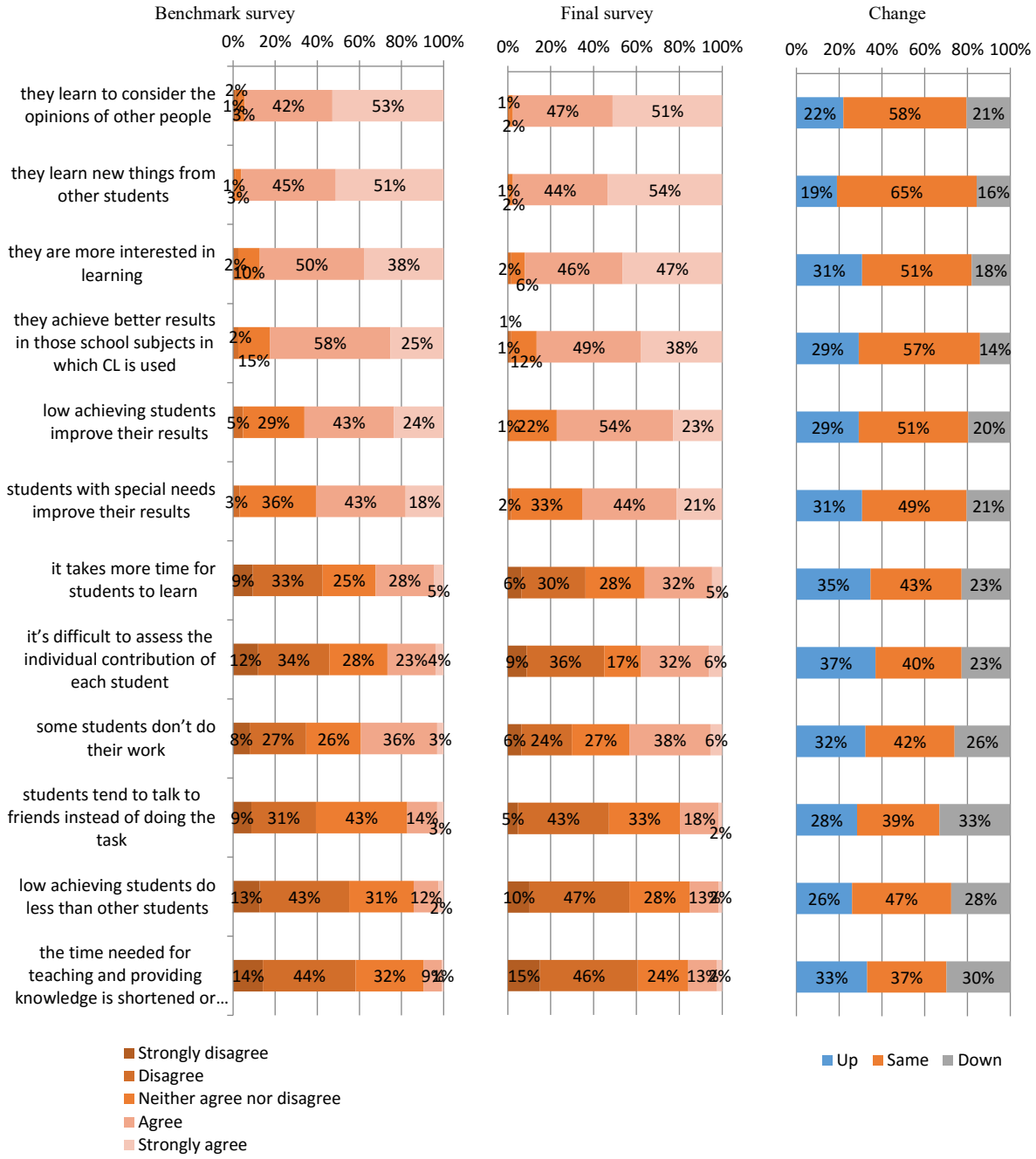
4.2. Opinions about collaborative learning and about its results for students

Both in the benchmark and final survey, participants were asked to answer if they agreed with a few statements about the practice of CL in classroom and about its results for learners. There were favourable statements (about positive results of CL) as well as negative statements, which reflected possible negative aspects of CL and

[7] Quotations from Polish students (future teachers) come from a report from a survey conducted among project participants at the Faculty of Pedagogy of the Warsaw University, which cooperated in the project.

obstacles to its use. Respondents indicated their answer on a scale: “strongly disagree / disagree / neither agree nor disagree / agree / strongly agree. On the chart below, their answers in the final survey are compared to those from the benchmark survey. The values are “up” if a respondent indicated an answer higher up the scale (e.g. from “strongly disagree to disagree”, from “neither…” to “strongly agree” etc.) The neutral answer is counted as the middle of the scale.

Figure 17 Beliefs on the results of collaborative learning – level of agreement



Source: Benchmark and final survey, only participants who took both surveys (n=127).

Like in the case of the notion of CL, also in this case participants’ opinions changed, and while some respondents started to tend towards a statement (or moved from strong disagreement to mild disagreement or lack of opinion), others ceased to believe these statements, or moved to lack of opinion. Of course, such shifts in survey answers could have occurred also without the project. However, it is noticeable that **the turn towards agreement**

(with most statements) was more frequent than the turn to disagreement. It suggests that during CO-LAB, **participants may have reflected about collaborative learning and become more aware of its positive results as well as of obstacles to its use**.

In both surveys, respondents almost unanimously agreed that in CL, students learn to consider other people's opinions and that they learn new things from other students, so they noticed positive results in terms of **social competences** and in terms of **peer learning**. There were moderate shifts to and from these opinions, as they were already commonly shared.

Opinions shared in the MOOC Padlet pointed mostly to social and transversal skills, as to the results of collaborative learning, but improvement of subject-related skills was also observed.

> *The social skills they develop also enhance their coping strategies and self-confidence. [Padlet]*
>
> *(…) improve their skills: leadership competences, self-evaluation, listening skills, presentation skills, skills of persuasion and negotiation, team working skills. [Padlet]*
>
> *In my experience of implementing collaborative work I witnessed mainly the development of leadership skills, listening to partners and teamworking. [Padlet]*
>
> *After a year struggle of implementing projects I observe some positive results in developing students skills. Especially leadership skills, team working skills and self-evaluation skills. [Padlet]*
>
> *In my opinion, collaborative learning is more effective because it develops such skills as responsibility, leadership, self-assessment, presentation skills, communication skills, and so much more... To sum up, this method improves learning not only in a specific subject/theme, but above all, it helps to develop some skills that students will need in their future lives. I've already witnessed some students to improve their learning and change their behaviour at school only because they are working in groups. They feel that they are useful and they can help their group to achieve its goal. [Padlet]*

As it is known from the Austrian country report, an interesting issue was raised during a workshop as regards **peer learning** and students' engagement. Colleagues (older students from other classes) might support students and thus play an important role as teachers, engaging their younger peers and allowing the teacher to be more involved in lesson processes and in supporting individual students. Moreover, in Portugal, it was observed that each task performed jointly, in a randomly selected group, teaches mutual cooperation to students who do not usually (or rarely) interact. They learn to **cooperate in conditions that are sometimes difficult (in their beliefs)**. It can generate **conflicts** and reinforce antagonisms between students if lessons are not properly summed up, and the resulting emotions are not named and explained. So, reflections in partner countries confirm that in CL, students learn from their peers, develop their social skills of communicating and taking other people into consideration, but only if **the teacher can manage the learning situations and group processes**.

The majority of respondents of both surveys also agreed that collaborative learning is beneficial from a subject-matter perspective: it makes students **more interested in learning** and improves **subject-related learning outcomes**. In the case of both statements, more people turned to these beliefs than moved away from them. Noticeably, respondents thought that CL had a little more impact in social terms and in terms of learning attractiveness, than in achieving the objectives of the curriculum, though it was also positive in the latter aspect.

There were similar observations in the report from country workshops and from the Padlet. Participants noted that working in teams has a great impact on the **attractiveness** of lessons, especially science, and thus more effective learning of the core curriculum content.

> *As a teacher of students with sixteen-eighteen years old, I can say that the collaborative learning activities are greatly appreciated by them, being visible their interest, involvement and implication. (…) students take their responsibilities and understand that their participation in the group is important to the success of the collective working group. (But sometimes the teacher intervention is necessary!!!). Students like to find solutions to the challenges that are posed to them and enjoy creating new products that love sharing with colleagues at the end. They also like to get feedback*

on their work and, over time, begin to understand the importance of constructive criticism to improve their learning and their work. [Padlet]

Some Irish teachers stated that while mastery of content knowledge by students is a key concern for teachers, they observed that with a team-based approach, **students made faster progress in learning content** than in traditional, didactic approaches. A similar reflection was shared for example by one of the Polish student-teachers from the Pedagogical Faculty of the Warsaw University, who filled in a qualitative questionnaire:

Participation in the project convinced me that ... Working in groups allows for more effective learning than traditional teaching; (participant, PL)[Student - future teacher]

Qualitative analysis of the country reports also showed that an increase in **student interest in problem-solving** is a great success of implementing broadly understood "group work". According to project participants, learning in groups results in raising interest in searching for knowledge from different sources and learning a particular topic.

The majority of survey respondents also believed that with CL **low achieving students and those with special needs improve their results**, though these opinions were shared somewhat less frequently. Also, workshop participants – in Portugal – observed that collaborative learning was especially effective with **students with disabilities** or students **with lower learning achievements**. This was also observed by one of the participants in Padlet:

Collaborative learning strategies benefit mixed ability classes as well as special needs students. [Padlet]

Most Portuguese teachers who took part in the workshop expressed their feelings that CL is an asset and can **help immensely in reducing school failure**, as it raises students' motivation and makes learning more active.

The "negative" statements (obstacles) were indicated less frequently than positive results. It shows that participants were generally positive about collaborative learning, which is understandable among people who joined a course on this subject.

In the case of this question, as well as in many other cases in this study, **time** appears to be the main obstacle: 32% in the benchmark survey and 36% in the final survey agreed or strongly agreed that when students learn collaboratively, it takes them more time to learn. Also, the shift up the agreement scale (32%) was larger than the reverse. All the same, for 26% of the respondents, time became less of an obstacle than before.

One could suppose that participants became more aware of time constraints, because they understood better what makes collaborative learning different from cooperative learning. However, this study does not confirm this hypothesis. There is no correlation between becoming aware that CL is about joint efforts, in-group discussion, application of learners' own methods or interdependence (which may be time consuming) and an increase in the perception of time constraints.

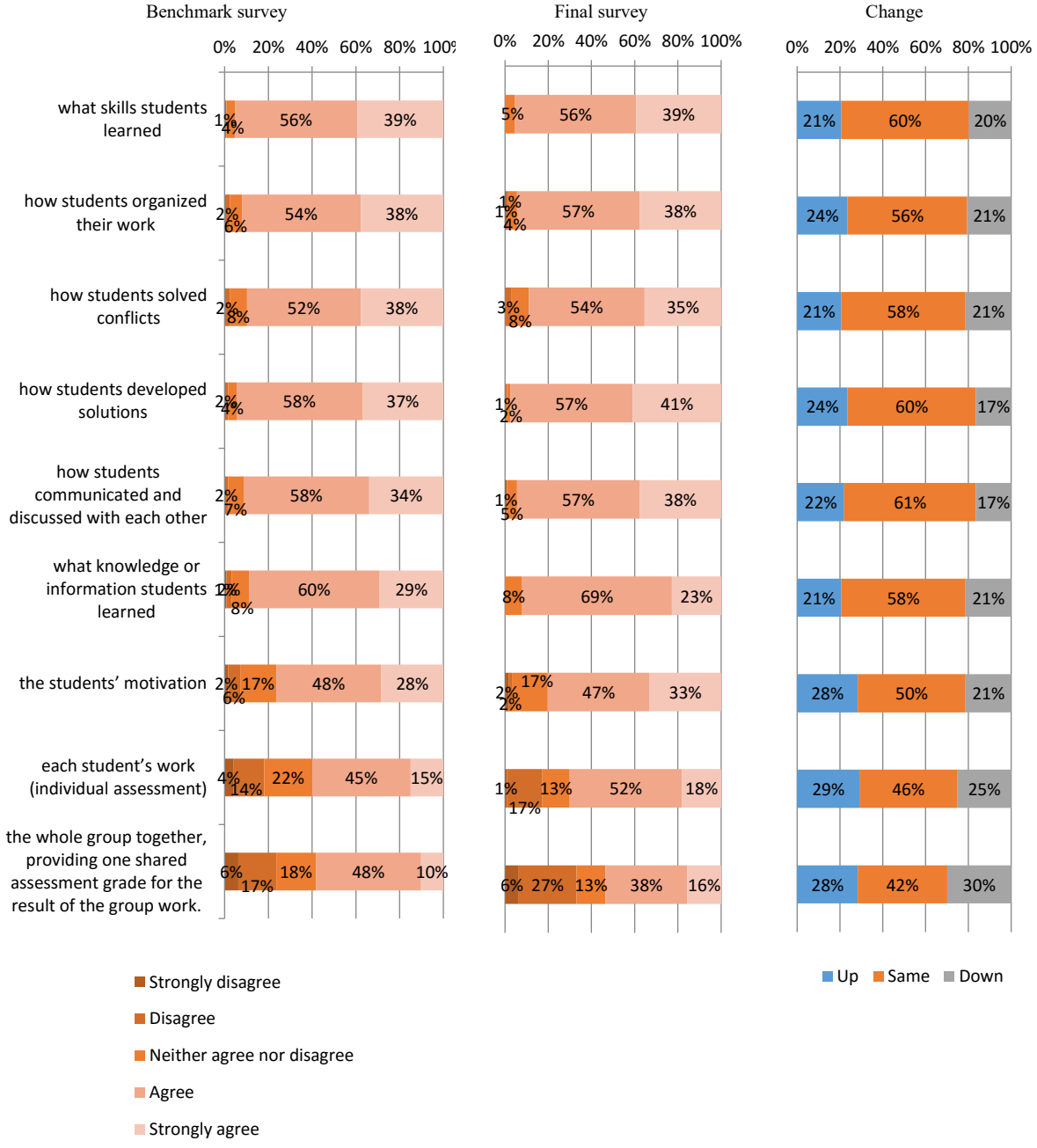
The other important difficulty was making sure that **all students in the group contribute to the group work** and to counteract free riding. As many as 39% respondents in the benchmark survey and 43% in the final survey agreed or strongly agreed that in CL some students do not do the work. Also, in the case of this belief, shifts towards it were more frequent that away from it.

The changing perception of the time constraint and of the free rider problem implies that CO-LAB allowed participants to reflect on the obstacles, while it was moderately effective in helping participants to learn how to overcome these obstacles. This is coherent with the scope of the course – it gave participants the opportunity to encounter a lot of inspiring material. However, while the topics of the MOOC were defined, there were no literally defined learning outcomes to be achieved by participants. It was not set that participants should leave CO-LAB, for example with specific knowledge and skills useful to overcome practical obstacles. This might have been partially due to the fact that the design of the MOOC and the identification of obstacles were done concurrently (the latter during country workshops and partner meetings), so the MOOC content could not have been based on the analysis of specific obstacles and identification of good practices in overcoming them. Apparently, CO-LAB made an important step in understanding the conditions for collaboration and the opportunities for its use, while another more advanced project (for the same participants) might be an option to support overcoming obstacles.

4.3. Opinions about the assessment of collaborative learning

Both surveys also included questions about participants' opinions concerning the assessment of collaborative learning.

Figure 18 Beliefs on assessment of collaborative learning – level of agreement



Source: Benchmark and final survey, only participants who took both surveys (n=127).

When it comes to assessment, participants largely shared the opinions about **what should be assessed** (they believed that most of the aspects about which they were asked should be assessed), while doubts were more frequent about **how to assess** – whether through individual or group assessment.

As to **what to assess**, the majority agreed that the teacher should assess learning outcomes (skills learnt as well as – slightly less often – knowledge), students' reasoning (how students developed solutions) and group

cooperation and communication (how students organised their work, communicated and solved conflicts). Shifts up and down the "agreement scale" occurred almost as often in both directions. Both before and after the course, a smaller share of participants believed that students' motivation should be assessed.

Assessment was one of the issues addressed during most country workshops and **some workshop participants** indicated **the assessment of the CL process as more important than the assessment of tasks' results**. The tool that was frequently quoted was the 21 CLD rubric, which supported teachers in the assessment process through determining the criteria, definition of activities to be assessed in a group work. The diagram illustrating subsequent levels in teaching through collaboration (1. Work in groups or pairs, 2. Shared responsibility, 3. Making substantive decisions together, 4. Interdependence) allowed for an easy way to grasp how much the lessons were taught with the use of this method, although if applied too rigidly, it could negatively influence the whole lesson (detailed and thus teachers might stick to details too much). (See chapter 6.1 on the use of CO-LAB resources). Another type of rubric addressed at the course were specific assessment rubrics (eg. for self-assessment, peer-assessment), however it was not always clear in the qualitative material what kind of rubrics a given participant had in mind.

Unsurprisingly, formative assessment was discussed during the workshops, since, similarly to assessment with the use of rubrics, it relies on adopting assessment criteria and expressing feedback. For example, during one of the workshops in Estonia, participants discussed criteria such as activity, performance of tasks, communication, as well as reflected on what scale should be used in a rubric.

There were more differences in the opinions on **how to assess**. A considerable share of survey respondents (27% before and 38% after the course) agreed that when students work collaboratively, it is difficult to assess the individual contribution of each student. Participants' opinions on whether **individual contribution should be assessed** and whether **group assessment** (one share grade for the group) should be used, were **very diversified.**

Throughout the course, **support for individual assessment in collaborative learning increased** globally from 60% to 70%, and the share of people who believed that individual assessment is difficult, but still should be done, increased from 16% to 30%. At the same time, the **global support for group assessment (one-for-all) seems almost unchanged** (58% and 54%), and the comparison of individual answers demonstrated that this was the matter where participants changed their mind the least often, **but still 58% changed their opinion at least slightly up or down the agreement scale**. Changes to and from the support for group assessment were almost equal.

Adequate and fair students' assessment was widely discussed during the country workshops. The need for constant **feedback** to students was raised as very important, but the discussions, just like the surveys, showed the diversity of participants' opinions on this matter and how many doubts there were about it. Assessment generally turned out to be **the most complicated topic for teachers** (in particular for persons preparing themselves for the teaching profession), both in the sense of assessment of groups as well as contribution of individual students. **Assessment** of **individuals** in the work based on students' collaboration was one of issues most often discussed as uncertain, confusing and raising doubts about its fairness. The concept of formative assessment was frequently mentioned as a complementary method to summative assessment. It provides indications to students on how to improve, so that assessment covers both – what was good and what needs to be improved. Discussions showed that the greatest difficulty for teachers was to assess the contribution of each student's work to the final result of teamwork (but it is worth reminding that only 27% participants in the benchmark survey and 38% in the final survey indicated that the assessment of individual contribution was difficult, so there were quite different opinions about it).

It was also emphasised at the workshops that students working in teams often have a difficulty with **respect and consideration of peers' opinions**, and with **objective peer assessment**. Yet, it was observed by participants that with time, students are able to learn to do a fair peer assessment. Moreover, motivation of those **students who were not sufficiently engaged in teamwork** or did not perform their tasks in due time, which affected the end result of the whole group, was an issue.

Teachers, who rarely used this form of classroom work, reported that the biggest problem for them was to **plan** classroom activities properly, to design appropriate lesson schedules and time frames for each task so that assessment is included. There was often a lack of time left for self-assessment or peer feedback and for providing teachers' individual feedback on the work of the group and each student. Group work assessment, including

assessment categories, current and summative assessments, group and individual assessment, peer and self-assessment were indicated as areas where teachers had needs for improvement.

> *I would like to deepen my knowledge/skills on ...evaluating the effects of group work and individual efforts of individual team members. It seems to me that for teachers this is the most difficult area of designing activities, especially during teamwork, hence in this area I feel least competent. I would like to learn how I can assess individual contribution of each student in the classroom during group work more efficiently and more equitably, as well as how to effectively use peer assessment. (participant, PL) [Student - future teacher]*

5. Opinions about CO-LAB and its declared results

5.1. Opinions about the course

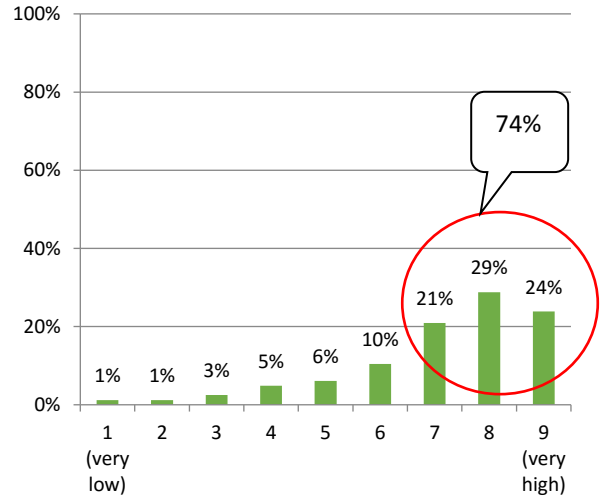
5.1.1. Assessment of the MOOC

According to over 87% of the actual project participants[8], the level of the CO-LAB content was just right in relation to their needs. Only 7,5% found it too difficult and for 5% it was too basic. So, **the level of the course was very well adapted to participants' needs and 95% of the respondents found something new in it**.

As regards the **MOOC**, the majority of its participants had **very positive opinions about it**: 74% of those who completed at least one module, gave the MOOC a rate from 7 to 9 on a scale from 1 to 9, including **¼ who indicated the top grade**. Similarly, in the EUN post-MOOC survey, performed worldwide, 70% respondents assessed the course as "very good".

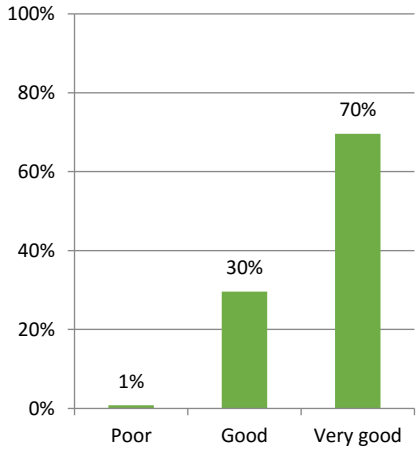
Figure 19 Participants' assessment of the MOOC in the CO-LAB final survey (left) and EUN post-MOOC survey (right)

How would you rate the overall value of the CO-LAB MOOC (e-learning) to you? Please indicate your answer on a scale, where 1 is very low and 9 is very high.



Source: Final survey (n=163)

How would you rate the overall value of the CO-LAB MOOC to you?



Source: EUN post-MOOC survey (n=257)

The average grade for the MOOC was 7,16 on a scale from 1 to 9. Naturally, the perceived value was higher among those who did a larger part of the course: 6,64 for those who did up to 3 modules, 6,19 for those who did the whole MOOC without a lesson plan and 7,74 for those who did the whole MOOC with the lesson plan. Teachers' opinions about the MOOC were slightly higher (7,23) than the opinions of non-teachers (6,95). There were also differences between countries, and since the composition of participants' groups varied between countries, here only teachers' opinions are compared. Comparing the 3 countries where there were more than 10 respondents-teachers, it appears that opinions about the MOOC were the highest in Portugal (7,49 on average), next in Poland (7,36) and lowest in Austria (5,90). It is unknown, however, how cultural differences worked in this case – if the MOOC was more adapted to some teachers' cultures or education systems than to others, or if the meaning of what is "very good" (or the tendency to assess positively) varies between cultures.

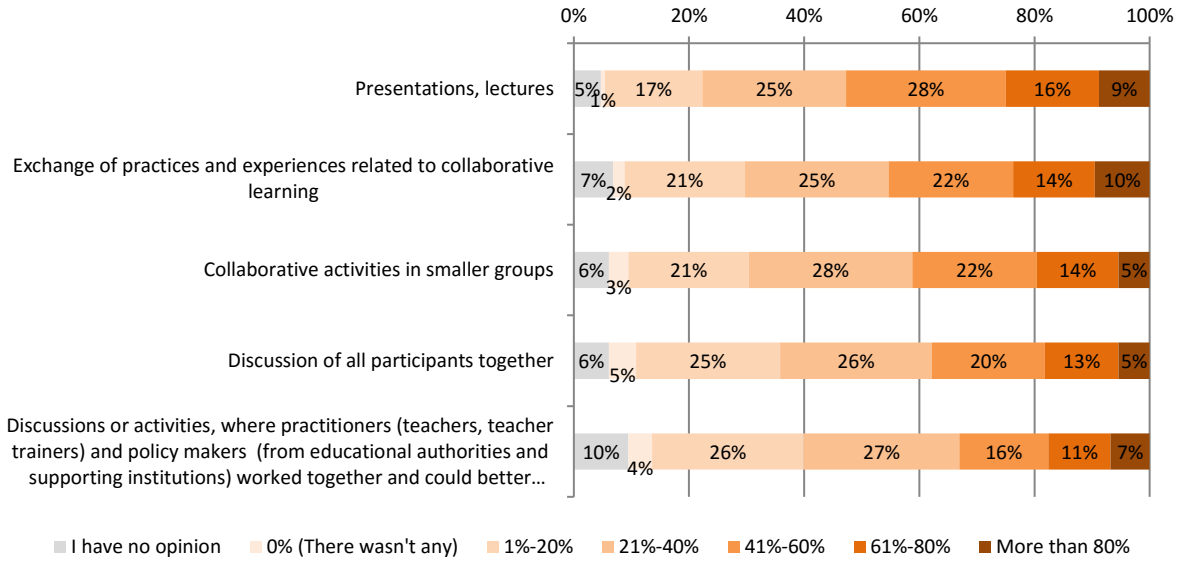
[8] Actual project participants are those who completed at least one module of the MOOC or took part in at least one workshop, while actual MOOC participants are those, who completed at least one module of the MOOC.

This means that the results of a survey of this kind are not a sufficient source to answer if country differences in answers demonstrate different effectiveness.

5.1.2. Assessment of the country workshops

Respondents who took part in at least one workshop were asked to give a picture of what methods were used during the country workshops, taking into account all the workshops they took part in.

Figure 20 Time devoted to selected educational methods during the country workshops in the opinion of participants



Source: Final survey (n=148)

Participants' opinions show that workshops were very diversified. While some indicated that a given method took more than 80% of the time of the workshop, others declared it took up to ¼. Naturally, the answers concerned different workshops in different countries, and some assessed only one workshop, while others assessed more workshops. Generally, it seems that **presentations were the most popular**. It is worth noting that according to the majority of participants during the workshops, there was **considerable time for exchange of practices and experiences related to CL** and some time (though less) for activities where practitioners and policymakers worked together and could better understand the other side's perspective.

Looking at the percentage of respondents who answered that a given method took up more than 60% of the workshop time, it appears that **collaboration in smaller groups took up the largest part of the workshops in Estonia and Portugal**, a moderate amount of time in Poland and Austria and the least time in Ireland, whereas **exchange between practitioners and policymakers** happened most often in **Estonia** and least often in Poland. **Austrian** workshops focused on presentations and on **exchange between practitioners and policymakers, Estonian and Portuguese workshops** were full of **discussion** and relied on collaboration in smaller groups, general forum discussions, exchanges of practices and exchanges between practitioners and policymakers. Both in **Ireland** and **Poland, methods were diversified**, with more presentations and more collaboration in small groups in Poland.

It is known from the country reports that most of the workshops included **sessions conducted in a form of group work, engaging practitioners into joint tasks and presentations** and it had a positive impact on teachers' collaboration. In the case of **Portugal,** this was the aspect that made the biggest progress in the project - teachers involved acquired a more collaborative attitude, and started to implement collaborative methodology in the classroom. The same applies for Ireland - **teachers involved started to collaborate with one another much more than they had done before the project**, although initially they were reluctant to engage in what they perceived as contrived collaborative activities.

As many as **89% participants found the workshops inspiring**. The workshops also often allowed them to acquire a better understanding of the viewpoints of different groups of stakeholders about CL.

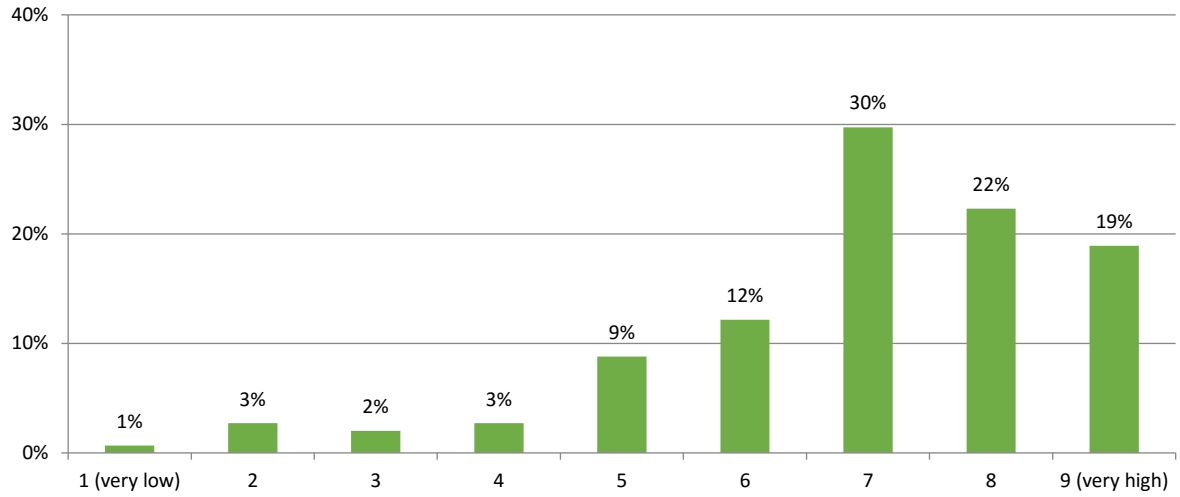
Table 6 Percentage of participants who strongly agree that the workshops helped them to better understand the viewpoint of different groups about CL

"Strongly agree" that "The workshops helped me to better understand the opinions of … about collaborative learning"	better understand the opinions of **teachers**	better understand the opinions of **teacher trainers or academic teachers**	better understand the opinions of **head teachers and managers**	better understand the opinions of **educational authorities and supporting institutions**
Head teacher / deputy head teacher	**23%**	**23%**	31%	**23%**
Other managerial / executive position at school	**36%**	**32%**	8%	**8%**
Teacher at school	36%	**24%**	**14%**	**12%**
Student of initial teacher education – already teaching at school	**25%**			
Teacher trainer (conducting continuous professional developmer	**33%**	30%	**15%**	**19%**
Teacher educator conducting initial teacher education	**36%**	46%	**27%**	**36%**
Educational authority or institution which supports education	**27%**	**20%**	**7%**	13%
All	**32%**	**23%**	**14%**	**13%**

Source: Final survey (n=148)

The workshops were intended as a space for exchange between diverse stakeholders, especially practitioners and policymakers. Some of the respondents strongly agreed that the workshops helped them to better understand the opinions of teachers about CL (32% respondents), the teacher trainers' viewpoints (23%) and less often the viewpoints of head teachers and managers (14%) as well as of policymakers (13%). These differences are understandable, because there were less head teachers and policymakers present at the workshops, so people had less opportunity to interact with them. Looking at who acquired a better understanding of whose viewpoints, it appears that respondents most often got to better understand the opinions of their own group. However, **some understanding across diverse groups of stakeholders** was also built. For example, the **workshops allowed nearly ¼ of the head teachers to better understand the opinions of teachers, teacher trainers and policymakers**. **Among teachers, ¼ understood better the opinions of teacher trainers**, and over 1/3 of the CPD teacher trainers understood better the viewpoints of teachers. However, only 12% of teachers declared a better understanding of policymakers' opinions and only 14% of head teachers' opinions. ITE educators particularly often indicated that they understood better the viewpoints of diverse stakeholder groups, while **more than ¼ of policymakers got a better understanding of teachers' viewpoints about CL**.

Figure 21 Participants' assessment of the workshops

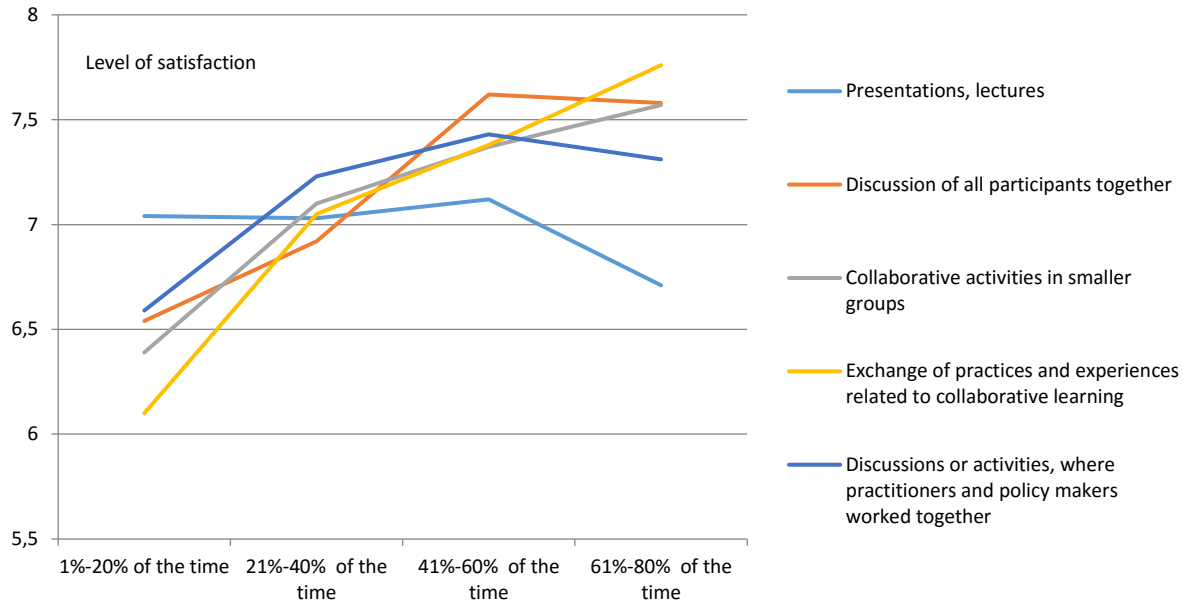


Source: Final survey (n=148)

Participants' opinions about the value of the workshops were almost as good as those about the MOOC. 71% chose notes from 7 to 9 on a scale from 1 to 9, and 19% indicated the highest note. The mean note was 6,97. There were not any considerable differences in the assessment of the workshops between people of different occupations, which means the workshops were equally useful regardless if someone was a teacher, educator, policymaker etc. There were however differences in the assessment of the workshops between countries – the top average rates were of the workshops in Poland (7,60), Portugal (7,14) and Estonia (7,09).

The comparison of the assessment of the workshops, and of the opinions about the methods used during the workshops, shows that respondents who indicated that a given method was not at all used had the lowest opinion about the workshops, and of those who estimated it was used, more than 80% of the time had the highest opinion (in general the higher the opinion, the higher was the perceived use of most of the methods). Both of these extremes were quite improbable, so it only seems that when a participant was very happy or very unhappy with the workshop, they gave high or low notes accordingly, which were supposedly influenced by their general opinion. Accordingly, those who could not remember how often a method was used assessed the workshops moderately (mean grade close to 6). The actual comparison can thus be based on the answers that a given method was used, but no more than 80% of the whole time.

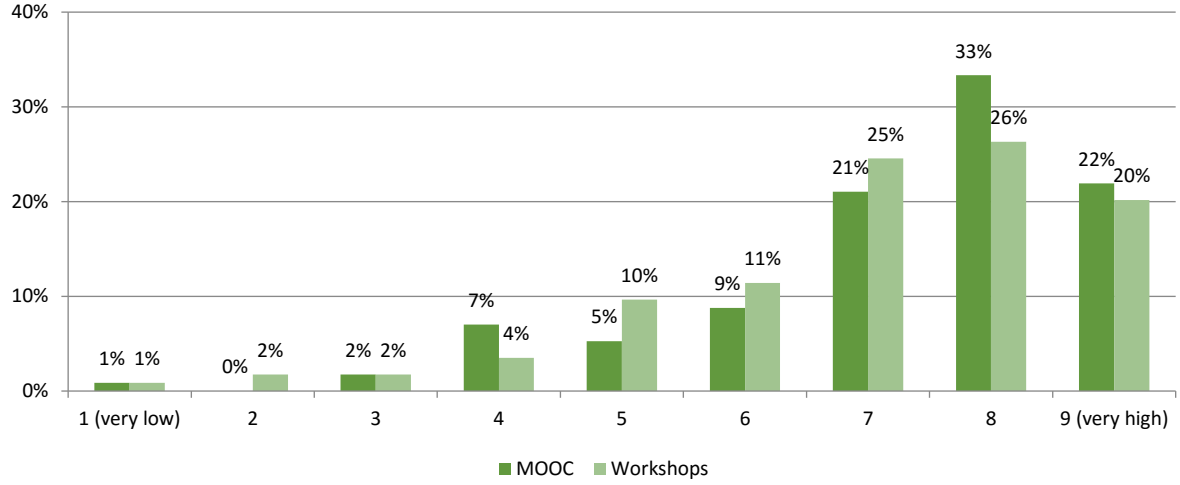
Figure 22 Average assessment of the workshops depending on the opinion of how often particular educational methods were used (without extreme answers)



Source: Final survey (n=148)

It appears that participants were most satisfied with the workshops when they could collaborate in small groups and exchange experiences and practices related to CL. Discussions of the whole group on the forum and exchanges between practitioners and policymakers were also valued – the more such discussions there were, the higher the satisfaction – but the limit was no more than 60% of the time. Whereas the amount of presentations was of little significance for the general satisfaction, as long as there were not too many – if they took up more than 60% of the time, the general assessment decreased. All in all, it seems that the participants were the most satisfied if diversified methods were used and especially if there were a lot of diverse opportunities for exchange and discussion, especially, but not only in small groups.

Figure 23 Compared assessment of the MOOC and of the workshops among those who participated in both forms



Source: Final survey (n=114)

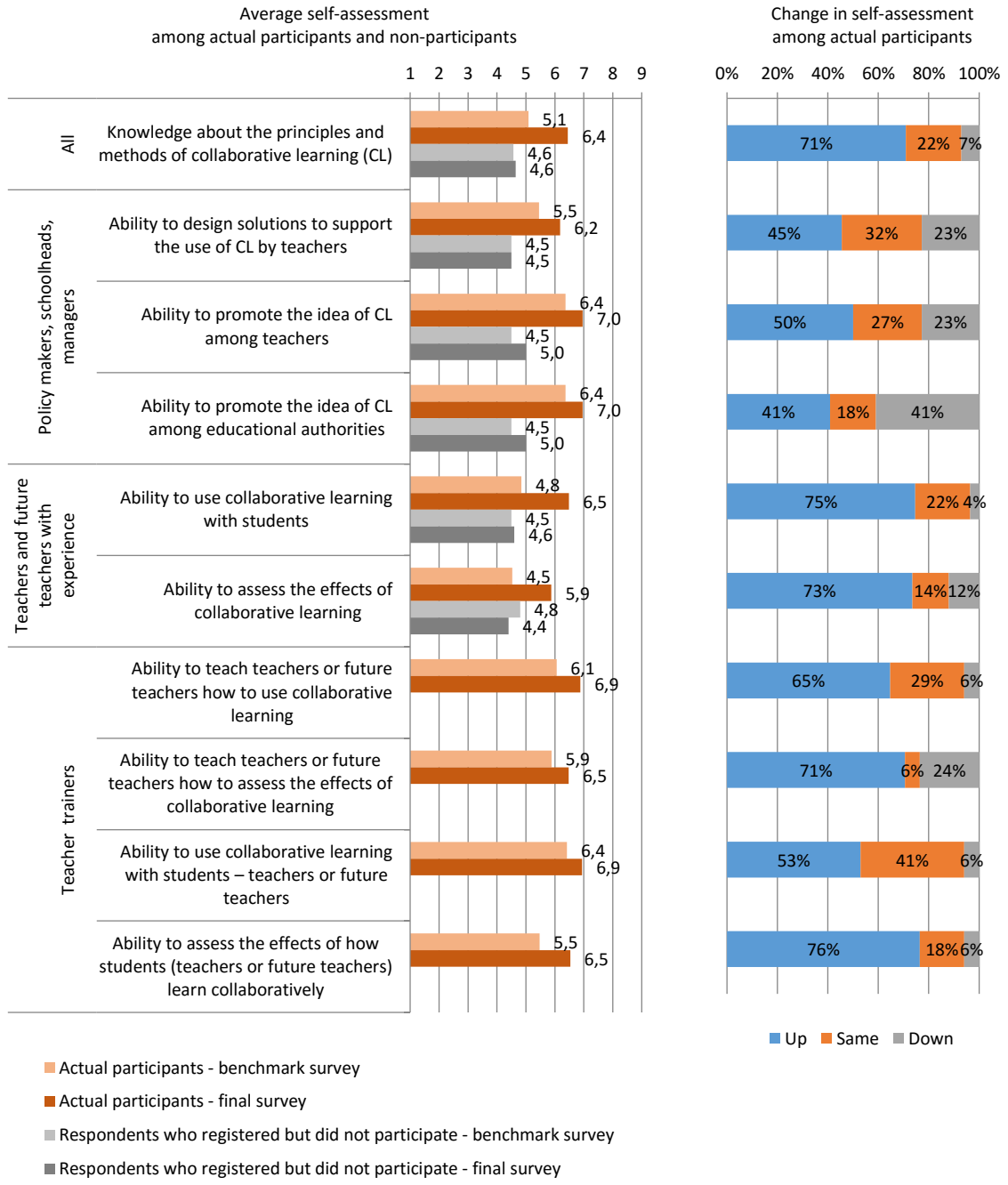
Those who took part both in the MOOC and in the workshops (at least partially) assessed the MOOC slightly higher than the workshops: the average assessment of the MOOC was 7,25 and of the workshops 7,04.

5.2. The impact of CO-LAB on participants' competences

5.2.1. Changes in competence self-assessment

Respondents were asked to self-assess their competences in the use or promotion of collaborative learning, according to their roles. Answers were given on a scale from 1 to 9, where 1 was the lowest and 9 the highest grade. The comparison below is within groups who answered the same question in both surveys – separated by whether they eventually took part in CO-LAB.

Figure 24 Self-assessment of competence in the use or promotion of CL before and after CO-LAB



Source: Benchmark and final survey (149 actual participants including 24 policymakers, 99 teachers, 17 teacher trainers

The comparison between respondents who participated, and those who eventually did not participate in CO-LAB, shows that these groups differ considerably in that **actual participants assessed their competences in collaborative learning as higher than non-participants, even before the course**[9]. Supposedly motivation and competences were correlated – people who really wanted to know more about CL were interested in it and already knew quite a lot.

The increase in (declared) competence level was higher among participants than non-participants in the case of: general knowledge of the principles and methods of CL as well as in teachers' ability to use CL and to assess its results. It should be noted however that non-participants are not an actual control group, since the two groups differ by many factors, including competence level in the beginning of the project. Therefore, the difference in the increase of declared competences cannot be attributed to CO-LAB with certainty, but it is possible.

Self-assessment of the **knowledge and principles of collaborative learning increased among 71% of actual participants.** A rise in the teachers' specific competences was similarly frequent: 75% declared a higher ability to use collaborative learning with their students and 73% a higher ability to assess the effects of CL.

Teacher trainers, on average, both before and after CO-LAB, **declared a higher level of competence** in using CL (with their student-teachers) and in the assessment of CL **than school teachers**. In this group, competence increase was comparable to that of teachers when it comes to assessment, and less common as regards teaching (which may be because this assessment was very high from the beginning). **Moreover, there was an increase among 65% of teacher trainers in the ability to teach teachers how to use CL**, and among **71% in the ability to teach how to assess CL**, but in the latter case a decrease was noted for as many as 24%.

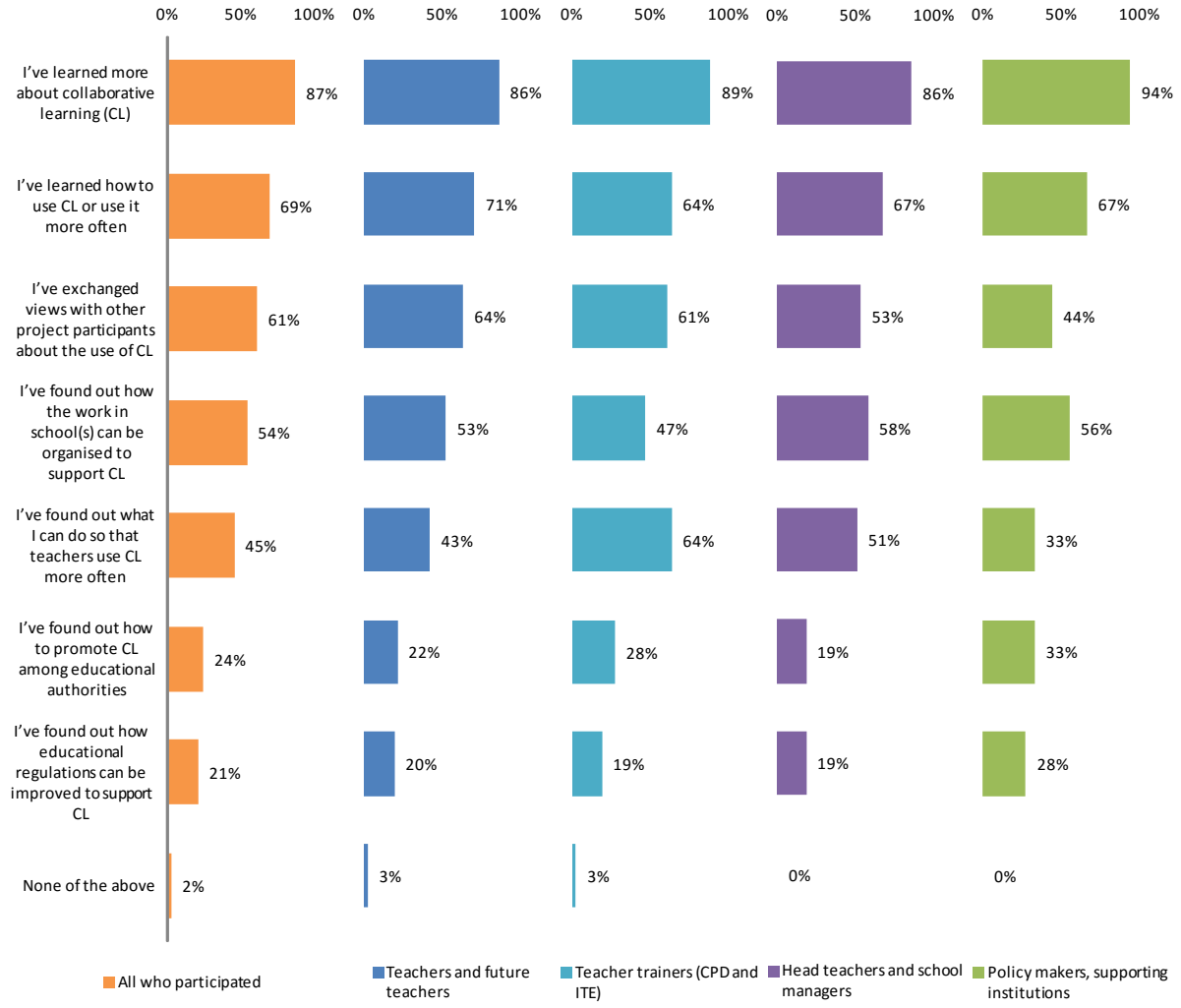
In the group consisting of **policymakers**, **head teachers** and other managers in schools, **answers were much less stable than among practitioners**, especially as regards the ability to promote CL among educational authorities. Answers shifted also as regards abilities to design solutions supporting the use of CL and to promote CL among teachers. Perhaps policymakers, heads and managers had a less specific picture of what it means to "promote CL" than practitioners had of what it means to use it. For each of these aspects, there was a competence increase among 41% to 50% of respondents, which is much less than among practitioners. Yet **it seems that CO-LAB had a positive impact on the policymakers, heads and managers' ability to support collaborative learning in schools,** but **did not boost considerably their abilities to bring the idea of CL to a higher policy level**.

5.2.2. Other results declared by participants

Participants were asked about their needs, and after the course about what they gained in the project in terms of using and promoting the use of collaborative learning. The results described below are only for actual participants (those who did at least one module of the MOOC or took part in at least one workshop).

[9] There is no such comparison for teacher trainers because all trainers among the respondents who answered both questions took part in the project

Figure 25 CO-LAB results declared by participants



Source: Final survey (n=192)

Almost every respondent indicated at least one of the results about which they were asked. There was nearly no one who wouldn't gain anything from the participation in the project. **The majority of actual participants (87%) declared that they learned about collaborative learning**. **A large part of them (69%) learned how to use CL**, though even among the practitioners learning these skills was a little less frequent than acquiring knowledge. Interaction was not a rule, but **61% exchanged views with other participants**. More than half learned how school work may be organised to support the use of CL and nearly 50% found out what they can do so that teachers use CL more often.

The reports from country workshops shed more light on applicable knowledge and skills learnt by participants. The project allowed participants to develop a higher **awareness of collaboration**. For example, Irish teachers made observations on some students' behaviour while working collaboratively. They noticed that while working in pairs, students discussed their work but did not share responsibility for the work, as real collaboration would demand. This demonstrates that they **became aware of the levels of collaboration**. Another reflection of this kind comes from an ITE student who got a better understanding of what collaborative learning is and how it can be used in practice.

> *The biggest discovery was for me ... how you can combine the ideas of learning based on collaboration with the daily practice in school. I think that participation in the CO-LAB project has*

changed my perception of what a collaborative learning really is and also made me aware of the educational situations in which pupils are really active. (participant, PL) [Student - future teacher]

This awareness is related to the use of the 21 CLD Rubric. Among the most important benefits that participants gained from the project were **the knowledge about how to develop a learning scenario** (with the use of CL) and **how to prepare a rubric**. **The 21CLD rubric** was perceived as a very **important and useful tool**. As teachers cited time pressure as a barrier, the use of rubric was perceived as a **time-saving tool** as it could allow for a better focus for **designing collaborative tasks**, saving time for planning and positively influencing time management. Moreover, it was perceived as facilitating assessment which becomes more transparent for students and teachers.

The biggest discovery was for me… The rubric method, which is to determine the activity of the students. Determine whether pupils work in pairs or groups, whether they share responsibility or make substantive decisions about..., whether their work is interdependent. Answering these questions, the teacher can determine the level of student interaction. I think this is an interesting proposition, especially for young teachers. It can help them to prepare interesting and valuable lessons. I was also interested in the interesting form of scenario divided into different phases of group work (dream, explore, map, create, ask, process, show). This is a valuable tool that can help you plan your activities in a clear way. Tools learned under this scenario need to be included in the lesson. Discussion, self-evaluation, peer evaluation, presentation of the final product. (participant, PL) [Student - future teacher]

There were minor differences in survey answers about the results between teachers, teacher trainers, head teachers / managers and policymakers. Contrary to expectations, **participants did not declare acquiring those competences, which are relevant to their position, more often than other competences**. For example, policymakers learned how to use CL nearly as often as teachers, while teachers learned what they can do so that there is more CL in schools and how to promote CL among educational authorities similarly often as head teachers/managers and policymakers.

The only larger difference is that it was much more common among **teacher trainers (64%)** than the rest of the participants to **learn what they can do so that teachers use CL more often**. As it is known from the country workshops, the project gave access to international teaching resources and for CPD institutions, the project gave an opportunity to broaden their training offer by including elements such as CL and the use of ICT in the teacher's work (MSCDN in Warsaw). This may in the future have an impact on teachers' competences and this study shows that CO-LAB had a positive impact on teachers' competences and practices (described further in the report). It may be also helpful, but to a lesser degree, in reducing obstacles in schools, since half of the head teachers and managers learned what they can do so that teachers use CL more often.

Participants shared their needs related to the course, both in the benchmarks survey (answers are described further in this chapter) and in the MOOC Padlet. Comments posted in the Padlet indicated either directly or indirectly what skills the practitioners needed to improve. An example of direct description of the needs included the need to gain more confidence in the use of CL, especially in shaping collaborative tasks.

Collaborative learning isn't something new for me. Unfortunately I am not very confident in that, that's why I took this course. (…) My geography classes are held in groups of 4. But I admit that I cannot always give the group the task so that cooperation is satisfactory. I hope that my participation in the course will help me learn how to do it better :)

Other participants pointed to their needs through listing their difficulties in using CL. These challenges included management of the group learning process, making learning interesting and meaningful, ensuring the involvement of every learner while attaining the objectives of the curriculum, as well as assessing the results of CL.

I think the biggest difficulty in the process of collaborative learning is "creating and managing meaningful learning experiences"; we must be creative and understanding of what young people care about. Defining the task and establishing several objectives is also a tough job but it guarantees that all students are involved and engaged during the process

It's not easy for me work on a collaborative way. I do not know very well how to manage groups and how to proceed; and even how to do the assessment of the work process.

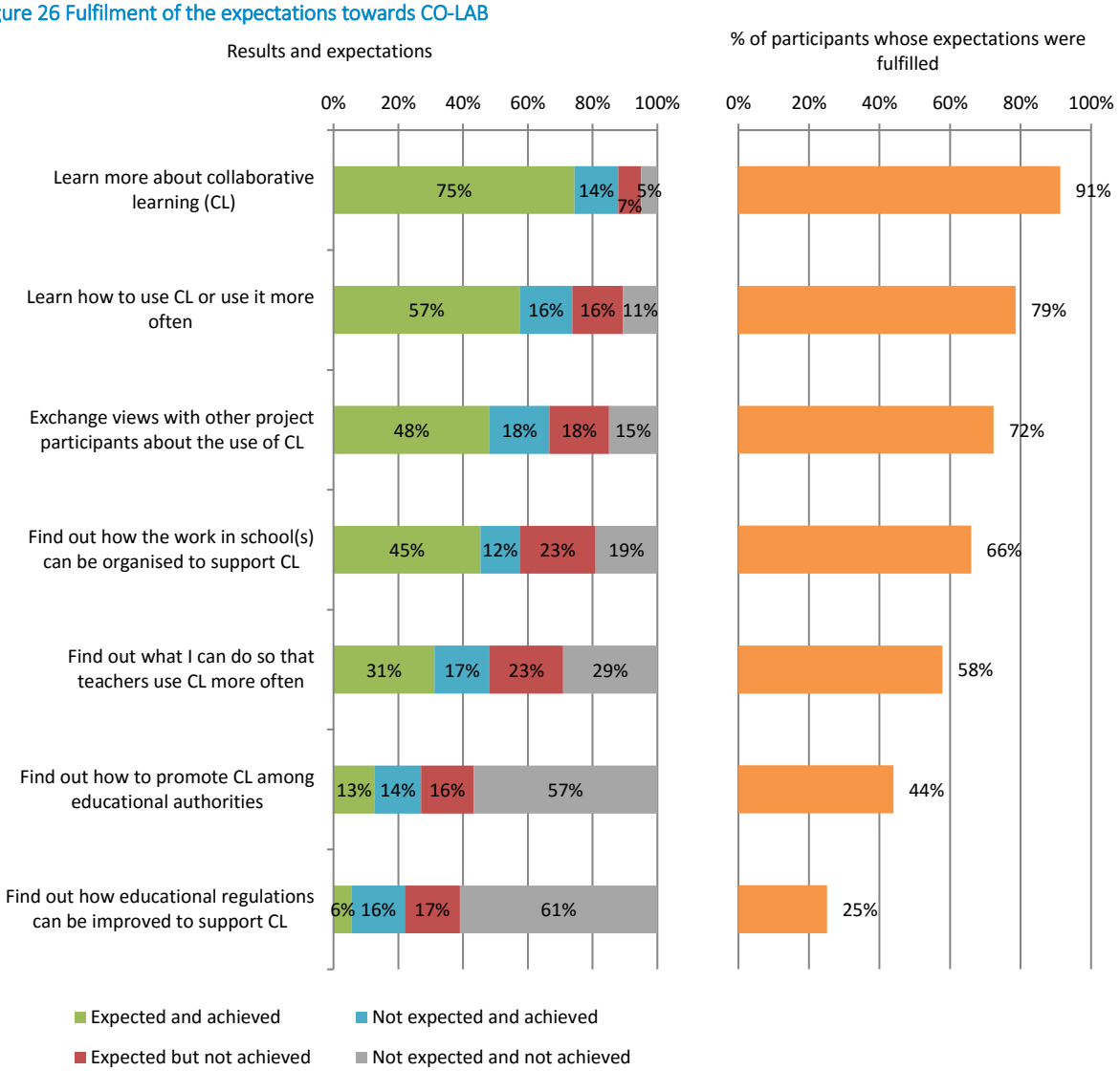
The problem is that some students are always more involved than others and I have to find ways to get them equally involved with different tasks that are more appealing to them.

Promote collaborative learning is easier said than promote ... is not enough to put the students to work in groups. The teacher must provide the right directions and closely monitoring the work of the students to see if actually collaborative learning is happening.

This is not an easy task for me. Sometimes it's hard to find and choose activities that, at the same time, fulfil what we have to do and are challenging for students.

For those participants who answered both the benchmark and final surveys, it was analysed if their expectations were fulfilled.

Figure 26 Fulfilment of the expectations towards CO-LAB



Source: Benchmark and final survey (n=141)

The more often a result was expected, the more often it was also achieved, which indicates that **the project answered the most frequent expectations** and that the majority of participants correctly recognised in the

beginning if this project was relevant to their needs. For **almost all** those who wanted to **gain knowledge** about CL, the project allowed them to do it. **Around ¾** of those who wanted to l**earn how to use CL and who wanted to exchange views** with other participants about the use of CL also found what they expected.

When it comes to **creating favourable conditions for the use of CL**, the project was effective for over half of these participants who wanted to find out **how school work can be organised** to this end and who wanted to **help teachers use CL more often**. There were less participants who wanted to learn how to promote CL among educational authorities and only less than half found what they expected. Even less participants expected to learn how educational regulations may be improved and they rarely acquired this knowledge in the project.

These results show that **needs related to practice were well addressed in CO-LAB**, while the project was **less effective in answering the needs related to policy making**. The latter corresponds with the previously described finding that while CO-LAB allowed participants to become more aware of the obstacles, it was less effective in learning how to overcome them.

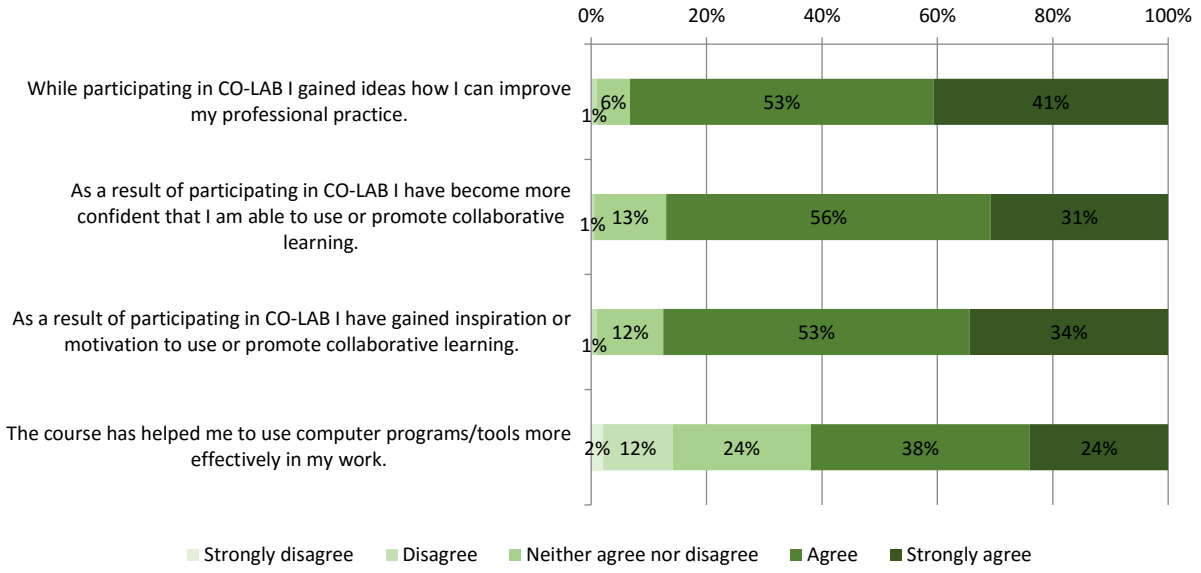
As expressed in the project proposal: CO-LAB's ultimate aim is to contribute to **spreading collaborative student learning at classroom level**. To achieve this, its operational objective is twofold.

- First, to offer concrete opportunities to teaching staff to **practise collaborative teaching and learning** in real conditions, allowing them on the basis of this experience to **report on the enablers and obstacles** they faced and the **student achievements** they observed.
- Second, the project aims to understand how education policy frameworks can support collaborative teaching and learning in the classroom.

So it may be concluded that if the second operational objective was realised, it was **not largely at the level of individual policymakers who participated in the project**. However, such analysis was performed in this project and this evaluation report is a part of this strand of reflection, which resulted in recommendations described at the end of the report.

Project participants were also asked about other results of the project for them and about whether they shared what they learned with their colleagues.

Figure 27 Other results of CO-LAB



Source: Final survey (n=192)

In addition to the development of specific competences, **the project also increased participants' readiness to use or promote collaborative learning**. A definite majority (93%) agreed or strongly agreed that while they participated in CO-LAB, they gained ideas about how they **can improve their professional practice,** but only 41% "strongly agreed" (51% among those who did at least one module of the MOOC and 56% among those who did

the whole MOOC). These results are similar but a little lower than those from the EUN post-MOOC survey, where 98% agreed or strongly agreed and 62% strongly agreed with the statement "*I have gained practical ideas of how I can improve my professional practice*". The reason of these differences is unknown.

Almost as many respondents of the final survey (87%) agreed or strongly agreed that as a result of participation, they **became more confident in their abilities to use or to promote CL.** Results were similar regardless of the participants' position, which means that CO-LAB was similarly effective in this respect for practitioners and non-practitioners. Moreover, CO-LAB had an almost equally common impact on participants' inspiration or **motivation to use or promote CL** (88%) and this result was more often among head teachers and managers (93%) than other participants.

The project partners' reports from country workshops present a similar picture. It appears that the second and third workshops turned out to be a platform not for exchange of opinions on obstacles and enablers on CL, but more on the **ideas how to implement CL in everyday practice**. This was most clearly identified in **Portugal**, where initial doubts about the CL method were substituted by concerns on how to use it in the most effective way, due to the fact that a large number of teachers had put it into practice in the classroom as a result of the first workshop and the MOOC. According to many of them, CO-LAB was one of the main causes for the CL implementation in schools. For those teachers who had some knowledge on CL earlier, the project allowed them to become more **aware on the level of CL importance** in the learning process. They also became more **encouraged to practice** collaborative learning in their classrooms more often (by exchanging information, good practices, peer learning and use of MOOC materials like the assessment rubric). The project **helped teachers to systematise their knowledge and increase their confidence in the competences which they generally already have**. It was also a source of **discoveries and inspiration** for example for student-teachers:

> *The biggest discovery was for me... to become aware of the essence of the educational space and how to plan the activities in such a way that the majority of the time is allocated to activities of students connected with collaboration. Another remarkable observation I have made is the enthusiasm of the students and their accompanying teachers. In addition, I was surprised by the ways in which teachers work in foreign institutions, both in terms of in-school activities and activities undertaken jointly with schools in other countries. (participant, PL) [Student - future teacher]*

Other opinions show how participants' motivation to use CL rose as a result of the project:

> *The form of group work should be used as often as possible in the education process; (participant, PL) [Student - future teacher]*
>
> *This is the method by which I want to work in the future. (participant, PL)[Student - future teacher]*

Some examples of good practice

The workshops were a source of many inspiring ideas. There were **examples of good practices** of various kinds, such as:

- Examples of collaborative school culture
  - An example of a learner-centred school, where the school personnel enjoyed considerable autonomy but also collaborated as a team and "followed the student", while collaborating also with parents (Poland);
  - A school where teachers filmed each other and exchanged their opinions and suggestions on teaching practice, such as types of questioning or "wait time". It was underlined that in this school, teachers constantly raise questions on their own practice in order to improve it through peer feedback. (Ireland)
- Examples of collaborative learning activities for students
  - Presentations given by school students (from students' perspective) about how they understand collaboration and how they worked collaboratively with their peers and teachers, as well as showcases prepared by students of their experiences with CL (Ireland);

- Examples of the use of software tools for collaboration – in this case the use of Google Docs and Microsoft One Note to create spaces where students can share their work, engage in collaborative activities, offer and receive peer feedback, assess peers and have a repository of their work; as well as the use of the Schoology platform for student-teacher collaboration (Ireland);
- One of the examples how engagement of students might be organised is the support of older students from upper classes to help teachers in the classroom while teaching through collaboration. In the case of Austria, a "buddy system" was also established among teachers, which teachers enjoyed and where a creativity rise was observed.

- Use of collaborative methods in teacher training
  - The use of a design thinking model in an ITE students project. In this case, it was Feel, Imagine, Do and Share (FIDS) framework. Students first were obliged to consider collaboratively the issues raised, imagine the solution to the problem they have empathised with, turn these ideas into actions and share their ideas and their findings. The assessment of their engagement was done by using the 21CLD rubric (Ireland);
  - Learning-by-doing (learning to collaborate and learning to use collaborative methods) where workshop participants took on the roles of school students and did collaborative activities in several subjects (two activities in geography, including one outdoors, one in biology and one in history), of which some required the use of software on participants' smartphones (Poland);
  - Raising participants' awareness of group roles and group dynamics through presentations, but also discussions and role-playing (Poland).

The use of ICT

The use of information and communication technologies (**ICT**) was promoted in CO-LAB as a means for collaboration. Various examples of the use of software were shown during the MOOC and discussed in the MOOC Padlets.

> *My school has been using Dropbox and Google Drive for some time to share documents and materials among teachers; last year, I and some colleagues have done training in the area of the flipped classroom as well as the use of mobile devices in a school context, which I have been implementing more and more in my teaching practice. For example, this school year I created a Padlet for each of my classes with the purpose of sharing and exchanging ideas, information and materials with my students. And I intend to increase the use of technologies and collaborative work among peers.*

Participants reflected in Padlets that technology may largely help learners' collaboration, for example as a means for students to do collaborative projects, and to communicate, for example to overcome shyness in communication. It was noted however by one participant that technology needs to be used with a purpose, not just as an attractive addition.

> *From what I have experienced, technology has aided massively in terms of allowing students to collaborate with each other for visualising projects, keeping in contact about a collaborative assignment whilst not in school and it is a great research tool. [Padlet]*
>
> *My students have shown to be more focused and participatory, when in my classes use technology. [Padlet]*
>
> *Technology might definitely help in collaborating / sharing your ideas - e.g. if there is pupil who is not a very talkative person, sharing documents using cloud services might actually help him/her. [Padlet]*
>
> *I agree that technology can help, but I often see people use technology in the wrong way. They make their lessons look fancy, but no more than that. [Padlet]*

Technology may also facilitate collaboration between teachers.

Developing these skills means that teachers have to make agreements on which activities are most effective within their curriculum, how they are going to assess these skills, how they are going to differentiate between pupils. And yes, technology can help for sharing results of thinking. [Padlet]

Although an increase in the use of ICT was not directly the objective, more than half of the participants (62%) agreed or strongly agreed that the course helped them to **use computer programmes / tools more effectively in their work**.

I learned that there are many digital tools that can be used in group work. (participant, PL) [Student - future teacher]

I would like to deepen my knowledge/skills on… different ways of using information and communication technologies in group work. (participant, PL)[Student - future teacher]

I would like to deepen my knowledge/skills on… the implementation of cooperation and collaboration in the work with children who have never had contact with this method and/or are reluctant to this method in integration classes, where they are students with special educational needs (participant PL). [Student - future teacher]

Opinions in the MOOC Padlets demonstrated that participants had diverse attitudes towards ICT – some shared their experience and recommended different kinds of software, others mentioned the obstacles – the difficulty to use ICT in their schools. This issue was also present during the country workshops, where while the use of **"non-digital" elements** in the project was seen positively, the **incorporation of ICT** tools was underlined as an important change in the mode of class teaching and also as an **enabler** for CL. In some cases, as a result of the project, the **use of technology** has become altered while teaching in the classroom (i.e. the use mobile phones). However, ICT tools use has also been indicated as an **obstacle** for many teachers. This was linked to their low competence and lack of conviction of the application of those methods in their teaching process.

This could have been observed also during the MOOC, where **e-learning as such was a difficult learning method for some teachers**, added to the language barrier. Some teachers realised that participation in the project has shown how difficult but effective online learning can be for people with lower ICT competences. Some organisations reflected on the need to increase the number of in-service training courses on the use of ICT in teacher work.

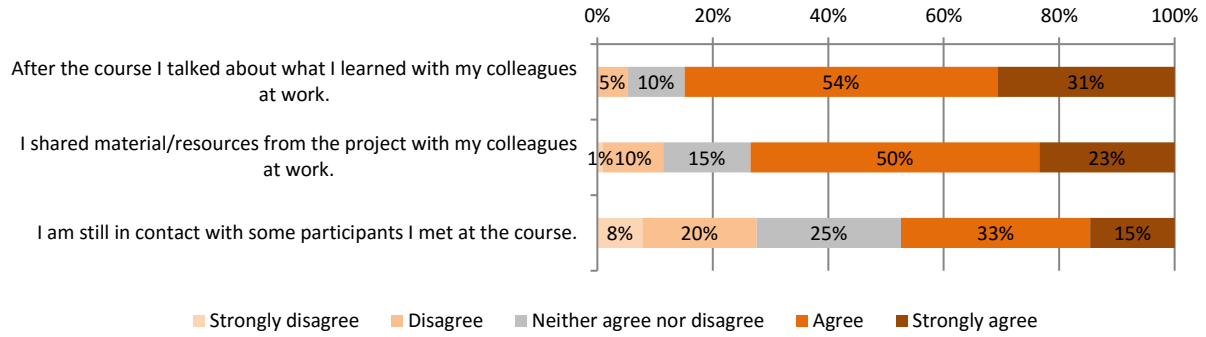
Additional results

Additional value of the CO-LAB project was the engagement of Polish future teachers (presently students at Warsaw University Faculty of Pedagogy) in additional research projects, planned and carried out under the guidance of faculty tutors. Based on the theoretical knowledge gained on the MOOC platform, participants developed a methodological basis for research activities. Empirical data was collected during school internships (with primary students in grades I-III) and at the faculty (with students of second and third year of first cycle studies and 1st year of second cycle studies). The topics of conducted research activities were:

1. Difficult art of self-assessment on the example of selected learning situations based on the interaction of pupils in early school age (study on self-assessment of class III pupils, characteristics of peer evaluations and convergence of these two types of assessments with observation assessment.)
2. Ways of a nonverbal teacher communication in a collaborative teaching-learning organisation (the study was devoted to nonverbal teacher communication including vocals, motivational behaviours and teacher's awareness of their use.)
3. The use of teaching-learning based on collaboration in academic activities (students observed group roles in small student teams and the relationship between them and the process of evaluation of the work, the ways of grouping and its relation with the quality of self-assessment and peer evaluation and other factors influencing teamwork and reliable peer assessment).

The above research showed that group work increases the autonomy of learners, raises their involvement in work and thus helps them to acquire knowledge and skills more effectively. It should therefore be applied on a larger scale in the everyday practice of schools of different levels. Special attention was paid to the 21 CLD Rubric, helping to plan student work in groups and assess their level of interaction.

Figure 28 Spreading knowledge and networking



Source: Final survey (n=192)

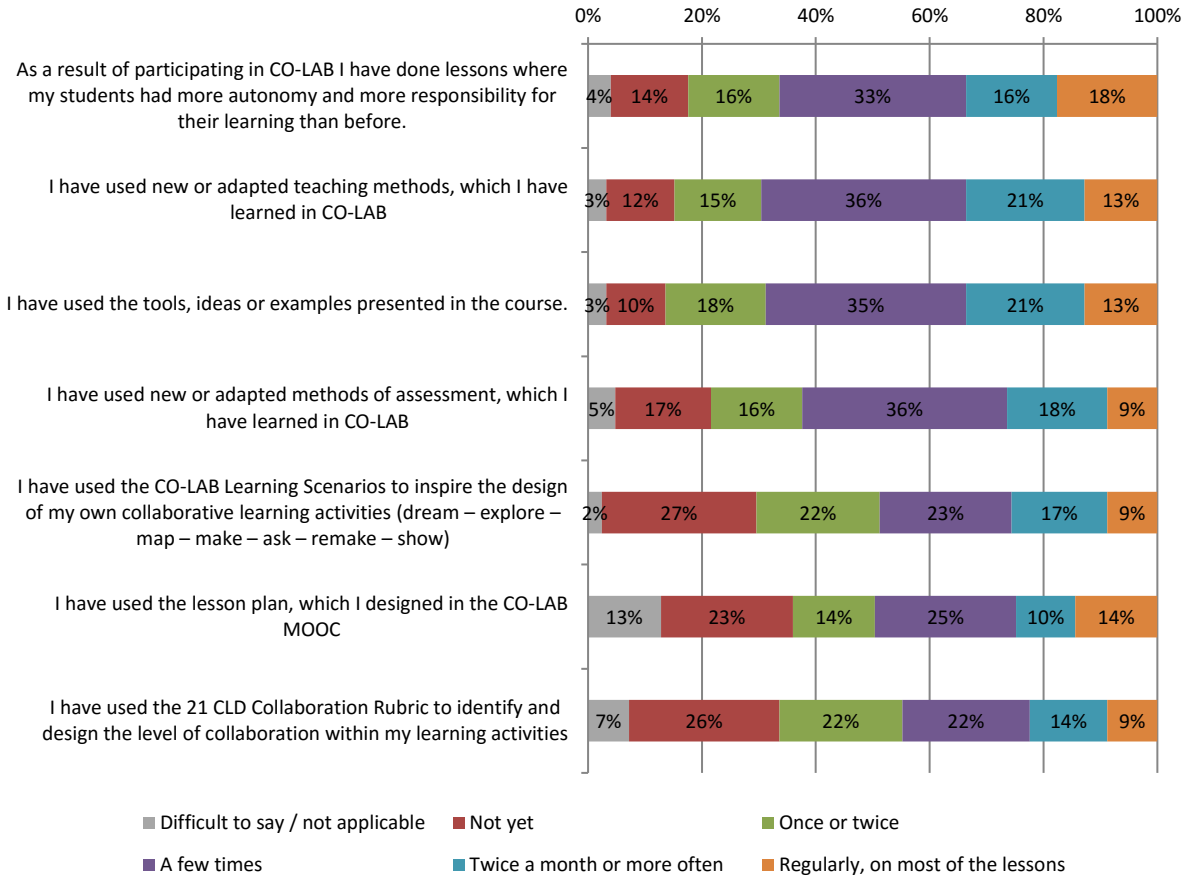
There were some additional results of the CO-LAB course. A very common one was that the knowledge about collaborative learning was spread by participants, making CO-LAB reach (at least partially) other people. As much as **85%** agreed or strongly agreed that they **talked with their colleagues about what they learned at the course**. Moreover, a large part of them (73%) shared the CO-LAB resources with their colleagues. The project also contributed largely to networking, as more than half a year after the end of the MOOC, nearly half of the participants (48%) remained in contact with other people whom they met at the course.

6. Use of collaborative learning – changes in teachers' practice

6.1. Use of CO-LAB resources by teachers

In this chapter, declared changes in the practice of school teachers are described. An analogical analysis of teacher trainers' practice was planned, but not performed, because of too small a number of respondents[10].

Figure 29 Use of CO-LAB resources and results by teachers



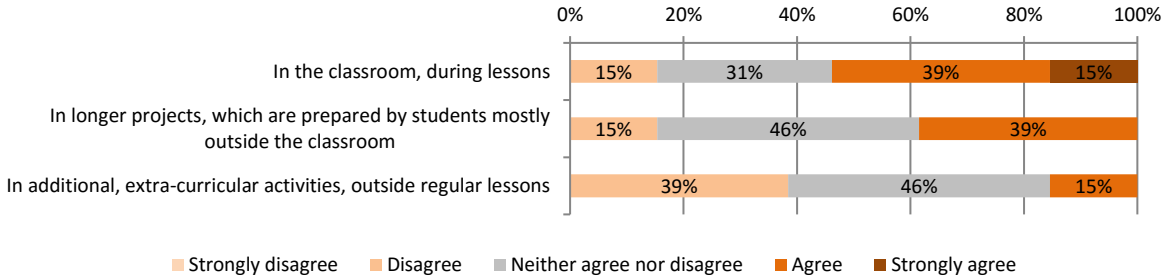
Source: Final survey (n=125)

The question described on the figure above was asked to all practitioners – teachers and teacher trainers - and it was not distinguished between respondents' practice as a teacher and as a teacher trainer. So, in order to allow for a meaningful interpretation and to avoid confusion, only teachers who were not at the same time teacher trainers were selected for analysis here, so as to be sure that they used the CO-LAB methods and resources to work with students at school, not with student teachers. Taking into account two types of answers together – the declared regular use on most lessons and use twice a month or more often – three results were the most frequent. In the first place came doing lessons where **students had more autonomy and more responsibility for their learning than before** (18% on most lessons and 16% twice a month or more) – **which means putting the**

[10] Depending on the question there were 13-17 respondents – teacher trainers, and questions about practice are too detailed for such an analysis to be informative in the case of a very small sample.

principles of collaborative learning into practice. Moreover, teachers often used the educational methods (13% on most lessons and 21% at least twice a month), as well as tools, ideas or examples which they learned during the course (same percentages). The use of **new methods of assessment** or adapting them was a little less common, but still 27% did it at least twice a month. Specific resources were used somewhat less frequently, with almost equal results for the self-designed lesson plan (done as MOOC activity) and for the CCL scenarios. **The 21CLD Rubric was used the least often** to identify and design the level of collaboration in learning activities. This may be somewhat surprising, because there was a very positive feedback from participants about this rubric.

Figure 30 Types of activities where teachers used what they learned in CO-LAB



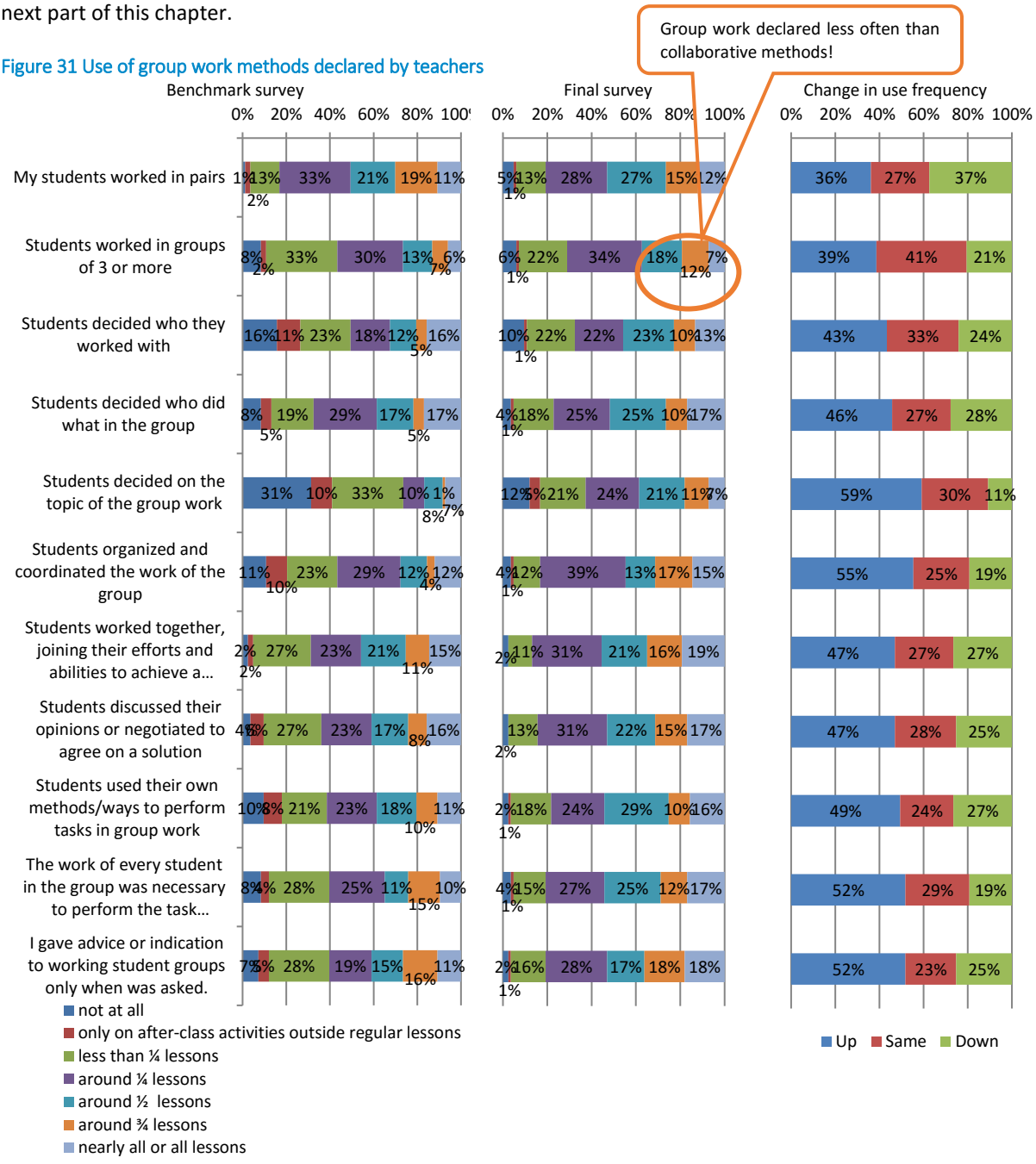
Source: Final survey (n=113) – teachers who used the CO-LAB methods or tools.

Teachers who used any of the methods or resources at least "once or twice" (or more often) were asked about the type of courses where they used them. The results are very positive. While 39% of teachers who used the CO-LAB methods and tools did it in the event when students prepared longer learning projects mostly outside the classroom, the use of CL is not limited to such projects or to extra-curricular activities. **Over a half of these teachers (54%) used these methods or tools in the classrooms during lessons,** thus proving that this is possible.

6.2. Use of collaborative methods of teaching and learning

The following questions were about the use of more detailed methods of group work, some of which are specific of collaborative learning. The frequency of their use before and after the project is shown on the figure below. It should be noted however that a change after the project is not necessarily a result of the project. It may also result from other factors. The impact of the project on these changes was also estimated and is described in the next part of this chapter.

Figure 31 Use of group work methods declared by teachers



Source: Final survey (n=83), teachers who answered both surveys

Among the teachers who answered both surveys, 7% indicated that their students **worked in groups (of 3 or more)** in nearly all or all of the lessons, 12% in about ¾ lessons and 18% in about ½ lessons. The use in about

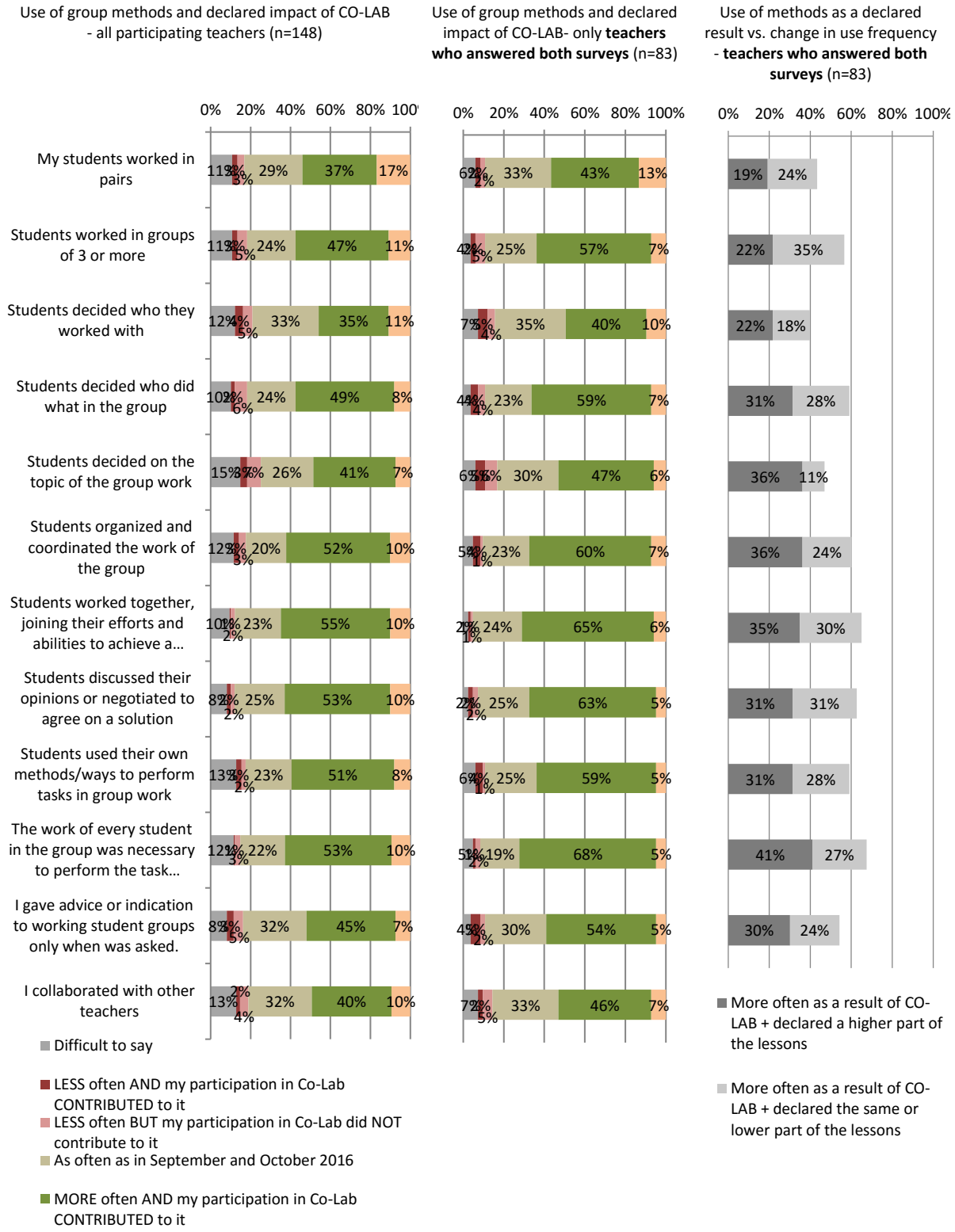
half of the lessons was the most often declared (34%). **Work in pairs** was more popular – 51% teachers declared using it in half or more of the lessons.

An interesting finding, both from the benchmark and final survey, is that **the use of any form of group work was declared less often than the use of many specific elements of collaborative learning**. It is unknown if that was because in the case of specific methods, the teacher thought only of those lessons where they used group work or work in pairs at all, or if they **overestimated** the real use of collaborative or cooperative learning. The latter may be possible if we consider the results of IBE research cited at the beginning of this report, which showed that there are discrepancies between teachers' declarations and the results of observational studies.

Still, the use of all of these methods and approaches was declared as more frequent by 36% to up to 52% respondents of both surveys. At the same time, between 11% and 37% declared using them less often. In the case of some methods, there were more teachers who started to use them, than teachers who declared their use only in the first, but not in the second survey. The methods, in the case of which this ''declarative net increase" was observed, were related to students' autonomy and to interdependence. As many as 59% indicated that their students decided on the topic of group work more often than before (this is a typical element of projects, so it is possible that project-based learning became more popular); 55% indicated that their students organised and coordinated the work of the group more often; 52% more often moved to a supporting position where they gave advice only when asked. **This would suggest that after CO-LAB, a large part of teachers moved to a more student-centred approach, which corresponds to the rise in the share of teachers who agreed with such approaches** (see chapter 5.1). A second frequent change was that **52% of the teachers started organising more often such types of activities where the work of every student was necessary to perform the task (interdependence)**. Also, in the case of other aspects, except for working in pairs, changes up the frequency scale were more common than the reverse.

Teachers were also asked about the same elements of group work for a second time in another section of the survey. This time they declared if they started using them more or less often (while in the question before they just indicated "how often" they used them) and the answers given in the benchmark and final surveys were compared. Results are shown on the figure below.

Figure 32 Declared impact of CO-LAB on the use of group work methods by teachers compared to declared frequency of the use of these methods



Source: Final survey. Answers are compared for participants who identified themselves as teachers and answered relevant questions in both surveys.

If the answers of all teachers who answered the final survey are compared to a sub-group of those, who also answered the benchmark survey, it appears that **those who answered both surveys declared positive changes more often**. Naturally, the difference is even larger if those who answered and did not answer the benchmark survey are compared. Respondents of both surveys declared twice or almost twice as oftenthan those who answered only the final survey that they used the listed approaches more often as a result of CO-LAB. The reasons for these differences are unknown, though it is possible that participants who answered both surveys were more motivated to be fully engaged in the project and thus used more of what they had the opportunity to learn. If this is the case, then possibly those who did not answer either of the surveys made even less changes. In that case, the results of this survey are **not representative of all the actual participants, but rather of those more involved and motivated**. This is only natural in survey evaluations of any projects of this kind, but it also means that **positive results in the whole population of participants may be less frequent than shown in this study**.

Globally, the answers to most statements seem similar in the case of both questions. Teachers indicated most frequently that as a result of CO-LAB, they taught in such a way that their students **organised and coordinated group work** more often. Moreover, the other aspects of students' autonomy were frequently indicated: **students' discussions and negotiations, use of their own methods and forming the groups by students**. Two aspects of collaboration were frequently indicated as used more often: **students joining efforts and abilities to achieve a common goal** (the essence of collaboration) and the situation where **each student's work was necessary** to achieve success (interdependence).

However, the comparison of the answers to this question to those where teachers indicated how often they used the abovementioned elements reveals a more complex picture. While the question of the use of collaborative and cooperative elements as a result of CO-LAB was asked to all respondents, this cross-analysis was only possible on the sub-group of those who also answered the benchmark survey, which, as mentioned above was possibly the most motivated group. It appears that among teachers who declared using these methods "more often as a result of CO-LAB" only some also indicated that they used them much more often, i. e. **their answers changed at least from "less than ¼ lessons" to "¼ lessons", from "¼ to ½" etc. In the case of most statements, about half of those who declared using these elements of group work more often made this kind of change**. So it probably means that among the other (more or less) half, the change was less notable (they used these approaches slightly more often) or largely declarative.

The element of which the use seems to have **increased largely as a result of CO-LAB was that students decided more often on the topic on which the group would work**. This is somewhat unexpected because it is a typical element of project-based learning, but not essential for collaborative learning. So it seems that **project-based learning may have become more popular as a result of CO-LAB** – especially in Portugal, where as many as 51% teachers (much more than in other countries) declared that as a result of their participation in CO-LAB, their students decided more often on the topic of group work.

Other notable changes are especially the increase in the abovementioned two rules: students organised and coordinated the work of the group (**autonomy**) and success depended on every student (**interdependence**).

Reports from country workshops bring more information about the use of different group work methods by teachers (and less about how these methods changed with CO-LAB). The reports show that **in all partner countries, teamwork or elements of group cooperation were used before the project started**. This could be widely observed for example during the workshops in **Poland**, where group working or working in pairs of students was a commonly known concept, although not that commonly practiced in everyday school activities. Collaborative learning was mostly identified with lower secondary schools, where (until the 2017 reform) – as a principle – students were obliged to develop a group project and present its results to the teacher. This was an obligatory requirement and a precondition for obtaining graduation to the third grade of the school. Thus, collaboration here was mostly linked with this long-term project activity rather than with short 45-minutes lessons. Some elements were anyway present during subject classes, including various forms of assessment.

In **Portugal,** group work was introduced by teachers in primary schools, mostly through projects, and much of this work had a focus on process evaluation and formative evaluation, with some elements of collaborative learning. As described above, this is confirmed by the final survey.

In **Estonia,** teachers use group work to give students tasks linked with the search for information, its analysis and formulation of new learning material. However, such elements of CL as division of tasks, ensuring active and fair involvement of all students or shared responsibility is rather occasional. What has been underlined is that the

role of the teacher is much bigger - and dominates the division of tasks, planning of exercises or forming students groups - than it is defined in the CO-LAB methodology, which indicates that cooperative learning or "group work" is used. Whereas in collaborative learning, the autonomy of students is much bigger as regards planning and performance of a given task (though not necessarily group forming).

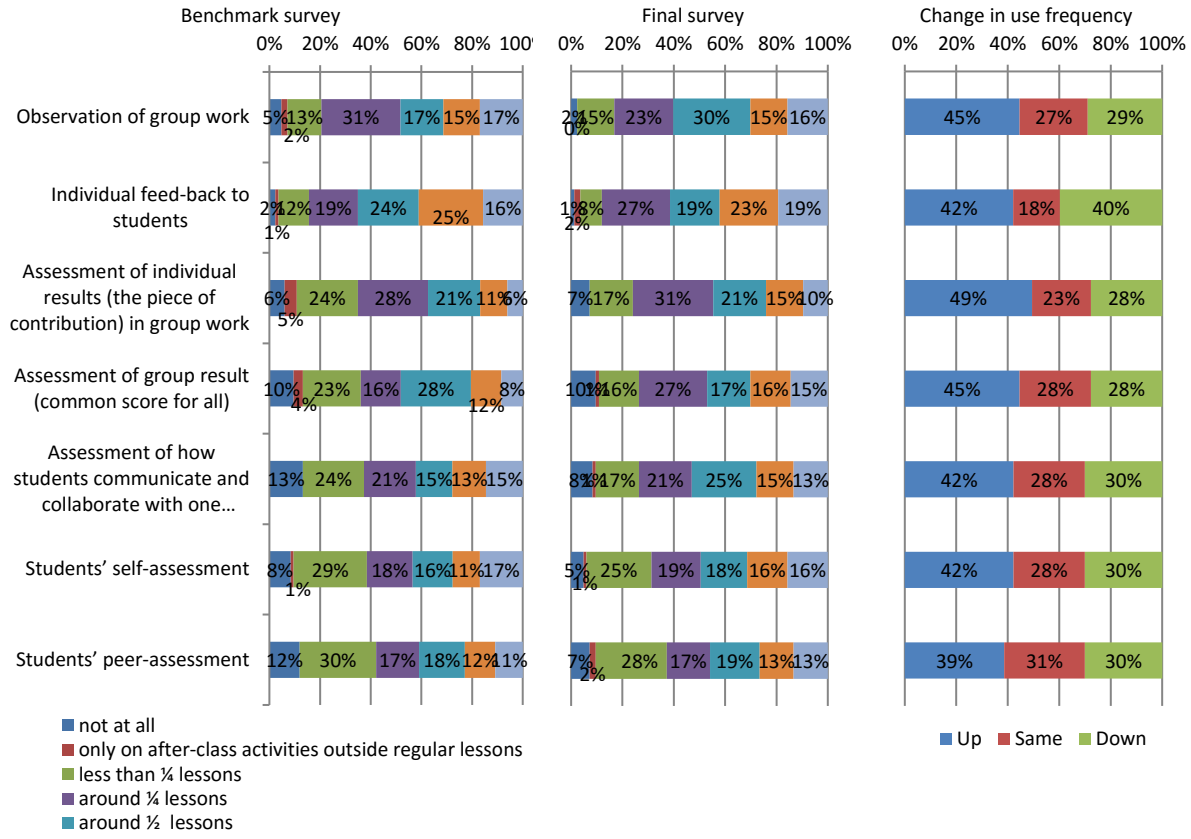
In **Estonia,** a common practice is that teachers decide on students' assignment to a group or they apply a random group generator, they rarely allow students to choose themselves. This seems to be also the case in other countries – i.e. **Austria**, where students were assigned different roles by teachers (researchers, reporters, engineers), using a special tool called TeamUp (http://teamup.aalto.fi), which facilitates assignment of students to various groups, on the basis of an analysis of students' strengths. Self-and peer-assessment were also commonly used (like in a lower secondary school in Vienna[11]).

In general, it appears from the country workshops that the CO-LAB project influenced positively both the level of knowledge on CL and attitudes towards its implementation into practice. Reports show that this cooperative approach was replaced by a **collaborative approach** (at least in some cases), where results of group work are more than a simple sum of individual results. This is in line with survey results, which show that as a result of CO-LAB, teachers organised learning with the use of CL principles more often.

6.3. Assessment of collaborative learning

A similar set of questions was asked about assessment of group work.

Figure 33 Use of assessment methods declared by teachers



Source: Final survey (n=83), teachers who answered both surveys

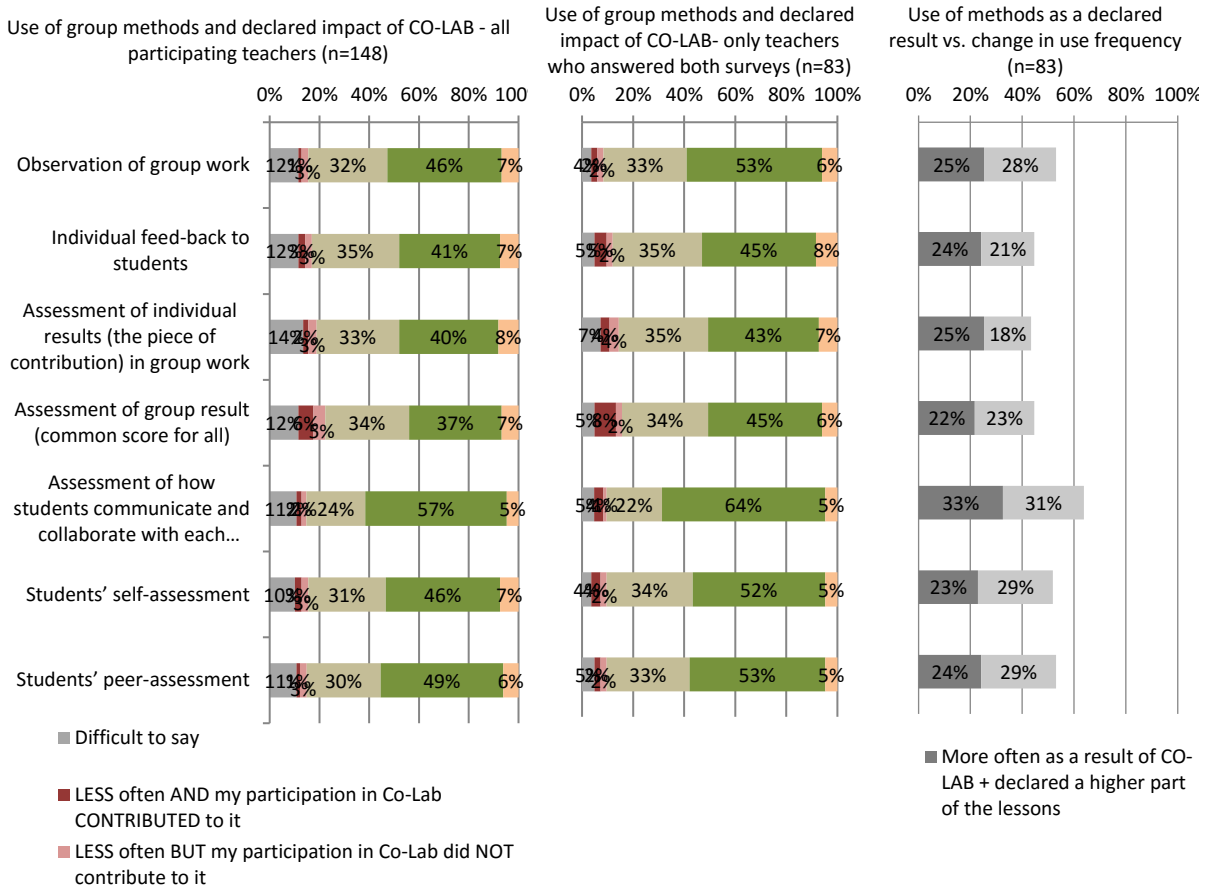
[11] NMS Schopenhauerstraße:http://zli.phwien.ac.at/co-lab-szenario-workshops-an-der-nms-schopenhauerstrasse-79/

Observation of group work and assessment of the result achieved **by the group** (common score for all) were used by half of the teachers before the project. After the project, a large part of teachers declared using it more often, but also a considerable share declared using it less often. The net difference was 16 pp for observation of group work and 17% for group assessment. As regards **individual assessment**, interestingly **teachers indicated that they gave individual feedback more often** than **they assessed individual results (contribution) into the work of the group**. This might mean that individual feedback did not always pertain to individual contribution – it might have been about other elements, such as specific details of the work or social aspects such as cooperation etc. As to the assessment of how students communicate and collaborate, a large part of the teachers indicated they assessed this aspect more often or less often than before, and the net result was moderate: 12 pp for this kind of assessment.

The use of individual feedback remained globally at almost the same level – while larger shares of the teachers indicated using it more often or less often, the net difference was close to zero. **What changed was that after CO-LAB, there were many more teachers who started assessing individual contributions more often, than those who began to do it less often than before – the net difference for this kind of assessment was 22 pp.** This was also the aspect where increase in declared frequency was most often indicated . The reason might for example be that teachers had the opportunity to reflect about assessment and to learn about assessment tools such as assessment rubrics. This happened even though more people started than ceased to believe that it is difficult to assess individual contribution (see chapter 5.2). Among the teachers who answered both surveys, **the share of those who agreed that it is difficult to assess individual contribution, but still assessed it at ¼ or more lessons, increased from 13% to 27% (by 14 pp)**.

There were moderate changes in the frequency of use of students' self-assessment and of peer assessment. While the comparisons of declarations show a difference for the majority of teachers, the global net result is 12 pp for self-assessment and 9 pp for peer assessment. So, it appears that there were **more changes in what and how teachers assessed, than in if (or how often) they did self-assessment and peer-assessment activities with their students**.

Figure 34 Declared impact of CO-LAB on the use of group work methods by teachers compared to declared frequency of the use of these methods



Source: Final survey. Answers are compared for participants who identified themselves as teachers and answered relevant questions in both surveys.

Like in the case of the use of group work methods, also in the case of assessment, results were cross-analysed between the declared impact of CO-LAB on more (or less) frequent use of different aspects of assessment, and the change in the answers about how often they were used before and after the project. Again, the declared impact of CO-LAB was higher in the group which answered both surveys. Also again, for each statement, out of those who declared that they used a given method or assessed a given aspect more often as a result of CO-LAB, around half also indicated doing it more often than in the benchmark survey. Both results coincided most often in the case of the **assessment of individual results – the contribution into group work** - which indicates **that it is very likely that as a result of CO-LAB, some teachers (at least 25% or more) learned how to asses this aspect and started to do it much more frequently**, while around 18% possibly started to do it a little less often.

As many as 57% surveyed teachers (and 64% of those who answered both surveys) declared that as a result of CO-LAB, they started to take the collaboration process (how students communicated and collaborated) more often into account in assessment. Also, the reports from country workshops show that the **approach of some teachers to assessment changed from result-oriented towards process-oriented**. For example, Irish teachers expanded the assessment of cognitive domains to include metacognition, and also included assessment within the affective domain - many of them considered metacognition or the affective domain in their assessment for the first time. Some of them designed new and innovative lessons and also used the 21 CLD rubric to assess the level of collaboration.

Half of the teachers declared using **peer-assessment more often as a result of CO-LAB** and **for at least 24%, this was a considerable change** reflected in the share of lessons when such assessment was used. The **Irish** country report brings more insights into the use of peer assessment, including an example of a teacher who learned the benefits of students' peer evaluation, and started to include it as a reflective process at the end of each activity.

Peer assessment was also visible during students' presentations at the Irish workshops. One presentation focused on the enhancement of student engagement in CL through the use of online applications, such as Google Docs, where students showed how they enjoyed providing and receiving peer-to-peer feedback in the writing process.

7. The involvement of decision makers

7.1. Dialogue between practitioners and policymakers

As described in chapter 1.3, 8% of the respondents of each survey were head teachers, 17% of respondents of the benchmark survey had another managerial position at school and 7% of the respondents of the benchmark survey were policymakers who worked in an educational authority or an institution supporting education. Not everyone managed to actually participate in the project. The participation of head teachers (70%) was a little below the average (which was 80% for all respondents) and that of school managers (76%) and policymakers (82%) close to average.

The project as a whole was less relevant to the needs related to policy making than to the needs related to practice. Participants' expectations were moderately often satisfied as regards micro-policy making at school level and less often as regards policy level. As regards the school level, 66% of those who wanted to find out in CO-LAB how schoolwork can be organised to support CL learned about it. Moreover, of those who wanted to learn what they can do so that teachers use CL more often, 58% learned it. As regards the policy level, results were less common. 44% of those who expected to find out how to promote CL among educational authorities declared that they learned about it and an even smaller share (25%) of the people who wanted to find out how educational regulations can be improved to support CL found out (see chapter 6.2.2).

This profile of the results was coherent with the concept of the MOOC, which was thought of as a course for practitioners, although anyone, including policymakers, could participate. Still this survey shows that **CO-LAB did have a positive effect on decision makers**. Although it had little impact on participants' ability to influence authorities and regulations, it allowed **all participants (including head teachers/managers and policymakers) to increase their motivation and to gain ideas which may be useful in practice**. As other answers suggest, these results pertain to school-level practice rather than to more general policy making.

The country **workshops** were the part of the project designed especially for policymakers as well as for practitioners, so that both groups could interact. And in fact, at least among the respondents of the final survey, the participation of decision makers in the workshops was **a little higher** than in the case of other groups. While among all the respondents, 61% took part in at least one workshop, it was 65% for head teachers, 66% for school managers and 68% for policymakers. These differences are not statistically significant though, but statistical significance is not taken into account in this study because of the specific nature of the study – (as it is described in chapter 1.3 there are concerns if it is representative, it is also based on a relatively small sample).

From the perspective of the final survey respondents, discussions between practitioners and policymakers took place during the workshops, but were the least frequent activity (see chapter 6.1.2). As the country reports show, in most of the workshops a vast majority of practitioners dominated the meetings. There might have been various reasons for that. In some cases, policymakers, like representatives of ministries of education or institutions engaged in national education policy making, were not that keen to participate due to the largely practical topics of the workshops – exchange of best practices, lesson scenarios, tools for assessment, MOOC linked with the development of a lesson scenario or assessment rubrics etc.

In some cases, the project addressed organisations providing training for teachers (Estonia) and thus policymakers were more reluctant to take part than teachers for whom the project was perceived as more useful. In 2 cases (Austria, Portugal), policymakers were more engaged in the project than on average, which may supposedly be attributed to the fact that the project was managed by ministry officials at national level. In Austria, the policymakers constituted 19% to 40% of the participants of the workshops, depending on the workshop. As regards head teachers, they constituted as much as 12% of the participants at the first workshop and 22% at the second, though few at the third. In Estonia, 6 out of 8 participants of the first workshop were head teachers while there was only 1 head teacher at the 2nd and 3rd workshop.

However, when we consider school principals, directors of teacher training centres and representatives of regional education boards as those involved in the decision-making process, the situation looks a bit different. Even in the cases of those project countries where teachers and teacher trainers were dominant, the workshops and the project as such were attended by some representatives of decision-makers.

Thus, although the workshops were dominated by a discussion on practical aspects of the implementation of CL in schools or CL teaching in CPD activities, such issues as school timetable organisation, administrative support for teachers or school infrastructure were also discussed, with the engagement of decision-makers. Those were naturally related to enablers and obstacles in CL introduction to schools, where the examples of both good and bad practices were identified in order to either encourage or to warn from repeating the mistakes. The gathering of education actors from various institutions allowed for exchange of different opinions and perspectives. The workshops were a good platform enabling to hear each party's voice and by consequence, education actors have become more aware of some problems and solutions. **Policymakers and decision-makers became more aware of the problems that teachers face while implementing CL into the school** timetable (like few possibilities to make subject classes in a row of two or three lessons, lack of appropriate ICT infrastructure, problems with teaching interdisciplinary lessons), **teachers in turn became more conscious as regards the flexibility of some core curricula** which do allow for innovative teaching and are more flexible than teaching manuals or textbooks, rigidly followed by some teachers. This allowed for drawing conclusions which referred to a need to cooperate among various education bodies and organisations.

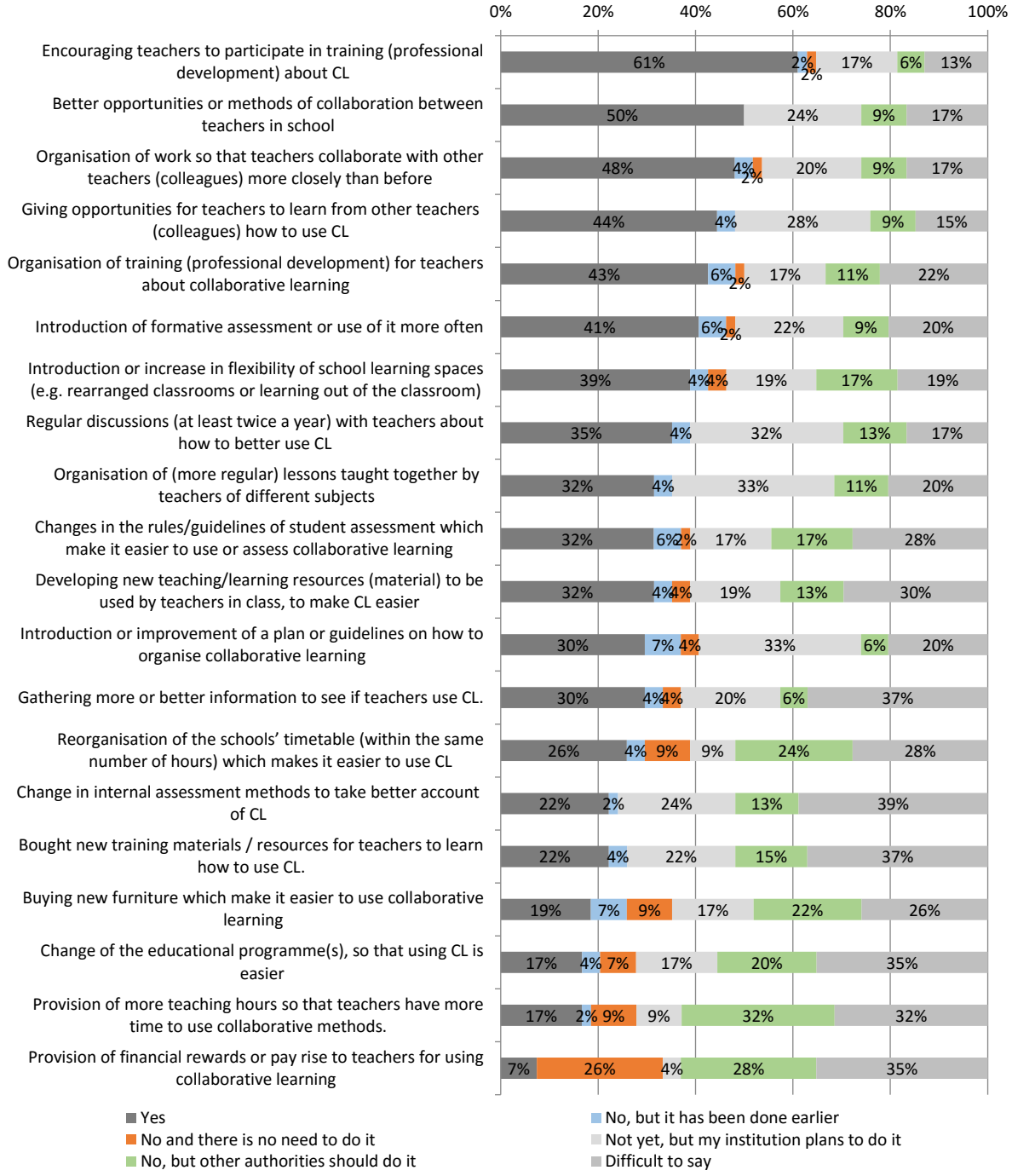
The conclusion was made that **good collaboration between school management and teachers is a supportive factor**. Without collaboration among those school actors, the implementation of changes as regards CL teaching and any innovations in teaching methods will not be possible or will be hard to put in place. Such kind of collaboration is also a good example for students, as they do not only learn during their lessons but also learn from everything that surrounds them.

> *The process of common learning of learners positively influences their sense of greater autonomy in the process of acquiring knowledge, and thus learners are more willing to engage in action. It requires the well-thought and coordinated action of schools, teachers and students. (participant, PL) [Student - future teacher]*

7.2. Changes made by head teachers

A set of questions was designed in the survey to find what institutional changes in support of CL were introduced at school level and policy level before CO-LAB and as a result of CO-LAB. The percentages represent respondents, but not schools, as there could have been more than one respondent from one school. Since there were very few head teachers (only 13) who participated in both surveys, it was not possible to perform an analysis of changes made after the project versus those made before the project. So, the results of the benchmark and final survey are described below separately and they come from largely, but not entirely different respondents.

Figure 35 Changes supporting CL in schools – head teachers' and managers' declarations in the benchmark survey



Source: Benchmark survey

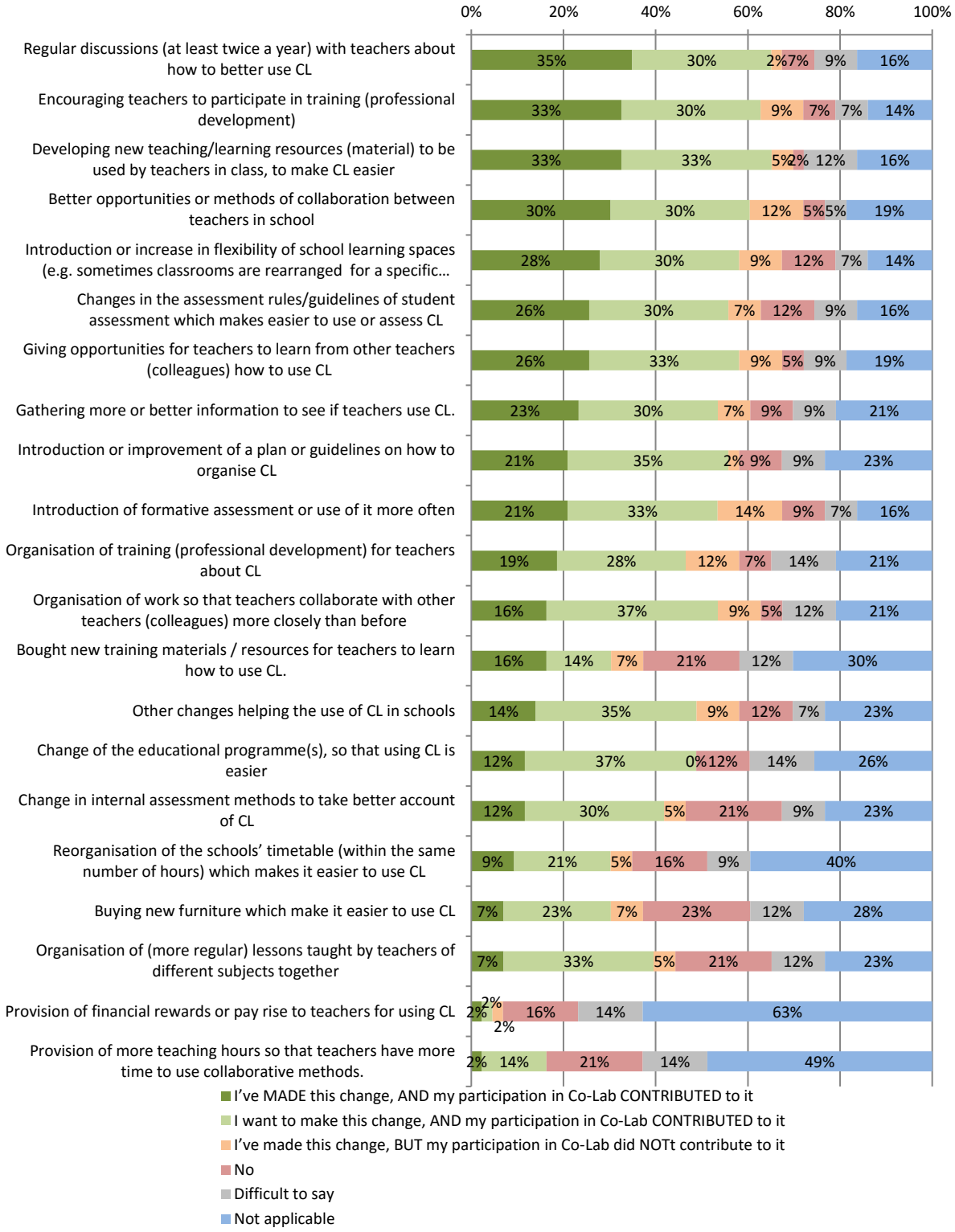
Within **two years before CO-LAB,** training about CL was the preferred solution for school heads and managers. School leaders often encouraged teachers to take part in continuous professional development on CL (61%) and less often organised training on CL (43%). School leaders also often improved possibilities for teachers to cooperate with one another (50%), which doesn't directly improve CL but helps in building an atmosphere of collaboration. Teachers were also given the opportunities to learn CL from other teachers (44%), so peer learning appears to be used quite often compared to CPD.

An increase in the flexibility of learning spaces was a popular solution favourable for CL (39%). Around 1/3 respondents declared the introduction of a plan or guidelines on the use of CL (30%), having regular discussions with teachers about the use of CL (35%), changing the rules of assessment to better include CL (32%) and development of CL-related learning resources (32%) as well as improvement of the monitoring of CL use (30%). There were also some relatively popular solutions less directly related to CL: a wider use of formative assessment (41%) and co-teaching (32%). Purchase of training material or equipment facilitating the use of CL was much less common.

Head teachers and managers less often declared changes in the schools' timetables (26%), especially if this should mean providing more teaching hours (17%) and rarely there were changes in educational programmes introduced (17%) for CL to be used more widely. Financial rewards for the use of CL were almost never used and quite a large proportion of respondents (26%) believed they shouldn't be used.

Changes made by head teachers and managers after CO-LAB are shown in the figure below.

Figure 36 Changes made by head teachers and school managers – declarations in the final survey



Source: Final survey (n=43)

As a result of CO-LAB, changes supporting CL were made by some head teachers and school managers, though by no more than 1/3 in the case of the most popular changes. If the change was made, it was more often attributed to the project than done regardless of the project, especially in the case of the most common changes.

The most common actions done by head teachers and school managers as a result of their participation in the project were: regular discussions with teachers about how to better use CL (35%), encouraging teachers to take part in professional development (33%), development of new CL-related teaching resources (33%) and improvement of the opportunities or methods of teacher collaboration (30%). More than 1/5 made the following changes: reorganisation of the learning spaces, at least for some lessons (28%), changes in assessment rules so as to better assess CL (26%), giving teachers the opportunity to learn to use CL from other teachers (26%), a better monitoring of whether teachers use CL (23%), introduction or improvement of a plan or guidelines on the use of CL (21%) and introduction or a more frequent use of formative assessment (21%).

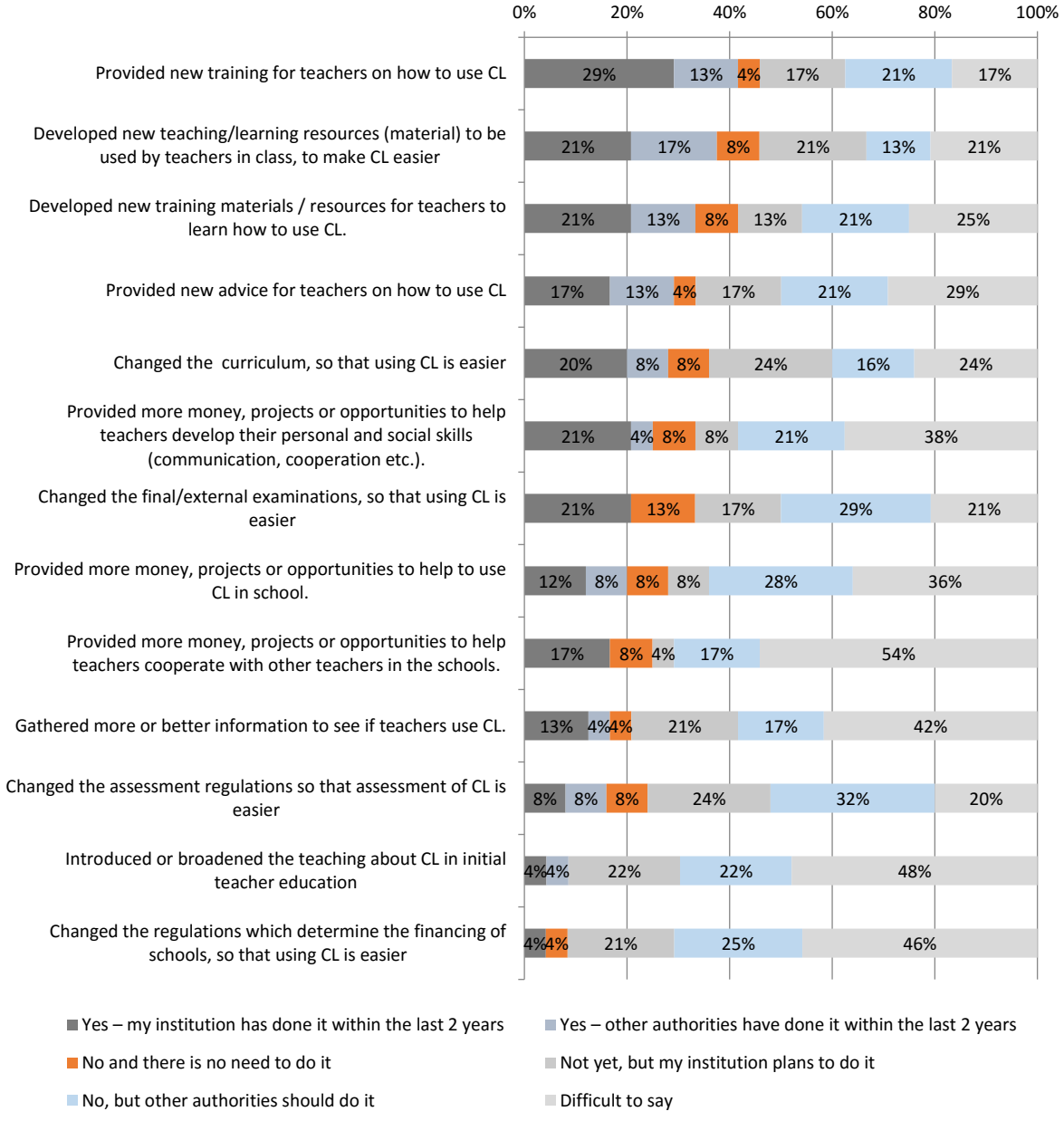
Among the surveyed head teachers and school managers, 33% did not make any of the abovementioned changes as a result of the CO-LAB project. So, **the project was effective in inspiring some changes among 67% of the head teachers and managers and 47% of them made between 1 and 6 of the 19 changes about which they were asked**. The mean amount of improvements made as a result of CO-LAB was 3,9 (counting in those who didn't make any, and 5,8 excluding them).

While changes made as a result of CO-LAB, within a few months after the MOOC and the 2nd workshop, were less frequent than the changes made within 2 years before the project, their ranking was quite similar. Again, **encouraging teachers to participate in trainings (33%) and developing new teaching resources (33%) as well as improving the collaboration between teachers (30%) and giving them the opportunities to learn the use of CL from other teachers (26%)** were relatively popular. However, there were actions which were not very common before the project and ranked higher after it. These were: **regular discussions with teachers about CL (35%), making learning spaces more flexible to support CL (33%) and a better monitoring of the use of CL by teachers (23%)**. The more frequent discussions and improved monitoring suggest that **to some head teachers and school managers, collaborative learning had a higher priority as a result of CO-LAB**.

7.3. Changes made by policymakers – authorities and supporting institutions

A parallel question was addressed to policymakers (representatives of authorities and supporting institutions) and was designed to find what systemic changes in support of CL were introduced within 2 years before the project and a few months after the project. Relevant questions were answered by only 26 policymakers in the benchmark survey and 18 in the final survey.

Figure 37 Systemic changes supporting CL – policymakers' declarations in the benchmark survey



Source: Benchmark survey (n=26)

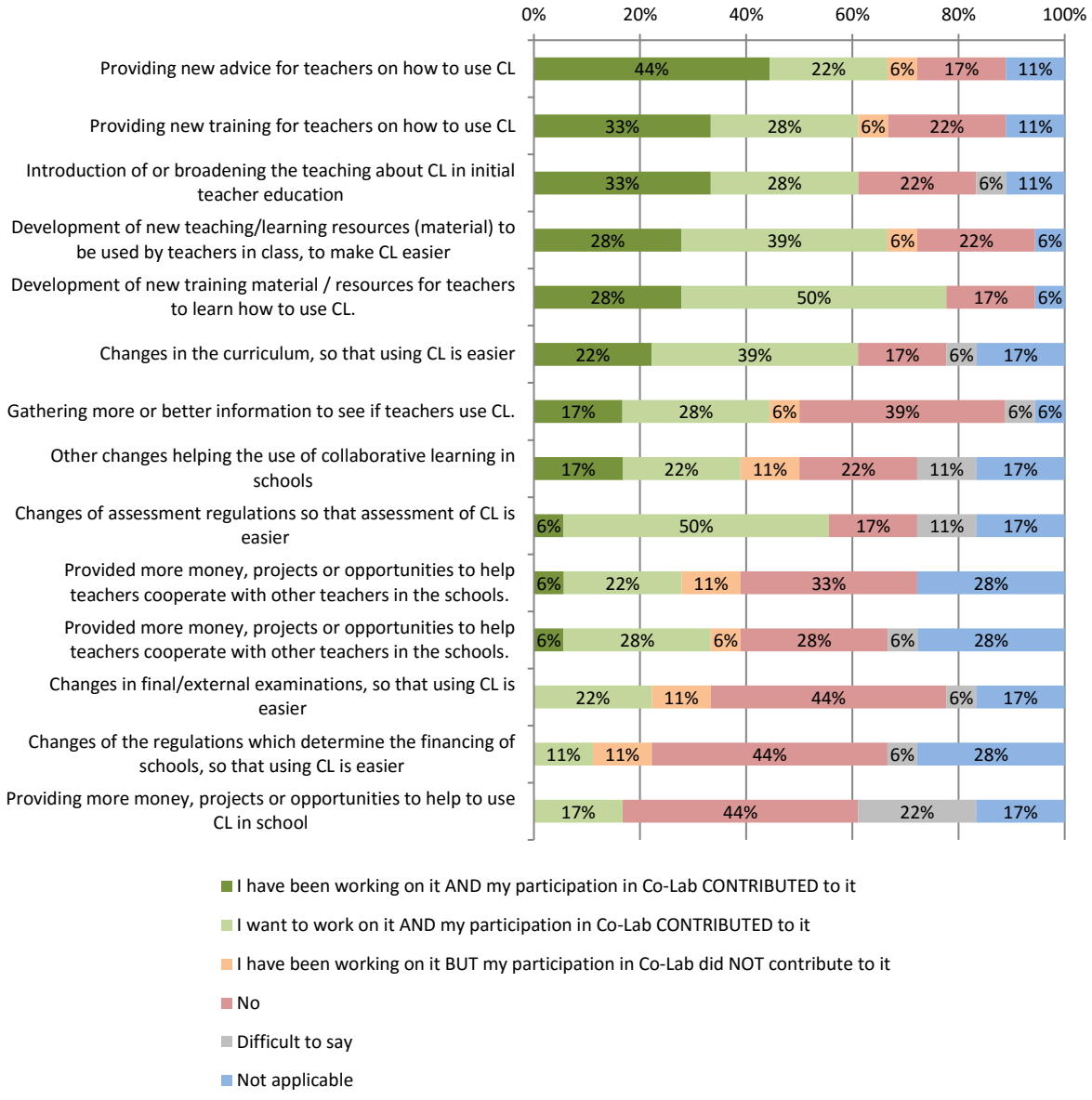
The most popular (or the most recognised) actions performed within the last 2 years were the provision of support: new training about collaborative learning (declared by 42% respondents of all countries, including 29% who indicated it was done by their institution), developing resources for teachers to use with students (respectively 38% and 21%) and to self-educate (33% and 21%), as well as new advice for teachers (29%, 17%).

On the other hand, respondents agreed that it was rare to increase funding for the support of CL. Considering these answers together, it may be assumed that either respondents did not think of the funding behind increased training, advice and resources as "increased" or this "new" support replaced the old or was continued within similar funding.

In some cases, there were changes in the curricula (28%) and in external examinations (21%) to take a better account of CL, whereas respondents rarely pointed to supportive changes in assessment and financial regulations, improvement of ITE or information collection and analysis.

In the final survey, policymakers were asked if they worked on the same kind of changes (not if they introduced them, as there was little time to do it).

Figure 38 Changes made by policymakers – declarations in the final survey



Source: Final survey (n=18)

Like in the benchmark survey, organisation of training for teachers (33%) and of teaching resources (28%) was quite popular. As many as 44% of the surveyed policymakers worked on providing more advice for teachers on the use of CL, whereas this was less common in the benchmark survey. Moreover, 33% worked on a better

coverage of collaborative learning in initial teacher education (33%) and 22% worked on the changes in the curricula. It should be noted however, that with such a small number of surveyed participants, the results cannot be generalised beyond the respondents.

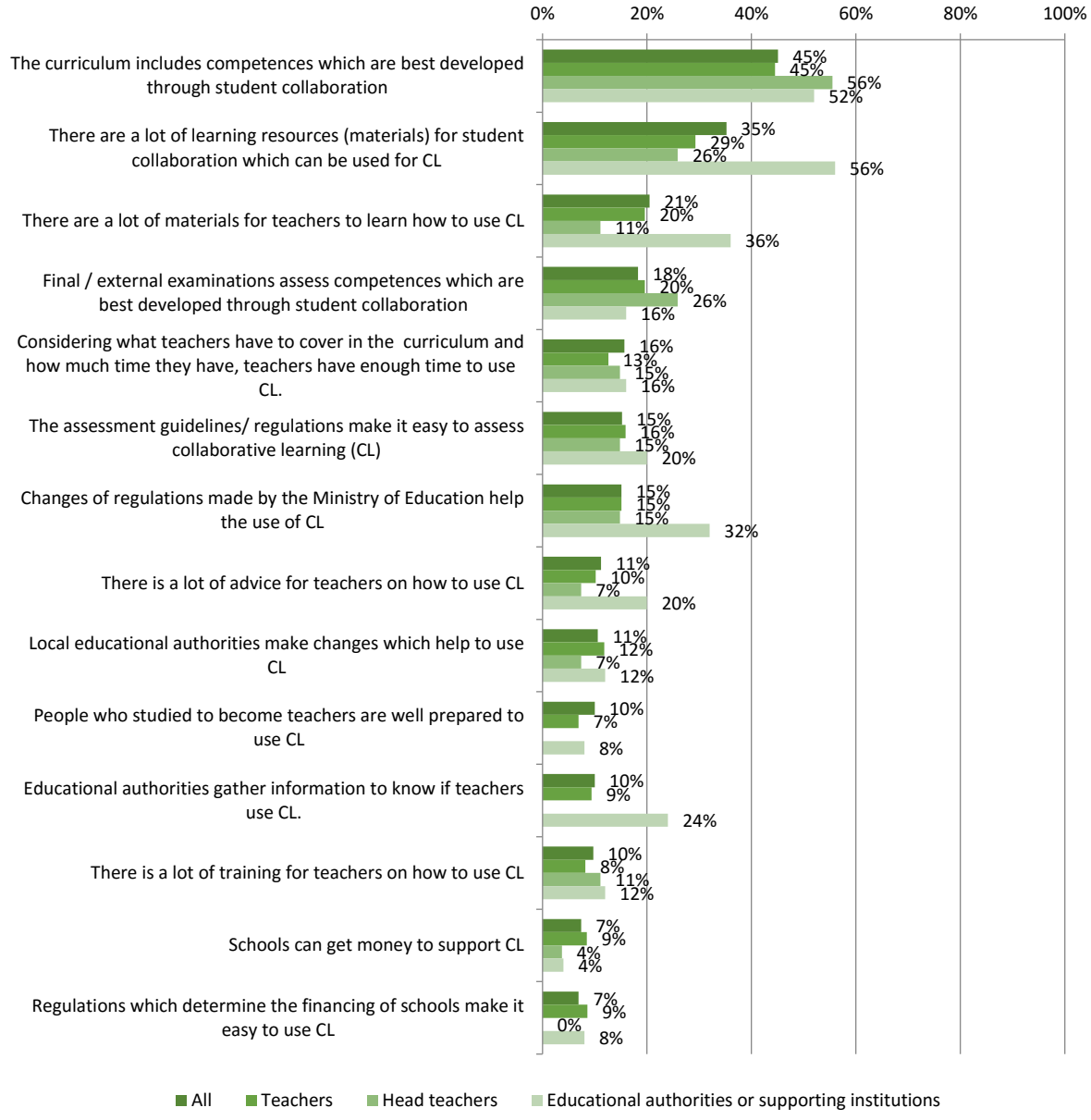
As the benchmark survey showed, if changes were not introduced, they were widely declared as planned or at least perceived as necessary. The **most desired changes included** the modification of **assessment regulations**, **the improvement of ITE, modification of financial regulations, modification of the curricula and examinations.** So, there was the necessity for **changes throughout the educational systems, especially on a higher policy level.** Generally, **educational systems were perceived more as barriers than as favourable conditions for CL. Yet, what was mainly done is not their modification, but the provision of support** (training, resources etc.) which is meant **to encourage teachers to use CL within current systemic constraints**. **CO-LAB made a small contribution to systemic changes**, because as a result of it, **some policymakers worked on changes in curricula and in ITE**.

8. Factors (enablers and obstacles) for the use of CL

8.1. The perception of enablers and obstacles

In the benchmark survey, participants were asked about their opinions on the incidence of several enablers and obstacles for collaborative learning. Respondents indicated that there were favourable as well as unfavourable conditions for the use of CL in schools. Generally, teachers and head teachers were less optimistic than policymakers.

Figure 39 Opinions about conditions for CL – all respondents and selected groups (benchmark survey)



Source: Benchmark survey

According to almost half of respondents (45%), **curricula** include competences, which are best developed through collaboration. Since curricula are the basics of school work, **their perception as requiring CL by less than the half of participants indicates that there is some room for CL at school, but it won't be the main objective**. Comparing participants' responses by countries and also by respondents' positions, it seems that the curricula were perceived as the most favourable factor for CL development in **Portugal**. As the analysis of the core curricula demonstrates (see chapter 3.1), social competences and collaboration were not directly expressed in the core curriculum, but teaching citizenship was introduced with the current reform, so it is possible that respondents' positive opinions were related to the reform. The documents review shows also that among the CO-LAB countries, **collaborative learning is directly expressed and the most underlined in the Irish core curriculum**.

Another factor are the final **examinations**, for which students must be prepared. As expected, respondents noticed that even if competences developed in CL are a part of the curriculum, they are not typically verified in examinations, which are individual, so they will naturally lower the priority of CL. This issue was also mentioned as an obstacle (and a sort of excuse for not using CL) in the MOOC Padlet:

> *Most teachers in subjects subject to national examination do not apply the new pedagogies and do not use activities based on collaboration because they find it difficult to evaluate students and say that "exams are individual". [Padlet]*

The picture was relatively more favourable in Austria, Belgium and Portugal, whereas in Ireland and Poland, examinations were perceived as definitely not verifying CL-related competences. Opinions about assessment regulations were similar to those about examinations – only 15% respondents believed that those regulations facilitated the assessment of CL. Again, there is a disparity between survey results and documents review as regards Ireland, where there are two specific classroom-based assessments for each subject, which include collaboration, as well as other skills that cannot be evaluated traditionally.

Participants **assessed relatively high the availability of resources for CL**: resources to be used by teachers with students (35%) and a bit less those for teachers to learn to use CL (21%). Less often, respondents indicated that there was enough advice for teachers on using CL (11%) and a lot of training on CL (10%). Looking both at the answers of teachers and policymakers, resources and training seem to be the most available in Austria, and advice in Portugal. It is noticeable how **policymakers overestimate the availability of support**. It is possible that **either resources and advice are not as widely available** as the representatives of authorities and supporting institutions believe, **or that they know about their own offer, but it hasn't been disseminated sufficiently among teachers**. An even more **problematic issue is initial teacher education**. According to the majority of respondents, graduates are not well prepared to use collaborative learning.

Respondents rarely declared that systemic changes introduced by the **ministries of education** facilitated the use of CL. It was the opinion of only 15% teachers, and again policymakers overestimated the positive impact (32%). There was even less support for the statement that **local educational authorities** made changes which helped to use CL (10% teachers, 20% policymakers). Eventually, very few respondents answered that there was **funding** available for schools to support CL (7%) and that regulations of financing were helpful (7%). So, **in the respondents' view, collaborative learning seems to have a low priority in national as well as local educational policy**.

Time is a major constraint in the use of CL. Only 16% respondents (13% teachers) agreed that considering what teachers have to cover in the curriculum and how much time they have, teachers have enough time to use CL. Insufficient time to fully include collaborative learning was also mentioned as an obstacle during the country workshops as well as in the MOOC Padlet. As collaborative activities take time, teachers find it difficult to use them during short lessons and with a lot of learning material which they are obliged to cover.

> *I try to use them as much as possible in my classes but this requires time and we don't have: we have many things to do in a short time. [Padlet]*

> *Imagination does not allow me yet to imagine lessons - 45 minutes from all these elements plus evaluating mutual. Fantastic idea for a project, a workshop, but not a lesson. [Padlet]*

This situation (or just such perception) makes CL an addition rather than everyday practice. It is also possible that the perception of time constraints is partially due to the use of traditional teaching methods to "cover" the

obligatory material and limited abilities to do it through CL, rather than to use CL as an additional method. Yet, there seems to be an objective aspect of the time constraints, which cannot be underestimated.

Chances to fit in CL within the teaching hours were seen most often by teachers in Austria and Belgium. However, the study does not allow to answer whether it's the question of the proportion of teaching hours to the curriculum requirements, or the teachers' ability to use CL. Enablers and obstacles for teaching and learning through CL were widely discussed during the workshop times, both at the beginning of the projects, as well as during the final workshops. First, participants were asked to identify the factors that jeopardise or facilitate the implementation of CL in schools or their teaching practice. This was a basis for further discussions during consecutive workshops on how those barriers could be overcome or how to spread the knowledge on enablers among schools. Sometimes the opinions of different education actors differed, for example where teachers complained on the rigidity of the school time organisation or the limits of curriculum, while decision-makers underlined the need for a greater creativity of teachers.

Also during the country workshops, participants observed that neither cooperative nor collaborative learning were often used in the classroom. In the opinion of workshop participants, it was mostly due to too little **time** and insufficient teaching **resources** (eg. lack of lesson scenarios), as well as problems with **assessment** of students' work. Those opinions were especially present during the first workshop, where opinion on the barriers to introduce these methods of work in the classroom dominated (Estonia, Poland, Portugal).

Other difficulties in the use of CL were also mentioned by MOOC participants in the Padlet. Some of them explained that it was difficult to use CL, because their **students did not have the necessary skills to collaborate.** It was observed especially in young children and associated with their development stage. All the same, participants noticed that it is the issue of developing social skills, which takes time. While they agreed that it was necessary to develop kids' collaboration skills from an early age, it was clear that they needed to improve their own skills to do it.

> *I find it hard to guid[e] my students in collaborative learning. I let them work in pairs and groups and sometimes it is successful, but many times they don't succeed in their mission. Another 'problem', more like a challenge actually, is that the kids I work with have few skills and lack of social understandings. [Padlet]*

> *I am a pre-school teacher and this is not so easy to do in kindergartens. I have tried to put little kids into situations where they must work together in groups, solve problems together, invent something new together, discuss and communicate in groups... But I must admit it is difficult, because small children have few skills and a lack of experience We keep trying! :) [Padlet]*

> *There is a long way to go ... Students are not used to having the lead role in their learning process, so not always the results are as fast as we would like. Change takes time! [Padlet]*

> *Their ages are between 6 and 7 and they have short periods of concentration. They start playing each other, speaking and sometimes they also speak with their friends in the other groups. [Padlet]*

> *I agree that the earlier we start collaborative practices, the better the performance of our students. However, I find it difficult to implement in the younger age brackets because children are very self-centered. [Padlet]*

> *When I start working with a new class, students can´t collaborate, they have problems also to cooperate as they are not used to it. (…) But with a new approach, students learn very quickly and are quite passionate to collaborate if their collaboration has a real purpose. [Padlet]*

Other challenges mentioned in the Padlets were: **large numbers of students in the class** (e.g. 30),

> *I would like to use this approach more often, but in my school all the classes have a huge number of students, making this kind of teaching and learning process too difficult to implement. Even so, I sometimes get students using their critical thinking skills and their creativity (not as many times as I would like to). [Padlet]*

As **technology** is concerned, while participants agreed that it may facilitate collaborative learning, they had diverse access to it. There were examples from very well equipped schools where the use of various software is common practice. On the other hand, there are schools with insufficient funding where students have insufficient access to computers.

> *I do not have access to the informatics classroom every time I want. I can't be there for three followed lessons and my students don't have laptops or tablets. [Padlet]*

Classroom **space** was perceived as one of the essential factors. Reorganisation was easier in some schools than in others. Where it was possible, it facilitated collaboration, but in some schools, changing space is a challenge.

> *I think that it is not easy to work in this way because we have to change completely our way to organise the space in our classroom. [Padlet]*

> *This school year I decided to change my classroom and start putting my students to work collaboratively. I changed the layout of the desks in classrooms (now in small islands), changed the way the activities are going to develop (each group of students must complete a set of mini tasks to get to the production of a project proposed by me). (…) With my colleagues, as Director of Class, many of the documents are made from google docs and all collaborate for the final result. We try to collaborate on decisions and try to help us in order to resolve conflicts.*

It's interesting that reorganisation of classroom space was mentioned in the case of a school where collaboration among teachers is developed. Since it is a complex and essential issue, it is described in more depth in the following chapter.

8.2. Collaborative culture in schools

As international research shows (summarised e.g. in TALIS 2013), a positive school climate, including teacher collaboration, has a positive impact on students' achievements. Different levels of teacher collaboration may be distinguished, from more basic (and more common) discussions and exchange of materials, to more profound (and less frequent) forms, including for example joint teaching and peer observation and feedback.

In the final survey, **40%** participant teachers reported that **as a result of CO-LAB, they collaborated more with other teachers** (while 32% collaborated as often as before). Due to the large scope of the surveys, they did not cover teacher collaboration in more depth, as they were focused on collaborative learning. Yet, qualitative material gathered in this study (from country workshops and the MOOC Padlets) brings more knowledge about teacher collaboration and the collaborative climate in schools.

Teacher collaboration is an essential aspect of a supportive school culture. Teacher collaboration in school (and between schools) allows for exchange of tools, ideas, hints, good practices on how to work with students or for example, as identified in Portugal (SWOT analysis), better communication among teachers, deeper reflection on their teaching, creation of a sharing network among teaching staff and their in-school professional development are indicated as opportunities for CL introduction into school practice. Despite coexistent weaknesses, methodological changes in classrooms, peer learning and sharing of reflections among teachers are strengths and they should constitute an asset that would facilitate overcoming the obstacles and enable the implementation of teaching through collaboration. Moreover, a good practice from Poland showed that collaboration may include the whole school personnel, not only teachers.

The notion of teachers' collaboration was present on the MOOC platform (it promoted and disseminated good practices of collaborative work among teachers) as well as during country workshops. Peer assessment of scenarios, exchange of opinions on the MOOC forum and sharing of information from individual Padlets allowed training participants to cooperate internationally, to get acquainted with foreign teaching materials, methods used for CL and to get ideas on how to integrate CL into everyday lessons with students. The idea of the creation of an international cooperation network that uses the theme of the project, with particular focus on Eastern European countries, appeared.

The workshops showed that **teachers really liked to work together** and to share their experiences, ideas and methodological hints. Teacher collaboration and cross-curricular teaching was also discussed during the country

workshops as well as at project partners' meetings. It appears that CO-LAB allowed for an **increased awareness** of the need for teachers' collaboration. It was noted that students are good observers and it would be very difficult to teach CL if teachers do not cooperate in their everyday work. Therefore, **teacher cooperation or collaboration is essential for the dissemination of CL and its implementation into teaching practice**. This was also noted in Padlets by the participants of the MOOC, who agreed that a common approach and a common language among the staff is necessary and described the difficulties of lonely innovators.

> *I certainly do agree with the fact that when we want to develop all those collaborative skills in our pupils, we do need a shared language at school and a policy that facilitates collaborative learning between teachers. Developing these skills means that teachers have to make agreements on which activities are most effective within their curriculum, how they are going to assess these skills, how they are going to differentiate between pupils. [Padlet]*

> *No doubt it's fundamental that we all share the same understanding about what collaborative learning means. And when I say all, it means teachers, students, parents, educational decision makers. Otherwise, it may become a single person's effort and not be of any use. [Padlet]*

Collaboration between **teachers and students** was not emphasised in CO-LAB, although the relationship between those groups is an essential element of the school climate. It was however addressed indirectly, as some participants reflected on this type of collaboration after the course.

> *Participation in the project convinced me that collaborative work can be effectively used in school. It seems to me that this is a good direction in which education should go, as it creates a community of students and teachers learning important skills today. (participant, PL) [Student - future teacher]*

Schools differ in terms of their **organisational culture**. The research allowed to identify good practices, as well as less supportive teams. In one of the Padlets, an interesting example of teacher collaboration was described, where teachers collaborate to create documents together (using online documents), as well as to answer to conflicts.

> *With my colleagues, as Director of Class, many of the documents are made from Google Docs and all collaborate for the final result. We try to collaborate on decisions and try to help us in order to resolve conflicts. [Padlet]*

It seems that some obstacles can be easily handled in a friendly school environment (in a supportive school culture), where support for change and innovations is given to teachers by peers and by school management. If such a climate is in place, it is a definite enabler for collaborative learning. This is the case of relatively easy changes, such as changing the classroom space or organisation of meetings with colleagues to exchange experiences. Workshop participants mentioned that it is often difficult to start with something new or where teachers have little experience, but it is much easier when colleagues are supportive. Monitoring was also emphasised: methods of recording the evidence of collaboration as well as analysing student progress.

On the other hand, there are cases of lacking collaboration among teachers, which is seen as a drawback by some teachers. Another participants' opinion shows the difference between the superficial collaboration (occasional exchange) and its deeper forms, as well as resistance towards the latter.

> *I don't think we really collaborate because we work too much individually and then we share some things. We prepare the final assessments together but we don't prepare or discuss lesson plans because there are some teachers who don't want to. [Padlet]*

This unwillingness is a notable difficulty for teachers who want to innovate, for example to introduce CL or to reorganise the classroom setting. It was noted in Padlets, and also mentioned by some workshop participants.

> *The shared language should be on every level, also in a school - I mean the staff needs to be on the same position. It does not help if just some teachers would include collaborative learning but other teacher[s] nor leaders of the school do not support them. Only after the above mentioned aim is achieved we can start to work with students and learn them to collaborate by showing examples and doing it with them. [Padlet]*

it's not easy to change classroom organisation, other teachers don´t like changes and they think we are weird. [Padlet]

In my school there is much resistance from the teachers to the adoption of collaborative practices between teachers and between students. We are only taking the first steps. [Padlet]

The teachers' willingness to reflect on their own practice and to receive feedback (which is an element of deeper collaboration) is an important factor of improvement. For example, as country reports show, there are schools where teachers have their lessons recorded and watched by peers to get feedback. On the other hand, there are schools where teachers are afraid to collaborate, for such reasons as fear of competition, unsupportive peers' attitude, or low confidence in their own practices. Moreover, as project partners observed, some teachers do not want to collaborate in cross-curricular teaching, for fear of "losing" their subject and not implementing the curriculum.

Peer learning is an essential aspect of teacher collaboration. Differences in age and experience between teachers are a chance for development, teams of teachers with different age and backgrounds are perceived as more creative and cooperative. The role of young teachers or the trainees is also important in this process, as they may have innovative ideas, they also have a fresh look at school reality, different from the teachers working there for a longer time.

Introducing collaborative learning is a challenge for beginners, especially if they are beginning teachers in general. As some initial teacher education students observed during a project workshop in Poland, they needed support during their traineeships, but did not always get it. Also, an IBE study showed that among several competences, which beginning teachers lacked, were: time management, adoption of adequate teaching methods (to the teaching content, to the educational level and to the dynamics of the students' groups) as well as the ability to collaborate with other teachers.

In addition to the attitude of some teachers, limited time was also noted as one of the obstacles to teacher collaboration. Since teachers have a lot of work to do, it is a challenge for the management to embed teacher collaboration in the school culture, while it is also seen by some teachers as a necessity.

Time is the biggest factor! I would love for my school to recognise and build in collaboration time but that is extremely unlikely. [Padlet]

Time for collaboration is an issue here in Ireland as the school day is busy. Leadership in schools has to recognise the value of teacher collaboration and give time for it. However, there is a need to build and develop the skills for collaboration. This needs to be addressed and supported also. [Padlet]

There are examples of schools where teachers try and collaborate to a limited degree despite the lack of supporting arrangements. This contrasted with a school where teacher collaboration is well managed and produces visible results, which demonstrates how much more may be achieved with managerial support. Also, a deeper look into the issue of time constraints suggests that it is the issue of priorities and good management, including time management.

In my school, collaboration between teachers, is not very frequent, we have the schedule often busy with many tasks which does not allow us to collaborate, although some of us make an effort, for the collaboration to happen. This collaboration is done within the disciplinary group, or with similar groups. I sometimes collaborate with colleagues in geography. Although real collaboration does not exist. [Padlet]

It works best when time is actually built into the working week where genuine collaboration can take place. This provides opportunities to plan, asses and evaluate together. It challenges old thinking and really encourages teachers to provide the best learning experiences for children at all times. [Padlet]

As international research, e.g. TALIS 2013, shows, the **head teacher** plays an essential role in creating a positive school climate. The role of the head teacher, or broadly of the school management, was also emphasised by project participants – both in supporting collaboration among teachers and supporting the use of collaborative

learning methods with students. As an example from Flanders (where schools have considerable autonomy) shows, collaborative learning is the learning objective in Flemish schools, but in practice, this refers to primary but not to secondary schools, unless the headmaster influences it and decides on its incorporation into teaching practices. The head teacher may play a role i.a. in creating school and classroom spaces as well as timetables which facilitate collaboration, in ensuring access to professional development, facilitating collaboration and peer learning among teachers, and more generally through valuing collaborative work, including collaboration in their management style and openness to ideas proposed by the staff and a wider school community.

In Portugal, for example, the headmasters involved in the project became facilitators of the process at schools. Both headmasters who participated in the workshops, as well as those who did not, selected teachers for participation in the project, showing their commitment to the CL notion and that a change should be done at the level of the whole school and not just by single experiences. Their perception of a need for change was clear, although it is also worth remembering that the change was introduced as a part of a broader process initiated by the Ministry of Education.

Like the teachers, also head teachers differ in their openness to collaborative learning, teacher collaboration and readiness to introduce changes. As many as 2/3 of the surveyed head teachers made at least 1 of the 19 changes supporting CL, about which they were asked as a result of CO-LAB. One of the positive changes is that after CO-LAB, head teachers discussed more often than before with teachers how to better use CL, and developed teaching resources to be used in CL. Surveys with the head teachers who participated in CO-LAB also showed that both before and after the project, they supported CL in their schools most often by **organising CPD**, encouraging teachers to participate in it, as well as **improving collaboration between teachers** and flexibility of learning **spaces** (rearrangement, usually not buying furniture). This is a positive observation, as it is known that teachers who have the competences are more likely to use innovative methods, as well as that the organisation of space is an important condition for the use of CL.

There are also changes, which although perceived as necessary, are not made by head teachers. The majority of CO-LAB survey respondents agreed that the time for teaching is quite limited to include CL, which takes longer. In the benchmark survey, as many as 65% disagreed (and only 16% agreed), that considering what teachers have to cover in the curriculum and how much time they have, teachers have enough time to use CL. The project partners as well as some participants emphasised that a 45 or 50 minutes' lesson is too short to do collaborative activities. Yet, **within 2 years before CO-LAB, only around ¼ of the head teachers, and after the project only 9%, reorganised timetables to better accommodate for CL, and even less often they provided more teaching hours or modified educational programmes to better include CL**.

Moreover, it was observed in the discussions that **all actors of the educational community should collaborate** in order to make schoolwork more effective and of high quality. One of the aspects was the engagement of **parents**. This was noticed by project participants in terms of obstacles.

> *We must not forget parents, accustomed to more conventional methods and therefore may have some distrust for... [Padlet]*

Participants noted that some **parents were concerned** that collaborative learning could compromise their children's grades and final examination results. Parents' difficulty to understand the CL approach and their resistance to it are one of the threats to implementation of CL in schools as identified by school headmasters[12]. Therefore, parents might not be so willing to see their children working in groups on projects which "steal" time from regular lessons. This is in fact the same reason why some teachers are reluctant to use CL. On the other hand, project partners noted that parents may be interested to see that their children work differently at home, e.g. doing flipped classroom, and with time they may get convinced to accept non-standard teaching methods. Indirectly, this "problem" points to insufficient inclusion of the parents, especially to the necessity of explaining the innovations to them and getting them "on board".

Another aspect of collaboration is that with local administration (quite often playing the role of school owners) and other **local stakeholders**. This is important when sustainability of results and the impact of projects on school

[12] SWOT for Portuguese headmasters

processes are taken into account. Some examples of the engagement of various associations were also provided e.g. the „Schulgemeinschaft (SQA)“ – an association of students, teachers and parents, which the Austrian Ministry of Education wants to use as a means of bringing stakeholders together.

8.3. Summary of enablers and obstacles

The enablers of and obstacles to collaborative learning may be seen broadly as "factors" in that if a positive factor is present, it is an enabler, but while it is absent, it is an obstacle. The factors are described below for four levels: teacher, school community and head teacher, teacher training and educational policy. Naturally, all levels are intertwined and as school practice is shaped by policy, so the typology below is provisional.

8.3.1. Factors at school level - teachers

Enablers

- Good knowledge of core curriculum and of the possibilities to use collaborative learning to implement it and to achieve subject-matter related learning outcomes;
- Awareness of the need to develop students' social competences;
- Acceptance of a change in the role of the teacher towards that of a coach and facilitator, making space for students' responsibility and autonomy e.g. as regards organisation of group work and adoption of methods;
- Proper planning of work and time by the teacher, including the time for the assessment of adequate CL activities;
- Ensuring important elements of collaborative work, especially in student projects: knowledge of the CL goals by both the teacher and the students (briefing sessions), achieving a clarity on each member's role and responsibility, ensuring that CL is in place from the very first stage of the project, care for good communication between members, debriefing sessions and assessment;
- Starting with easier cooperative or collaborative tasks, so that students have time to get used to the new method;
- Going beyond project-based learning and out-of-the classroom projects, to use collaborative or at least cooperative learning also in shorter activities in regular lessons, especially as it is closely linked with problem-based learning and problem-solving skills;
- Identification of the principles of collaboration applicable in a given form of group work for a given class of students. The 21CLD Rubric may be an enabler as it clearly identifies the characteristics of collaborative learning and it helps to put it into practice;
- Identification of students' needs and abilities;
- Use of work in couples as well as in groups of 4-5 students;
- The formation and the make-up of groups is crucial – diversity within the group is very important and teachers need to be aware that allowing students to form groups themselves is not always optimal. Teachers should know their students and think about which students to put together, because this affects group dynamics, individual effort, peer learning and other aspects;
- Peer teaching and peer to peer student learning – inclusion works really well if students help each other and peers help weaker students, but this requires teachers' competence to be aware of and facilitate group processes so that students learn to collaborate with different people and to solve conflicts;
- Arrangement of the classroom space so that it facilitates CL – especially the setting of benches that will allow for group work;
- The use of technology may boost collaboration (e.g. students' collaboration and feedback on virtual platforms) and may help overcome some of the timing issues (e.g. saving group results on Padlet or another online platform);
- Working with prototypes and templates – it is easy and works well in class (e.g. students work together and create a prototype);
- The competence to perform fair evaluation in different forms – self-evaluation, peer assessment, teacher's formative assessment and summative assessment, assessment of individual contribution to the outcome as well as of collaboration;
- Being aware of possible results and possible assessment of different forms of collaborative work (for example as regards the assignment of tasks, if each group receives the same task, it will be possible to compare the results, while if each group receives a different task, the sum of group work may give the final effect);
- Teachers' reflection on the collaborative learning process;

- Building a positive student-teacher relationship;
- Not overdoing the frequency of collaborative learning. A variety of forms and methods of work are needed;
- Willingness and engagement – the introduction of innovations, such as collaborative learning, depends primarily on people, on their enthusiasm and dedication.

Challenges for the teacher

- Implementation of teaching content following only a textbook and exercise booklet, a narrow approach to the core curriculum, with a focus on the message and not on the skills. Consequently - perception of collaboration as an add-on;
- Time constraints: time is necessary for the teacher to prepare CL activities, as it is more time consuming than preparation to conventional teaching. This factor may be regarded as individual (in terms of teachers' willingness to put in more effort) as well as systemic (the possibility to engage more time versus the necessity to teach more groups or in more schools in order to secure the teachers' income);
- Time and readiness to change – implementing CL requires adopting new ideas and performing new tasks. Some teachers felt that their lack of creativity gets in the way in thinking how to redesign classroom activities, thinking of new ideas is the hardest part for some;
- Equal and full engagement of every student (teachers need to learn how to maximise it, e.g. by interdependence in collaboration, building on each learner's strengths etc.);
- Collaboration can be competitive in some situations – creating activities with this awareness so that competition and collaboration are balanced and suit the educational objectives;
- Students objecting to the concept of collaboration – CL is best introduced early and with small steps (it takes children around 2 years to learn to collaborate);
- Unwanted behaviour of students – egoism (they do not participate), fear of being embarrassed, bullying colleagues while the teacher cannot watch everything and everybody;
- Student absenteeism can hinder progress;
- Difficulty of assessment, making it visible and fair, peer assessment not widely accepted by teachers;
- Low readiness of some teachers to collaborate with other teachers;
- Teachers' adherence to their subject – fear to "lose" their subject in cross-curricular activities;
- Fear and uncertainty of some teachers;
- Difficulties in being open to fellow teachers' feedback.

8.3.2. Factors at school level – head teacher, school community, school culture and resources

Enablers

- The head teachers' involvement is key to collaborative learning and teachers' collaboration;
- Supportive school culture – support from the head teacher and colleagues to introduce change – from simple changes like reorganisation of space or use of a new technique to more complex changes which require the involvement of the school community, like integrating CL into education planning and assessment.
- Teacher collaboration
    - Valuing the diversity of teachers' experience and ideas;
    - Support for other teachers, including junior teachers;
    - Readiness to reflect on one's own teaching practice and receive feedback;
    - Ability to give constructive feedback;
    - Audio-visual technology (recording lessons) may help teachers to seek and get feedback on their work (including on how they use collaborative learning).
- Collaboration in the school community and beyond
    - It is important that teachers, parents and school administration understand the importance of collaboration and set a good example for students;
    - Working with parents is essential, because (among many other reasons) they know their children best;
    - Including students in the collaborative culture of the school, listening to the students, for example speaking about their experiences of collaborative teaching, learning and assessment;

- External persons entering the school have a new look and can bring fresh air into the work of the teachers' team;
- Co-operation of schools with other schools and organisations, e.g. in projects.

Obstacles

- There are obstacles to teacher collaboration, seemingly more common in some schools and cultures than in others. The obstacles include:
  - competition between teachers and lack of peer help;
  - fear; the feeling of being endangered by potential feedback – related to individual low self-esteem and lack of trust in others as well to non-supportive school culture.
- Obstacles to collaboration between teachers in cross-curricular (interdisciplinary) teaching
  - More complicated organisation of lessons;
  - Adherence to teachers' "own subject", fear of not teaching the core curriculum fully.
- Timetable, lesson organisation (timetables are developed by the schools but also regulated by ministries of education)
  - Doing collaborative activities is difficult or impossible during lessons of 45-50 minutes. It is necessary to organise timetables so that there are two lessons one after another;
  - If a subject is taught one hour per week, the use of CL is hardly possible.
- Rigid, at times inadequate interpretation of the provisions of educational law, e.g. on core curriculum, lesson schedules, etc., mainly by school principals and leading bodies (school owners);
- Focus on examination results and the school's position in rankings;
- School infrastructure
  - Insufficient space in some schools, limited access or the lack of habit to use such spaces as the library, corridor etc. which may be needed for some CL activities;
  - Insufficient ICT infrastructure.
- Lack of monitoring of change and follow-up process;
- Resistance of some parents, who worry about the examination results of their children and doubt if CL is effective.

8.3.3. Factors at the level of teacher training and supporting institutions

Enablers

- Continuous professional development on broadly understood group work/cooperative learning is available
- Educational resources such as scenarios for cooperative or collaborative learning seem to be available (although practitioners' and policymakers' opinions differ)

Obstacles

- Some of the teachers' competences necessary for CL are not sufficiently covered in ITE and CPD, e.g. the understanding of the collaborative approach (as opposed to merely cooperative), the abilities to handle group processes and to introduce CL step by step but from the beginning, competence in assessment, showing how technology can help but also how CL may be done without technology;
- The ICT skills of some teachers are insufficient for technology-supported collaborative learning;
- Educational resources for CL are either still insufficient (although they are available) or insufficiently disseminated;
- Initial teacher education does not prepare teachers sufficiently to use collaborative teaching methods.

8.3.4. Factors at educational policy level

Enablers

- Core curricula
  - Include social competences and general competences which are best developed through collaboration, at least at the level of general objectives;

    - Are actually more flexible than perceived by some practitioners, and allow space for collaboration and the development of social competences.
- Educational policy supports school leadership – head teachers are given independence in school management (to a different degree in different countries);
- Example of good practice: the new Irish reform at junior cycle level allows for different approaches to assessment, it also includes obligatory assessment of learning outcomes which cannot be assessed conventionally, including collaboration;
- Co-operation in national and international projects.

Obstacles

- Social competences, including collaborative skills, are less prominent (or even not included) in detailed subject-matter related learning outcomes. There are difficulties in translating the general objectives to specific objectives, school syllabuses and practice;
- The opinion that core curricula include so many requirements, that there is not enough time for teachers to use more time-consuming activities (such as CL) is widely shared by practitioners and policymakers.
    - This study does not allow to answer to what degree it is an objective factor present in the core curricula, but some participants believe that this notion is at least partially due to teachers' and head teachers' understanding of the CL requirements and insufficient abilities to implement them in other ways than traditionally.
- Summative assessment is mostly individual, especially final examinations. The requirements of the examinations are one of the key factors shaping the work of the schools as well as expectations towards the schools;
- The rules of school inspection;
- Policymakers largely agree that changes in the core curricula, examinations, assessment regulations, financial regulations and in initial teacher education are necessary – but survey results show that these changes are not widely made to support collaborative learning. Policymakers focus on helping teachers to work (and use CL) in extant educational systems through improving their competences with training, advice and educational resources (which are also necessary);
- On the other hand, "initiative overload" or "reform overload" was perceived as an obstacle. With numerous changes to accommodate, teachers and schools do not find the time for CL. So recommending further systemic changes would not always be an option;
- Collaboration perceived by practitioners as an aspect of secondary importance for educational authorities;
- Lack of specific funding for the support of collaborative learning (or lack of the visibility that such funding is used and what is produced with it – e.g. resources, CPD).

9. Conclusions and recommendations

9.1. Schools

9.1.1. Teacher level

1. The work of many teachers – participants in the project demonstrates that it is possible to implement collaborative learning (CL) in school. The benefits of CL activities are also obvious to participants as well as proven in international research. It shows that cooperative or collaborative learning has a positive impact on students' outcomes in comparison to individual learning (Hattie, 2009). Even before the course, CO-LAB participants agreed that when students work collaboratively, they achieve better results in subject learning (83%), are more interested in learning (88%), learn to consider other people's opinions (95%) and learn from other students (96%). Results related to social and transversal competences were noticed a little more often than subject-related competences.

   The surveys indicated that actual CO-LAB participants (i.e. those who completed at least one module of the MOOC or took part in at least one workshop) already had a more comprehensive and more consistent notion of what collaborative learning is. They also had – on average – higher (self-assessed) knowledge of CL in comparison to people who registered, but eventually did not participate. Possibly, they were more motivated to learn more about CL. So it appears that the CO-LAB course did not largely reach beginners, but those who were more familiar than average with CL. It also indicates that teachers and other actors involved in education systems who are not particularly interested in CL may have vague ideas about its principles.

   As the comparison of pre- and post-course survey results shows, after CO-LAB, participants understanding of collaborative learning increased. In particular, there was a wider acceptance of the principle that CL comprises a larger degree of students' liberty in deciding on how they do the work. Yet on the other hand, CL was still – and even more so after the course – quite often reduced to project-based learning. Moreover, country workshops showed that the notion of CL is not yet commonly known and CL is confused with cooperative learning or broadly meant "group work", which seem to be used more often in practice.

   It is recommended that basic knowledge about collaborative learning is widely disseminated among actors in education, and opportunities for further development in this area are available.

   Dissemination and training should include information about the principles of CL, benefits of learning in groups, as well as practical examples of the use of CL in school.

2. It was found out in TALIS 2013 that teachers use group work more often if they feel more prepared in terms of pedagogy, which indicates that continuous professional development in collaborative learning is necessary. The country workshops and the benchmark survey showed that participant teachers already had some competences in cooperative or collaborative learning before the project. Average self-assessment of teachers' ability to use CL was 4,8 on a scale from 1 to 9 and it increased to 6,5 after the course, whereas among teachers who registered, but eventually did not participate, it remained virtually unchanged (4,5 and 4,6). Results were similar as regards the ability to assess CL results. This indicates that CO-LAB was possibly effective on teachers' competence development. It also indicates that CPD courses on collaborative learning attract people, who know the basics of learning in groups, which is important for future planning of such CPD.

   Also, teacher trainers reported an increase in the ability to teach teachers or future teachers to use CL, and the majority of all participants declared that as a result of CO-LAB they gained inspiration and confidence in their competences to use or promote CL.

Participants' most frequent needs were well addressed in CO-LAB: almost all participants who wanted to increase their knowledge of CL did, and ¾ of those who wanted to learn to use CL learned to do it. The course was assessed as being on the right level of difficulty by 87%.

As it is known from TALIS 2013, nearly 40% lower secondary teachers reported that they used students' work in small groups "frequently" and nearly 8% that they used it on all or almost all lessons. This may seem frequent, however observation studies performed by IBE in Poland (outside the CO-LAB project) showed that work in pairs or groups was well below declarations – it constituted 3% to 10% of the tasks, depending on subjects and types of schools. Declarations about changes must be thus interpreted with care. This is also indicated by the observation that while teachers declared the use of various elements of CL fairly often, they less often declared that their students at all worked in groups of 3 or more. Pair work was indicated as more frequent, which implies that the various elements of CL may have been used while students worked in pairs.

Declarative use of group learning was also frequent among CO-LAB teachers: surveys show that before the project, 51% teachers reported that their students worked in groups of 3 or more people at ½ or more lessons and 30% that it was at ¾ or more lessons. After CO-LAB, 39% teachers reported increased frequency of group work and 21% a decrease, which comes down to a net increase among 18% of participating teachers. In particular, more frequent use largely prevailed over less frequent use in the case of methods emphasising students' interdependence as well as their autonomy in coordinating group work, which suggests that after CO-LAB, a large part of teachers adopted a more student-centred approach. Also, in another question, teachers openly declared that as a result of CO-LAB, they conducted lessons where their students had more autonomy and responsibility than before (i.e. they put CL into practice): 18% declared that they did it on most lessons and 16% at least twice a month.

It is recommended to make courses, similar to CO-LAB, available to practitioners in the future. Such courses should be well adapted to participants' competence level (whether they need basic or advanced competences in CL).

While CO-LAB was effective both in terms of knowledge and skills, its results were lower in the latter, so putting the knowledge into practice should be framed in more detail in future courses.

This can be done for example through more detailed requirements on the development of scenarios and testing CL by practitioners during the course, together with peer exchange and individual feedback done live, e.g. at the debriefing workshops.

3. It was emphasised in the MOOC, through the 21 CLD Rubric, that activities may be done at different "levels" of collaboration. Project partners also observed that learning in groups can be seen as a continuum from basic cooperative to fully collaborative, and that it takes time for teachers to learn to use collaborative learning, especially in its more advanced version, as well as that the use of simpler cooperative exercises in pairs or groups is also valuable, provided that the teacher is aware at which "level" of collaboration students are working and why.

Some project participants observed (whether in the MOOC Padlet, at country workshops or partner meetings) that collaboration is especially important in early childhood education, as it is easier to collaborate if people learn to do it at an early stage, and it gets harder to implement it at later stages, where students unused to it could object to this method.

On the other hand, they noticed that younger learners do not have the social skills necessary for collaborative learning and that they need to learn to collaborate, which is a long process. Participants' opinions also indicate indirectly that using CL with young learners is a challenge and some practitioners have insufficient skills to teach children to collaborate before they can teach them subjects through collaborative learning.

When introducing CL into teaching practice, consider the levels of collaboration and take small steps first.

Start using collaborative approaches from the early stages of education, while being aware of different levels of collaboration and using simpler (cooperative) tasks first.

Ensure that teachers' competences to help learners develop social skills is included in ITE and CPD.

Put emphasis on teaching initial teacher education students, who prepare to work with younger children, to use CL adapted to the age group.

4. Some of the project participants – 33% in the benchmark survey and 37% in the final survey – agreed that when students work collaboratively, it takes them more time to learn. Limited time for teaching large material, as well as relatively short lessons, were perceived as a constraint for CL.

   Collaborative learning was associated with project-based learning by some of the participants: 74% in the benchmark survey and 82% in the final survey believed that in CL students create or develop a new product such as a presentation or publication. All the same, among the teachers who used the methods, tools or resources, which they came to know through CO-LAB, while 39% used them in longer projects (largely done outside the classroom), 54% used them during lessons, thus proving that the use of CL is also possible in lessons, not only in longer projects.

   Moreover, project participants found it important that the goals both of collaborative tasks (such as projects) and of the collaboration process are initially explained and commonly understood by the students and the teacher. Such approach was considered to better allow students to learn to collaborate and to promote collaboration beyond project-based learning. Transparent goals are also in line with formative assessment approaches and may facilitate fair assessment.

   Teachers may search for opportunities to use CL in project based learning as well as (in particular) on an everyday basis, in shorter activities at regular lessons. It is recommended to disseminate examples of how to do the latter.

   As much as it is possible (considering regulations etc.) organise timetables so that time for CL can be found, e.g. join lessons.

5. Core curricula in project countries usually include objectives (learning outcomes) related to social competences, including collaborative skills, and either define teaching through collaboration or (typically) leave a space for schools and teachers to achieve these objectives the way they want.

   Teachers put an emphasis on the requirements of the core curricula, including knowledge, and on achieving the best results of final examinations. Some of them see it as an obstacle to a wider use of collaborative learning, which they sometimes perceive as loosely related to these "core" outcomes and often as time consuming. This obstacle may be partially objective, but some participants of the project also noted that at times, it is the teachers' perception of the core curriculum (which seems to be actually more flexible than it seems) and their habit to follow course books, as well as the belief that conventional teaching methods must be used to transmit knowledge, that is the obstacle. On the other hand, survey respondents quite widely agree that collaborative learning contributes to students' better learning outcomes in terms of subject matter as well as social competences.

   It seems that teachers have insufficient knowledge of how collaboration may help to achieve subject-related learning outcomes (and not just social competences) and how it can be relatively easily incorporated into teaching practices, so that teachers find ways to use CL to implement the core curriculum.

   Give teachers opportunities to learn (teaching resources, courses, exchange of practices, dissemination etc.) how – very practically – to achieve specific as well as general objectives of the core curriculum through collaborative learning (and other active teaching methods)

– show that CL may be a core element of learning, not just an add-on.

Support dissemination and exchange of experiences, reflections and information on CL, so that interested persons from the school environment (teachers, students, parents), academics (students, lecturers) and in-service trainers and consultants can help one other and learn from one another.

This could be done for example through face-to face and group exchanges between teachers within schools, through school networking, local and regional workshops, online etc.

6. One of the challenges in collaborative learning is to ensure that all students do their work. A considerable part of the participants (39% in the benchmark survey and 43% in the final survey) indicated that when students work collaboratively, some of the students do not do the work. Interestingly, more participants indicated this problem after the course, which shows that CO-LAB allowed some participants to become more aware of the challenges related to collaborative learning, although it did not always allow them to find solutions. But 35% and 30% respectively didn't agree, which suggests that they notice the possibilities to overcome this obstacle.

   Use methods which will engage every student, for example by proposing activities that are interesting for learners, supporting the distribution of group roles adapted to the strengths of every student, or by fostering interdependence in collaboration.

7. Assessment is essential in collaborative learning, but it is also a difficult part, and assessment of CL is a part of a wider challenge. As EURYDICE data shows, students' evaluation and assessment practice are identified as training needs by around 40% of teachers in lower secondary education (ISCED 2), with over 30% expressing moderate and 9% high professional development need levels.

   The CO-LAB study showed that the majority of participants agreed that both subject-matter related aspects and social competences (the collaboration process) should be assessed in CL activities. They had diverse opinions and expressed concerns about the methods of assessment. For example, 27% of participants agreed before the course and 38% after it that when students work collaboratively, it is difficult to assess the individual contribution of each student (this is another issue more widely noticed after the course). Yet after CO-LAB, support for individual assessment in CL increased from 60% to 70%, the net prevalence of teachers who started to assess individual contribution was 22 percentage points over those who ceased to use it. Moreover, the share of teachers who agreed that it is difficult to assess individual contribution, but they assessed it, increased by 14 pp. It should be noted that individual feedback is not the same thing as assessment of individual contribution – the first is done more often than the latter, so it might also be about other elements than individual contribution.

   Despite the difficulties, CO-LAB participants emphasise that assessment of group learning - both individual and collective - should be systematically done, using self-assessment and peer assessment, formative and summative assessment, taking into account the task, as well as the collaboration process, with the application of various tools and rubrics. They also underline that this requires that teachers to plan their lessons and projects appropriately in order to envisage the time needed for assessment.

   Support teachers, through ITE, CPD, peer learning and distribution of resources, to:

   - **Plan CL teaching activities in a way to envisage time for assessment.**
   - **Assess collaborative and cooperative learning, using in particular formative assessment, individual feedback (including the assessment of individual performance and contribution if possible), as well as students' self-assessment and gradually introduce students to peer assessment.**

- **Define assessment criteria and use assessment rubrics to ensure that social as well as subject-matter related aspects are covered and to facilitate transparent assessment.**

8. Information and communication technology may enable CL and it was found as very helpful by some participants – both to improve student and teacher collaboration. Comments in the MOOC Padlets as well as during workshops showed numerous examples of use of ICT for collaborative learning. For example, student collaboration in virtual documents and on virtual platforms enhances the opportunities for peer feedback. However, it is important to be aware that technology it is not a precondition for CL, and if there are obstacles to the use of technology either in terms of poor infrastructure or low ICT competences of the teacher, it is worth showing that CL can be done without technology. Technology should not frighten teachers, but should be only one of possible tools to be used.

Teachers have diverse levels of ICT skills, a varied readiness to use ICT and different habits, which was to be seen for example in the comments in the MOOC Padlets as well as in some reported difficulties with the use of the MOOC platform. Demand for training on "ICT skills for teaching" and "new technologies in the workplace" in teacher professional development remains high – around 30 % of teachers aged under 30 express a high or moderate need for these topics, for those aged between 40 and 49 this percentage is 60% and those in older age groups this is even higher.[13].

Technology may be an enabler for CL but should not be treated as a precondition for it.

Teachers should have access to resources and examples of collaborative learning both based on ICT and those without ICT.

Teachers should be helped through training to achieve necessary ICT skills to be able to use ICT in the classroom smoothly, as well as to be able to use internet resources (including MOOCs and other resources) for self-development).

When designing e-learning, such as the MOOC, it is important to use as intuitive and easy technology as possible to make the courses widely accessible.

9.1.2. School community level and head teacher level

9. CO-LAB had a positive impact on teacher collaboration: 40% teachers declared that they collaborated more with other teachers as a result of the project. The project also contributed to participants' higher awareness of the need for teacher collaboration as a prerequisite for teaching students to collaborate.

Teacher collaboration is an essential aspect of a supportive school culture. There are different forms of teacher collaboration. In its simpler forms, teacher collaboration allows for tools, ideas, good practices on how to work with students, while more developed forms may include co-teaching, reflecting together on the teaching methods and continuous professional development through peer learning.

The readiness and the competence to collaborate vary between teachers as well as between school communities. Participants shared their experiences of working in schools where team collaboration brought positive results, as well as those where lack of support from other teachers or the management was an obstacle to the use of CL. The need of beginning teachers for support was also mentioned.

Examples from participants showed that some changes can be easily made in a school culture where support for change and innovations is given to teachers by peers and by school management. If such a

[13] European Commission/EACEA/Eurydice (2015), 2015. *The Teaching Profession in Europe: Practices, Perceptions, and Policies*. Eurydice Report. Luxembourg: Publications Office of the European Union.

climate is in place, it is a definite enabler for collaborative learning, while if it is not, even seemingly smaller changes such as changing classroom space are not simple. Unwillingness of some teachers to collaborate was attributed by participants, i. a., to habit as well as fear of critique and competition. This was to some degree pictured by participants as an individual feature. But it seems that school culture played its part in shaping individual attitudes, especially that participants underlined the role of the head teacher and some shared examples of fruitful teacher collaboration as a result of good management.

Project participants emphasised the role of the head teacher in creating favourable conditions for collaborative learning and teacher collaboration, while some experienced more support from their principals than others. There were examples of head teachers who managed their school so that time for collaboration was regularly a part of the teams' work, as well as examples of schools where teachers tried to find some time and collaborate without management support. There were also examples of principals open for innovation and collaboration initiated by their staff, while on the other hand survey research showed that some head teachers were not ready for changes.

Head teachers should strive to support collaboration and peer learning between teachers as well as the use of collaborative learning by teachers.

It is recommended that head teachers do in particular the following, and that they are helped (e.g. through CPD, coaching, learning from other head teachers)…:

- **to build good collaborative relations with teaching staff;**
- **to value the diversity of teachers' competences and experience as a chance for peer learning;**
- **to be open to teachers' didactic ideas, while monitoring teachers' performance (including the use of CL) and students' outcomes;**
- **to notice the teachers who have difficulties and ensure they get support;**
- **to establish models of training ITE students and of induction of beginning teachers (in collaboration with the team of more experienced teachers), which will be effective for the trainee and for the school;**
- **to help beginning teachers to structure their teaching, show how the school worked with CL, what teachers experiences are and what added value was observed;**
- **to give constructive feedback to teachers and to be open for their feedback;**
- **to require and facilitate genuine collaboration among teachers, e.g. ensure that day-to-day exchanges take place as well as regular team meetings;**
- **to analyse their own social and management competences and be willing to self-develop as well as seek advice if necessary;**
- **to analyse teachers' social competences and ensure development in this area if necessary;**
- **to promote cross-curricular teaching as an element of teacher collaboration;**
- **to engage teachers into learning how to use cross-curricular approaches to implement the core curriculum;**
- **to seek for the possibilities to save time through cross-curricular teaching.**

Integrate CL in the broad educational strategy of the school, develop and update this strategy collaboratively: together with teachers, and possibly with students and parents.

Collaboration should be promoted also between schools. Internet platforms may be used in this case, if teachers in a given country are willing to exchange on the internet.

10. Surveys with the head teachers who participated in the project showed that both before and after the project, they supported collaborative learning methods in their schools most often by organising CPD, encouraging teachers to participate in it, as well as improving collaboration between teachers and flexibility of learning spaces. It seems that after CO-LAB, head teachers more often than before discussed with teachers how to better use CL and developed teaching resources for CL. As many as 2/3 of the surveyed head teachers made at least 1 of the 19 changes supporting CL about which they were asked, as a result of CO-LAB, while 1/3 didn't make any.

    On the other hand, head teachers were reluctant to modify timetables. The majority of project participants agreed that the time for teaching is quite limited to make time for CL. In the benchmark survey, as many as 65% disagreed (and only 16% agreed) that considering what teachers have to cover in the curriculum and how much time they have, they have enough time to use CL. The project partners as well as MOOC participants emphasised that a 45 or 50 minutes' lesson is too short to do collaborative activities. Yet within 2 years before CO-LAB only around ¼ of the head teachers, and after the project only 9% reorganised timetables to better accommodate for CL. Even more rarely did they provid more teaching hours or modified educational programmes to better include CL.

    School owners (leading bodies) and head teachers should be more flexible in the organisation of school work, thus enabling integrated and collaborative teaching.

    This pertains in particular to timetables, for example planning time so that two lessons are joined one after another, as well as planning cross-curricular education and sharing time.

    Head teachers should continue to ensure teachers' access to competence development and resources on CL

11. Collaboration with parents is a part of the collaborative culture of the school. Some participants pointed to its importance but some also noticed challenges in parents' belief in conventional methods and concerns that CL could compromise their children's achievements and final examination results. This is in fact the same reason why some teachers are reluctant to use CL. On the other hand, project partners noted that parents may be interested to see that their children work differently at home, e.g. doing flipped classroom, and with time they may get convinced to accept non-standard teaching methods. Moreover, the fact that parents' attitudes were pictured as obstacles implies insufficient collaboration with parents.

    First, develop teachers' understanding of how CL contributes to the acquisition of knowledge and development of skills, which are required in the curriculum and will be verified in examinations, so that teachers can share this view with parents.

    Next, ensure that discussion with parents is a part of the school's collaborative culture, so that parents' questions are answered.

    If doing larger collaborative activities, explain them to parents and show how children will benefit from CL, what competences they will develop and why it is important for their future (e.g. for work).

    Build the school culture of broad collaboration, especially with parents and guardians.

9.2. Teacher education and training institutions

12. As international research demonstrates (TALIS 2013), teachers use innovative educational resources more often if they feel pedagogically competent. From the CO-LAB experiences, it appears that to use

CL with confidence, teachers need a sound training offer, examples on how to use CL with students, as well as resources ready to use in the classroom.

The survey showed that some participants were concerned if the core curricula include competences best developed through CL, and workshops showed that some teachers perceived the implementation of the core curricula as a domain of conventional teaching, with CL as an addition for which there is not enough time. On the other hand, many project participants used in class what they learned in CO-LAB and shared examples of how to do it.

So it appears that teachers need concrete, practical examples of teaching solutions based on the provisions of the core curriculum, ready for use in school, such as lesson scenarios and rubrics for assessment, adjusted to education levels and expectations of teachers.

Policymakers and teachers have diverse views on the availability of collaborative learning resources to use in class. While 56% representatives of school supporting institutions and authorities believed that there are a lot of resources for CL, only 29% of the teachers declared that there are a lot of such learning resources which can be used for CL with students. Teachers even less often agreed that there are a lot of resources for teachers to learn to use CL (20%), while 36% of policymakers believed they were sufficiently available. So either such resources are insufficient or they are not sufficiently disseminated.

While opinions on the availability of resources varied, participants almost unanimously believed that CL is not sufficiently covered in initial teacher education and continuous professional development. Country workshops showed that teachers were interesting in learning practical solutions from one another. Peer learning and the use of other teachers' experience is an important method of CPD, yet as described before, it requires teacher collaboration.

CO-LAB also contributed to the identification of further needs. Survey result showed that more people considered obstacles to CL as such after the project than before it. So possibly, it helped participants to reflect on the obstacles while it was moderately effective in helping to overcome them. On the other hand, it had a positive impact on participants' practices. So, it appears that further courses on CL may be beneficial and that they should be even more practice oriented.

Teacher training on collaborative learning and group work assessment should be on CPD institutions' agenda.

It is recommended to train head teachers and teachers on how to establish collaboration, in particular effective peer learning between teachers within a school and between schools, so that teachers profit from sharing experiences even without external training.

Training provided to teachers should be based largely on teaching practical examples and methodologies.

The CO-LAB MOOC, even when it is not "live" anymore, should be promoted among CPD and ITE institutions as an available online resource for teachers who are interested in knowing more about collaborative learning.

Encourage peer learning and collaboration through sharing of teachers' own best resources with other teachers on online platforms.

Promote online tools and resources (including teaching scenarios and assessment rubrics) on CL teaching and learning, for example promoting country-level portals and databases.

Shared educational resources should include clear information on which specific and general requirements of the core curriculum they pertain to.

Shared educational resources should be verified for quality, e.g. reviewed by experts or experienced peers before wider dissemination.

In the continuation of the CO-LAB MOOC and in similar courses in the future, ensure a space with links to valuable platforms containing resources on CL (sort by languages).

13. It appears from the CO-LAB project that to use CL widely, teachers may need professional development, whether through training, peer learning or advice, especially in the following areas:
    - Adopting teaching approaches which include openness to students' higher responsibility and autonomy in their learning, e.g. in that students organise their own learning (such as of group work) and choose the methods to perform tasks;
    - Adequate planning of collaborative learning, taking into account the strengths and needs of the students, adoption of the level of collaboration and ensuring time for assessment;
    - Practical examples of how to use cooperative and collaborative learning in the classroom (especially in shorter activities) to carry out specific objectives of the core curricula, and how to overcome obstacles at student-, teacher- and school level;
    - Awareness of group dynamics and ability to facilitate group processes;
    - Knowledge and skills necessary to help learners learn to collaborate (develop collaborative competences);
    - Ensuring the involvement of each student;
    - Assessment of the collaborative process (communication, effective collaboration etc.);
    - Assessment of individual contribution, e.g. through assessment rubrics;
    - Use of self-assessment and peer assessment;
    - Competences in the use of ICT, especially using virtual documents and platforms for collaboration – for the teachers with lower ICT skills;
    - Team collaboration
    - Giving and receiving feedback, strengthening teachers' feelings of self-efficacy and the positive aspects of being open for feedback.

    Recommendations for educational authorities and training institutions:

    - **Verify if these themes are covered in ITE and in available CPD programmes;**
    - **Check teachers' and head teachers' interest in these subjects, verify and update the list of actually needed themes;**
    - **Analyse which areas may best be covered through peer learning or cooperation between schools;**
    - **Analyse which themes need external support such as training or consulting;**
    - **Launch necessary development courses/consulting for which there is demand;**
    - **Work with head teachers and teachers through available channels (authorities' supervision, inspection, pedagogical counselling etc.) to help school teams reach the willingness to improve in more areas.**

14. It is a widely shared belief among project participants that initial teacher education does not prepare teachers sufficiently in using collaborative learning in the classroom. As many as 68% of respondents of the benchmark survey disagree or strongly disagree with the statement that "People who studied to become teachers are well prepared to use CL".

    It is recommended that ITE faculties in collaboration with educational authorities:

- **verify ITE programmes as regards the same aspects as listed for CPD;**
- **identify (together with schools) and promote the best practices in practical training of future teachers.**

15. Teacher competence development on CL should be complemented by the support for school principals. Among CO-LAB participants, there are head teachers who already introduced changes in schools, those who want to change, as well as those who are not at present open to changes favourable of collaborative learning. Country workshops indicate that head teachers have various leadership styles and attitudes towards CL and towards the school culture. Examples of interesting development initiatives for head teachers were also identified.

    Another form of assistance would be individual management coaching designed specifically for head teachers.

    As regards head teachers (school leadership), the following themes of professional development are proposed:

    - Possibilities for the head teacher (within an extant educational system) to make the organisation of the school work, time planning and learning spaces more supportive of CL;
    - Fostering the use of active teaching/learning methods, including CL;
    - Collaboration with teachers and among teachers;
    - Fostering openness and trust in the relations between teachers, building the ground for readiness for peer feedback, arranging constructive peer feedback;
    - Induction of beginning teachers, ensuring collaboration between them and more experienced teachers;
    - Social and management competences, creating a culture of trust, peer support and constructive feedback;
    - Support for some head teachers to develop more openness to teachers' autonomy and innovative approaches, while increasing head teachers' competences to evaluate the work of teachers.

    Training dedicated to school headmasters on CL implementation in everyday school practice should be developed.

    Professional development of head teachers should include in particular:

    - **Group courses largely involving peer learning – exchange of practices with other head teachers and managers;**
    - **Individual advice or management coaching;**
    - **E-learning as an answer to limited time availability.**

16. Among the participants who did at least one module of the MOOC and used the digital communication tools, 83% agreed or strongly agreed that the use of these tools gave them the feeling that they belonged to a community of participants. Similarly, 82% of workshop participants agreed with an analogical statement as regards the workshops.

    Participants were asked if the MOOC's digital communication tools and the workshops contributed to establishing a community of participants, country differences show that respondents assessed the actual feeling of community – answers were more positive in countries where schools collaborated in previous projects. It seems from the survey that the workshop participants were the most satisfied if diverse methods were used and especially if they had a lot of opportunities for exchange and discussion - especially, but not only, in small groups.

    There were voices during the workshops about the importance of live contact and about the encouragement and confidence that it gave. There were also examples of ineffective use of digital communication tools. For example, while the EUN CO-LAB Facebook group gained interest, the Twitter

activity did not. Another issue is the Polish CO-LAB Facebook group, where discussions were non-existent. From the rudimentary evidence, it seems that there were various needs related to communication which required different channels.

Technology in the MOOC posed difficulties to some participants, while some (whose native language is not English) experienced language barriers

Possibilities for online exchange and face-to-face exchange are both necessary. If e-learning is organised, make it possible for participants to meet and discuss face-to-face in their country.

Make this kind of courses accessible to various teachers, also by organising them on country level in native languages, but with the use of translated international resources and examples.

9.3. Policymakers

17. Development of social competences is required in core curricula, although differently in various countries and with a different degree of importance. Among CO-LAB countries, the Irish core curriculum is an example of good practice, since it puts emphasis on the development of social competences and explicitly on collaboration.

Surveyed CO-LAB participants agreed that core curricula include competences, which are best developed through collaboration. On the other hand, they largely agree that with the amount of curriculum requirements, and the time for teaching, there is not enough time to use CL. This belief may be partially due to the actual overload of the curricula and partially to teachers' beliefs and competences.

Final/external examinations assess individual achievements, so they are perceived more as an obstacle than as an enabler for collaborative learning. Few participants (18%) believe that these examinations assess competences which are best developed through collaboration. Yet there are some interesting practices, such as adding assessment of collaboration as obligatory in class.

The changes that policymakers would want to be made were modification of curricula, examinations, assessment regulations and financial regulations, so that all of these support CL better. Briefly speaking – an educational reform. Generally, educational systems were perceived more as obstacles than as enablers for CL. Some of the policymakers worked on the improvement of curricula and of ITE using what they learned in CO-LAB. However, what the surveyed policymakers did most often was helping teachers to use CL in extant systems through resources and professional development. It should be noted however that maybe system changes were not within their competence. Moreover, since the time that passed between the course and the final survey was short, and the scope of the course was introductory, initiation of large scale changes should not be expected.

The survey results suggest that collaborative learning is not a priority on policymakers' agenda, at least not in practice. Yet social competences, including the ability to collaborate, are essential in contemporary society. The times of educational reforms offer an opportunity for a better inclusion of CL in countries. This opportunity is used in Portugal, where the CL concept is introduced into schools alongside other innovations. There are also countries where teamwork is widely recognised, but where CL still needs proper promotion and dissemination. Without the support of policymakers, there is the risk of CL being considered only as a fashion, instead of as a method to develop social as well as subject-specific competences.

Social competences and student collaboration need to be emphasised in core curricula.

Plan wisely the required scope of specific subject-related learning outcomes, taking into account their relation to the general objectives

as well as the time necessary for students to effectively learn the expected knowledge and achieve the skills.

Establish clear links in core curricula between general objectives (including social competences) and subject-matter specific objectives.

Systematically implement and promote the CL method with the engagement of educational authorities at various levels, including national, regional and local government bodies, curatorial staff, teachers and staff members of initial teacher education and continuous development institutions.

18. Survey results show that as a result of CO-LAB among all groups of participants, including policymakers and head teachers, there were many who gained motivation and ideas which may be useful in their professional practice. The project also had a positive declared impact on participants' competences to support collaborative learning at school level (in particular, it contributed to changes made by head teachers).

On the other hand, CO-LAB was less effective in answering the needs related to policymaking than those related to practice. In particular, it rarely allowed participants to become more competent to promote CL at a higher policy level. While 66% respondents who wanted to learn how work in schools can be organised to support CL learned it, only 44% of those who wanted to find out how to promote CL among educational authorities had their expectations fulfilled. This was to be expected, as the CO-LAB MOOC was focused on knowledge about CL and school practice, while policymaking was only addressed during workshops where partners were successful to establish a dialogue between policymakers and practitioners.

Policymakers have specific needs, and while it is important to allow policymakers and practitioners to hear each other's voice, separate professional development is also necessary for policymakers. It is observed by EUN that lower results among policymakers may be associated with their other competences, which were not covered by CO-LAB, such as the ability of the "lower-level policymakers" to persuade and influence the actual decision makers. This may also be an issue of the openness of the decision-making systems and processes for suggestions and initiative from lower levels.

Future training projects promoting collaborative learning should include a specific path or module (training, counselling etc.) for policymakers.

Competence development for policymakers should be preferably initiated by ministries of education, and, in the case of regional and local policymakers, by regional authorities, in order to raise the priority of CL and to involve the staff of the initiating institution in professional development.

It is recommended that if specific support is designed for lower-level policymakers, as well as non-governmental actors, which would include the development of competences to advocate educational issues and bring them to the attention of decision makers.

This is especially important in cultures and education systems where considering suggestions from lower levels and participatory policymaking are not a common practice. Support needs to be founded on thorough understanding of the country culture of policy making and of the educational system, as well as to build on examples from other countries which overcame similar obstacles.

Bibliography

Blatchford, P., Kutnick, P., Baines, E., & Galton, M. (2003). Toward a social pedagogy of classroom group work. International Journal of Educational Research, 39(1-2), 153–172. http://doi.org/10.1016/S0883-0355(03)00078-8

Bordzoł P., Gajewska A., Jasik K., Lech J. Orzechowska M., Poziomek U. (2015), Optymalizacja sposobu wykorzystania narzędzi dydaktycznych IBE w praktyce lekcyjnej – wdrożenia, raport przedmiotowy – Biologia, Warsaw: Educational Research Institute

Racz B. et al., (October 2017). CO-LAB Country Reports, Summary and reports from national partner leads. http://colab.eun.org/country-reports

Crook, C. (2011). Versions of computer supported collaborating in higher education. [in] Ludvigsen S., Lund A., Rasmussen I., Saljo R. (eds.), Learning Across Sites: New Tools, infrastructures and practices. New York: Taylor and Francis.

European Commission /EACEA/Eurydice (2012), Developing Key Competences at School in Europe: Challenges and Opportunities for Policy–2011/12. Eurydice Report. Luxembourg: Publications Office of the European Union

European Commission/EACEA/Eurydice (2015), The Teaching Profession in Europe: Practices, Perceptions, and Policies. Eurydice Report. Luxembourg: Publications Office of the European Union.

European Council. (2006). Recommendation of the European Parliament and the Council on key competencies for lifelong learning. Official Journal of the European Union, (March 2002), 10–18. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010:0018:en:PDF

Grajkowski W. (2014), Diagnoza potrzeb nauczycieli przyrody w szkole podstawowej w zakresie wsparcia w prowadzeniu lekcji metodą badawczą, raport z badania, Warsaw, Educational Research Institute

Grajkowski W., Ostrowska B., Poziomek U. (2014), Podstawy programowe w zakresie przedmiotów przyrodniczych w wybranych krajach, Warsaw: Educational Research Institute

Hattie J. (2009), Visible Learning. A Synthesis of over 800 Meta-Analyses Relating to Achievement, Abingdon: Routledge

Johnston, K., Conneely, C., Murchan, D., & Tangney, B. (2012). Johnston, Conneely, Murchan & Tangney (2012).pdf. In Enacting Key Skills-based Curricula in Secondary Education: Lessons from a Technology-mediated, Group-based Learning Initiative.

Jordan K. (2015); MOOC Completion Rates: The Data; http://www.katyjordan.com/MOOCproject.html; accessed 30.10.2017

Karpiński, M., Zambrowska, M. (2015), Nauczanie matematyki w szkole podstawowej. Raport z badania, Warsaw: Educational Research Institute

Muszyński, M., Campfield, D., Szpotowicz, M. (2015), Język angielski w szkole podstawowej – proces i efekty nauczania. Wyniki podłużnego badania efektywności nauczania języka angielskiego (2011–2014), Warsaw: Educational Research Institute

National Council for Curriculum and Assessment (NCCA). (2003). Developing Senior Cycle Education: Report on the consultative process. Dublin, Ireland. Retrieved from http://www.ncca.ie/en/Publications/Reports/Developing_Senior_Cycle_Education_Report_on_the_Consultative_Process.pdf

NCCA. (2009). Key Skills Framework. Dublin: NCCA. Retrieved from http://www.ncca.ie/en/Curriculum_and_Assessment/Post-Primary_Education/Senior_Cycle/Key_Skills_Framework/KS_Framework.pdf

OECD (2014), TALIS 2013 Results: An International Perspective on Teaching and Learning, TALIS OECD Publishing

Pecheone, R. L., Kahl, S., Hamma, J., & Jaquith, A. (2010). Through a Looking Glass: Lessons Learned and Future Directions for Performance Assessment, 100. Retrieved from https://scale.stanford.edu/system/files/through-looking-glass-lessons-learned-and-future-directios-performance-assessment.pdf

Szpotowicz M. (ed.) (2014), Język angielski w gimnazjum. Raport cząstkowy z I etapu Badania uczenia się i nauczania języków obcych w gimnazjum, Warsaw: Educational Research Institute