Creative Emotional Reasoning Computational Tools Fostering Co-Creativity in Learning Processes

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C²LEARN USER EVALUATION PLAN

C²LEARN PROJECT DELIVERABLE NO. D5.2.2

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1.0	30/04/2014	EA	Final version
2.0	30/06/2014	EA	Updated final version
3.0	31/10/2014	EA	Updated final version

CONTENTS

Abbreviations used

A) Abbreviated names of the project consortium partners

Abbreviation	Explanation
EA	Ellinogermaniki Agogi, Greece (coordinator)
UEDIN	The University Of Edinburgh, UK
OU	The Open University, UK
NCSR-D	National Center For Scientific Research "Demokritos", Greece
UoM	Universita ta Malta, Malta
SGI	Serious Games Interactive, Denmark
BMUKK	Bundesministerium Für Unterricht, Kunst Und Kultur, Austria

B) Other abbreviations in alphabetical order

Abbreviation	Explanation
C²Learn	Acronym of the project (full title: Creative Emotional Reasoning Computational Tools Fostering Co-Creativity in Learning Processes)
DoW	Description of Work (Annex I of the Grant agreement no. 318480)
EC	European Commission
FP7	The Seventh Framework Programme for Research and Technological Development (2007-2013)
ICT	Information and Communications Technologies
M#	#th month of the project (M1=November 2012)

Abbreviation	Explanation
TEL	Technology-Enhanced Learning
UEP	User Evaluation Plan

Executive summary

C²Learn at a glance

C²Learn (www.c2learn.eu) is a three-year research project supported by the European Commission through the Seventh Framework Programme (FP7), in the theme of Information and Communications Technologies (ICT) and particularly in the area of Technology-Enhanced Learning (TEL) (FP7 grant agreement no 318480). The project started on 1st November 2012 with the aim to shed new light on, and propose and test concrete ways in which our current understanding of creativity in education and creative thinking, on the one hand, and technology-enhanced learning tools and digital games, on the other hand, can be fruitfully combined to provide young learners and their teachers with innovative opportunities for creative learning. The project designs an innovative digital gaming and social networking environment incorporating diverse computational tools, the use of which can foster co-creativity in learning processes in the context of both formal and informal educational settings. The C²Learn environment is envisioned as an open-world 'sandbox' (non-linear) virtual space enabling learners to freely explore ideas, concepts, and the shared knowledge available on the semantic web and the communities that they are part of. This innovation is co-designed, implemented and tested in systematic interaction and exchange with stakeholders following participatory design and participative evaluation principles. This happens in and around school communities covering a learner age spectrum from 10 to 18+ years.

About this document

The present deliverable, D5.2.2 'C²Learn User Evaluation Plan', is an update to the preceding D5.2.1 'C²Learn User Evaluation Plan'. Both these documents constitute the 'translation' of provisions of the Co-Creativity Assessment Methodology (deliverables D2.3.1 and D2.3.2) –as well as more generally of the evolving conditions of technological design and development in the project– into a practice plan that informs the implementation of the pilot activities in the three countries involved, i.e. Austria, Greece and the UK. It describes the conditions and characteristics of the user pilots implemented, defining the case studies, the way school communities are involved, and the relevant action and time plan for the realization of the evaluation in the pilot locations.

From the very early stages of the project, the research teams of EA (Greece), OU (UK), and BMUKK (Austria) have invested effort in building communities of educators and students around the project. Utilizing these communities and in close collaboration with schools and teachers the research teams have started negotiating and planning the introduction of the proposed C²Learn innovation in real-life educational settings for the purposes of piloting and evaluation.

This process is evolving in parallel with developments in the rest of the project: as more details of the intervention to be piloted become available, the research teams inform the collaborating school communities about the needs of the project for specific access to learning environments, take into account the actual conditions, possibilities and restrictions shaped by the realities of the schools, and gradually negotiate and agree concrete piloting actions. In this context, rather than a final document, the User Evaluation Plan (UEP) is an ongoing dialogic process between the methodological needs of the project and the real-life conditions in already identified, as well as in additional potential, pilot locations.

The UEP's second official iteration as D5.2.2 in the 18th project month (M18, Version 1.0 of the present document) has already been updated twice up to M24 (Version 2.0 in M20, and the present Version 3.0 in M24) to reflect the conditions and circumstances of piloting more closely, as those have been arising in parallel to the evolution of technological design and development within the project. In its current state, the UEP takes into account all project aspects as they have been shaped up to the end of the second project year, and reports on plans made in the three countries so far for the final rounds of pilots in winter, spring and summer 2015, up to the end of the project. However, given the dynamic nature of developments on both sides, project and schools, we will revisit and update the UEP whenever a need for adjustment becomes evident.

1 Introduction

The present deliverable, D5.2.2 'C²Learn User Evaluation Plan', is an update to the preceding D5.2.1 'C²Learn User Evaluation Plan'. Both these documents constitute the 'translation' of provisions of the Co-Creativity Assessment Methodology (deliverables D2.3.1 and D2.3.2) –as well as more generally of the evolving conditions of technological design and development in the project– into a practice plan that informs the implementation of the pilot activities in the three countries involved, i.e. Austria, Greece and the UK. It describes the conditions and characteristics of the user pilots implemented, defining the case studies, the way school communities are involved, and the relevant action and time plan for the realization of the evaluation in the pilot locations.

From the very early stages of the project, the research teams of EA (Greece), OU (UK), and BMUKK (Austria) have invested effort in building communities of educators and students around the project. This has become particularly evident in the first and second project years, through the outcomes of scenario development and user requirement elicitation (D5.1.1, D5.1.2 and D5.1.3), in the development of the learning design (D2.2.1 and D2.2.2), and in the various user pilot activities in the first two years (D5.3.1 and D5.3.2). Utilizing these communities and in close collaboration with schools and teachers the research teams have started negotiating and planning the introduction of the proposed C²Learn innovation in real-life educational settings for the purposes of piloting and evaluation.

This process is developing in parallel with developments in the rest of the project: as more details of the intervention to be piloted become available, the research teams inform the collaborating school communities about the needs of the project for specific access to learning environments, take into account the actual conditions, possibilities and restrictions shaped by the realities of the schools, and gradually negotiate and agree concrete piloting actions. This dialogue with the school communities informs the scenarios which are gradually turning into more concrete use cases (D5.1.2 and D5.1.3), and eventually the User Evaluation Plan (UEP) (Figure 1).

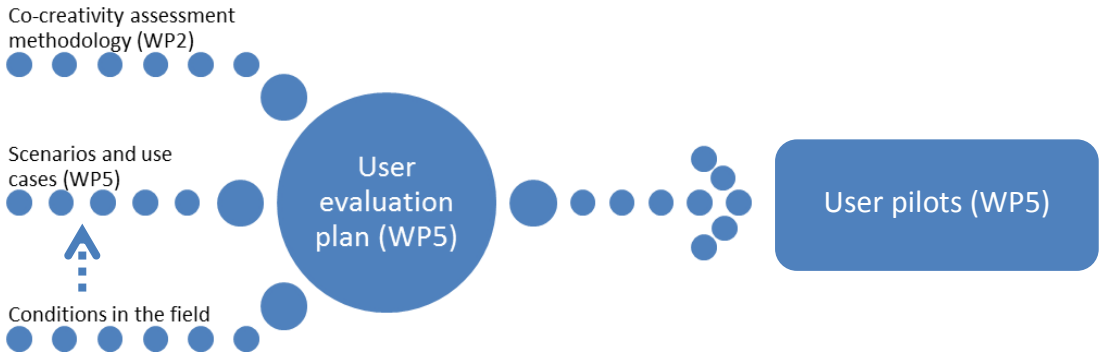

Figure 1: Position of the User Evaluation Plan in C²Learn processes

In this context, rather than a final document, the UEP is an ongoing dialogic process between the methodological needs of the project and the real-life conditions in the already identified, as well as in additional potential, pilot locations. The UEP's second official iteration as D5.2.2 in the 18th project month (M18, Version 1.0 of the present document) has already been updated twice up to M24 (Version 2.0 in M20, and the present Version 3.0 in M24) to reflect the conditions and circumstances of piloting more closely, as those have been arising in parallel to the evolution of technological design and development within the project. In its current state, the UEP takes into account all project

aspects as they have been shaped up to the end of the second project year (especially in relation to technology development), and reports on plans made in the three countries so far for the final rounds of pilots up to the end of the project.

Information included in the present document has been gathered through the rich interaction of the research teams with the school communities, and monitored and organized using the internal project questionnaire presented in Annex I. This information reflects what at the present stage appears to be possible and desirable from the viewpoint of those involved in the actual pilot activities. This planning remains dynamically open, however. Adjustments and fine-tuning will continue during the pilot phase to address any changes in circumstances arising on both sides, project and schools. We will revisit and update the UEP whenever a need for adjustment becomes evident.

2 Overview of concepts, processes and conditions

This section summarizes the concepts, processes and conditions relating to evaluation and piloting in the C²Learn project, and serves as the framework for all decisions relating to user evaluation, in accordance with the provisions of the Description of Work (DoW) of the project.

A useful schematic overview is provided by the diagram in Figure 2 on the following page. On the subsequent pages, this is accompanied by a detailed discussion and framing of the pilot countries, case studies, pilot cycles, use cases and scenarios in the wider context of evaluation.

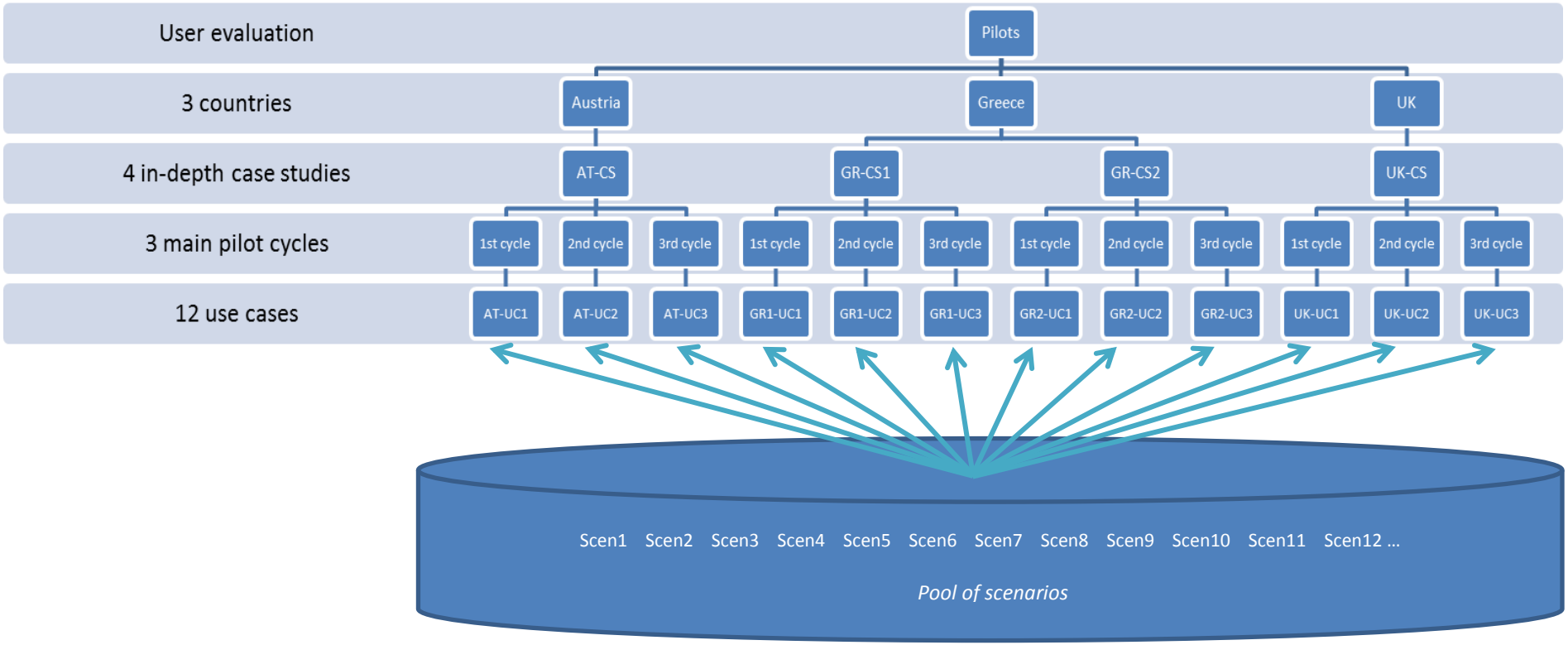

Figure 2: Diagrammatic overview of the evaluation and piloting process and its elements

2.1 RELATION TO ASSESSMENT METHODOLOGY AND EVALUATION ANALYSIS

The aim of the pilots is to test and evaluate the innovation proposed by C²Learn, i.e. innovative pedagogical practices including the use of the technological tools that are being designed and developed. Thus, the pilots consist in the implementation, in iterative cycles, of concrete creative learning activities with real users, as designed by the project in the form of scenarios and use cases (deliverables D5.1) and using the technologies developed in WP3 and WP4, for the purposes of user evaluation. The definition of the co-creativity assessment methodology (deliverables D2.3) logically lies before the user pilots. In the pilots this methodology is applied in the fieldwork with the purpose to collect data, which are then analyzed to lead to evaluative conclusions (deliverables D5.4) (Figure 3).

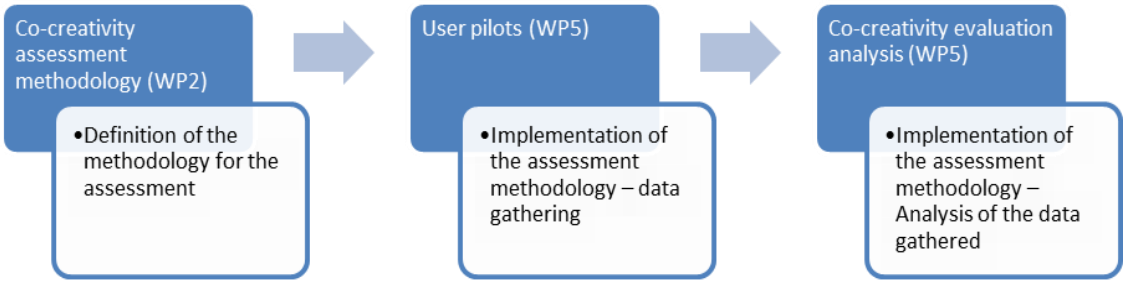

Figure 3: From methodology through implementation to analysis and conclusions

The first edition of the co-creativity assessment methodology (D2.3.1), which became available in M12, informed both the first iteration of the UEP (D5.2.1) and the early versions of the current iteration (D5.2.2). In the meanwhile, the final version of the co-creativity assessment methodology was delivered in M24 (D2.3.2), defining the aims, procedures and tools of user evaluation, and thus informing the present Version 3.0 of D5.2.2. The project has now reached the heart of this process, with one of the three main cycles of user evaluation completed, as described further below.

2.2 PILOT COUNTRIES

The pilots of the project are realized in three European countries: Austria, Greece, and the United Kingdom. The three countries have been selected from the conception of the project to represent a wide spectrum of educational, economic, social and cultural contexts, as well as a wide spectrum of practices regarding education in general and creativity in education in particular.

User pilots and generally all field-based research in the project are organized and carried out in each of the three countries by the local consortium partner who acts as the 'national node' for that country. The national node for Austria is BMUKK; the national node for Greece is EA; and the UK national node is OU, supported by UEDIN. In addition, EA coordinates all field research at the project level.

2.3 LEARNER AGE GROUPS

The project addresses three main learner age groups:

a) 10-12 year-old school students

b) 13-15 year-old school students

c) 16-18 year-old school students.

While the focus of the project is on school education, an additional (though less central) fourth group is defined, as an extension to the third main group above, including:

d) Young (18+) people in transition from school to adult life (e.g. university students).

The rationale behind this wide coverage of the student age spectrum is based on the fact that creativity and creative thinking, on the one hand, and digital gaming behaviours and experiences, on the other hand, are manifested differently in the different stages covered by school education, changing dramatically with student age. In this context, the project has a strong interest in investigating the use of the proposed pedagogical and technological approach with children who have acquired the level of basic skills needed for involvement in the foreseen activities, pupils in the transition to, and early years of, adolescence, as well as teenagers who are either approaching the end of schooling, or find themselves in varying degrees of transition from school to tertiary education, work, and more generally, adult life.

All four (3+1) age groups are covered in the pilots, on the basis of local availability and circumstances (see section 3).

2.4 PILOT CYCLES

User piloting of the innovation is realized in four (1+3) pilot cycles. The input to each one of these cycles consists in project developments and achievements up to that point, while its output is feedback to the rest of the project so as to inform adjustments and further development.

Of the four pilot cycles, the first one was of an introductory nature. This first **introductory pilot cycle** was completed towards the end of the first project year. Its content and outcomes were reported in detail in deliverable D5.3.1 'C2Learn User Pilots'. In overview, the aim of that first introductory pilot cycle was to expose user communities, and in particular teachers, to the first outcomes of the project, and gather their reactions, which then informed next steps in design and development. This provided the project with valuable, exploratory input and insights relating to learning design, Creative Emotional Reasoning (CER) techniques, scenarios, computational tools, game design, as well as research tools for the purposes of co-creativity assessment methodology.

Following the introductory phase of the first year, the project entered its main phase of piloting with end users. In this, there are **three main pilot cycles** taking place in years 2 and 3 of the project.

The **1st main pilot cycle** took place in the period M16-M21 (February 2014 – July 2014), with a total duration of six months. The purpose of this pilot cycle was to expose, for the first time, the interventions developed by the project up to that time, as well as the co-creativity assessment methodology, to real use in educational settings. User feedback from this mainly informed adaptations in the designs and further development, while this pilot cycle also provided first indications of the impact of the innovation in terms of co-creativity assessment. Due to the timing of the 1st main pilot cycle in relation to the academic year (cf. also restrictions such as end-of-year examination period and summer holidays), as well as the period of fine adjustments that followed the first project review and the overall project progress in terms of technological design and development, a shorter actual period of implementation was unavoidable. In general, during this pilot cycle the research teams made efforts to secure the longest possible availability of young users for trials of those project elements that were available at each time.

Following a period of intensive work across the project, researchers are returning to field trials in the **2nd main pilot cycle**, in the six-month period of M25-M30 (November 2014 – April 2015). To provide a wider time window that will allow the research teams to make use of the whole school year, it has been foreseen that these pilots can start even earlier, in September/October 2014, closer to the start of the school year, if technological products appropriate for use in classrooms are in place. In the meanwhile, with rapid developments underway in autumn 2014 linked to technology availability and readiness for use in classrooms, at the time of the latest update of the current document it is foreseen that the main part of the 2nd main pilot cycle will fall mainly in M27-M30 (January 2015 – April 2015), while an extension of the pilot into May, June and July 2015 will also be considered, if the pragmatic conditions allow this. As the outcomes of the project are rapidly maturing, and since this timing provides a convenient time window in the heart of a school year, pilots at this stage are aiming to provide both rich feedback for the validation of the available C²Learn technology and pedagogical interventions, as well as rich insights relating to co-creativity evaluation.

Finally, as soon as the whole solution produced by the project is available, the **3rd main pilot cycle** will serve as the last opportunity for the interaction of the design and development teams with the end user communities, so that the project products are finely adjusted, finally shaped and delivered. This last pilot cycle will be shorter, lasting three months (the last three months of the project: M34-M36; August – October 2015). This final validation of the project products will be accompanied by the final conclusions of co-creativity evaluation, and evidence for the exploitation of the results of the project. The short nature of the last pilot cycle, which cannot be altered due to overall restrictions of the time plan of the project as well as due to the short distance between summer school holidays 2015 and the end of the project, requires careful planning and inventive solutions that will allow effective exposure of a number of users to the almost final C²Learn solution in the little available time. This will be achieved in coordination with rich dissemination and exploitation-oriented activities aiming at attracting larger numbers of users far beyond the immediate user access spheres of the consortium. These activities will commence in February 2015 and will gradually accumulate to a climax in summer and autumn 2015, with the organisation of a European contest in spring 2015 being an important milestone (details in the exploitation plans described in deliverable D6.3.2 'Report on Dissemination and Exploitation Activities Year 2').

2.5 CASE STUDIES

User pilots are methodologically shaped into four in-depth case studies, which are distributed among the countries as follows:

- One in Austria
- Two in Greece
- One in the UK.

The concept of 'case study' in this frame is flexible to adapt to the needs and interests of the project as they arise. At minimum, it suggests that the amount of piloting effort in Greece will be roughly twice as much as that in each of the other countries. However, the distribution of the case studies and more generally of the pilot activities in the three countries constantly and dynamically aims at a comprehensive coverage of learner age groups, learning focus points, and variety of formal and informal learning contexts.

2.6 SCENARIOS AND USE CASES

Closely linked to the configuration of the user pilots in each country are the scenarios and use cases defined in deliverables D5.1.

Schematically, as the project progresses, the scenarios, which are open and generic 'scenario ideas', are gradually transformed into concrete experience designs, the 'use cases' (Figure 4).

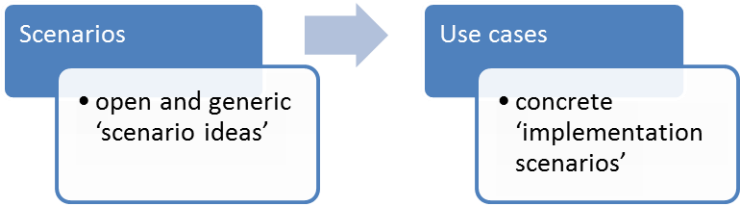

Figure 4: From scenarios to use cases

Thus, while 'scenarios' aim at illustrating a range of possibilities without being prescriptive, 'use cases' reflect concrete cases of pilot implementation, thus being the 'implementation scenarios' for the pilots.

Each of the cyclical iterations of a case study corresponds to at least one use case (cf. Figure 2). The three iterative main pilot cycles in each one of the case studies lead to at least 12 discrete use cases overall (corresponding to the foreseen 12 'scenarios' as defined in the DoW). As the content of each use case is defined through the selection of one or more scenarios from those which the project has been developing, local research teams and school communities have the opportunity to shape a variety of use cases by selecting from a large pool of scenarios.

The 12 use cases overall in the three years of the project provide a comprehensive distribution of pilot activities across learner age groups, learning focus points, and formal and informal learning contexts. Annex II includes the matrix used to monitor the distribution of pilot activities across learner age groups, learning focus points, and formal and informal learning contexts, reflecting the relevant provisions of the DoW.

In particular regarding user group coverage, the research teams are making efforts to create conditions in one of the use cases that will allow exploring the nature and consequences of having more than one of the age groups collaborate, so as to investigate the potential for 'capital transfers' with older and younger gamers playing together. This will probably be possible in the 2nd or 3rd main pilot cycle.

For each use case, the local research team, in collaboration with the local school communities, selects from the large pool of scenarios developed in the project. As foreseen in the DoW, overall in each case study at least two (and potentially many more) of the available scenarios will be tried, provided the local circumstances allow this.

2.7 NUMBERS OF PARTICIPANTS

The co-creativity assessment methodology (D2.3.1 and D2.3.2) requires that in each pilot cycle, each case study should consist of a group of about 20-30 students, which may be further divided into smaller subgroups. The research teams in the three countries have made arrangements so that this number of students can be secured as a minimum, with flexibility regarding their distribution so as to address any methodological requirements that may arise. In particular, researchers, where possible, aim at numbers larger than the minimum required in order to counterbalance any attrition. It should

be noted, that in any case the requirements of the co-creativity assessment methodology and the corresponding plans by far surpass the level of end-user participation defined by the DoW

In addition to the above core participants of the case studies, activities in the context of rich dissemination and exploitation-oriented activities involve larger numbers of students and teachers in a variety of episodes of C²Learn practice, thus further enriching user feedback. This started already in the first project year (cf. the C²Learn Summer School; D5.3.1) and continues in the second project year with EA's pilot in informal learning settings in July 2014. In the third project year, such activities will commence in February 2015 and will gradually accumulate to a climax in summer and autumn 2015.

2.8 DURATION OF PARTICIPANTS' EXPOSURE AND DATA COLLECTION

According to the co-creativity assessment methodology, students should experience around 18-24 hours of exposure to the C²Learn educational interventions spread throughout the 6-month periods of the 1st and 2nd main pilot cycles. While local restrictions and pilot site and project logistics may influence the details of the attainment of these targets in practice, effort is made to limit this effect to the absolutely unavoidable. Given the circumstances explained above (section 2.4), the research teams in the three countries made efforts to achieve the best possible solution for the 1st cycle, keeping as close to the target as possible. However, in a pragmatic approach, the emphasis has now shifted to a much richer 2nd main pilot cycle in the heart of the 2014-2015 school year. Regarding the 3rd, shorter, main pilot cycle, the present plan will integrate any relevant decisions made after the completion and analysis of the 2nd main pilot cycle. However it has already been decided that the 3rd cycle will be complementary to the second one, with a focus on eliciting requirements for final refinements, and combined with extrovert project initiatives that will seek to attract and involve larger numbers of end-users.

Data collection is generally performed as defined in the co-creativity assessment methodology, and technically supported by EA through monitoring and coordination of activities as well as the operation of a safe and secure online data storage space shared by the research teams. In school environments data collection generally happens in ordinary classroom settings, while the 18+ age group is typically addressed through smaller focus groups in appropriate (e.g. university) contexts.

2.9 TRAINING

Teachers involved in the pilots are responsible for administering the C²Learn interventions and contributing to evaluation data collection, always supported by the researcher teams. To prepare teachers for these roles, the project provides training prior to the implementation of the pilots. Such activities have taken place in the three countries since winter 2014, in various forms depending on the local circumstances and need may arise. Teacher training has often been combined with researcher training on data collection and analysis, as foreseen in the co-creativity assessment methodology. A milestone event of this kind, which helped further refine the methodological tools and the training approach, as well as preparing teachers and researchers, took place in EA, Athens, Greece, on 5th – 6th February 2014, with the participation of researchers and teachers from Greece as well as Austria and the UK.

2.10 ETHICS

All pilot implementation activities are underpinned by a clear set of ethical principles, as described in the co-creativity assessment methodology (D2.3.1 and D2.3.2).

3 The current state of pilot planning

In the context of the requirements and conditions described above, each research team made initial plans for the implementation of pilot activities in each of the three countries starting approximately in February 2014 (foreseen start of the 1st main pilot cycle). The current state of these plans, as of October 2014, is outlined in the present section. These plans are in constant elaboration, in the light of all new developments within the project and any changing or arising circumstances on the side of the school communities.

3.1 THE CASE STUDY IN AUSTRIA

Austria hosts one of the four C²Learn case studies. The code name for this is: **AT-CS**.

BMUKK has been building a community of teachers around C²Learn since the first stages of the project. The results of work with this community are reflected in the work relating to scenario development (D5.1.1, D5.1.2, D5.1.3) as well as in the pilot reports (D5.3.1, D5.3.2).

Teachers involved in the visionary workshops organised in Austria in the first year teach different age groups, including all targeted age groups of the project, and various subject areas (English, Italian, Music, Craft-Design-Technology, Biology & Ecology, Arts, International Development, Teaching & Learning, Accounting). The core group of teachers which was subsequently formed secures project access to different school environments and through various curriculum areas.

In the first project year, and more specifically in September 2013, a preliminary pilot was organised in HTLW Bergheidengasse, a higher vocational school located at Bergheidengasse 2, in Vienna. The class involved in the pilot (8B) consisted of 31 students (24 girls and 7 boys) in the age range of 17-18 years. Sabrina Schnabel was the teacher who led the pilot activities. The scenario implemented was the 'Amusement Park', with links to curriculum areas such as German, Geography, Biology, History, Arts, Music, Sports, Religion/Ethics. The pilot lasted 14 hours, distributed into 2 days (7 hours per day).

For the main pilot cycles, plans in Austria foresee one pilot per cycle, each of them lasting about 20-25 hours. These hours may be distributed across a number of weeks of lessons, or concentrated in just one week (a 'project week'), depending on local school circumstances and availability. The Austrian pilots concentrate on the age groups of 13-15 year-olds and 16-18 year-olds. Most probably, the age group of 10-12 year olds will not be addressed, while there is possibility to attempt trials with the 18+ age group involving teacher-students at the University of Vienna. It is not feasible to involve the same students in more than one pilot cycle (so that their 'progression' through C²Learn could be followed), as most of them will change or leave school during the project. From the scenarios available, use cases in Austria will be based at least on those proposed by the Austrian teachers.

More precisely, the plans for pilots in Austria in the second and third project years include the following activities:

1st main pilot cycle

- ***When:*** May 2014
- ***School:*** New Middle School Vienna 21, a lower secondary school located at Jochbergengasse 4, in the 21st district of Vienna

- ***Class involved:*** Class 3B, 24 students (6 girls and 18 boys) in the age range of 13-15 years
- ***Teachers involved:*** Thomas Weixelbaumer, head teacher of the school; he has developed the scenario and leads the implementation of the pilot.
- ***Scenario implemented:*** 'Teleporter', with links to various curriculum areas including English, German, History and Politics.
- ***Duration:*** a total of 25 hours in a week, structured into five daily 5-hour sessions

2nd main pilot cycle - A

- ***When*:** November 2014
- ***School:*** Cooperative Middle School, a lower secondary school located at Schopenhauerstraße 79, in the 18th district of Vienna
- ***Class involved:*** 25 students (19 girls and 6 boys) in the age range of 13-14 years
- ***Teachers involved:*** Markus Jastraunig, an external creative artist; he has developed the scenario and leads the implementation of this pilot alongside the head teacher Gerada Reissner.
- ***Scenario implemented:*** 'Global Diversity', with links to various curriculum areas including German, Geography, History, Arts, Music, Sports, Religion/ Ethics.
- ***Duration:*** a total of 20 hours in a week, structured into 5-hour sessions.

2nd main pilot cycle - B

- ***When:*** Spring 2015
- ***School:*** BG/BRG Gymnasium Klosterneuburg, a higher secondary school located at Buchberggasse 31 in Klosterneuburg
- ***Class involved:*** Class 7A, 17 students (15 girls and 2 boys) in the age range of 17-18 years
- ***Teachers involved:*** Markus Jastraunig, a creative artist; has developed the scenario and leads the implementation of this pilot alongside the head teacher Barbara Simons.
- ***Scenario implemented:*** 'Global Diversity' with links to various curriculum areas including German, Geography, History, Arts, Music, Sports, Religion/ Ethics.
- ***Duration:*** a total of 20 hours structured into 4 weeks, 5 hours per week.

3.2 THE CASE STUDIES IN GREECE

Greece officially hosts two of the four C²Learn case studies. The code names for these are: **GR-CS1** and **GR-CS2**. In addition, an extrovert approach followed in conjunction with the dissemination and exploitation efforts has managed to attract the attention of educators in Greece who are willing to contribute to piloting C²Learn in their teaching contexts as volunteers motivated by the strong pedagogical innovation and value of the project approach. This movement has grown to form an additional, third Greek case study, encoded as **GR-CS3.**

The overall plan and intention in Greece is to cover the whole age range falling within schooling, as follows:

- 10-12 year-olds: mainly year 5 and year 6 in primary school, and possibly year 7 (1st grade of lower secondary school)
- 13-15 year-olds: mainly year 8 or year 9 (2nd and 3rd grades of lower secondary school), and possibly year 10 (1st grade of upper secondary school)
- 16-18 year-olds: year 11 (2nd and 3rd grades of upper secondary school; it is noted that due to the pressure of the final university entry examinations, access to the 3rd grade of upper secondary school is not easy).

EA has been building a community of teachers in Greece around C²Learn since the first stages of the project. The results of work with this community are reflected in scenario development (D5.1.1, D5.1.2, D5.1.3) as well as in the pilot reports (D5.3.1, D5.3.2). The initial core of this community was formed within Ellinogermaniki Agogi (EA, C²Learn consortium coordinator). EA is a large private school in the suburbs of Athens covering all levels of schooling from pre-school to upper secondary, which enrols students from all over Athens and the surrounding areas including parts of the greater city with very different socio-economical characteristics.

Twelve teachers of EA have been closely following C²Learn from the very early stages engaged in visionary co-design and early piloting activities. They are working in two independent groups, one in the primary school, and one in the secondary school. The groups were formed in consultation with school principals after an initial meeting explaining the goals of the project and reviewing how it fits into the school needs and priorities. Teacher expertise includes primary school teaching, as well as secondary school specialists in home economics, biology, mathematics, humanities and language, astronomy, and drama education. The emphasis of all work with the groups is on strongly cross-curricular approaches. The same teachers are involved in the pilots.

The above described division between primary and secondary education has been the working definition of the two main Greek case studies (GR-CS1: primary school; GR-CS2: secondary school). However, a different interpretation of the distinction between the two Greek case studies remains always possible, to address any relevant methodological need of the project.

The fact that EA is the C²Learn consortium leader makes access to a variety of classrooms an immediate, very helpful possibility, which allows for considerable flexibility to address the needs of the project for pilots as these may be emerging or changing in the course of the project. In this context, EA is in close collaboration with partners from both the theoretical/pedagogical side and the technology side of the project, regularly investigating possibilities for supplementary or enhanced piloting activity in its school whenever such a need arises.

Pilots in EA relate to various curricular areas serving as starting points for cross-curricular work, implementing a variety of the developed scenarios. In addition, it is a priority to identify opportunities in the regular life of the school for the combination of piloting in formal and informal learning contexts, mainly utilizing school activities in informal contexts (e.g. school trips and other out-of-classroom activities).

Regarding the numbers of participants in the EA pilots, besides what has been described above (section 2.7) it is noted that there is the possibility to go for student numbers significantly higher than those required. In the primary school case study, the estimation is that most likely a whole school grade (i.e. more than 150 children in year 6) will be exposed to 'C²Learn compatible' pedagogy - while

of course the evaluation focus will be on one or two classrooms among them (i.e. approximately 25-50 children from the 10-12-year-old age group). In the secondary school case study, planning includes one to two classrooms in year 8 (about 25-50 students falling in the 13-15-year-old target group), as well as at least one upper secondary classroom (about 25 students in the 16-18-year-old target group).

Besides offering its staff and classrooms for the pilots, EA enables the involvement of more teachers and schools in Greece in the pilot activities, drawing from a wide network of education professionals with whom EA has strong collaboration links. As stated above, pilots involving volunteer teachers who offer to contribute to C²Learn trials in their own teaching contexts form the additional, third Greek case study, GR-CS3. The duration and intensity of pilot activities in the GR-CS3 case study are generally at lower levels than in the pilots based in EA. In this case study, the emphasis is less on the full application of the co-creativity assessment methodology, allowing for the use of a selection only of the research tools, adjusting to local conditions. The stronger emphasis of the GR-CS3 case study is on helping cover less-served areas of the project design, such as informal learning activities outside school and activities addressing the 18+ age group, as well as contributing to a wider dissemination and stronger exploitation of the project results and thus generating enhanced project impact. EA encouraged the formation of such an extended community around C²Learn from the first stages of the project. Already in the first year a requirements elicitation and scenario development workshop as well as an international teacher training summer school dynamically contributed to this direction, followed by intensive piloting in informal learning settings in July 2014.

More precisely, the plans for pilots in Greece in the second and third project years include the activities described below.

As the 1st main pilot cycle coincides with a period of intensive game design work and decisions about the concrete shape of the C²Learn solution in winter and spring 2014, in case studies GR-CS1 and GR-CS2 pilot activities in the school of EA are to be realised flexibly, putting emphasis on providing direct, immediate input to the design processes (game and pedagogical/methodological) whenever a need for that might arise. This includes testing of the games and pedagogical/methodological activities with teachers and students in the school, possibly without the full application of the evaluation methodologies, as the outcomes of design and development in the project are not yet mature enough to sustain longer, richer classroom activity. In this context which requires flexibility, the choice of the scenario to be implemented in each pilot activity and the degree of methodological formality of the activity are kept as open options. In addition, the plan foresees extensive checking and testing by the members of the research team of all interim and final elements of the C²Learn solution, as they become available. This flexible piloting activity:

- started already in November-December2013 with the play-testing of the first provided version of 4Scribes
- included piloting with upper secondary school students combined with (a) the teacher and researcher training workshop that took place in EA on 5th-6th February 2014, and (b) regular lessons in the context of the Research Project curriculum area, and
- continued up to the end of the pilot cycle and beyond, to the end of the second project year, with various instances of play-testing and continuous feedback from EA researchers and teachers to the design and development teams.

The 2nd main pilot cycle will start in school year 2014-2015 as soon as there are stable, integrated technological outcomes to be tried in real classrooms in a sustainable longer-term fashion. In this fully

developed pilot, the whole set of the project's methodologies for the refinement of use cases and the application of the co-creativity assessment methodology will be applied. In summary, it is planned to carry out these pilot activities in EA according to the following distribution:

- 10-12 year-old age group (primary school):
    - In year 5, activities linked to the Geography curriculum
    - In year 6, activities related to the History curriculum
- 13-15 year-old age group (lower secondary school):
    - year 8, activities related to the curriculum areas of literature, religion and home economics
- 16-18 year-old age group (upper secondary school):
    - year 11 or year 12, activities related to creative writing and/or religion studies.

In parallel, day-to-day testing and feedback from EA's researchers, teachers and students to the design and development teams will continue, following guidance and requirements expressed by the technical teams.

In case study GR-CS3, i.e. beyond the immediate school context of EA, the research team concentrates on combining additional piloting with dissemination and exploitation efforts through which educators and stakeholders in Greece are approached and motivated to offer opportunities for piloting the C²Learn innovation in their teaching contexts. The evolution of this additional, third Greek case study has been very satisfactory, providing rich user feedback from contexts such as places of non-formal and informal learning (e.g. museums, creativity clubs and summer camps) as well as addressing the 18+ age group. The plan foresees that for the 1st main pilot cycle such activity will be concentrated towards the end, i.e. in summer 2015, so as to present the fullest possible picture of the C²Learn proposition to the world outside the project consortium. In early summer 2015 it was established that there is rich potential for such piloting activities in the districts of Heraklion and Rethymnon in Crete, Greece, with the collaboration of various local stakeholders (municipalities, local teachers, the Natural History Museum of Crete, summer camp organisers, the University of Crete, the Praxis HELP-FORWARD Network established in the Foundation for Research and Technology Hellas, the Research and Development Department of the Forthnet telecommunications and digital services group of companies). In addition, discussions confirmed the potential for collaboration with the Union of Greek Physicists to integrate C²Learn pilot activities in the programme of the Union's Summer School for school students.

In the third project year, such activities will commence in February 2015 and will gradually accumulate to a climax in summer and autumn 2015, with the organisation of a European contest in spring 2015 being an important milestone (details in the exploitation plans described in deliverable D6.3.2 'Report on Dissemination and Exploitation Activities Year 2'). It is planned to end the project with the organisation of a big public event that will also include opportunities for wide use of the C²Learn products by the public.

3.3 THE CASE STUDY IN UK

UK hosts one of the four C²Learn case studies. The code name for this is: **UK-CS**

OU has been building communities of students and teachers around C²Learn since the first stages of the project. The results of work with these communities are reflected in the work relating to scenario development (D5.1.1 and D5.1.2) and learning design (D2.2.1), as well as in the report on the first introductory pilot cycle (D5.3.1). It should be noted that the OU researcher team has prioritised working with young people alongside their teachers from the initial project stages, as it brings a special interest in learner voice and participation alongside its expertise in creativity in education.

In principle, it is probably desirable to cover all age groups in UK pilots, if methodologically relevant. Relevant decisions are made closer to the start of the pilots so as to cover the relevant needs of the project as these emerge, taking into account the possibilities offered in the collaborating school communities. The curricular areas to be used as possible starting or reference points for cross-curricular work are defined closer to the start of the pilots, after the schools and particularly the teachers within them are recruited. The selection of scenarios for the UK use cases is based on the ongoing close collaboration with the teachers involved as well as depending on which parts of the games and environment are ready to pilot and which scenarios might house those best.

In the first project year, the OU team recruited four community (i.e. state funded) schools in England, which are known to the team for their interest in both creativity and digital media. Two schools were located in the South West of England and two in the South East of England, in a variety of city, suburban and rural contexts. Two were primary schools and two were secondary. The age span of pupils involved in project activity (workshops) was 10-17. It was impossible to involve 18 year olds, who are in their final year of school and under heavy pressure with assessments and examinations. Each of those sites was in the first year keen to continue to work with the project.

In the second project year (1st main pilot cycle), the following pilots in UK were planned:

- School SW1, Brownlow Primary (South West England)[1], 10-11 age group: 4Scribes basic paper prototype in June, 2014. Scenarios/Themes: Genetic modification lab and war, Bullying in school.

- School SW2, St Paul's Secondary (South West England), 11-15 age group: Initial plan for an 8 week pilot in March –May 2014. *Update:* the pilot activity was cancelled because of the following reasons: paper-based rather than digital prototypes were available at the time; related time and effort overhead; other school and teacher's personal issues.

- School SW3 (FE), SW FE college, 16-18 age group: teacher Interview providing feedback on available tools in April 2014, and 4Scribes basic paper prototype in July 2014. Scenarios/Themes: Global warming with bullying in school, Iraqi situation.

- School SE1, Ridgeway Primary (South East England), 10-11 age group: Initial plan for an 8 week pilot starting March 2014 *Update:* the pilot activity was cancelled because of the following reasons: limited range available of high-quality tools; time issues; other academic priorities.

- School SE2, Sir Walter Raleigh Secondary (South East England), 12-17 age groups: 4Scribes basic paper prototype in May 2014. Scenarios/Themes: Love conquers all in an amusement park, War at school.

[1] School names are pseudonyms, detailed information in deliverable D 5.1.1

- School OoE, University of Exeter, 18+ age group: 4Scribes basic paper prototype in January 2014. Scenarios/Themes: individual games with different premises.

Overall, pilot activities in the 1st main pilot cycle in the UK were shaped by the readiness of the project outcomes for use with teachers and students, as well as by changing circumstances in some of the schools involved.

For the 2nd main pilot cycle in the third project year, the following pilot activities are planned:

- School SW1, Brownlow Primary (South West England), 10-11 age group: An early main pilot of 8 weeks starting in October 2014 was initially planned but postponed due to teacher illness. The realization of this full 8 week pilot is planned for later in the academic year (hinges upon resolving technical issues in collaboration with IT personnel).
- School SW2, St Paul's Secondary (South West England), 11-15 age group: No pilots planned.
- School SW3 (FE), SW FE college, 16 – 18 age group: No pilots planned.
- School SE1, Ridgeway Primary (South East England), 10-11 age group: a full 8 week pilot is planned commencing in January 2015 (hinges upon resolving technical issues in collaboration with IT personnel).
- School SE2, Sir Walter Raleigh Secondary (South East England), 12-17 age groups: An early main pilot of 8 weeks starting in November 2014 was initially planned, but cancelled due to non-availability of the tools which the teacher had planned into teaching. No other pilots planned.
- School OoE, University of Exeter, 18+ age group: plans for one-off sessions with different undergraduate and postgraduate student groups at Exeter University, starting January 2015.
- School WM1 (FE), Midway College FE (West Midlands, UK), 16-18 age group: plans for a full 8 week pilot with the digital prototype (tools to be decided) in January 2015. Scenario/Theme: Sociology Revision themes.

4 Reporting pilot activities

Detailed reporting of the pilot activities are to be provided in deliverables D5.3.2, D5.3.3 and D5.3.4, at the end of each piloting cycle. These will focus more on the procedures and conditions of the pilot activities, while the 'content' outcomes and user feedback will inform all relevant processes and deliverables of the project (and among them, predominantly D5.4.1 and D5.4.2, 'Co-creativity Evaluation Analysis').

Annex I: User Evaluation Plan questionnaire

Administered by EA, July-September 2013

Country: _____. Questionnaire to be filled in by _____.

Introduction

In deliverable D5.2.x 'C2Learn User Evaluation Plan' our aim is to 'translate' the Co-Creativity Assessment Methodology which is being developed in WP2 (D2.3.1) into a concrete practical evaluation plan. This plan will describe in detail the conditions and characteristics of the user pilots that will be implemented in each country (Austria, Greece, UK). It will define the focus points for each of the case studies, the school communities to be involved, and the detailed action and time plan for the realization of the evaluation in each pilot location. In short, at this stage we are deciding precisely how the pilots are to take place in each pilot location. This task of ours is interrelated with the Scenarios and Use Cases developed so far (D5.1.1) in WP5, as well as with their refinement which is currently in progress (towards delivering D5.1.2). Especially the 'use cases' in D5.1.2 are being shaped in the light of the real-life conditions in the pilot locations; they are therefore very relevant to our present of defining the user evaluation practicalities in these locations.

With this questionnaire, we are seeking your input regarding the practical details that will define the mode of pilot implementation in your country.

Participants in the main pilot cycles

	Core element			**Wider element**		
	Project target (average)	**Feasible numbers (realistic estimation)**		**Project target (average)**	**Feasible number (realistic estimation)**	
1st main cycle (Feb2014 – Jul2014)	8 game players		10-12 yrs	35 game players		10-12 yrs
			13-15 yrs			13-15 yrs
			16-18 yrs			16-18 yrs
			18+ yrs			18+ yrs
2nd main cycle (Nov2015 – Apr2015)	8 game players		10-12 yrs	35 game players		10-12 yrs
			13-15 yrs			13-15 yrs
			16-18 yrs			16-18 yrs
			18+ yrs			18+ yrs
3rd main cycle (Aug2015 – Oct2015)	8 game players		10-12 yrs	35 game players		10-12 yrs
			13-15 yrs			13-15 yrs
			16-18 yrs			16-18 yrs
			18+ yrs			18+ yrs

Other information or comments:

'Long-term' participants

Would it be possible to involve the same individuals in more than one pilot cycle, and thus maybe follow their 'progression' through C2Learn?

- ❑ Yes, this is what we plan to do
- ❑ Maybe, but we are not sure yet
- ❑ Maybe, but we would prefer not to
- ❑ No, this is not possible

Please explain:

If 'yes' or 'maybe', in which cycles and how many participants?

	Core element		Wider element	
	Feasible number of 'long-term' participants (realistic estimation)		Feasible number of 'long-term' participants (realistic estimation)	
In the 1st and 2nd cycles		10-12 yrs		10-12 yrs
		13-15 yrs		13-15 yrs
		16-18 yrs		16-18 yrs
		18+ yrs		18+ yrs
In the 2nd and 3rd cycles		10-12 yrs		10-12 yrs
		13-15 yrs		13-15 yrs
		16-18 yrs		16-18 yrs
		18+ yrs		18+ yrs
In all three cycles		10-12 yrs		10-12 yrs
		13-15 yrs		13-15 yrs
		16-18 yrs		16-18 yrs
		18+ yrs		18+ yrs

Other information or comments:

Distribution of pilot activities across learner age groups, learning focus points, and formal and informal learning contexts

Use cases:	**AT-UC1**	**AT-UC2**	**AT-UC3**
Learner age group			
10-12 year-olds			
13-15 year-olds			
16-18 year-olds			
18+ year-olds			
Learning focus			
Language			
Science, mathematics and technology			
History			
Social, personal and civic education			
Competences			
Learning to learn	☑	☑	☑
Civic competence	☑	☑	☑
Initiative and entrepreneurship	☑	☑	☑
Cultural awareness and expression	☑	☑	☑
Formality of learning activities			
Formal			
Informal			

Annex II: Matrix used to monitor the distribution of pilot activities

Use cases:	AT-UC1	AT-UC2	AT-UC3	GR1-UC1	GR1-UC2	GR1-UC3	GR2-UC1	GR2-UC2	GR2-UC3	UK-UC1	UK-UC2	UK-UC3
Learner age group												
10-12 year-olds				☑	☑	☑				☑	☑	☑
13-15 year-olds	☑	(☑)	(☑)				☑	☑	☑	☑	☑	☑
16-18 year-olds	(☑)	☑	☑				☑	☑	☑	☑	☑	☑
18+ year-olds	(☑)	(☑)	(☑)					(☑)		☑	☑	☑
Curricular focus												
Language	☑	(☑)	(☑)	☑	☑	☑	☑	☑	☑			
Science, mathematics and technology	(☑)	☑	☑	☑	☑	☑	☑	☑	☑			
History				☑	☑	☑	☑	☑	☑			
Social, personal and civic education	(☑)	(☑)	(☑)	☑	☑	☑	☑	☑	☑			
Competences												
Learning to learn	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Civic competence	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Initiative and entrepreneurship	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Cultural awareness and expression	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Formality of learning activities												
Formal	☑	☑	☑	☑	☑	☑	☑	☑	☑			
Informal	☑	☑	☑	☑	☑	☑	☑	☑	☑			