EU Classroom ePortfolios
Pilot Evaluation Results

2013-2015

EU Classroom ePortfolios
EACEA/20/2012
EUfolio – EU Classroom ePortfolios

WP6: Pilot Implementation

(Extract of) D17: Pilot Evaluation Results

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EU Classroom ePortfolios EACEA/20/2012
PILOT COUNTRIES’ RESULTS

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1. Introduction
This document reports on the results of the experience of EUfolio project’s (http://EUfolio.eu) pilot classroom implementations of five piloting countries; Cyprus, Ireland, Lithuania, Slovenia and Spain. This document is a public document derived from the EUfolio project’s confidential Deliverable 17: Pilot Evaluation Report (Work Package 6: Pilot Implementations) so as to share the results of the pilot implementations of the EUFolio project. The results of the pilot evaluation illustrated in this document are presented in a way that protects sensitive data.

2. Pilot Implementation Research Design
The pilot implementations of the EUfolio project were implemented in two phases; Phase A (Autumn/Winter 2013 – June 2014) and Phase B (Autumn/Winter 2014 – Spring 2015). Overall, 72 schools, participated in EUfolio project. There were 236 teachers involved in the trainings of which 194 proceeded with the pilot implementations. 4098 students were involved in the pilot implementations developing their ePortfolios. The selection of the participating schools varied among the pilot countries. Table 1 below summarizes information regarding the schools, teachers and students that participated in both Phases of EUFolio Pilot Implementations. More information regarding the pilot countries’ implementations can be found in the “Deliverable 17: Pilot Evaluation Report” of EUfolio project.

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<tr>
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Table 1: EUfolio pilot implementation participants’ overview

2.1. Research Questions
This document presents results related to the following EUFolio project’s research questions:

- What was the impact of using ePortfolio on teaching, learning and assessment in the country?
- How can the employment of ePortfolio models facilitate learning with the use of ICT for teachers and students of the country?
- What key policy decisions and implementation activities (action plans) are required for ensuring the successful implementation of the ePortfolio strategy in the country?
- What are the key specifications required for designing ePortfolio models?

2.2. Methodology
EUfolio’s classroom implementations were expected to be diverse and therefore it was important to ensure that a proper research design was used in order to collect and analyse data. The participants of those implementations ranged from EUfolio country team member to school teachers and students who were involved. Following a mixed-methods approach in order to collect data, the EUFolio implementing countries used both quantitative and qualitative methods in order to compile their country’s individual pilot evaluation report addressing the research questions of the EUFolio project. Pilot countries used data collection instruments provided by the EUFolio Data Collection toolkit, depending on the way their implementations were designed. The EUFolio Data Collection toolkit included several instruments such as pre- and post- questionnaires for participating teachers and students, Focus Group questions, Researcher
diaries protocols and Classroom observation protocols. The individual country reports were then reviewed and analysed in order to develop the current document. The EUfolio Pilot Implementation Research Design and the pilot countries’ Evaluation Reports are described in detail in “Deliverable 17 Pilot Evaluation Report” of the project.

3. Results

The results presented in this document were composed after reviewing and analyzing the individual pilot country’ reports. For each research question, data provided by the country reports were analyzed in order to illustrate participating teachers and students experiences while implementing ePortfolios in their classroom. Each research question was addressed using data from all the pilot countries. A brief summary of the results, as they related to each research question, is provided at the beginning of each of the following sections (3.1 to 3.4).

3.1. What was the impact of using ePortfolio on teaching, learning and assessment in the pilot countries?

Teachers reported a change in the way they planned and designed their lessons in order to implement ePortfolios in their classrooms. Even though there were teachers who stated that the integration of a platform to accommodate their students’ ePortfolio development did not substantially change their teaching methodologies, the majority of teachers were required to take into consideration several factors that affected their teaching during the implementation phase and these included:

- learning design modifications,
- planning and design of their lessons,
- out-of-school timeframes and feedback
- multi-media management,
- interactivity and clarity and sharing of learning goals with students.

The finding that the majority of the teachers stated that they would continue implementing ePortfolios in their classrooms in the future indicates that this project had a positive impact on their teaching. The teachers also reported that their learning design’s cognitive goals were achieved through the ePortfolio implementation and that their students developed 21st century skills throughout the process, with countries placing a particular emphasis by on developing students’ reflective skills. Teachers also stated that the pilot implementation seemed to increase their students’ engagement and motivation in their learning and highlighted the fact that students’ work on the platform seemed to enhance communication within the classroom both between teacher and students and between students. It seems that the ePortfolio implementation helped teachers in assessing their students’ work while specifically enhancing teachers’ formative assessment processes. There were teachers who claimed that ePortfolios helped them assess their students’ 21st century skills, however, there is not enough evidence provided in the reports to support this argument.

Impact on Teaching

- Learning Design modifications

Teachers in Cyprus shared their initial lesson ideas with the EUfolio Cyprus team and together they modified their initial learning design ideas in order to help their students develop their ePortfolios with the use of Mahara platform and included activities that would be implemented outside of school time. However, when teachers were asked whether the ePortfolio pilot had affected their teaching practice, there were some who stated that it did not affect their teaching practice that much. For example, during Phase A focus groups, a Cypriot teacher stated that “There wasn’t a huge change. I adapted my teaching on the implementation and on the platform specifically. I designed my lesson the way I usually do and I just combined the experiments with the platform”. Cypriot teachers referred back to their existing teaching
practices in order to reflect on their ePortfolio learning tasks. For example, a Cypriot teacher referred to the students’ work on Mahara as their ‘digital workbook’. Nevertheless, there were some teachers who stated that the use of the ePortfolio affected their teaching practices. For example one teacher noted that “it was a different way of teaching... it was more interactive”. Two other Cypriot teachers stated that they needed to consider issues that did not consider before in their practice, such as, ‘out-of-school’ planning and implementation of their lessons, since they asked their students to work outside the school timetables for their ePortfolios. Lastly, another Cypriot teacher added that even after the pilot implementation in Phase A, students asked questions through the platform and she replied providing feedback in out-of-school timetable.

Teachers involved in the Irish pilot also noted that the introduction of ePortfolios impacted on their teaching, in particular by getting them to focus on the planning that was required in order to use the ePortfolio. One teacher recorded the positive impact that the ePortfolio had on their lesson planning as it provided an opportunity for them to engage in pre-teaching which made “the plan and the objectives clearer for students”. In addition, two other teachers agreed that using the ePortfolio required them to engage in additional advance preparation and planning. This involved ‘booking the computer room’ and in arranging access to ICT facilities, such as computer rooms, during the week. Another teacher felt that initially providing feedback online to students was “more time consuming” as she had to “click in and out of each one” but another teacher felt that “this got faster with time”. Irish teachers modified their planning to teach lessons including using the multi-modal capacities of the ePortfolio to provide audio feedback. Finally, another Irish teacher commented that using the ePortfolio without one to one devices means that “some advance preparation was required in order to have ‘the class page populated and ready for the class.”

- Teachers’ willingness to continue implementing ePortfolios in the future

When teachers were asked whether they would like to continue implementing ePortfolios in the future 57.8% of Slovenian teachers agreed or strongly agreed that the will continue integrating ePortfolios into their teaching in the future. 73% of Lithuanian teachers also stated that they would continue implementing ePortfolios in the future. During the Focus groups, most Cypriot, Spanish and Irish teachers stated that they will also continue implementing ePortfolios in their teaching in the future. Interestingly in the case of Cypriot teachers appeared positive to the idea of continuing to use ePortfolios continue provided that improvements will be made on the available ICT infrastructure and technological support available to schools. At the same time 77% of Irish teachers agreed or strongly agreed that they would recommend the ePortfolio platform to their students.

Impact on Learning

- Cognitive goals and 21st century skills development (as stated by the teachers)

Analyzing the country reports, it seems that the duration of the pilot phase did not allow EUfolio team to reach safe conclusions in relation to the impact of an ePortfolio approach on students’ learning. However, most teachers stated that their students’ developed 21st century skills throughout the pilot phase. Nevertheless, none of these teachers provided evidence to show how their students actually developed their 21st century skills. In fact, there is a more fundamental question as to whether these skills were already there before the pilot phase.

The analysis of the evaluation reports, from all the EUfolio piloting countries, indicates that teachers were of the view that they had successfully achieved the cognitive goals that they had set in their lesson plans and that they helped their students developing their 21st century skills through the pilot phase. Interestingly, when looking at claims pertaining to more general implications of the ePortfolio implementation in Slovenia, the respondents seemed to agree more with the claims on the benefit of the implementations on certain skills than on the claims of benefit for the learning of the subject matter itself. For example Slovenian teachers agreed more with the claim that student’s critical thinking was facilitated
than with the claim that students understood more easily what they had learned this approach. In that latter case, the number of neutral (neither – nor) responses was larger than the share of positive responses.

The majority of Cypriot teachers referred to the development of 21st century skills by their students during the pilot phase. Specifically teachers’ responses in Phase A POST-questionnaire found that: 68.4% agreed that students developed creativity and innovation skills; 73.7% were of the view students developed their communication skills while 68.5% agreed that students developed their critical thinking skills. It is important to note that 67.7% of Cypriot students stated that they felt more independent in their learning having been involved in the pilot implementation phase. The Lithuanian report also indicates that Lithuanian students developed ICT skills, communication skills, time management, learning to write proper feedback, self-assessment (reflection) skills and also that they learnt how to apply their existing IT knowledge in school. In particular, the majority of Lithuanian teachers agreed or mostly agreed that the ePortfolio had facilitated students to express their opinion, increased student autonomy, understanding and concentration. During focus group discussions Lithuanian teachers highlighted the opportunities for cooperation between students, to comment on each other’s work, to allow teachers to assess all children. At the same time, the students had the opportunity to successfully improve uploaded works, look for errors in their work. Furthermore, the focus group members noted that ePortfolio provided opportunities for students to introduce themselves.

For example, one Cypriot teacher, compared the ePortfolio implementation to a previous implementation of the same lesson and she noted that through the ePortfolio implementation she managed to help her students develop additional skills in comparison to her previous teaching practices. Interestingly, during the focus group discussion of Phase B, when teachers were discussing the development of 21st century skills on behalf of the students, a Cypriot teacher challenged this statement saying that “I am not sure whether students developed those skills. They might have them already, they did not develop them.”

Irish teachers found that the use of the ePortfolio enhanced the development of 21st Century skills also. One stated that “ePortfolios certainly go a long way in assisting critical thinking, problem solving, independent learning, working collaboratively and most importantly ICT”. Additionally, another Irish teacher highlighted the development of digital skills, while another Irish teacher highlighted critical thinking skills “it was easy to see that the students were using critical thinking skills when they were deciding on how to present the work in the portfolio”. Furthermore, another Irish teacher stated that “it helped the students to manage their information and files well” and another said that “the true value came when creativity on behalf of the student and teacher was at an optimum”.

The Lithuanian teachers’ responses to the questionnaire indicated that they believed that the following skills were developed through the pilot phase: ICT, creativity, innovative thinking, communication and collaboration were developed using this approach (see Figure 1). It seems that in Lithuanian implementations, meta-cognitive skills related to students’ self-regulation and autonomous learning were skills that teachers appreciated as being developed by ePortfolio approach but not as much as the other skills. Teachers in Slovenia were the most positive in relation to the assertion that an e-portfolio enhances student’s reflections on their learning (80.5% agreed or strongly agreed). This is one of the core activities that is specific to an ePortfolio approach. However, learner autonomy and learner responsibility achieved a slightly lower average approval (50% agreed or strongly agreed that their students were more autonomous in their learning). However, 68.5% of Cypriot teachers agreed/completely agreed that their students felt more autonomous during the pilot implementations. In addition, the findings of the Irish teachers’ survey found that 47% of teachers strongly agreed that the ePortfolio supported student reflections and 80% agreed or strongly agreed that their students were more autonomous in their learning.


Furthermore, the majority of Cypriot teachers stated that their students seemed to be more engaged in what they were doing during the pilot phase. During the Focus groups teachers stated that there were students who were not active during the lessons delivered before the pilot phase and that during the implementations they were more engaged. Irish teachers noted an increased effort from students in how they presented their work, in particular the addition of images and sound files. In addition 80% of Irish teachers agreed or strongly agreed that their students were more autonomous in their learning (See Figure 2) and numerous students remarked that they enjoyed working with ICT more than traditional methods. For example one student said that: “it was more interesting and less boring”. Spain reported that the implementation facilitated students’ collaboration, students’ critical thinking and students’ reflections, problem-solving skills and communication between students and between the students and the teacher.
One of the aims of the ePortfolio implementations across all countries was to help students develop their reflective skills through the use of the Journal¹ (most countries in Phase A) and an addition to the Mahara platform ‘My Learning’² cycle, which was developed and used by Slovenian partners in Phase A and was then translated and added to the Eufolio Mahara platform so as to be used by the other countries. Cyprus used ‘My Learning’ cycle with the involved teachers and students in Phase B.

During the Focus group discussion that took place at the end of Phase A, almost all Cypriot teachers stated that even though they planned using the Journal in Mahara for their students to be able to reflect on their learning, they did not proceed with this in the end. Most Cypriot teachers highlighted the usefulness of ‘My Learning’ activity, an activity firstly developed by the Slovenian partners, for the development of their students’ ePortfolio; “Through ‘My Learning’ students could document what they said that they had learnt, ‘I learnt about this topic as well’, since they could add a link to support that... So students could present a complete work that would give them a feeling of accomplishment which would be more intense than what their workbook would give” (Phase B Cypriot teacher). Another Cypriot teacher stated that “In fact this, ‘My Learning’ was their self-assessment which was important”. However, there were teachers who reported that their students found it very difficult to understand what they were expected to write in ‘My Learning’ and some teachers who were implementing for a second time in the same classroom, stated that their students felt overwhelmed by the ‘My Learning’ activity. For Slovenia, the ePortfolio approach seemed to have a positive impact since it provided a scaffolding tool for the implementation of a more student-centered approach to learning, informed by ‘Assessment for Learning’ approaches. Slovenia supports the notion that ePortfolios empower students to have more control of their learning, by allowing them to plan and reflect on their learning. This was also evident in the Irish implementations as one Irish teacher reported an increase in student self-reflection and that “it was good for the students to be able to see the teacher’s comments and respond and ask questions for clarification if they needed”. This was supported by the survey findings, which found that 83% of Irish teachers agreed or strongly agreed that the ePortfolio facilitated student self-reflection. This information is shown in Figure 3 below. Reflecting on the formative assessment findings illustrated earlier, an Irish teacher stated that “I also think it developed their reflection skills as they had to think more about what they were doing and the feedback they received”. Irish teachers agreed that the implementation helped the students in managing information and learning. In addition, other Irish teachers observed that “Students have organisational issues, as they haven’t done this before, initially had to be done for them, but it is a skill that they needed to learn and they have improved” and another Irish teacher noted increased collaboration between students “Collaboration skills were definitely better. Some stronger students were helping others without being asked to”. In terms of communication skills, 41% of teachers surveyed strongly agreed that the implementation improved student communication skills.

¹ ‘Journal’ was a feature in Mahara platform in which students could write their thoughts and experiences online.
² ‘My Learning’ cycle is a Mahara plug-in, developed by Slovenian EUfolio team, in which, during their ePortfolio development, students need to go through 5 learning stages that appeared as fill-in boxes and included the following coaching questions; What do I already know? What can I already do? (Prior knowledge stage) - What are my goals? What do I want to achieve? (Setting goals stage) - How can I achieve my goals? (Strategies stage) - How will I prove that I have achieved the goals? (Evidence stage) - How successful have I been? Have I reached my goals? What could I do better? (Self-evaluation stage)
Students’ motivation and engagement

The pilot evaluation reports of all countries illustrated that there was an increase in student motivation and engagement during the ePortfolio pilot phase. In particular, most countries reported that students with low classroom participation seemed more engaged and participated more. A Cypriot teacher stated that “I had a student that I never hear in the classroom. The way she expressed herself in the Forum was amazing, I did not expect that”, which was something that other Cypriot teachers shared as well during the Focus groups. Similarly, an Irish teacher stated that the discussion was more active and richer than her traditional classroom discussions. “Discussion aspect worked well on poetry. Students commented on the poetry, students then commented on other students’ comments....Everyone commented – even those students who don’t normally comment in class.” This viewpoint was supported by another Irish teacher, who observed that “Those who don’t normally speak in class provided comments online – teachers noticed good articulation from students”.

Spanish and Slovenian teachers said that their students were more motivated and seemed more engaged when developing their ePortfolios, however no evidence was provided to support this claim. Lithuania reported that there for Lithuanian teachers, there was a need to increase motivation for students’ work. Similarly, there were teachers in Cyprus who, for this reason, decided to explicitly tell their students that their ePortfolio work was being assessed as part of their regular assessment in order to provide their students’ with a strong motivation to participate. As one Cypriot teacher stated in the Focus group discussion: “I told them: You will be assessed on this... why did I do that? To work successfully. As a motive. I don’t like that, to have assessment as the student’s motive in order to work” and another Cypriot teacher added that “It’s because it’s the beginning. Later on this motive will change”.

Impact on Assessment

The impact of the ePortfolio on assessment was an interesting aspect of the project. Slovenia reported that the area of assessment was greatly improved, as the ePortfolio approach facilitated the learner’s self-assessment skills in connection to the development of the ability to plan one’s own learning and then assessing it. Peer-assessment was introduced and facilitated through the Forums and allowed the direct line-up of various levels of assessment (self- peer- teacher). An Irish teacher had a similar observation as s/he felt students were “engaged more” when feedback was provided to them through the ePortfolio platform. He also noted that the feedback process was more dialogic than traditional approaches, as the
feedback was often discussed electronically by the student where they were seeking further feedback. Another Irish teacher felt that the students were engaged in deeper self-reflection as “all the students are thinking more about their work”. In the teacher surveys, all Irish teachers either strongly agreed or somewhat agreed that ICT helps to develop self-evaluation and self-assessment skills.

Furthermore, one of the most successful aspects of the Irish implementation was the use of the ePortfolio as a vehicle for formative assessment. An Irish teacher said that it “provided a good way for me to give better feedback to the students”. This was supported by another Irish teacher who stated that “the ability to give formative feedback, which is a valuable teaching and learning tool”. Furthermore another Irish teacher reported that “the students paid much more attention to my feedback…. It was an excellent vehicle for providing feedback excellent feedback to the students in a timely and meaningful way”.

Two Irish students said that they found it “easier to see how to make their writing better with the portfolio”. Furthermore two other students stated that they were “thinking more about what the teacher told us to do to improve”. Mentors visiting one of the Irish schools noted that students were given time at the beginning of class to assimilate feedback received on previous work and some used the opportunity to electronically ask questions to the teacher. One researcher noted that students observed were engaging in self-reflection using self-reflection prompts embedded in the platform and therefore, feedback was not only in written format. One Irish student spoke about how the ePortfolio platform helped her to get feedback in a language class “I can record myself speaking and the teacher can listen after class and can give me feedback on what it sounds like and tell me how to improve things like my accent”. She went on to say “then I can re-record myself taking what the teacher tells me to improve on and then she can listen again to see if I have it right”.

Spain claimed that ePortfolio provides an enhanced opportunity to assess 21st century skills, because teachers can have evidence of what students do and learn, receive and give their feedback about the activity. Teachers and students could review students’ work as many times as needed and then assess it. Cypriot teachers also stated that the ePortfolio helped them collect evidence of their students’ work and as a result provided an insight to the process their students followed in accomplishing their tasks. Some teachers reflected: “You could see the process, because everything was there, in the platform”, “You could see their improvement in several stages. The student does something, he reflects and then improves and improves until perfection”, “You ask them (students) did you understand and they say yes, but when you read what they wrote in the platform you see that they did not fully understand”. However, in Phase A teachers stated that they faced issues assessing each students’ work because their students were developing group ePortfolios. A Cypriot teacher for example questioned her students’ work credibility when working in groups. In addition, when teachers were asked about assessing their students’ 21st century skills they vaguely stated that they noticed some development of 21st century skills through their students’ activities during their implementations but could not assess these skills formally. For this reason, before initiating Phase B implementations teachers were trained by EUfolio Cyprus team to help their students develop individual ePortfolios and design activities so as to be able to assess their students’ content knowledge and 21st century skills.

During Phase B, one teacher decided to include their students’ ePortfolio activities in their modules’ formal assessment. To do so, they informed their Head Teacher, the corresponding Inspectors and their students. During the Phase B focus group these teachers had a discussion on whether their students developed 21st century skills or whether those skills were already developed and were used during the implementation. This fruitful discussion might indicate that teachers needed more guidance on the way to detect, develop and assess their students’ 21st century skills.
3.2. How can the employment of ePortfolio models facilitate learning with the use of ICT for teachers and students of the pilot countries?

The introduction of ePortfolios was viewed by the majority of teachers as an impetus for teachers to use ICT more regularly to support student learning. In addition the introduction of an ePortfolio platform resulted in increased communication between students and teachers, but within and outside school.

- **New impetus to the use of ICT in learning / Frequency of use**

Teachers in the focus group sessions broadly referred to the impact that the ePortfolio implementation had on their teaching. An Irish teacher noted that the ePortfolio gave ‘a new impetus’ to the use of ICT in teaching, while another Irish teacher felt that the EUfolio implementation made it easier to integrate the use of ICT into their lessons, rather than look at ICT as a stand-alone element of teaching and learning. The use of the ePortfolio platform also led to increased interest in the general use of ICT tools to facilitate learning. Specifically, two teachers commented that the use of the ePortfolio platform provided them with an opportunity to effectively integrate Web 2.0 tools into their practice. One teacher noted in her survey response that “The project gave the students and teacher a chance to use ICT in teaching and learning. It opened the possibilities to using ICT more often as a teaching methodology. It engaged students, they were more content using this learning medium than the traditional ‘talk and chalk’”. Student interviews revealed that they preferred presenting their work in a digital format and that as a result, they were more motivated and more involved in classroom participation. An Irish teacher, commenting on the flexibility in revising and editing documents by the students in their ePortfolio, said that it made the process ‘much easier for students’. The Spanish responses reported that the use of the ePortfolio made some teachers rethink the way they used ICT and it encouraged them to look at new approaches that introduced creativity and innovation at schools. Unfortunately no evidence was provided to support this claim.

- **Communication / peer interaction / collaboration**

Most Cypriot teachers aimed in developing their students’ collaboration and communication skills during Phase A. To do so, they used the group feature of Mahara platform in order to organize their lessons and to create online pages with instructions and other material related to their implementations. Thus, during Phase A, teachers and students used Forums in their Mahara groups. The communication and interaction between teacher and students and between students was something that most teachers noted as a positive result from their pilot implementations. Specifically, one Cypriot teacher stated that “It (Mahara/ePortfolio) helps, it motivates students who are not that communicative within the classroom, to communicate. There are students who are shy or students who feel more comfortable talking in the platform than in the classroom”. Another Cypriot teacher added that “this type of communication cannot be done in a traditional classroom (referring to their practice before the pilot implementation)”. Additionally, another Cypriot teacher noted that students were aware that they were responsible for what they were writing in the platform while another teacher highlighted the importance of having a place where students could communicate with each other and with their teacher outside of formal class time. She also suggested that a chat option in a future platform would be preferable, in order to enhance communication between students. The communication among peers and between students and teacher was something highlighted by the Irish teachers as well. This was also evident in Irish implementations where student-teacher communication and peer to peer collaboration increased through the use of the ePortfolio.

- **Direct access and sustainability**

Teachers seemed satisfied that they could access their students work at any time, through the platform. One Cypriot teacher mentioned that even after the pilot implementation of Phase A, her students could
contact her with questions about their final exams and that she could give them immediate feedback. Throughout the implementations of both Phases, Cypriot teachers highlighted the advantages of being able to communicate with their students and monitor their portfolio activities whenever they needed to. Yet, a number of teachers raised concerns regarding the sustainability of their students’ ePortfolios, as their work was stored on a platform that did not guarantee that it would always be available to the user in the future. It seems that for Cypriot teachers, sustaining an ePortfolio for a long time was important and they suggested that a macro-perspective action plan on behalf of the Ministry of Education policies should be made so as to develop a culture within the schools and provide students with the opportunity to start their ePortfolio from early years and ensure that the students will be able to continue developing it even after they finish school. Irish teachers also reflected that having the students’ work stored in one place made it more accessible and easier to get an “overview of student progress”.

- **Opportunities to develop students’ digital skills and innovative products**

Slovenian teachers highlighted the development of students’ digital skills through the ePortfolio implementations as students need to develop their digital skills in order to manage their work in the platform used during the development of their ePortfolio. During the Focus group of Phase B, a Cypriot teacher stated that “students developed ICT skills because they created a Page (in Mahara) for their ePortfolio”. Lithuanian teachers referred to students creating “innovative products with the use of ICT” to describe the development of their students’ ePortfolios. In addition, both Irish teachers and students believe that ongoing use of the ePortfolio fostered the development of ICT skills. Teachers felt that ICT became more integrated into teaching and learning and was no longer “seen as a standalone aspect”. Teachers reported that students developed an enhanced range of ICT skills.

3.3. **What key policy decisions and implementation activities (action plans) are required for ensuring the successful implementation of the ePortfolio strategy in the countries?**

The following recommendations were stated by the teachers and Head-teachers during the Focus group discussions and teachers’ post-questionnaires. Overall, teachers listed several suggestions to ensure successful future implementations, based on their experiences through their classroom implementations. Specifically, teachers highlighted the importance of:

- having appropriate infrastructure in the school and
- ensuring the out-of-school access of students in order to develop their ePortfolios.

In addition, teachers suggested that the pilot phase should be longer and some also suggested integrating ePortfolios in primary education. All teachers were of the view that appropriate practical upskilling should be provided to teachers and students, both in terms of technological and pedagogical support, in advance of any future pilots. Ensuring appropriate teachers’ and students’ preparation through practical training before implementations and sound pedagogical and technological support during the implementations was something that teachers of all countries stressed. Some teachers also emphasized the need to integrate ePortfolios into existing curricula, so as to facilitate future implementations while others stated that the sense of belonging in a community in their schools was important for them as they could discuss their implementations with peers. Integrating the ePortfolio across the entire school and not just locating it as a special project for a few selected teachers seemed to be important for the teachers. For this reason, there were some teachers who suggested expanding the implementations by deciding on a common platform to be used across an entire country and to achieve this by informing and convincing other teachers with an evidence-based research approach.

- **Infrastructure**
All country reports highlighted the importance of an appropriate hardware infrastructure, such as computers, and a fast internet connection in the school while in addition it was important for students to have access to a computer and an internet connection outside-of-school time. For example, Irish teachers highlighted the need for improved infrastructure, in the form of faster broadband speeds, wifi, modern hardware and also general access to ICT to support the implementation of ePortfolios. An Irish teacher said that “students would need access to their own devices” for the implementation to be successful, which was supported by an Irish teacher who said that “having their own devices would definitely help to being this thing on”. Another Irish teacher said that the “infrastructure in all schools needs to improve for this to be successful”, which was something that most Cypriot teachers (84.2%) shared with the EUfolio team during the Focus groups. As they suggested, in order for future classroom implementations of ePortfolios to be successful, appropriate infrastructure is required. For example Cypriot teachers, requested up-to-date computer labs, internet access (wired and Wi-Fi) in all areas of the school and laptops or individual devices for each student to be able to access his/her ePortfolio account. A number of Irish students said that it would “work better if the internet was faster”. This was corroborated by observations from another Irish teacher who noted that it took “significant class time to move to the computer room, get logged on and start the exercise. Some internet connectivity issues were also observed, which meant that students had to pair up to do the task”. At the beginning of the pilot implementation, a number of Irish school leaders highlighted their concerns about the capacity of their current ICT infrastructure to adequately support the ePortfolio pilot implementation. 60% of Irish teachers in the teacher survey agreed that there “needed to be radical changes in schools for ICT to be fully exploited”. Furthermore, as indicated by Lithuania’s survey, for successful implementation of ePortfolio in schools fast internet connection and good quality of digital tools (i.e. Computers) is required. The Slovenian teachers also highlighted the need for national ministries to consider if schools have the appropriate ICT infrastructure to roll out ePortfolios in all schools. In addition they highlighted the need to consider if students can use their own equipment to support such strategies. This includes both devices and networks.

- **Duration of ePortfolio integration and sufficient time for teachers’ and students’ preparation**

  The in-classroom pilot implementations of all piloting countries started in February/March 2014, except Slovenia which started the implementations earlier in September/October 2014. Cypriot teachers mentioned that the timing of the Phase A implementation was not the best as it was towards the end of the school year and students were concentrating on their final exams whereas teachers whose lessons were part of the core examination that Cypriot students go through by the end of the school year, were worried regarding the delivering of all content of the curriculum. Specifically, a Cypriot teacher said that “We needed more time to implement. That. Because we started the training seminars in December (Another Cypriot teacher: Yes, we started late) maybe it would have been better to start earlier”. Likewise, a number of Irish teachers felt that the amount of time allowed for piloting could have been longer as it took a while to get into the project and to see the benefits from their participation. An Irish teacher was surprised by the amount of time that it took the students to get used to the digital skills required for the ePortfolio and “had to spend time developing these”. At the outset of the pilot implementation, a number of Irish school leaders had reservations about the actual digital competences of their students.

  Cypriot teachers, for example, envisage that ePortfolios should be adopted in Cypriot schools in the future. A number of teachers suggested that students begin developing their ePortfolios during their primary education and by the time they are in secondary education students they will be already familiar with the assessment platform and with how to create and manage their ePortfolio. One year of implementation was not enough as the teachers stated. Specifically the Slovenian teachers suggested that the rollout of a national ePortfolio solution should be gradual throughout the system. They also added that it should start early with younger students and this would require modifying the existing ePortfolio platforms in order to accommodate the needs of younger children and ePortfolio implementation should commence in early years.
• Teachers’ pedagogical training and preparation

Overall, teachers were satisfied with the content, duration and design of the training workshops. It seems that most teachers were satisfied with the pedagogical support they received from the EUfolio teams however they were less satisfied with the platform functionality and the technical support they received. For example, a Cypriot teacher stated that the training design “was excellent” and that participating teachers agreed or fully agreed that they were highly satisfied with the workshops’ content, organization and given material (Figure 4, Phase A teachers’ POST-questionnaire). The experiential nature of the training design, which considered the implementation process as part of the training process, helped teachers to understand the ePortfolio approach as one Cypriot teacher identified that “I understood it during the implementation, in the final stage. I did not understand the approach in the theoretical part to be honest”. Therefore, it seems that teachers need more hands-on experience and support while learning to use ePortfolios in their practice.

![Implementing teachers' satisfaction with:](image)

**Figure 4: Cypriot teachers’ satisfaction with training content, support and platform (Phase A Post-Questionnaires)**

Irish teachers in both the focus groups and the surveys were satisfied with the pedagogical support received in the project (93% satisfied or very satisfied). The Spanish report indicated that teachers who continued participating in Phase B were more skillful and stated that they felt more familiar with the ePortfolio implementation. During the last training workshop, Spanish teachers said that they did not face difficulties implementing ePortfolio. A number of Irish teachers similarly remarked that the pilot was easier in the second phase as they were already ‘set-up’ to work because of their experience during the first phase. Slovenian teachers with up to 10 years of experience were less satisfied with the way they were trained and the content of their training in comparison to the teachers with more than 10 years of experience, as indicated in the Slovenian evaluation report. Overall, Slovenian teachers expressed fair satisfaction levels on workshops’ content, organization, supporting material, technical and pedagogical
support and platform, but they were most positive about the pedagogical support received within the country. Lithuanian teachers were satisfied with the supporting material and training workshops but were less satisfied, yet positively satisfied, with the pedagogical and technical support they received by their country.

- **Teachers’ technological support and practical training**

All countries reported that teachers required additional practical training on using the platform and more technological support during the implementation phase. For example, Lithuanian teachers stated that they needed more practical time to familiarize themselves with the Mahara platform and that they did not have enough time to try out Office 365 because it was not introduced to the project from the outset. Even though there were Cypriot teachers who said that they spent time familiarizing themselves with Mahara platform, a number of teachers suggested that the provision of more practical workshops and training in order for them to become more confident in using it. Additionally, during the training workshops, teachers requested concrete examples of previous implementations in order to be able to understand what was expected of them in an ePortfolio implementation. It should be noted that in the case of Cyprus, Cyprus EUfolio team provided teachers with ePortfolio examples that were not classroom tested, in order to help teachers encapsulate the three ePortfolio levels (i.e. storage, workspace, showcase), however teachers asked for real in-classroom examples. This further illustrates the need for ministries to provide real examples to teachers before implementing.

Irish piloting teachers were less satisfied with the technological support they received. Irish teachers also highlighted the need for more online support in relation to technological issues. This theme was also captured in an analysis of focus group data, with one teacher expressing the need for a “shared space for collaborating and collaborative problem-solving, and maybe even sharing resources”. Another teacher stated that “teacher CPD is key [to] a successful implementation” while another Irish teacher stated that “rigorous and continuous professional development with constant feedback and encouragement is required”. The need for differentiated CPD was also highlighted, with an Irish teacher stating that this would help teachers to learn “at a suitable pace”. Another Irish teacher said that CPD was “essential in the beginning and that this would need to be further supported in the school during the implementation”. Furthermore, Spain reported that there were teachers who needed more practical training and technological support as they were not that familiar and expert in using ICT in their classrooms. An Irish teacher also felt that the success of ePortfolios “depended on the individual teacher and how comfortable they are with technology and assessment for learning”.

- **Integration of ePortfolio in the curriculum and use of a common platform**

The Spanish report suggests that ePortfolios need to be included in the curricula by the authorities as is the case with the key competences, as this will help all teachers introduce it into their classrooms. To do that, Spanish teachers suggest that the authorities have to provide the platform for all schools and also provide appropriate training. Similarly, Cypriot teachers referred to the restrictions they faced because of the current curriculum requirements; adaptation of the curriculum material and provision of enough time for the implementations. Even though most of the Cypriot pilot teachers had the support of their school inspectors to be more flexible regarding the curriculum timeframes, teachers stated that for future implementations, this will not be the case. Cypriot teachers requested that Ministries should train Curriculum designers regarding ePortfolio integration so as to reform the curriculum in a way that teachers would have the time to implement it without feeling stressed. Specifically, almost all Cypriot teachers requested entering ePortfolio training and development as a compulsory part of the official ICT subject curriculum, so as to ensure that all students will at least have ePortfolio accounts and be trained on the way to develop their ePortfolios. This way, as Cypriot teachers said, students can develop their ePortfolios cross-disciplinary. Lastly, Cypriot teachers highlighted the importance of agreeing on a common platform (i.e. Mahara or Office 365) that all school units will use and also, on a common core ePortfolio model that
students will be required to follow in order to develop throughout the years. This was also suggested by the Spanish teachers.

- **Update of assessment methods**

Even though most teachers referred to the advantages of using an ePortfolio approach and a platform to gather evidence of students’ progress and work, there seemed to be issues in terms of assessing students’ 21st century skills of. For example, in Phase A of the implementations in Cyprus, students worked mostly in groups, developing group ePortfolios. A number of Cypriot teachers noted that they were worried about the credibility of students’ work in a group ePortfolio. Specifically, one Cypriot teacher stated in the focus group interview that “Were their answers credible? Did they come from each individual student or as a group?”. Even though other teachers supported the idea of students engaging in collaborative work can also be assessed, the majority of Cypriot teachers believed there was a need to assess each individual student’s work through their individual ePortfolio. This finding was something that was taken into consideration when implementing Phase B. However, there were a great number of Cypriot teachers who expressed their need for more concrete ways of assessing students’ ePortfolio work and 21st century skills in such platform activities.

- **Development of teachers’ communities in respect to the integration of ePortfolio within the school unit**

Irish teachers highlighted the need for a team approach to the implementation, as one teacher noted that “having more than one teacher working on the project is best as they can support each other”. Another Irish teacher noted that “there was good collaboration between the teachers involved” while another felt that teacher collaboration was key to the success of the project. There was a similar sentiment expressed by one of the Cypriot schools who had a number of teachers involved in Phase A. Those Cypriot teachers expressed satisfaction when they felt that they belonged to a group within their school, where the members were working towards a common goal; that of integrating ePortfolios into their classroom practice. Cypriot teachers stated that they liked the fact that they could discuss issues and implementation ideas with fellow teachers who were experiencing similar challenges. They enjoyed the sense of ‘community’ that this shared experience created for them. For example, one Cypriot school participated in Phase A of the implementations with a team of 4 implementing teachers, of which 3 were replaced to a different school during Phase B, due to the policies of the Ministry regarding teachers’ placements in schools. Thus, they did not participate in Phase B. This, in fact, affected the way Phase B implementations were carried out in that school, because the ‘community’ of Phase A was not there in Phase B and Cypriot teachers who remained in the implementing school expressed their disappointment. Thus, it is an important policy decision to make sure that the ‘community’ aspect of a school remains intact, especially during such implementations. Finally, Slovenian report indicates that teachers needed to ‘spread the word’ so as to have a sense of community within their school and convince other teachers to implement as well.

- **Deployment of the ePortfolio integration in more schools and teachers by providing convincing evidence-based arguments for the benefits of using ePortfolios.**

Cyprus’ teachers want ePortfolios to be used in Cyprus’ schools in the future and suggested that Policy Makers promote and deploy the integration of an ePortfolio approach by providing evidence-based arguments in order to convince more teachers to try it. They stated that during Phase A they wanted concrete examples of existing implementations and evidence-based research outlining the benefits of using ePortfolios in secondary education. As they highlighted, such a practice, will help convince teachers who are reluctant to use ePortfolios.

- **Teachers Pedagogical and Technological Support (and CPD)**

It appears that the successful implementation of an ePortfolio solution is strongly dependent on two key factors: teacher training and appropriate ICT infrastructure. Teachers require intensive technical support
and the assignment of a supporter (either, for example, the Mentor model in Ireland, the ICT coordinator in Cyprus and Spain and the EUfolio team supporter in all piloting countries) for the piloting schools seemed to be successful in providing ongoing support. For example, in Cyprus, there was one teacher who did not have any support from an ICT teacher during Phase A. This resulted in lack of technological support, poor access to the ICT labs and hindered the success of the implementation, as the students and the teacher did not have the support of an ICT teacher before and during the implementation.

Technical support in using the platform needs to be accompanied by pedagogical supports, such as examples of learning designs. Irish teachers were very vocal in highlighting the importance of teacher training and CPD. An Irish teacher noted that “big technological support was required, delivered in small groups to ensure success”. Another Irish teacher mentioned the success of the Irish mentor model and in “having someone to support you and encourage you was very important”. It is important that such activities are financed and organized through the educational system. An Irish teacher noted the need for some form of technical support “whatever software package a school decides to use it must be supported by suitably trained and experienced teachers/admins. Problems are inevitable, for example, passwords, and technical support for the teacher in the classroom is a fundamental starting point in my view if schools are deciding to begin using ePortfolios.”

3.4. What are the key specifications required for designing ePortfolio models?

The following section outlines the views of teachers in relation to the development of any future ePortfolio platforms.

- Platform specifications as stated by teachers

Pilot countries who used mainly Mahara platform for their implementations overall found that Mahara was not easy to handle by some teachers and students. Ireland was the only case to use Office 365 in both Phases, as this environment was not introduced to the other countries during Phase A and therefore they could not use it in their implementations from the beginning of the project.

Even though Cypriot teachers stated that they were satisfied with Mahara platform during Phase A, 18% said that they were neither satisfied nor unsatisfied and 9% were not satisfied with it. Specifically, Cypriot teachers and students suggested modifications to the Mahara interface so that it would be more user-friendly. In addition teachers reported issues with the Mahara when students were simultaneously uploading material in the classroom at the same time. During Phase A, Cypriot teachers requested Mahara to be functional in multiple devices, apart from a computer as they some students were using mobile devices and Mahara had some compatibility issues. However, this was not the case in Phase B, where improvements on Mahara platform were made by the EUfolio team. Lastly, one Cypriot teacher commented on the challenge of uploading large files and suggested they develop a more ‘Dropbox’-like storage of files in the future. Similarly, Lithuanian teachers reported that Mahara platform was not very user-friendly and did not allow for uploading large files. In addition, 24.5% of Slovenian teachers expressed their dissatisfaction with the Mahara platform and reported that the usability of Mahara platform should be of the utmost importance and thus, further thought and development should be invested towards this. Furthermore, Slovenian teachers shared that Mahara was very difficult to use, for the ICT-beginners and that the technical aspects of the platform used seemed to be quite a burden on both Slovenian teachers and students. However, the majority of Irish teachers, used Office 365 and they appeared satisfied with the ePortfolio repository function One teacher stated that it was a “safe, secure and stimulating environment” while another teacher commented that it was “helpful to have the work in one space”. In addition another teacher noted the advantage of being able to store student work in different “multi-media” file formats.

An Irish teacher referred to the work that was involved in setting the class page. He felt that “it would be very advantageous for schools if the school site was set up in advance (ideally without cost, but possibly for
This would mean that setting up the class page would be just a click of a button. Starting from scratch can be very intimidating for even the most capable of IT teachers”. In terms of the ePortfolio platform, one Irish teacher outlined his vision for four separate areas:

- Teacher (read only) section where content is shared with students;
- Collaboration space (where all students can create areas to work on shared projects);
- Student (write) section where student work is completed and an
- Assessment section where student assessment and feedback is stored.

Another Irish teacher felt that this assessment section could have the potential for students to respond to feedback and ask further questions. In addition, Cypriot teachers stated that an ePortfolio should have a high capacity repository space for the students to be able to store their work and also functions that will allow teachers and students to easily communicate and share their accomplishments. In some cases, Cypriot teachers mentioned that students preferred to communicate through Facebook or e-mail, rather than in the Mahara platform, because it was “easier”. For example, during Phase A, Cypriot teachers needed to send multiple messages to their students but could only do so through the use of a Group setting which was not a direct message to their students. Thus, teachers said that perhaps a Chat function could make it easier to communicate and provide feedback on student work. They also indicated that an ePortfolio model should help students to:

- plan their work,
- present their work,
- reflect on their work and later on
- share their work with others.

In addition, they evaluated the use of reflective journals and also ‘My Learning’ cycle that was used in Phase B was something that helped them promote their students self-regulation.

An Irish teacher, who used Office 365, said that: “Without question the greatest advantage of using portfolios is the potential for increasing the quality of assessment/feedback. Assessment, using OneNote, can be made more visual for learners using the highlighter functionality... More auditory using and the microphone on the desktop version and of course more permanent due to its digital nature.” This teacher also modelled good feedback before allowing the students to use the ePortfolio to engage in peer feedback: “I discussed and highlighted features of quality for the opening weeks of the year and as the term developed pupils became more comfortable in assessing their own and other pupils’ work to these criteria”.

Furthermore, Spanish teachers stated that an ePortfolio platform should be able to host all kind of files, such as video formats and they did not consider the external links to post materials, such as YouTube uploading of non-supported video formats, as a positive point. Lithuania reported that students faced problems when uploading videos to Mahara, something that was also evident in the Cypriot and Spanish implementations. The Lithuanian students who used Microsoft’s Office 365 stated that it felt more user-friendly than Mahara but reported issues with the internet connection.

- **Infrastructure specifications and students’ access**

Cypriot teachers highlighted the importance of having sufficient infrastructure in order to implement ePortfolio models across secondary education. As mentioned earlier, teachers referred to the lack of infrastructure, limited access to a computer lab and limited availability of Wi-Fi connection both within school and in students’ homes as key obstacles during their implementations. Similarly, an Irish teacher felt that: “One of the biggest issues I would find as part of the EUfolio project pilot was getting enough access to hardware during class time. We had to go to the computer room, sign in their profiles on the computer, login to the SharePoint site and then the class could begin. A similar process is required towards the end of class. If the pupils had their own device at all times in all classes this access issues obviously disappears”.

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Access at home was also highlighted as important, both for teachers and students. Teachers were also worried for not being inclusive in respect to students who could not have access to the platform out of school either because of limited access to the internet or because of limited access to a computer device. For example, an Irish teacher explained that: “Some other pupils did not have access at home. Whilst they were very much in the minority, it is an issue teachers have to consider and respect by tailoring projects for the whole class. Pupils on the whole seemed to love working from home. The permanent nature of a task being in their portfolio was a major advantage for them”. Cypriot teachers stated that the platform should be interoperable even in a mobile device such as a mobile phone that almost all students carry with them. During the implementation of Phase A, Mahara had some issues when it was being used in a mobile device.

4. Conclusions
The ePortfolio model, as adopted in the EUfolio pilot, where learning was approached both as a process and a product, provided indications on the benefits in teaching and learning. It seems that the ePortfolio as a learning process offered teachers and students opportunities to achieve their learning goals. However, there were a number of challenges that significantly affected the implementations. More specifically as stated by the majority of the teachers that participated in the pilot implementations:

- Successful implementation of ePortfolios is strongly dependent on the teachers’ professional learning. It seems that it is important for implementing teachers to have a sufficient pedagogical and technological support before (i.e. trainings, workshops), during (coaching, mentoring, peer to peer) and after the implementations (communities, policy). Technical support in using the platform needs to be accompanied by pedagogical support and content such as sample learning scenarios.
- ePortfolio as an approach in the form of a comprehensive learning model and not just a digital platform with contents, was and still is a challenge for the teachers (and even the project team) to espouse.
- The level of technological infrastructure in schools and the lack of ICT technical support also impacted on the momentum of the implementation for teachers. Schools typically encountered issues with their internet connection and with access to operational equipment.
- Having a supportive school culture and community was also a factor in successful implementations.
- The ePortfolio provided an excellent vehicle for formative assessment, supporting student self-reflection and assessment, enabling peer assessment and enhancing teacher feedback with the potential to become more communicative. Furthermore, students have a more approachable opportunity to redraft work and thereby bridge gaps in their learning.
- ePortfolios need to be integrated in and aligned with a country’s curriculum so as to ensure smooth integration and less inconvenience.
- In order to ensure national integration of ePortfolio in formal education there is a need to decide for a common platform to be used in all schools of the country.
- The duration and sustainability of ePortfolios is an important factor for a successful implementation. As was evident in EUfolio implementations students need to have time to develop their ePortfolios for longer period of time. Furthermore, it was suggested that the ePortfolio development should start from Primary education and continue being developed more substantially in Secondary education.
- ePortfolios offer a wide range of potential in education. The multi-media capacity of a digital environment offers opportunities in all subjects, including those with an oral component. The repository function of the platform enables safe storage of work over a period of time, which is immensely beneficial for assessments and particularly where a student moves school. Where used on a cross-curricular basis, the ePortfolio greatly increases the potential for cross-curricular collaboration and for students to develop transferable skills. The showcase potential of an ePortfolio also offers interesting opportunities to students in planning their careers and in developing their CVs.
- Teachers appreciated that they were successful in achieving cognitive goals and 21st century skills. It was not evident whether there was a significant change on the way they assessed their students. Most
teachers stated that the formative assessment of their students’ work was facilitated by the ePortfolio implementations but they did not adequately described the way they assessed their students formatively. There were teachers who admitted that they needed guidance on the way to evaluate and assess their students’ ePortfolios with particular difficulty on assessing their students’ 21st century skills. The latter observation initiated a discussion of a new project that will aim to provide this kind of teachers’ guidance on developing and assessing 21st century skills with the use of ICT, for future implementations.
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