ATS2020

ASSESSMENT OF TRANSVERSAL SKILLS

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ATS2020-Assessment of Transversal Skills 2020

Training booklet

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ATS2020-Assessment of Transversal Skills 2020

WP3: Teacher Professional Development

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Contents

1. Introduction

1.1 Purpose of this booklet and contents

This booklet is addressed to the ATS2020 teacher trainers and participating teachers from upper primary and lower secondary education. It is developed as part of the ATS2020 – Assessment of Transversal Skills, a project funded by the European Commission. The booklet aims to introduce teachers and trainers to the ATS2020 project and to provide a starting resource material to support the *ATS2020 Trainers Community of Practice* regarding the implementation of ATS2020 learning model for the development and assessment of transversal skills.

The booklet provides a theoretical background regarding transversal skills for the 21st century, assessment for learning and ePortfolios in order to share a common understanding. Then, examples of previous implementations and more specifically the ATS2020 project and its implementation, will be presented and implementation issues and recommendations will be discussed. Furthermore, we will refer to the two main ePortfolio tools (Mahara and O365) to be used in this project and examples of learning activities developed for ePortfolio use will be given for further guidance. Lastly, a suggested implementation path will be outlined as guidance for the in-classroom implementation of the ATS2020 learning model.

1.2 The ATS2020 Project

The Assessment of Transversal Skills 2020 (ATS2020) project is a European Policy Experimentation funded by the European Commission via the Erasmus+ programme. The ATS2020 project is developing a comprehensive learning model to enhance student transversal, 21st century skills across diverse EU national curricula. This includes the provision of teachers with modern approaches and innovative tools for the assessment of these skills. The ATS2020 learning model is being piloted in 10 participating countries in 2016 and 2017.

The project objectives are:

- Design and develop ATS2020 Transversal Skills Framework
- Develop AST2020 platform and technology tools
- Design continuous professional development programme for teachers
- Train and support teachers in pilot implementation
- Pre- and post pilot testing and evaluation
- Repository of innovative learning scenarios
- Comprehensive evaluation report & policy recommendations

The ATS2020 consortium brings together 17 partners and 4 associate partners from 11 European countries in a collaborative research and implementation process, establishing a network of policy experts, researchers, educational experts and practitioners. ATS2020 project partners are:

Partners:

- Cyprus Pedagogical Institute (CPI), Cyprus (Coordinator)
- Ministry of Education and Culture (MoEC), Cyprus
- Centre for Educational Research and Evaluation (CERE), Cyprus
- Danube University Krems, Austria
- CVO Antwerpen, Belgium
- Croatian Academic and Research Network CARNet, Croatia
- Foundation INNOVE, Estonia
- University of Tampere, Finland
- Computer Technology Institute & Press "Diophantus", Greece
- Monaghan Education Centre, Ireland
- H2 Learning Ltd., Ireland
- Centre of Information Technologies in Education, Lithuania
- National Examination Centre, Slovenia
- Ministry of Education, Science and Sport, Slovenia
- Education Research Institute, Slovenia
- National Education Institute Slovenia, Slovenia
- Dirección Xeral de Educación, Formación Profesional e Innovación Educativa, Spain

Associate partners:

- Microsoft Corporation, Education Central and Eastern Europe
- Ministry of Education, Estonia
- Adobe, Belgium
- Trinity College, Ireland
- Welsh Assembly Government, UK

More information on the ATS2020 project can be found at http://www.ats2020.eu

2. Theoretical background

This section aims in providing a brief theoretical perspective of the key terms of this project; eAssessment, 21st century skills and ePortfolios.

2.1 What is eAssessment?

Teaching and learning perhaps are the mostly discussed elements of educational practice; however, an additional key element of educational practice is the assessment "of" or "for" learning. Assessment is a key element, as the assessment approaches might be assumed as tools for the provision of a framework for the collection of evidence of learning and skills development based on a particular systematic process. At the same time, assessment

approaches might be considered as tools for learning, providing opportunities for students to develop new skills during their learning process.

ICT can establish a link between teaching, learning and assessment providing an improved framework where the three elements interact. This interaction resulted to the new form of assessment; e-Assessment. Technology could act as a catalyst for a shift considering the way teachers assess students' achievements. E-Assessment tools are likely to provide additional opportunities for better understanding of students' performance and achievements. This could be achieved with the use of e-Assessment instruments facilitating reflective processes such as a continuous peer-assessment planning, evaluation and feedback sharing and therefore providing a representation of learner's ongoing progress. Furthermore, eAssessment opens the way to new assessment tools and approaches in order to tackle new skills and competencies developed in addition to knowledge, something that was difficult to assess in more traditional assessment approaches.

The term eAssessment has two components; "e" and "assessment" component. The "e" component stands for electronic and "assessment" refers to the monitoring process of students' performance and achievements, and skills development. According to JISC (2007) e-Assessment is defined as: *"the end-to-end electronic assessment processes where ICT is used for the presentation of assessment activity, and the recording of responses"* (p. 6).

Simply put, e-Assessment is a form of assessment that is completely advanced using ICT and students' progress is constantly monitored using different types of tools. Recent trends in e-Assessment research are focusing on ways of assessing students' 21st century skills that are presented and described next.

2.2 What is ePortfolio?

Portfolios have been around in education for many years now. Traditionally, they are being used mainly as a collection of students' work, artifacts and achievements. EPortfolios were created to provide a digital environment that can foster the development of students' 21st century skills, their reflective techniques and self-regulated learning and innovative ways of their assessment (Johnson, Mims-Cox & Doyle-Nichols, 2006; Barrett, 2007).

There is no one single definition of ePortfolio in literature. However literature refers to several types of ePortfolio, in respect to their purpose. For example, Abrami and Barrett (2005) refer to *process, showcase and assessment* ePortfolios. A process portfolio is, according to Abrami and Barrett (ibid, p.2), *"a purposeful collection of student work that tells the story of a student's effort, progress and/or achievement in one or more areas (Arter & Spandel, 1992; MacIsaac & Jackson, 1994)".* This might include student's

reflections, evidence collection process etc. This learning process ePortfolio can be described as a formative assessment *for* students' learning. A *showcase* ePortfolio illustrates competences, achievements and what has been learned / accomplished without necessarily describing the process it was acquired (i.e. student's work final version). An *assessment* ePortfolio is more than just a showcase of the student's work. Rather, it focuses mostly on external evaluation and assessment (i.e. scoring rubrics, evaluation criteria). This showcase/assessment ePortfolio can be described as a summative assessment *of* students' learning.

In order to better describe and further explain these three types of ePortfolios, it is needed to go through an exemplar pathway of developing an ePortfolio starting from ePortfolio as storage, then process and then product (Abrami & Barrett, 2005).

2.2.1 ePortfolio as storage (level 1)

At the beginning, students usually use their ePortfolio space as a storage, where they create and collect artifacts that can be used for developing their ePortfolios. For example, they can upload and store in their ePortfolio space several photographs, images, YouTube videos of themselves and/or of items of interest, podcasts, documents etc. that they can use later on when building their ePortfolio.

2.2.2 ePortfolio as workspace / process (level 2)

As a second step, students start planning their goals, organizing their learning experiences chronologically, collaborating with their peers, reflecting on their own learning process and on peers uploads. At the same time, they can collect and upload artifacts (storage), discuss with peers the selection of their artifacts, work collaboratively or alone and organize their resources. Thus, a cycle of self and peer reflection learning process starts. In this level, teacher and peers provide feedback and formative assessment *for* learning.

2.2.3 ePortfolio as Showcase and Assessment / product (level 3)

A showcase ePortfolio demonstrates students' competences, achievements and products. When the ePortfolio process is ready to become a product, students critically organize their learning experiences thematically, edit and select their artifacts considering their own reflections and their peers contributions and feedback in order to create their showcase achievement ePortfolio. The latter product, the showcase ePortfolio is what the teacher will evaluate as a summative assessment *of* learning. Table 1 below captures the main features of the three levels of ePortfolio.

2.2.4 ePortfolio definition

For the purposes of the project ATS2020, ePortfolio has been adopted as defined in the framework of the European project EUfolio (2014). This definition was understood as true

and it derived from the Irish National Council for Curriculum & Assessment's interpretation of ePortfolios (NCCA, 2013).

"ePortfolio is student-owned dynamic digital workspaces wherein students can capture their learning and their ideas, access their collections of work, reflect on their learning, share it, set goals, seek feedback and showcase their learning and achievements" *(EUfolio project, 2014).*

A more in-depth exploration of ePortfolio definition is included in the "EUfolio Review of Existing ePortfolio Policies and Practices" deliverable.

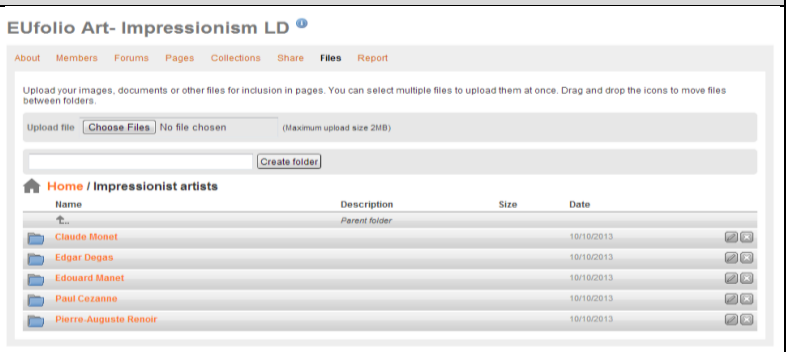
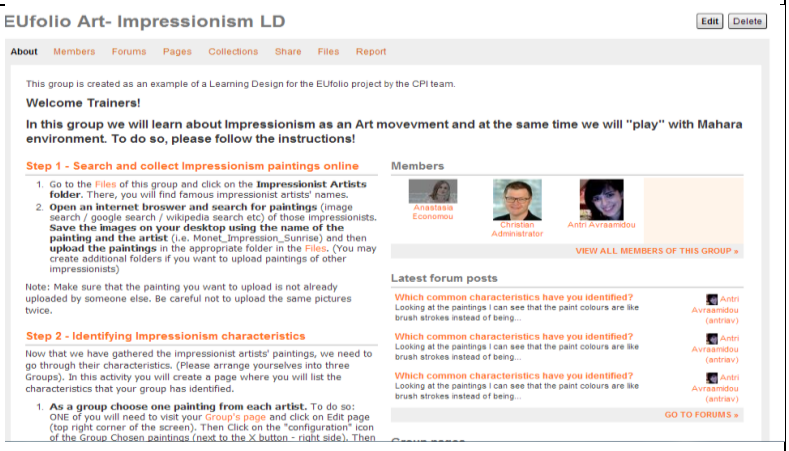
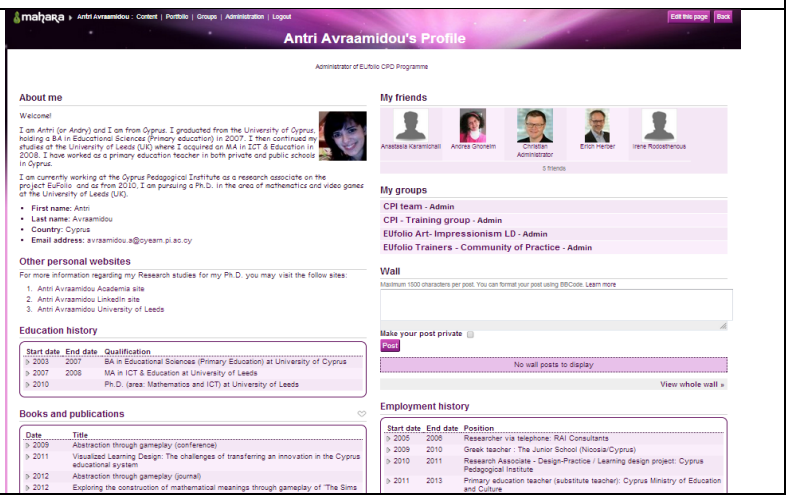
ePortfolio level	Features	Image
as Storage / Repository	• Storage of documents, video, audio, links etc. • Organization of material • Accessible material online at anyplace	
as Workspace	• Discussion forums (communication) • Journal (reflection) • Website creation • Peer-assessment • Social network (groups)	
as Showcase	• Personal goals / profile • CV • Pages • Achievements • Artifacts • Sharing of final products	

Table 1: ePortfolio features per level

2.3 From paper Portfolio to ePortfolio

Considering the terms ePortfolio and Portfolio, their main difference is the "e" that stands for "electronic". This implies that ePortfolio is a digital version of traditional paper-based Portfolio. However it offers a lot more than just a digital repository of an individual's work and achievements. An ePortfolio is not just an electronic showcase of students' work achievements, but it can also be a workspace (process) for an individual's learning experiences, demonstrating the process of learning. ePortfolio is an evolvement of paper Portfolio. Additionally, ePortfolio can become a tool for enabling teachers and students to communicate, collaborate and reflect on their work. In order to better understand this evolvement, this table was created to present this shift as part of the digital portfolios guidelines developed and issued by the New Zealand's Ministry of Education, SMS Services Team (2011, p.4).

Paper portfolio	Digital portfolio
Can deteriorate over time, susceptible to environmental degradation –moisture, sunlight, etc	Enduring
Often time-bound and discontinuous	Provides continuity and can be lifelong
Not easily mobile, transport can be difficult	Totally mobile
A reproduction can be very time consuming and inevitably will not look as good	Freely and easily reproducible
Table of contents and possibly an index, requires physical presence. Can be slow to cross reference instances of a given 'term'	Fully searchable – instantly and always available to be searched
Not easily and certainly not simultaneously	Enables collaborative work
Could be a limited and time-bound resource	Can be a 'live' resource for others
Needs to be physically present	Easily reviewable by anyone, anywhere, anytime
Needs to be copied and then distributed to enable multiple viewers or markers	Can be read, peer reviewed, or marked by multiple viewers simultaneously. i.e. it has a feedback loop
Fixed layout and format	Allows different organisational 'views' of the one set of core resource material
Different layouts are difficult to produce and are always (paper) media bound or may also contain discrete additional media samples	The views represent different functions for the ePortfolio: progression, process, showcase, competencies, etc
Structure is fixed	It may be linear, or hierarchical in structure, or neither, or both
Not unless done within the classroom	Allows learner/teacher interaction
Impersonal – generally does not reflect feelings and emotions	Provides student voice – feelings and emotions

Improves finger dexterity in turning pages	Improves the learner's ICT literacy skills
Not easily editable	Easily and always available for editing
Expensive to do so – needs copied and transported	Easily communicated to any size, type and location of audience
Can be, but more difficult to include reflections	Intended/designed to encourage reflective practice
Must be physically transported and present	Infinitely extends the classroom
Must be physically transported	Anywhere, any time access
Content and organisation mainly driven by teacher	A personal approach to learning that grows with the learner's maturity
Often tends to be assessment focused	Development focused
Once out of the owner's hands she/he has no control over access or comments	The owner has total control of the sharing and commenting capability
Owner could possibly provide remote instructions to direct a third party to access a document/book	Does not have to be in possession of the owner to be accessible and usable
Can be lost or easily damaged	Secure – difficult/impossible to lose or misplace
Paper-based media only – text, images, diagrams, charts. May have discrete additional media samples	Multi-media – text, charts, graphic images, sound, video and all combinations
What you see is what you get	Can include embedded files
Manual references can be provided – often difficult and slow to follow-up	Can link directly and immediately to other references

Table 2: Shift from paper-based Portfolio to ePortfolio (New Zealand's Ministry of Education SMS Services Team, 2011, p.4)

2.4 What are 21st century skills?

Given the rapid development of technological means such as audio, video and web 2.0 tools students are exposed to the digital world and devices, in a way that changes and enhances the nature of their skills and also their capabilities of producing learning outputs that are multimodal. Thus, teaching, learning and assessment processes need to take into consideration and work towards the development of students' '21st century' skills. It is therefore needed to transform educational policies by integrating innovative and e-learning teaching techniques and learning environments that can foster the development of students' 21st century skills (Schwartz and Arena, 2013).

Currently, several organizations have attempted to map and define 21st century skills in different ways. Voogt and Pareja Roblin (2010) compare the 21st century skills proposed by the following projects: P21, EnGauge, ATCS, NETS/ISTE, EU and OECD. Table 1 below is

extracted from their report (p. 18) mapping the 21st century skills mentioned in those frameworks.

The skills presented in the table below, highlight the central role of ICT, peer-interaction and individual's meta-cognition in the learning process. Although different frameworks have several labels for the 21st century skills, a brief description of the ones that are most discussed in literature will be presented next.

Mentioned in *all* frameworks	Mentioned in *most* frameworks (i.e., P21, EnGauge, ATCS and NETS/ISTE)	Mentioned in a *few* frameworks	Mentioned only in *one* framework
- Collaboration - Communication - ICT literacy - Social and/or cultural skills; citizenship	- Creativity - Critical thinking - Problem solving - Develop quality products / Productivity (except in ATCS)	- Learning to learn (ATCS, EU) - Self-direction (P21, En Gauge, OECD) - Planning (En Gauge, OECD) - Flexibility and adaptability (P21, EnGauge) Core Subjects: - Mathematics; communication in mother tongue; science (EU, P21, ATCS); - History and arts (P21 and ATCS)	- Risk taking (En Gauge) - Manage and solve conflicts (OECD) - Sense of initiative and entrepreneurship (EU) - Interdisciplinary themes (P21) - Core Subjects: economics; geography; government and civics (P21)

Table 3: Similarities and differences between frameworks for 21st century skills (Voogt and Pareja Roblin, 2010, p. 18)

Table 4 below shows the four groups of 21st century skills as proposed and described by the ATCS; ways of thinking, ways of working, tools for working and living in the world.

	21st century skills (ATCS)	Description – Indicators
Ways of thinking	**Creativity / Innovation**	• To be able to create new and worthwhile ideas • To be able to work creatively with others • To be able to implement innovations • To be able to elaborate, refine and analyze one's own ideas
	Critical thinking / Problem solving / Decision making	• To express thoughts and ideas effectively, using any type of communication (oral, written, artifact, technology etc.) in several contexts and for a range of purposes • To be able to listen to other's thoughts and ideas • To share opinions and provide feedback
	Learning to Learn / Metacognition	• To use several types of reasoning in appropriate situations • To use systematic thinking by considering the interaction of the small parts of the whole problem in order to solve it • To make decisions and judgments • To critically evaluate online and other resources

	21st century skills (ATCS)	Description – Indicators
Ways of working	Collaboration	• To interact effectively with others • To work effectively in diverse teams • To manage group projects • To guide and lead others (having a respectful behaviour)
	Communication	• To be able to communicate in oral or written form in their mother tongue and additional language • To be able to read and understand different texts • To be able to formulate arguments in a convincing matter • To develop skills to use aids (such as notes, schemes, maps etc)
	21st century skills (ATCS)	Description – Indicators
Tools for working	ICT / Digital literacy	• To access and evaluate information and communication technology (ICT) • To use and manage information online • To create media products (i.e. video, audio etc) • To apply technology effectively
	Information literacy	• To access and evaluate information • To use and manage information • To be able to search, collect, organize and process information • To be able to use technology as a tool to research, organize and collect information
	21st century skills (ATCS)	Description – Indicators
Living in the world	Citizenship	• To participate in community/neighborhood activities • To be able to display solidarity on issues affecting the local or wider community
	Life and Career	• To adapt to change • To be flexible • To manage goals and time • To work independently • To interact effectively with others • To work effectively in diverse teams • To manage projects • To guide and lead others
	Personal and Social responsibility	• To be able to communicate • To be able to express one's frustration in a constructive way • To be able to maintain a degree of separation between professional and personal life • To be able to view and understand different viewpoints • To be able to negotiate

Table 4: 21st century skills (ATCS project) description (Binkley, Erstad, Herman, Raizen, Ripley, Miller-Ricci & Rumble, 2012)

2.5 How can ePortfolio facilitate 21st century skills' in-classroom assessment?

Fostering and assessing 21st century skills, in a classroom, is a challenge. Price, Pierson and Light (2011) refer to six common assessment strategies that are currently being used in educational contexts; rubrics, performance-based assessments, portfolios, student self-assessment, peer-assessment and student response systems. Of course these strategies are often linked. For example, student self-assessment, peer-assessment and rubrics can be integrated in a portfolio strategy and so on. There are other assessment strategies that can be found in literature but the above six are the most common ones and will be briefly described next.

2.5.1 Rubrics

A rubric is a tool that is developed in order to set criteria for assessing certain skills or knowledge. Andrade et al. (2009), researched middle school writing with the use of rubrics and found that children that went through the process of reviewing a sample rubric, developing a rubric by generating criteria and then using it for self-assessment performed better in their writing and had better group discussions. Going through the process of creating a rubric is a valuable activity for both the teacher and the student. It is a way for the teacher to assess whether students have learnt the content-knowledge (in order to generate assessment criteria, one needs to first *be aware of* what to assess) and whether they have developed certain skills (in order to develop i.e. a collaborative rubric, one needs to develop collaboration, communication, critical thinking, creative and learning to learn skills). University of Wisconsin (USA) offers rubric examples for education. iRubric is also a good web 2.0 tool for teachers creating rubrics.

2.5.2 Performance-based assessment (PBA)

Performance-based assessment is a type of assessment that involves project-based and other end product activities. Students are asked to perform authentic real-life activities such as currying out surveys, performing and documenting science experiments, writing a letter to the mayor about a real-life issue of their area, developing and testing models etc. Being involved in such activities, students can develop 21st century citizenship skills and other 21st century skills such as communication, collaboration, creativity and critical thinking.

2.5.3 Self-assessment

Self-assessment is a strategy that is viewed as a formative assessment. Students can improve their performance while going through a process of judging their own work (Andrade & Valtcheva, 2009). This can be done by having students writing a reflective journal or completing a questionnaire. Students can also follow a rubric or a checklist in order to assess their own work. It is best if these tools are negotiated with the teacher (Price, Pierson and Light, 2011). Self-assessment is a process that can help developing students' metacognitive skills and critical thinking.

2.5.4 Peer-assessment

Similarly to self-assessment, peer-assessment is a type of formative assessment (although sometimes it can be a summative assessment) that involves students reviewing their peers' work and providing their feedback regarding the quality of their work (Topping, 2009). Through such a process, students receive feedback from someone that is at their own level.

2.5.5 Student Response Systems (SRS)

Student response systems (SRS) are technology-based tools. These systems usually involve students holding devices such as voting devices or other hand held clickers where they can respond fast and anonymously. The teacher can then receive their data quickly and can show it to students using graphics and other forms of representation. This can help teachers to assess students formatively (Beatty and Gerace, 2009) and take decisions on their teaching practice based on evidence. This strategy can foster the development of collaborative and communicative skills, as well as ICT and Information literacy. Another approach that provides teachers with students' data is Learning Analytics. Learning Analytics has emerged the last years following the rapid growth of online learning environments. During the 1st International Conference on Learning Analytics and Knowledge, (2011) learning analytics were described as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs".

2.5.6 Portfolio assessment (as a showcase)

Showcase portfolios can be used as a summative assessment since they are a collection of students' work and achievement over a period of time. As discussed earlier, paper-based portfolios and ePortfolios (as showcase) can be used as a presentation of students' final projects, assignments and other work. Such a strategy can facilitate most of the 21st century skills discussed above including creativity, critical thinking, communication, life and careers and metacognitive as well as personal and social responsibility skills.

Even though Portfolio as a showcase can foster most 21st century skills, it does not completely encapsulate the process of learning and the development of these skills and students' work. An ePortfolio approach, however, in the way described in section 3.1., has the potential to capture the *process* that students follow in order to create, communicate, collaborate, think critically to solve problems, reflect, use technological tools and manage information online (and offline), share their work with peers, receive and provide feedback and develop a career plan by setting personal goals and developing a CV.

ATS2020 project aims in using ePortfolio approach as a learning environment that through scaffolding can potentially foster the development and assessment of all 21st century skills.

3. Implementation Principles from JISC's ePortfolio project

So far, most recent researches on ePortfolio implementations were set in Higher Education Institutions and only a limited number of researches reported implementations in middle and high schools. JISC's project resulted in the release of several guidelines for future implementations, in the form of an ePortfolio implementation toolkit. JISC's implementation guidelines for practitioners section, highlights five important concepts that need to be taken into consideration in an ePortfolio implementation; learning activity design and ePortfolio's purpose, processes, ownership and disruptive nature. The major assumptions and recommendations for these concepts are presented below:

3.1 The role of purpose

*Learning how to use ePortfolio for one purpose **does not** mean that one can use ePortfolio for all purposes*.

Trainers need to take into consideration the context (i.e. Institution, job-related ePortfolio, assessment etc.) and align the ePortfolio use with the particular context and purpose. For example, when students prepare an ePortfolio in order to show and demonstrate their achievements (showcase), does not mean that they know how to use ePortfolio as a workspace where they can collaborate with peers for a common task. Thus, it is important to make sure that there is training time devoted for the several purposes of ePortfolio use.

3.2 The role of learning activity design

*Students (and teachers) will **not** identify the benefits from the ePortfolio use by themselves*

Designing learning activities for ePortfolio use is a challenge. Specific design training and support of an ePortfolio's learning activity need to be provided, in order to make sure that the learning design suits the purpose and the context of the implementation. It is also advised that this learning design should be shared with students as well so as to identify the benefits of their activity. Professional development opportunities are needed in order to train academics / teachers to design appropriate learning activities.

3.3 The role of processes

***Not all students** are digital natives and can use technology easily and not all of them can understand processes like feedback, reflection etc. In addition, **not all teachers** are able to use ICT as well and also understand reflection, feedback etc.*

Trainers need to provide support on IT/technical issues and also pedagogical support because not all students and teachers are able to use ICT and understand metacognitive processes. The learning activities for ePortfolio use, should be designed bearing in mind these issues.

3.4 The role of ownership

*ePortfolio's creators **(students) should own** their own ePortfolio and Institutions need to make sure their ePortfolio platforms are interoperable.*

Institutions and practitioners need to make sure that students own their ePortfolio and provide platforms that will allow users to export and continue developing their ePortfolios as their own, even after graduation. They should also choose ePortfolio platforms that allow users to have the freedom to choose their own tools (i.e. webcam software etc). Students need to know that they own their ePortfolios.

3.5 The disruptive nature of ePortfolios

*ePortfolio **was not** developed for just digitalizing the paper-based portfolio, ePortfolio **will not** save everyone's time (at the beginning at least) and access to ePortfolio **is not** unproblematic by learners.*

Practitioners should allow time for successful implementation (two-three years approx.) through various stages and make sure that teachers are aware of the ePortfolio implementation's demands, both time and workload related before implementing.

4. ePortfolio tools to be used in ATS2020

The ePortfolio platforms that will be used in the ATS2020 project are: a custom-made Mahara platform (mahara.ats2020.eu) and a Microsoft solution that will be a combination of several Microsoft Office products (o365.ats2020.eu). A brief description of each tool is presented below.

4.1 Mahara

Mahara is an open-source ePortfolio web platform. As Mahara official website states: "Mahara is a fully featured web application to build your electronic portfolio. You can create journals, upload files, embed social media resources from the web and collaborate with other users in groups". In the ATS2020 project, the Mahara platform will be private and will allow users to create webpages and journals, upload files, embed web 2.0. tools, engage in discussion forums, create groups and develop an electronic portfolio with users' accomplishments and achievements.

4.2 Microsoft Office for Education

Microsoft, as one of the associate partners for the ATS2020 project, has developed an ePortfolio solution composed by: Microsoft's SharePoint, OneNote Notebook, OneDrive, Web Apps and Office 365. Students can use their SharePoint accounts in order to create their own personal space, portfolios and interact with others. They can use OneDrive and Office 365 in order to create, save and have access to Office documents virtually anywhere at any time.

5. ePortfolio Learning Activities Examples

In order to demonstrate the way ePortfolio features and 21st century skills can be integrated in Lower Secondary schools, the following three learning designs were developed as examples by the Cyprus Pedagogical Institute team. These examples are for a Modern Greek unit, an Art unit and a Chemistry unit, all following the Cyprus New Curriculum content and methodology. A brief description of those learning designs is presented next. A detailed learning design for each unit is provided, as a hyperlink, at the end of each example.

The representation of the Learning Design examples we have used, follows a visualized template (Table 5) that CPI developed as part of the Design-Practice project, a previous EU-funded project for visualized learning designs that CPI participated in (for more information visit the project's website http://www.design-practice.org/). This kind of visualization aims in mapping all components related to a Learning Design for each individual activity in one place; the learning outcomes and 21st century skills with the students' tasks, the teacher's activity, the tools to be used, the methodology/class arrangement and the expected learning outputs.

Act.	Learning Outcome / 21st century skills	Tasks	Teacher's activity	Tools	Methodology – Class Arrangement	Learning Output (expected)
1.						
2.						
3.						
4.						
5.						

Table 5: Design-Practice CPI's Learning Design template

5.1 L.D.1: Using ePortfolio for Modern Greek

This Learning Design is developed for a unit of Modern Greek module and is aligned to the suggested methodology of the New Curriculum reform. Although the example used here is the topic of "Unemployment", this Learning Design can be used as a template for all Modern Greek topics. It is designed with an emphasis on the following 21st century skills: Collaboration, Communication, Critical thinking, Learning to learn, ICT (digital) literacy, Information literacy, Creativity, Life/Career, Personal and Social responsibility.

After introducing the topic and have an initial classroom discussion, students (with the teacher) will pose several initial questions of interest, regarding the topic. In collaboration with their teacher, students will organize their initial questions into thematic units and teacher will create Discussion Forums and Files for each unit in the Mahara platform. Students will work collaboratively (groups of 2-3) in order to create a Mahara webpage, addressing the discussion questions. Each student will also write an essay/argumentation paper on the topic, assigned by the teacher by the end of the unit. Teacher will monitor the process and each student will keep a private journal of their activity on a weekly basis. Overall students will do the following:

1. Collect, evaluate, create and organize online and other resources
2. Engage in classroom and online discussions
3. Keep a weekly journal/diary of their activity
4. Reflect on their own and peers' work and critically evaluate information they find online.
5. Collaboratively create a Wiki-like Page with bullet points of the main issues of each thematic unit
6. Create an Index of the relevant vocabulary in collaboration with peers
7. Work on grammar activities organized by the teacher.
8. Create a webpage on the topic in collaboration with peers.
9. Write an essay/argumentation paper on the topic.

For the detailed learning design, please visit the following link:
http://mahara.eufolio.eu/artefact/file/download.php?file=472)

5.2 L.D.2: Using ePortfolio for Arts

This ePortfolio Learning Design refers to an Art lesson, aligned to the New Curriculum reform. Although the example used here is the topic of "Impressionism – 19th century art", this Learning Design, can be used as a template for similar Art topics. It was created with an emphasis on the following 21st century skills: Collaboration, Communication,

Critical thinking, reflection, ICT (digital) literacy, Information Problem solving, Creativity, Social/Cultural, Organizational, Self- and Peer-assessment.

After introducing the topic and have an initial classroom discussion, students work in groups to search and collect paintings (images) of famous Impressionist artists. Next, they upload the images in the Mahara environment and they collaboratively extract the similarities of the Impressionist artwork in order to identify their main characteristics. They post their response in the Forum and they create a rubric of Impressionist artwork identification, in collaboration with their teacher. They will then create their own artwork, integrating the characteristics of the Impressionist reviewed paintings and photograph/scan them to upload their artwork in their ePortfolio page. Each student writes a reflective post in his/her journal, addressing the way his/her creation integrates Impressionistic elements, in reference to the rubric. Peers then review their paintings and provide feedback by writing comments based on the rubric they previously developed. Students can edit their paintings if possible. In the meantime, students keep a weekly journal input writing about their learning experience and their feelings while engaging in these activities. Their final journal entry, they will reflect on their peers' comments and their final paintings, referring to the rubric. Overall students will do the following:

1. Collect, evaluate, create and organize online and other resources
2. Engage in classroom and online discussions
3. Keep a weekly journal/diary of their activity
4. Reflect on their own and peers' work
5. Collaboratively create a rubric of the main characteristics of Impressionism art
6. Upload their creations and critically evaluate them using a rubric

For the detailed learning design, please visit the following link:
http://mahara.eufolio.eu/artefact/file/download.php?file=470)

5.3 L.D.3: Using ePortfolio for Chemistry experimental unit

This ePortfolio Learning Design refers to a Chemistry lesson, aligned to the New Curriculum reform. Although the example used here is the topic of "Mixtures' separation techniques", this Learning Design, can be used as a template for similar experiential Chemistry topics. It was created with an emphasis on the following 21st century skills: Collaboration, Communication, Critical thinking, reflection, ICT (digital) literacy, Problem solving, Creativity and. It is assumed that students and their teacher are already familiar with the Mahara (or other ePortfolio platform) environment and know how to engage in basic activities (i.e. posting, commenting, uploading etc). The main idea of this Learning Design is

that students will use ePortfolio in three ways: as Repository/storage, workspace, showcase/product.

After introducing the topic and have an initial classroom discussion, students (with the teacher) will set their initial goals. Students will work in groups to create mixtures using given material, formulate hypotheses on the identity of the mixtures of the other groups and design and suggest ways to separate those mixtures. Students will participate in group Forums, express their arguments, critically discuss other groups' work and on their own. Teacher will monitor the process and each student will keep a private journal of their activity on a weekly basis. Overall students will do the following:

1. Make hypotheses, design and perform experiments for testing hypotheses
2. Engage in classroom and online discussions
3. Keep a weekly journal/diary of their activity
4. Reflect on their own and peers' work and critically evaluate other groups' suggestions.

For the detailed learning design, please visit the following link:
http://mahara.eufolio.eu/group/view.php?id=486

6. Στάδια και χρονοδιάγραμμα εφαρμογής του έργου ATS2020

ATS2020 learning approach aims at upper Primary and lower secondary education schools in 10 countries. Each country chose two (2) trainers who are trained by the Cyprus Pedagogical institute in the beginning of the project in a 2-day face-to-face workshop. These trainers were then supported by each country's partner institution in several training workshops, as well as online support.

The trainers shared the responsibility to support and transfer the ePortfolio approach to in-service teachers that participated in the ATS2020 project. The teachers developed and implemented learning designs with ePortfolio integration in their classrooms. At the same time teachers were supported by each country's institution and the two trainers. Participants in ATS2020 implementation (teachers, trainers, officers) were also involved in the evaluation process of the implementation through their participation in interviews, questionnaires, observations and other data collection methods.

As an example of the national trainings the suggested training, implementation steps and timeframe of the Cyprus case is presented next in Table 6.

Time	Activity	Participants	Goal	Location
October 2015 – April 2016	**Train the trainers** 1. eAssessment theoretical framework 2. ePortfolio theoretical framework 3. 21st century skills frameworks 4. Mahara and O365 learning environments 5. Designing learning activities with ePortfolio integration 6. Implementation steps 7. Community of Practice for trainers	Trainers (minimum of 2 trainers from each country)	The trainers to be trained for the ATS2020 project – ePortfolio framework, 21st century skills, Mahara environment, learning activities with ePortfolio and implementation process	• CPI premises (September – mid October) • 2day f2f workshop with all trainers in November (project level) • Online workshops and resources
April – May 2016	**Recruit participating teachers** 1. Open call to upper primary and lower secondary schools in Cyprus 2. Evaluate applications and choose participating schools and teachers (following criteria)	Participating schools and teachers	To inform upper primary and lower secondary schools in Cyprus regarding the ATS2020 project and call them to participate. Then choose participating schools and teachers	• CPI premises
May – June 2016 August – September 2016	**Train participating teachers** 1. Informative meeting: ATS2020 project / eAssessment / ePortfolio framework – levels / 21st century skills 2. Mahara platform workshops 3. 21st century skills – integration for ePortfolios 4. Development of Learning Designs integrating ePortfolio and 21st century skills 5. Discussion / Suggestions	Participating teachers	To inform participating teachers regarding the ATS2020 project: ePortfolio framework, 21st century skills, Mahara environment, learning activities with ePortfolio and implementation process.	• CPI Premises • Mahara and O365 workshops online

October 2016 – June 2017	**CPI optional In-Service Program for ePortfolio** 1. Informative meeting: ATS2020 project / eAssessment / ePortfolio framework – levels / 21st century skills 2. Mahara and O365 learning platforms workshops 3. 21st century skills – integration for ePortfolios 4. Development of Learning Designs integrating ePortfolio and 21st century skills and in-classroom implementation 5. Discussion / Suggestions	In-service teachers who apply for the Program	To disseminate ATS2020 project and inform in-service teachers (of all levels of education) regarding the ePortfolio integration in the classroom, the 21st century skills, the ePortfolio platforms and the way to design lessons for ePortfolio integration.	• CPI premises • Moodle online course
September 2016 – June 2017	**Implementation Phase** 1. Teachers design their ePortfolio-Learning Designs with the support of trainers and CPI officers 2. Teachers implement their ePortfolio-Learning Designs 3. ATS2020 data collection process	Participating Teachers CPI ATS2020 officers Trainers	- To help teachers design and implement learning designs for ePortfolio integration, in their classroom - To collect research data for the ATS2020 project	• Participating schools • Moodle online course • Mahara and O365 environment • CPI premises

Table 6: ATS2020 Training and Implementation Timeframe

7. CPD resources

For the professional development of teachers on ePortfolio, ATS2020 will create a portal with resources available to teachers, school units and policy makers. The portal hosts CPD material that was developed for the national trainings in the five piloting countries, learning scenarios and exemplar ePortfolios, case studies, recommendations and ATS2020 communities.

ats2020.eu
mahara.ats2020.eu
o365.ats2020.eu

8. ATS2020 – CPI Contact details

Trainers and teachers will have full support on behalf of the CPI's ATS2020 team.

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