Training Material and Resources

ATS2020 - Assessment of Transversal Skills 2020
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D3.2: Training Material and Resources

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Related documents/material:

- Teachers' Training booklet (https://resources.ats2020.eu/resource-details/ADM/training_booklet)
- ATS2020 toolkit – A step by step guide (https://resources.ats2020.eu/resource-details/ADM/toolkit)
- Learning Designs booklet (https://resources.ats2020.eu/resource-details/LEDE/ld_booklet)
- Resource Portal Guide for National Administrators (https://resources.ats2020.eu/resource-details/ADM/resource-portal-for-admins)
- Online training course (https://mahara.ats2020.eu/OnlineTrainingActivities)
- Resources and tools online repository (https://resources.ats2020.eu)
- ATS2020 User Support - Guides for Tools (D.2.4) (https://mahara.ats2020.eu/view/view.php?id=468)
- D1.2: Research Report on innovative assessment for learning approaches (https://ats2020.eu/deliverables)
- D1.3: ATS2020 Learning and Assessment Model (https://ats2020.eu/deliverables)
- D1.4: ATS2020 Technology and Tools (https://ats2020.eu/deliverables)
- D1.5: Change Management and Implementation Model (https://ats2020.eu/deliverables)

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Version	Date	Status	Author	Modifications in short
V1.0	28/8/15	On going	Anastasia Economou	Description of educational resources Templates Collections of educational resources
V2.0	28/6/16	In progress	Anastasia Economou Nicolas Kanaris	Description of online resource portal Technical specifications
V3.0	28/8/16	On going	Anastasia Economou Nicolas Kanaris	Incorporated resource portal in use and uploads of educational resources
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V6.0	30/4/18	Submitted	Anastasia Economou	Submitted

Contents

1. INTRODUCTION

The ATS2020 teachers' professional development Work Package is expected to provide the teachers involved with the necessary clear and common understanding of the ATS2020 learning and assessment model for the development and assessment of transversal skills. It is also expected that the trainings will guide and support teachers, as well as equip them with the necessary tools to develop their learning designs based on the ATS2020 learning model and implement them in the field trials.

Towards this direction, a number of material and resources were designed and developed. Emphasis is given in the active involvement of trainers and teachers' contribution to the development of the training material and resources.

This education content is hosted on the ATS2020 online resources portal (resources.ats2020.eu), in the form of an Open Educational Resources repository. The online resources repository aims to bring together the resources developed from all project teams, to have a common reference point and to create a place for autonomous self-directed learning for teachers. The resource platform gives the opportunity to teachers to search in multiple ways for the resources they need, as well as to upload and share their own. It is expected that the initial pool of ATS2020 training material, educational resources and tools, will be increasing throughout the project.

The content is provided under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International licence (CC BY-NC-SA 4.0). Resources are available in English and in all pilot countries languages.

At the same time, some of the content has been also printed and distributed to participating teachers and other interested parties.

In this deliverable, the design and development process of the educational material is initially described, along with the major categories and templates provided. Following, the design of the ATS2020 resource portal is explained, along with a description of the interface and content. Finally, some references on selected educational material are given.

2. DESIGN AND DEVELOPMENT OF TRAINING MATERIAL, EDUCATIONAL RESOURCES AND TOOLS

2.1. Target groups, Content and Types

2.1.1. Target groups

From the beginning of the project, the project team discussed what kind of training is to be offered to the teachers who will be implementing the ATS2020 learning and assessment model. Since, the training was to be offered using a multipliers approach, training material was needed for the trainers' needs, as well as for the teachers. Furthermore, educational and other material would be necessary for other stakeholders involved in the project, such as school leaders, parents and students. Thus, the following target groups for the educational resources and tools were identified:

- Trainers and teachers
- Project partners and researchers
- School leaders
- Parents
- Students

For each purpose, some material was public and shared on the ATS2020 resources portal, while some other material was specifically targeted to a group and was privately shared in the corresponding SharePoint site developed in the ATS2020's Office 365 (http://o365.ats2020.eu). Figure 1 shows the different SharePoint sites developed in Office 365. Some of the private content could then also be published in the public resources space (e.g. learning designs).
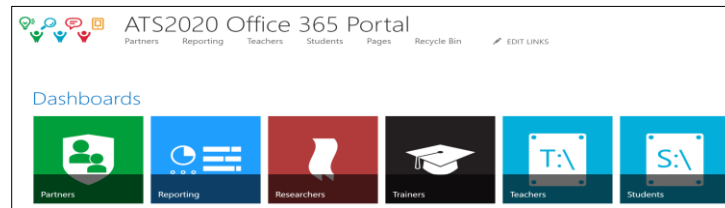

Figure 1: ATS2020 Office 365 partners' space – Individual groups' private spaces developed in SharePoint

2.1.2. Content

The training material for trainers and teachers was designed and developed in such a way so as to satisfy the needs of the ATS2020 teachers' professional development programme.

The teachers' professional development programme was expected to provide the teachers involved in the project with the necessary clear and common understanding of the ATS2020 model for the development and assessment of transversal skills. By the end of the training programme, teachers were expected to familiarise themselves with the ATS2020 transversal skills framework and to be able to design and implement lessons that allow transversal skills development and assessment. Additionally, they should understand and use the ePortfolio three-level developmental process (repository, workspace and showcase) (Abrami and Barrett, 2005) with an embedded continuous reflection cycle of "My learning" by using the "My Learning journal" tool (as introduced in the *EUfolio- EU Classroom ePortfolios* project 2013-2015[1]).
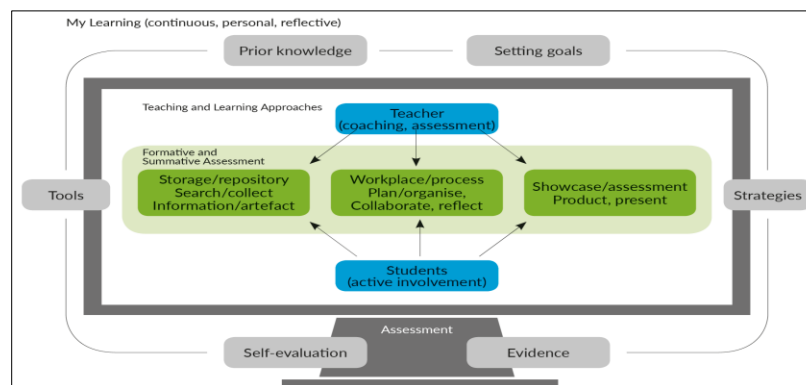
Figure 2: ATS2020 Learning and Assessment Model

Equally important, teachers should gain a deeper understanding of the ATS202 learning model basic elements, including assessment of, for and as learning, ePortfolios as an innovative method of assessment of students' learning (focussing on transversal skills), and assessment using formative assessment scaffolding tools (teacher assessment, peer-assessment, self-assessment). From the training programme, teachers should also get familiar with digital technologies enhanced learning, using online learning environments (Mahara and Office 365 OneNote Class Notebook), using and creating digital content, and exploiting opportunities for digital communication and collaboration. Finally, they should explore transversal skills existing frameworks and analyse the ATS2020 transversal skills framework.

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[1] http://eufolio.eu, https://eufolio-resources.eu

One important aspect of the teachers' training is also the Learning Design process, since teachers are supported to design their own educational scenarios or adapt existing ones that were developed at project level. For that purpose, a Visualised Learning Design (VLD) approach is adapted for the needs of the project, based on the work of the UK Open University (Conole et al, 2008) and the European project "Design Practice – PREATY"[2]. (Avraamidou and Economou, 2011).

It was also expected that the trainings guide and support teachers, as well as equip them with the necessary tools to develop their learning designs and implement them in the field trials. Throughout the real classroom implementations, as part of the teachers' training, teachers will implement the ATS2020 model, apply and expand their knowledge on what they have learnt, improve their practice and reflect upon their teaching.

For more details on the ATS2020 teachers' professional programme, please refer to the project deliverables "D3.1-Professional Development Programme" and "D3.4-Consolidated Country Reports on the CPD Programmes".

Based on the above, the training material explored the areas that the project was tackling as well as the ATS2020 learning model basic elements (see Figure 3). Thus, the training material was designed to cover the following:

- ATS2020 elements (Literature review, theoretical background)
- Learning Design process
- Formative assessment scaffolding tools and other supportive material and tools
- Exemplar ePortfolios

Figure 3: Basic Elements of the ATS2020 Learning Model

2.1.2.1. ATS2020 elements (Literature review, theoretical background)

A strong theoretical background based on Desktop Research and Literature Review was considered essential to be provided to the partner teams, trainers and teachers, for their initial training. For that purpose, a number of resources is listed under the "Literature Review" category on the ATS2020 resource portal, based on project deliverables, as well as continuing work from partner teams during the national trainings and classroom implementations (Figure **Error! Reference source not found.**4).

Figure 4: ATS2020 resource portal – Literature Review category

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[2] http://www.design-practice.org, http://www.pi.ac.cy/preaty

2.1.2.1.1. Transversal skills

Based on the project deliverable "D1.1 - Research report on transversal skills frameworks", a number of presentations and training activities with supporting material were designed and developed so as to be used in the "Train the Trainers" workshop. This material was used for the national teachers' trainings as well as to support online activities. It is also hosted on the ATS2020 resource portal. Furthermore, research and other papers, presentations and links are shared on the ATS2020 resource portal under the "Transversal Skills" category. This content is being continuously updated by partners' and trainers' as a result of their preparations and delivery of the national trainings (https://resources.ats2020.eu/transversal-skills).

Finally, an overview on transversal skills with references to skills frameworks are included in a section in the ATS2020 Training booklet (https://resources.ats2020.eu/resource-details/ADM/training_booklet).

2.1.2.1.2. ePortfolios

Based on the work of Abrami and Barrett (2005) and the work of the *EUfolio- EU Classroom ePortfolios* project 2013-2015)[3] a number of presentations and training activities with supporting material were designed and developed so as to be used in the "Train the Trainers" workshop. This material was then used for the national teachers' trainings as well as to support the online training activities (https://mahara.ats2020.eu/OnlineTrainingActivities). Special material and examples were collected so as to enable teachers to have a common understanding of what an ePortfolio is. This material is also hosted on the ATS2020 resource portal. Furthermore, research and other papers, presentations and links are shared on the ATS2020 resource portal under the "ePortfolio" category. This content is being continuously updated by partners' and trainers' as a result of their preparations and delivery of the national trainings, as well as the classroom implementations (https://resources.ats2020.eu/eportfolio).

2.1.2.1.3. Assessment

Assessment of transversal skills through an ePortfolio process approaches assessment *of*, *for* and *as* learning. Material on innovative approaches for assessment and formative assessment scaffolding tools were created, based on the project deliverables "D1.2-Report on research and literature on innovative assessment for learning approaches", "D1.4-Technology and tools for the scaffolding of teachers, learners and researchers towards the assessment of the teaching and learning" and the ATS2020 skills framework "D1.3-ATS2020 learning and assessment model for the development of transversal skills". This material was used in the "Train the Trainers" workshop and for the national teachers' trainings. The material, along with research and other papers, presentations and links are shared on the ATS2020 resource portal under the "Assessment" category. This content is being continuously updated by partners' and trainers' as a result of their preparations and delivery of the national trainings, as well as the classroom implementations (https://resources.ats2020.eu/formative-assesment).

2.1.2.1.4. Online learning environments

Based on the two online learning environments chosen to be used for ATS2020 (Mahara and O365 OneNote Notebook) and the project deliverable "D2.4- Support for key users, evaluation and further development of the tools", a number of presentations, guides and training activities with supporting material were designed and developed so as to be used in the "Train the Trainers" workshop. This material was used for the national teachers' trainings as well as to support online activities. Relevant material has been adapted for the students' needs, in order to be able to use the online environments. Furthermore, a number of classroom presentations have been developed for each one of the online learning environments with embedded guidance and

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[3] http://eufolio.eu, https://eufolio-resources.eu

instructions for the teacher (e.g. https://resources.ats2020.eu/resource-details/GUTS/intro_mahara, https://resources.ats2020.eu/resource-details/GUTS/intro_office).

Figure 5: Examples of classroom presentations with embedded guidance for teachers

All the material is also hosted on the ATS2020 resource portal in different languages under the "Guides for Tools" category (https://resources.ats2020.eu/guides-for-tools).   The content is being continuously updated by partners and trainers as a result of the national trainings and classroom implementations.
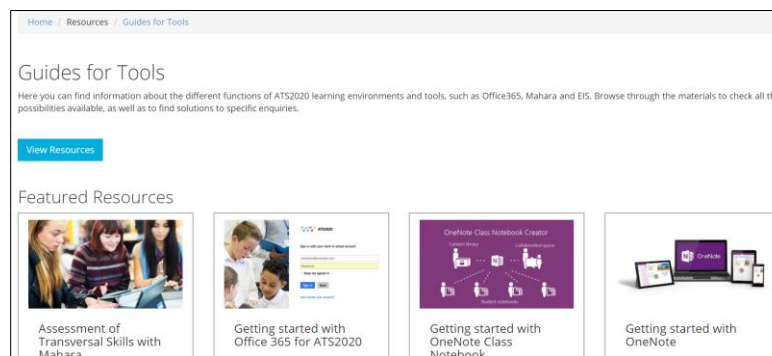

Figure 6: ATS2020 resource portal – Guides for Tools category

Finally, online guidance is also provided in the form of instructional videos as well as interactive activities on the page "ATS2020 User Support - Guides for Tools" (https://mahara.ats2020.eu/view/view.php?id=468).

2.1.2.1.5. Innovation and change management

For a successful and sustained implementation of an innovation the teachers' role is critical. As ATS2020 introduced innovative learning approaches within the school, and as teachers and school leaders as agents of change are considered to have a substantial role in the successful implementation of any innovation, it was considered essential to provide trainers with some literature review on this area. Some activity material was developed for discussion among the trainers based on the project deliverable "D1.5 Change Management and Implementation Model for Schools".

2.1.2.2. Learning Designs

One of the aims of the ATS2020 project was to train teachers and support them to actively contribute to the learning design of ATS2020 activities in their classrooms. However, knowing from the beginning, that this cannot be the most appropriate case for all teachers, depending on the teachers' profile, context of work, confidence, competence and time availability, teachers were expected to use and adapt existing ATS2020 learning designs or create their own. In both cases, it was important to support the trainers and teachers in implementing the ATS2020 learning model in their schools, to have an initial pool of examples and exemplar Learning Designs, which would be continuously updated and enriched. At the same time, a number of educational resources and tools should also be available and easily accessible for the teachers to use.

Furthermore, the teachers' involvement from the early stages of the project was considered important for the successful implementation of the project. Thus, following a participatory approach, trainers' and teachers' active

participation in the designing processes was encouraged. Teachers, were expected during the innovation to be creative and innovative, were encouraged to take initiatives and be actively involved in the learning design process. In this way, it is expected that teachers would develop a sense of ownership, and at the same time better understand and adapt the ATS2020 learning model and its elements.

Finally, through the exchange of their teaching practices and learning designs, as well as sharing their teaching and learning experiences, teachers become and feel members of the wider ATS2020 community, where they can find support and share advice on their practice.

2.1.2.2.1. Learning Design approach

Learning Design is one of the most vital elements of successful teaching and learning, especially when teaching and learning involve innovative approaches and methodologies. The assessment of transversal skills, through an ePortfolio process, involves and requires new skills and tools to support the learning designs. Thus, one important aspect of the teachers' training was the introduction to Learning Design process, since teachers were expected to design their own educational scenarios or adapt existing ones that were developed at project level.

For that purpose, a Visualised Learning Design (VLD) approach is adapted for the needs of the project, based on the work of the UK Open University and the European project "Design Practice – PREATY"[4]. The project aimed to investigate how the Visualised Learning Design approach, as developed by the UK Open University supports teachers in the design of technology-enhanced activities (Avraamidou and Economou, 2011).

More on the Visualised Learning Design approach and its implementation in the ATS2020 project can be found on the project deliverable "D3.3-Learning Scenarios".

For the purposes of the ATS2020 project, the VLD approach was adapted to the needs of the ATS2020 learning model and its elements. It is expected that this approach helps the ATS2020 partners and trainers to guide and support the participating school teachers in the designing of learning scenarios that will lead to successful ATS2020 learning model goals, while at the same time will enhance better communication among teachers and stimulate innovative pedagogical activities while designing.

For that purpose, the following templates were introduced:

- *Macro-level design* template (https://resources.ats2020.eu/resource-details/ADM/macrolevel)
- *Meso-level design* template as optional (https://resources.ats2020.eu/resource-details/ADM/mesolevel-template)
- *Micro-level design* template (https://resources.ats2020.eu/resource-details/ADM/micro-level)
- *Developed learning scenario* template *(for publishing on the online portal)* (https://resources.ats2020.eu/resource-details/ADM/LD_template)

For the training purposes, a number of examples were developed, both as online learning activities (e.g. Impressionism at https://mahara.ats2020.eu/view/view.php?id=147) and as learning designs (https://resources.ats2020.eu/resource-details/LEDE/Impressionism).

2.1.2.2.2. Learning Design repository

A powerful resource for ATS2O20 teachers is the provision of a collection of learning designs that follow the learning model (https://resources.ats2020.eu/learning-designs). The learning designs provide ideas for different subject areas and can be used to help teachers prepare the learning cycles according to ATS2020 learning and assessment model. Teachers are encouraged to use them, adapt them or take them as a starting point for their ideas. The learning designs, as a resource, are expected to provide teachers an insight and an understanding of how their own learning designs and lessons could look like, to provide examples of the education process

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[4] http://www.design-practice.org, http://www.pi.ac.cy/preaty

regarding what to teach, how to teach and how to assess in the framework of the project. The pool of learning designs helps the teachers to envision the teaching process with the incorporation of the ATS2020 methodology.

On project level, the first 20 complete learning designs were created before the beginning of the implementation and were uploaded to the resource portal. They were created by a teacher trainer to have the teacher's perspective on the model. The list of those lessons with links to the lessons in the resource portal can be found in the table below.

Table 1: Initial pool of exemplar learning designs

No	Primary/ Gymnasium	Grade	Subject	Title and Description	Link to Resource Portal
1	Gymnasium	C	ART	Self-portraits – Exploration of Identity	https://resources.ats2020.eu/resource-details/LEDE/Artselfportraits
2	Gymnasium	A	GEOGRAPHY	Sustainable Development	https://resources.ats2020.eu/resource-details/LEDE/SustainableDevelopment
3	Gymnasium	A	HISTORY	Archaic Period Art	https://resources.ats2020.eu/resource-details/LEDE/historyarchaicperiodart
4	Gymnasium	B	MATH & ICT	Introduction to research	https://resources.ats2020.eu/resource-details/LEDE/lessonIntroResearch
5	Gymnasium	B	ENGLISH LANGUAGE	Endangered Animals Online Campaign	https://resources.ats2020.eu/resource-details/LEDE/EndangeredAnimals
6	Gymnasium	A'	ENGLISH LANGUAGE	Fairy-tales writing	https://resources.ats2020.eu/resource-details/LEDE/WritingFairytales
7	Gymnasium	C	HOME ECONOMICS – HEALTH EDUCATION	Volunteering	https://resources.ats2020.eu/resource-details/LEDE/Volunteering
8	Gymnasium	B	HOME ECONOMICS – HEALTH EDUCATION	Bullying	https://resources.ats2020.eu/resource-details/LEDE/Bullying
9	Gymnasium	A	GREEK LANGUAGE	Argumentative Talk (Unit 3: Journey in the World of Nature)	https://resources.ats2020.eu/resource-details/LEDE/argumentative
10	Gymnasium	C	GREEK LANGUAGE	Unit 3: We are all different. We are all the same	https://resources.ats2020.eu/resource-details/LEDE/different
11	Primary	Sixth Grade	GEOGRAPHY	Tropical Africa - Chapter 4: Tropical flora and fauna, Chapter 5: Natural Wealth	https://resources.ats2020.eu/resource-details/LEDE/africa
12	Primary	Fifth Grade	GEOGRAPHY	Tourist Development of Cyprus	https://resources.ats2020.eu/resource-details/LEDE/tourism
13	Primary	Fifth Grade	HEALTH EDUCATION	Children's party organisation Unit 2: Development of safe and healthy lifestyle Subunits: 2.1 Healthy lifestyle and living conditions 2.2 Food & Health	https://resources.ats2020.eu/resource-details/LEDE/childrenpartyorganisation
14	Primary	Sixth Grade	HEALTH EDUCATION	Internet Safety Unit: Safety	https://resources.ats2020.eu/resource-details/LEDE/internet_safety
15	Primary	Fifth grade	GREEK LANGUAGE	Unit 11: Games – Electronic Games	https://resources.ats2020.eu/resource-details/LEDE/games
16	Primary	Sixth Grade	GREEK LANGUAGE	Unit 16 – Museums	https://resources.ats2020.eu/resource-details/LEDE/museum
17	Primary	Fifth Grade	SCIENCE	Classification of living organisms	https://resources.ats2020.eu/resource-details/LEDE/living_organisms
18	Primary	Sixth Grade	SCIENCE	Soil	https://resources.ats2020.eu/resource-details/LEDE/soil
19	Gymnasium	C	MATHEMATICS	Unit 7: Solid Geometry – Surface area and volume of prism	https://resources.ats2020.eu/resource-details/LEDE/prism
20	Gymnasium	B	HISTORY	Justinian A' and his work (527-565)	https://resources.ats2020.eu/resource-details/LEDE/justinian

The "Impressionism" learning design (https://resources.ats2020.eu/udata/contents/files/Resources/Learning-designs/ATS2020_WA3_TrainersActivityLearningDesign_Impressionism.pdf) was used in the transnational training of the trainers as the activity in which trainers took the role of the students to go through the activities of the lesson

plan and then as teachers they discussed and reflected upon the learning design and how the ATS2020 model was incarnated in the learning design.

All countries developed learning designs through the national training programmes and classroom implementations and shared them on the resource portal. Teachers from all the countries could share their learning designs in the resource portal as examples for other teachers to use, to get ideas from and to give other teachers an insight on how the model is implemented in action. The online repository has been established and hosts the educational resources. Special collections are guiding the portal users to access the learning designs in micro and macro levels. The resource platform gives the opportunity to teachers to search in multiple ways for the resources they need, as well as to upload and share their own. It is expected that the initial pool of ATS2020 learning designs, as well as other educational resources and tools, will be increasing throughout the project.

At the moment, more than 80 fully developed and more than 100 macro level learning designs can be found at the ATS2020 resource portal, in all national languages of the implementing countries (https://resources.ats2020.eu/learning-designs). The learning scenarios are provided under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International licence (CC BY-NC-SA 4.0). The learning designs can be searched through a dynamic search option, as well as through predefined collections, such as Complete Learning Designs, Macro level Learning Designs, Featured or even through Exemplar ePortfolios.
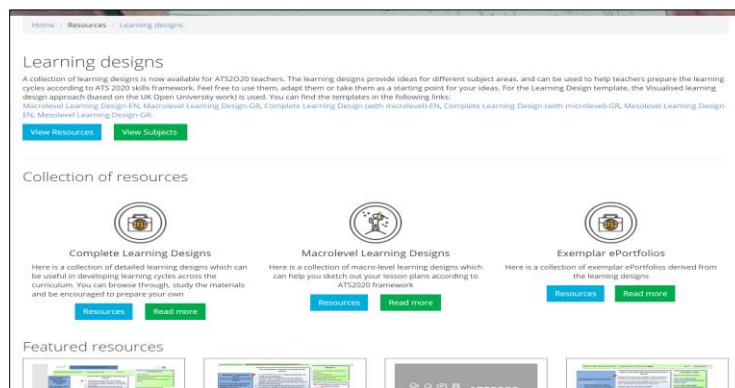

Figure 7: ATS2020 resources portal – Learning Designs category

The learning designs provide ideas for different subject areas and different areas of transversal skills and can be used to help teachers prepare the learning cycles according to ATS2020 skills framework. Teachers are encouraged to use them, adapt them or take them as a starting point for their ideas. The learning designs, as a resource, are expected to provide teachers an insight and an understanding of how their own learning designs and lessons could look like, to provide examples of the education process regarding what to teach, how to teach and how to assess in the framework of the project. The pool of learning designs helps the teachers to envision the teaching process with the incorporation of the ATS2020 methodology.

Finally, a collection of exemplar Learning Designs from all countries is published in the form of a booklet *"Learning Designs booklet"* (https://resources.ats2020.eu/resource-details/LEDE/ld_booklet).

2.1.2.3. Formative assessment scaffolding tools and other supportive material and tools

A number of assessment scaffolding tools have been developed, in order to facilitate the teachers to assess ATS2020 transversal skills during, as well as after the completion of each learning cycle and at the end of the experimentation. They were based on the ATS2020 transversal skills framework (D1.3-ATS2020 learning and assessment model for the development of transversal skills).

Assessment tools were developed for each area of transversal skills. In addition, teachers developed their own scaffolding tools, which were more context specific to their learning designs or even specific tasks. For example, such a tool was developed regarding creativity and innovation skills specifically for the design of a poster. Most assessment tools follow the form of rubrics with grades or levels, with or without detailed descriptions for each level.

The assessment tools have been designed to be used for formative or summative assessment. Moreover, they have been designed to be used either by the teacher or by students for self or peer assessment.

The scaffolding tools are hosted on the ATS2020 resource portal in different languages under the "Scaffolding Tools" category (https://resources.ats2020.eu/scaffolding-tools). The content is being continuously updated by teachers as a result of the national trainings and classroom implementations.
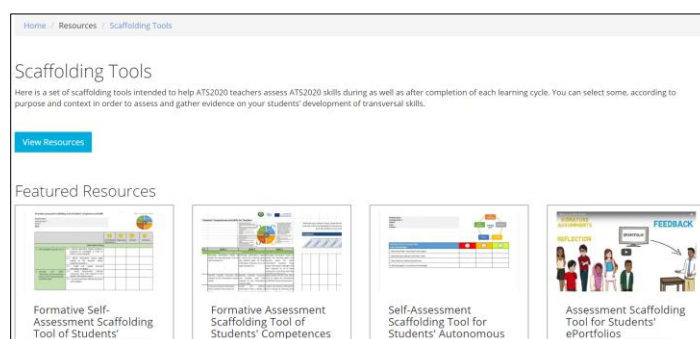

Figure 8: ATS2020 resource portal – Scaffolding tools category

The scaffolding tools were also discussed in training workshops and online meetings. The following table shows the main assessment tools created for the project.

Table 1: Formative Assessment Scaffolding tools

Formative Assessment Scaffolding tools			
What	**When**	**Who**	**File location**
Assessment Scaffolding Tool for students' ePortfolios	For each unit and at the end of the Learning Cycles	Teacher	https://resources.ats2020.eu/resource-details/SCTS/assessmentTooePortfolio
Formative Assessment Scaffolding Tool of Students' Competences and Skills for Teachers	For each unit and at the end of the Learning Cycles	Teacher	https://resources.ats2020.eu/resource-details/SCTS/assessment-scaffolding-tool
Formative Self-Assessment Scaffolding Tool of Students' Competences and Skills	For each unit and at the end of the Learning Cycles	Students	https://resources.ats2020.eu/resource-details/SCTS/assessment-student
Formative Self-Assessment Scaffolding Tool of Students' Competences and Skills-Extended version	When deemed necessary by the teacher	Students	https://resources.ats2020.eu/resource-details/SCTS/assessment-skills-student-extended
Self-Assessment Scaffolding Tool for Students' Autonomous Learning Skills (My Learning Journal)	For the assessment of students' My Learning Journals	Students	https://resources.ats2020.eu/resource-details/SCTS/MyLearningJournal_assessment

Teachers can select the scaffolding tools they needed for their learning designs, according to purpose and context, in order to assess and gather evidence on their students' development of transversal skills.

More supporting material has been developed and gathered on the resource portal, that can be used by teachers when in the learning design process, in addition to the assessment scaffolding tools. Such material includes templates (e.g. for students' ePortfolios), students' cards and worksheets, presentations and so on. All this material is hosted online and can be found through the search option on the portal or embedded in the learning designs.

2.1.2.4. Exemplar ePortfolios

Exemplar ePortfolios are also hosted in the portal under the collection Exemplar ePortfolios in the Learning Designs category, as examples of good practices (https://resources.ats2020.eu/Exemplar-ePortfolios). These ePortfolios are videos of students presenting their ePortfolios and their learning experience. More ePortfolios are presented with direct links, as they derived from the competition of exemplar ePortfolios developed by students, during the implementation of the project in Cyprus (2016-2017). These exemplar ePortfolios are presented here at https://resources.ats2020.eu/resource-details/LEDE/5A42B3171FC99284E38EA1F66C113462.

More students' ePortfolios can be also found from the Eufolio project at https://eufolio-resources.eu/teachers/exemplar-eportfolios.

2.1.2.5. Other resources

Resources were also created for the ATS2020 project teams and trainers. They were shared with partners in meetings and through Office 365 SharePoint. If public, they are hosted on the resource portal under the "Administrative" and "Other" categories. Those resources include administrative work documents necessary to implement the project like templates for consent forms, guides to upload material to the resource portal, templates, guide cards (e.g. for students, teachers, school leaders, coaches), certificate templates, etc.

Some collections of these resources include the following:

• Experimentation evaluation documents
  - Evaluation tools, tests, guides etc.
    - All material for students was translated in all participating countries' national languages. Not all material for researchers was translated in all participating countries' national languages.
• ATS2020 informational and dissemination documents
  - e.g. ATS2020 informative presentations to be used in the school informational days for inspectors, teachers, students and parents, leaflets, posters, digital banners etc.
    - Material was translated in all participating countries' national languages.
• Administrative documents
  - e.g. Participation invitations, Parents' consent forms etc.
    - Material was translated in all participating countries' national languages.

2.1.3. Types of resources

Material is available in different types and formats, according to its purpose, accessibility needs, and the creators' imagination and available resources. The major types include:

• Booklets (digital and printed form) (e.g. Training booklet, ATS2020 toolkit, Learning designs booklet)
• Online training activities (https://mahara.ats2020.eu/view/view.php?t=ATmCwnqxuX20LKQcS9sM)
• Online communities (e.g. https://mahara.ats2020.eu/group/view.php?id=4)
• Dedicated online collections (e.g. https://mahara.ats2020.eu/view/view.php?id=468)
• Videos (e.g. exemplar ePortfolios, instructional videos)

The aim is that all material is gathered on the ATS2020 online repository (resources.ats2020.eu) as open educational resources, serving as a central gateway for the ATS2020 learning model, as well as a lifelong learning portal for teachers' professional learning.

2.2. Creative Commons license

An effort has been put so as educational resources created through the project are available under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License[5].

The conditions implied by this license are explained in the Creative Commons website[6] and are listed below for reference:

> **Attribution (BY):** All CC licenses require that others who use your work in any way must give you credit the way you request, but not in a way that suggests you endorse them or their use. If they want to use your work without giving you credit or for endorsement purposes, they must get your permission first.

> **ShareAlike (SA):** You let others copy, distribute, display, perform, and modify your work, as long as they distribute any modified work on the same terms. If they want to distribute modified works under other terms, they must get your permission first.

> **NonCommercial (NC):** You let others copy, distribute, display, perform, and (unless you have chosen NoDerivatives) modify and use your work for any purpose other than commercially unless they get your permission first.

Resources that are hosted on the portal and are not available under CC license, they provide in most cases information about "usage rights" and whether a user can use, share, or modify the corresponding resource.

3. ONLINE RESOURCE PORTAL

3.1. Scope

The online resources portal (https://resources.ats2020.eu) was designed and developed in order to bring together all the resources available related to the ATS2020 learning model, so as to have a common reference point to access them in a dynamic and easy environment. The aim is that the portal serves as an online repository with Open Educational Resources, where users can search, download and upload their own User Generated Content, so as to be continuously enriched with resources and tools developed by the ATS2020 community, in addition to the initial ones that were developed on project level.

The portal has also additional features, such as collections, featured, promoted and most viewed resources, categories and profiles, so as to scaffold the navigation within the portal for those who need it, allowing at the same time a dynamic search option for those who prefer it.

The portal can serve as a central gateway for the ATS2020 learning model, as well as a lifelong learning portal for teachers' professional learning.

3.2. Overview of Users

The potential users of the resource portal can be divided into two categories, i.e. the "**end-users**" that use the portal as a mean for searching resources and information about the ATS2020 project and the "**administrators**" that upload and manage the resources of the portal.

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[5] https://creativecommons.org/
[6] https://creativecommons.org/share-your-work/licensing-types-examples/

3.2.1. End-users profile

The spectrum of end-users can cover a broad range of users, from persons that participated in the implementation of the ATS2020 project, to any interested citizen that would like to find more information regarding the project. However, as already discussed in the previous section, the educational content and material that has been developed and is available through the resource portal, is intended for use by the following types of users:

- Teachers
- Students
- Parents
- School leaders.

Therefore, even though the portal has been developed to be public and accessible by everybody, the design and development of the portal has been focused on these types of end-users.

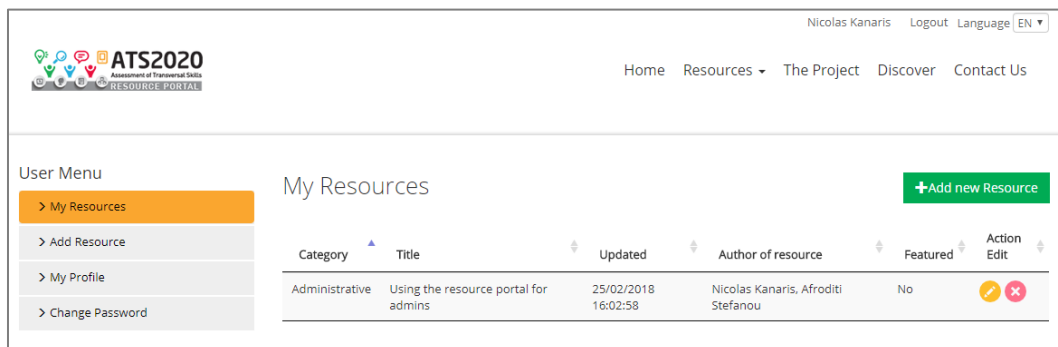### 3.2.2. Administrators' profile

The portal provides two types of administrative roles: Global administrators and Regional administrators.

Global administrators have full access to the content management system (CMS) of the portal (see Section 3.4.1). Through the admin panel of the portal (see Figure **9**9), global administrators can perform any task, including assigning other administrator roles. In addition, global administrators can measure, collect, analyse and report all user's interactions and web usage, through Google Analytics. Global administrators of the system are from the Cyprus Pedagogical Institute (CPI).

Figure 9: Admin panel of the content management system (CMS)

Figure 10: Web interface for Regional administrators

On the other hand, *Regional administrators* have limited access to the admin panel of the portal, through a dedicated user interface (see 10). Through that interface, regional administrators can perform different tasks

such as managing resources, i.e. upload, enrich and update resources (see Section 3.66 for more details) or updating their profile. They cannot though create other admin roles, or delete a global admin.

There is not any automated registering process for Regional administrators. Only, the system administrator can create Regional administrators accounts for users, through the admin panel. For the purposes of the project, we have assigned at least one person from each country as a regional administrator.

3.3. Key terms

Before moving on, it is important to define some important key terms that appear in the following sections. This will reduce the risk of misunderstanding in general, and allow everyone to have a shared understanding of the terms used in the context of the resource portal. These key terms together with their corresponding definition are listed below in Table 3.

Table 3: Key terms and associated definitions in the context of the ATS2020 Resource portal

Term	Definition
Resources	A collection of digitised material related with the ATS2020 project, available to users through the resource portal.
Resource types	There are six (6) different types of resources: Literature review, Learning Designs, Scaffolding tools, Guides for tools, Administrative, Other.
Resource attributes	A number of descriptors that represent specific characteristics of a resource, and allow filtering of search results. Resource attributes are divided into two sets; core attributes and custom attributes.
Core attributes	Specific attributes that are common to all resources independent of the resource type.
Custom attributes	Specific attributes associated to different resource types. Depending on the resource type, different custom attributes are available. Some attributes may be available to multiple resource types.
Collection of resources	A set of resources categorized by specific attributes.

3.4. Main components of the platform

The portal is built on a custom Content Management System (CMS) modified specifically to serve the scope of the resource portal. The CMS provides two main modules: the "Resources module", and the "Search module".

3.4.1. Content management system (CMS)

The main purpose of the Content Management System (CMS) is to allow the global administrator(s) of the resource portal to manage the system and update content. The CMS used includes the following:

- Support for multiple languages
- Simple and easy to use interface
- WYSIWYG content editor similar to Microsoft Word
- Be HTML 5 and CSS3 complaint
- Simple SEO tools like meta data, SEF (search engine friendly) URLs, H1 to H5 titles
- Support of multiple domains should be considered as a plus
- Support of multiple templates and multiple themes
- Support of social media integration – more details under modules and additional functionality
- Contact form to send comments via email to designated email address(es)
- Newsletter subscription form – subscription data should be collected either in a database (preferably) or an excel file (not enabled)
- Integration with Google analytics

3.4.2. Resources Module

The Resources module is the main component of this portal, upon which everything is based on. This module allows the *creation* and *management* of resources. Resources are searchable based on various search criteria associated with each resource, and displayed on the website.

In detail the module:

- Allows the creation and management of resources entries
- Displays the entries in different ways
  - Featured resources
  - Resources listing
  - Resources details
- Displays the resources details as described below (see Subsection 3.65) in a modern way.
- Shares the entry with social media
- Displays related resources
- Has the option to publish/un-publish an entry and define the publish date of an entry
- Applies various filters to each resource (see Subsection 3.5.2)

3.4.3. Search module

The Search module allows the user to submit a search request containing various search criteria and return the resources that match the selected search criteria, in listing view. This will help users to go through a large set of resources and exclude any resources that do not meet certain criteria.

In details the add-on/module:

- Provides a *search box* where a user can enter keywords:
  - Enter one or more keywords separated by space.
  - If no keywords specified, Search uses an empty value.
  - When multiple keywords are entered Search, looks for resources containing all of the words, or the exact phrase, or at least one of the words entered.
  - Search looks for keywords within the title, description, keywords and attributes (see Subsection 3.5.2).
- Under or next to the search box should be an option "*Advanced search*" where all categories and corresponding fields are expanded with checkboxes next to each tag. Under the tags there should be two buttons: (1) "Clear" button to clear all selected tags and (2) "Search" button to search based on the tags selected. *[This feature will be developed in a future update]*
- Allows filtering of the results based on different *filters* listed in Subsection 3.5.2.
  - All filter categories are visible. Once a category is selected a list of all corresponding values drops down.
  - In each category, the user should be able to select or unselect multiple tags.
  - Once a tag is selected results should be updated instantaneously.
  - Selected tags should be shown right on top of the results listing, one next to the other irrespective of the category of each tag, updated on the fly, and provide option to remove them.
- Listing of Results:
  - Display number of total results based on keywords and filtering.
  - Allow selecting number of results shown per page
  - Allow sorting of results by
    - Title,
    - Views,
    - Relevance (e.g. look first in title, then in fields, then in keywords and then in description) *[This feature will be developed in a future update]*

3.5. Resources

As already mentioned before, all the training material and educational content that have been produced in the context of the ATS2020 project, is hosted on the Resource portal and is available to all users through the portal. This collection of digitized material is referred as "Resources".

3.5.1. Resource categories

All available resources in the portal are listed under the following six (6) categories:

1. **Literature review**: Resources regarding the key elements and pedagogical aspects of the ATS2020 learning model and the ATS2020 framework.
2. **Learning designs**: A collection of learning designs to provide ideas for different subject areas, and to help teachers prepare the learning cycles according to the ATS2020 learning model and skills framework.
3. **Scaffolding tools**: A set of scaffolding tools intended to help ATS2020 teachers assess ATS2020 skills during, as well as after, the completion of each learning cycle.
4. **Guides for tools**: Information about the different functions of the ATS2020 learning environments and tools, such as Office365, Mahara and EIS.
5. **Administrative**: Documents necessary for the implementation of the project, including templates for consent forms, policy recommendations, as well as other documents for different administrative purposes.
6. **Other**: Background documents which form the basis for ATS2020 project, i.e. the ATS framework, guides for implementation, good practices, dissemination material etc.

Thus, resources are divided into six (6) predefined categories. Each category has a predefined set of categories of filters. Depending on the resource category selected, different categories of filters are displayed for filtering of results. In addition, there are four (4) predefined audiences. Each type of audience is assigned a predefined set of categories of resources.

		CATEGORIES OF RESOURCES					
		Literature review	Learning designs	Scaffolding tools	Guides for tools	Admini-strative	Other
AUDIENCE	Teachers	✓	✓	✓	✓	✓	✓
	School leaders					✓	✓
	Parents	✓				✓	
	Students				✓		

		CATEGORIES OF RESOURCES					
		Literature review	Learning designs	Scaffolding tools	Guides for tools	Admini- strative	Other
CATEGORIES OF FILTERS	1	Pedagogy	Focus	Focus	Learning platform	Media format	Type
	2	Material type	Subject area	Use	Media format	Language	Media format
	3	Media format	Educational level	Media format	Language	Country	Language
	4	Language	Age group	Subject area	Country		Country
	5		Learning platform	Educational level			
	6		Language	Age group			
	7		Country	Language			
	8		Design level				

Figure 11: Categories of resources.

3.5.2. Resource attributes

To describe a resource and provide all the necessary information and associated data, a number of attributes are available. These attributes are divided into a *core set of attributes* that are common to all resources, and a *custom set of attributes* that depend on the resource type.

Attributes have a dual role:

1. On one hand, attributes provide administrators a set of *descriptors* that they can use to describe all the different aspects and characteristics of a resource. These descriptors may have predefined values or not, and provide a controlled, uniform and structured way of describing a resource.

2. On the other hand, attributes can be used as *filters* that allow end-users to refine search results based on specific characteristics of a resource. In addition, they may also allow administrators to create collection of resources.

In the context of the ATS2020 resources and the different categories of resources, we have tried to come up with as many attributes as possible, in order to ensure that the fundamental characteristics of each resource are clearly identified.

A list of all the core attributes is shown in Table 4. The table shows the attribute's name, a list of the specific options available (if applicable), and a short description. There are only three (3) mandatory attributes, i.e. the Website language, the Resource language and Title. All other attributes are optional and can be left blank. As shown in the table, for some attributes, there are specific options available. These attributes can only be associated with a single value!

* This *is Table 4 continued from previous page*

Table shows the custom set of attributes available. Here, all attributes are associated with specific options. However, unlike core attributes, a custom attribute can have none or multiple values. All attributes in the custom set are optional.

As already discussed before, not all custom attributes are available for all types of resources. Depending on the resource type, a different group of custom attributes is available. This means that some attributes may be available to more than ore resource type. Below, you can find the attributes available per type of resource:

1. **Literature review**: Material type, Media format, Pedagogy
2. **Learning designs**: Age group, Country, Educational level, Focus, Learning platform, Subject area
3. **Scaffolding tools**: Age group, Educational level, Focus, Media format, Subject area, Use
4. **Guides for tools**: Country, Learning platform, Media format
5. **Administrative**: Country, Media format
6. **Other**: Country, Media format

In order to have a clearer view of these correlations, a visual representation of the different resource types a custom attribute is associated with is shown in Table 6.

It is important to note here that the options available for each attribute are not hardcoded to the portal. The CMS provides the ability to the system administrator to add new options or remove/modify existing options if needed. On the other hand, attributes are hardcoded and cannot be modified through the CMS.

Table 4: Core set of attributes that are common to all resources. Attributes marked with an asterisk are mandatory. Attributes with specific options available, may have a single value only.

Core attributes	Specific options (one value allowed)	Description
Website language *	o English	Language of the website for the resource to be displayed
Resource language *	o Croatian o Dutch o English o Estonian o Finnish o French o Greek o Irish o Lithuanian o Russian o Slovenian o Spanish	Language of the resource's content
Title *	n/a	Title of the resource
Image	n/a	Single image, and thumbnail of image for listing of resources
Description	n/a	Description of the resource
Author	n/a	Author of the resource
Terms of use	o Free to use or share o Free to use or share, even commercially o Free to use, share or modify o Free to use, share or modify, even commercially o Not filtered by license	Terms for using the resource
Publish date	n/a	Date of publication
Published	o Yes o No	If the resource will be available online or not

Featured	○ Yes ○ No	If the resource will be shown under "Featured" resources
Promoted	○ Yes ○ No	If the resource will be shown under "Promoted" resources
Keywords	n/a	Custom tags
Files	n/a	Upload multiple files
Videos	n/a	Upload multiple videos
Images	n/a	Upload multiple images
Links	n/a	Write multiple links

* This is Table 4 continued from previous page

Table 5: Custom set of attributes. Different attributes correspond to different resource types. An attribute can have none or multiple values

Custom attributes	Specific options (multiple values allowed)	Description
Age group	☐ 6-9 ☐ 9-12 ☐ 12-15 ☐ 15-18	The age group of the students that resource is intended to be used with
Country	☐ Belgium ☐ Croatia ☐ Cyprus ☐ Estonia ☐ Finland ☐ Greece ☐ Ireland ☐ Lithuania ☐ Slovenia ☐ Spain	The country for which the resource has been developed
Educational level	☐ Lower primary ☐ Upper primary ☐ Lower secondary ☐ Upper secondary	
Focus on	☐ Information literacy ☐ Communication and collaboration ☐ Creativity and innovation ☐ Autonomous learning ☐ ePortfolio	
Learning platform	☐ Mahara ☐ Office 365 ☐ EIS	The learning platform associated with the resource
Material type	☐ Guide ☐ Journal article ☐ Report ☐ Book ☐ MOOCs ☐ Webinar ☐ Informative material ☐ Interview	

Custom attributes	Specific options (multiple values allowed)	Description
	□ Learning course □ Framework	
Media format	□ Document □ Image/Photo □ Video □ Text/Html □ Presentation	
Pedagogy	□ Transversal skills □ Formative assessment □ ePortfolio	
Subject area	□ Art □ Chemistry □ Computer science □ Design and technology □ Foreign language □ Geography □ History □ Home economics □ Mathematics □ Natural science □ Official language □ Biology □ Physical education □ Physics	
Use	□ Student peer-assessment □ Student self-assessment □ Teacher assessment	Intended use of resource

This is Table 5 continued from previous page

Table 6: Correlation of Custom attributes and Resource types

CUSTOM ATTRBIUTES		RESOURCE TYPES					
		Literature review	Learning designs	Scaffolding tools	Guides for tools	Administrative	Other
	Age group		✓	✓			
	Country		✓		✓	✓	✓
	Educational level		✓	✓			
	Focus on		✓	✓			
	Learning platform		✓		✓		
	Material type	✓					
	Media format	✓		✓	✓	✓	✓
	Pedagogy	✓					
	Subject area		✓	✓			
	Use			✓			

3.6. Uploading resources

Both, "Global administrators" and "Regional administrators" can upload resources to the portal. Global administrators can do that directly through the CMS admin platform, while for the Regional administrators a dedicated front end has been developed especially for uploading resources.

3.6.1. Global administrator

Figure 11 shows the global administrator's web interface for adding a new resource under the category "Learning designs". Once the administrator selects the resource type, a corresponding screen appears showing the core and custom attributes associated with the selected resource type, accordingly. (See previous section for a detailed discussion on custom attributes)

Figure 11: Adding a resource through the CMS

3.6.2. Regional administrator

Regional administrators can upload resources through a dedicated front end, not the admin panel. To upload resources, a regional administrator needs first to login through the website (see Figure 1212). Once they login, they are redirected to a custom dashboard, from which they can manage resources (i.e. upload, enrich and update resources) or update their profile.

Figure 12: Login page for regional administrators

Regional administrators can upload resources and select if they want to make them publicly available, without any approval process.

A more detailed view of how a regional administrator can manage resources can be found in the guide developed specifically for regional administrators, in "Resource portal guide for administrators".

It is important to note here that a regional administrator can only edit or delete resources that s/he has uploaded. He cannot even see resources that have been uploaded by other regional administrators or even by the global administrator.

3.7. User interface

For the user point of view, there are two main layouts for viewing any of the available resources in the Resource portal. These are the "Resources listing layout" and the "Resource details layout".

3.7.1. Resources listing

Listing of resources is *displayed* on different pages *as lists*. Each list item includes:

- thumbnail
- title of the resource
- short description
- some (not all) selected tags associated with the resource
- link to more details

When the user selects a specific resource s/he is navigated to the contest details where all the resource information is displayed.

3.7.2. Resources details

From the resource listing view, a user can select to see "More info" for each resource by clicking on the corresponding button. In that case, the user is redirected to a new page, which shows all the core and custom attributes associated with that resource.
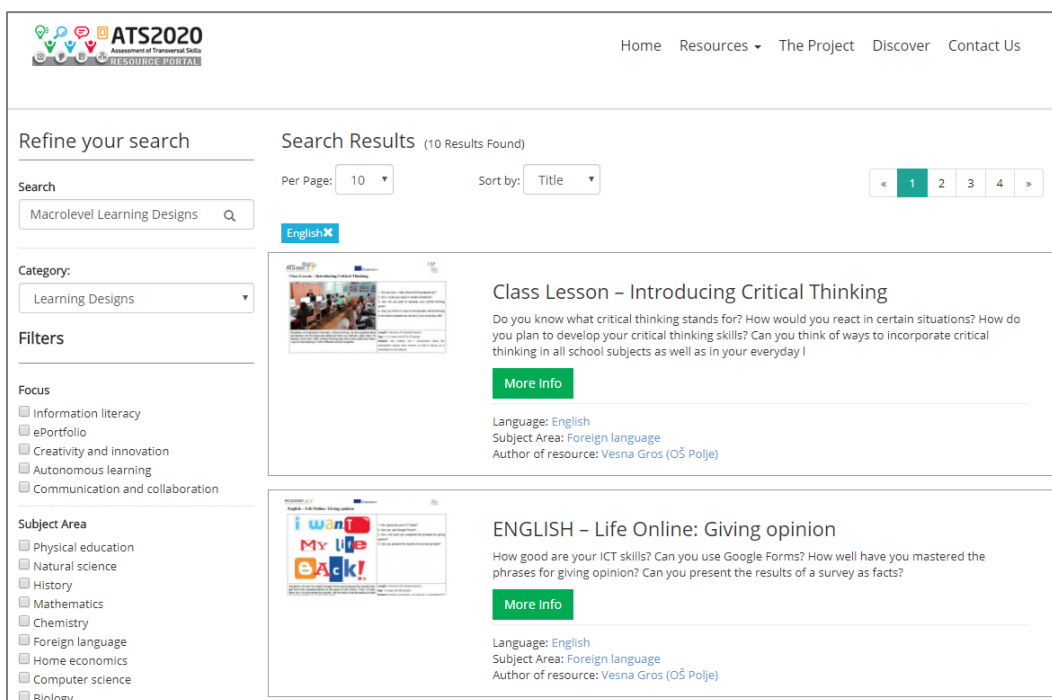
Figure 13: *Example from the resource portal that shows a listing of resources based on selected search criteria and filters*

*Figure 14*: *Example from the resource portal that shows detail information of a selected resource*

3.8. Custom pages

In the landing page, the system provides the following elements:

- *Search box* to search directly based on keywords
- Link to Resources *Collections page*
- Link to *Search page using filters*
- *Featured resources*: a list of few selected resources that the system administrator selects in order to promote or highlight.

3.9. Collections

A "Collection" is essentially a set of resources categorized by specific filters or keywords. The Collections page link in the landing page will direct the user to a static page where all collections will be listed. Each collection will have a short description and a link to the resources of that collection. Once a collection is selected, the user will be redirected to the search page with pre-selected filtering options, in order to show the resources of that collection. This aims to facilitate access and provide targeted access points and results. For example, as shown in Figure 15, the portal provides for each type of user easy navigation and direct access to selected resources.
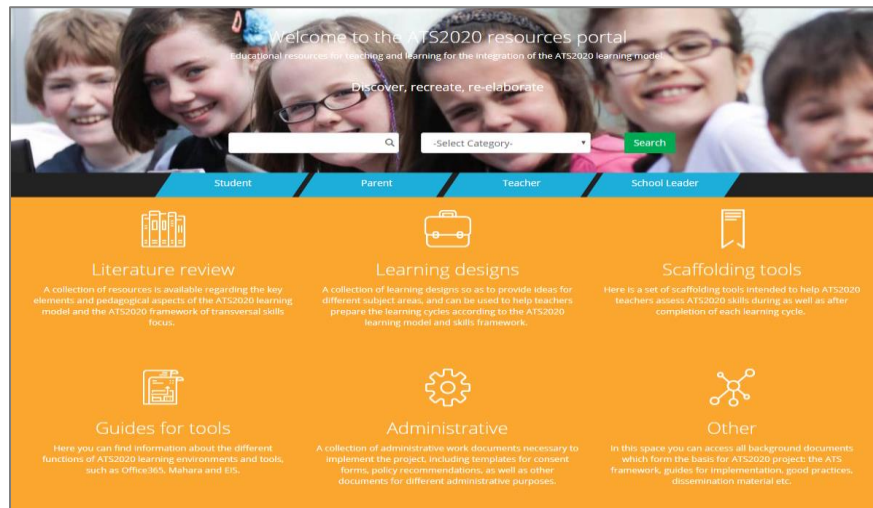
Figure 15: *Landing page of the resource portal, with direct links to resources targeted to different types of users, i.e. students, parents, teachers and school leaders*

3.10.   Define, design, develop, deploy

3.10.1. Development process

The portal was developed by an external developer. Meetings between the selected candidate and the Cyprus Pedagogical Institute (CPI) Project Team were carried out during the development period on a regular basis. At the beginning of the development process, a need analysis was provided by the CPI, which served as the basis upon which different mock-ups were designed and presented. Through an interactive process involving comments and feedback, a final design solution was reached.

3.10.2. Support and Maintenance

Support and maintenance was provided from the developments of the portal for 1 year commencing after the final delivery of the website(s). After that time, CPI provides support and maintenance internally.

3.10.3. Web Hosting and DNS Services

The website(s) is hosted on the premises of the Cyprus Pedagogical Institute. The system can be hosted in at least one of the following web application servers:

- Microsoft Server 2012 R2 web/application servers (IIS)
- Apache web/application server on open source operating systems (e.g. Red Hat Enterprise Linux >= version 6)
- Apache web/application server on Microsoft Windows Server 2012 R2

The Domain Name Service (DNS) has been provided by the Cyprus Pedagogical Institute.

## REFERENCES TO MATERIAL

Resource portal guide for administrators

A user guide for administrators on of the ATS2020 resource portal. You can find a digital copy (pdf) of the "Resource portal guide for administrators" at https://resources.ats2020.eu/resource-details/ADM/resource-portal-for-admins
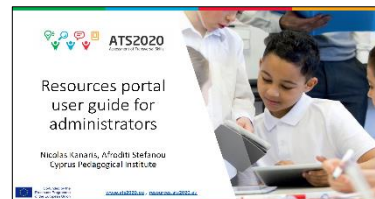
ATS2020 Learning Designs booklet

ATS2020 implementing countries provided a number of exemplar learning designs in the English language so as to share a collection of LDs in a booklet form. The printed form of the booklet has a spiral binding, so as to be easily used by a teacher in the classroom, if needed. This booklet presents 18 fully developed learning designs (in micro-level) and 10 learning designs in macro-level.

Learning designs are also hosted on the online resource platform in both English and national language. In some cases, students' material and ePortfolios are also included. All learning designs are provided under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International licence (CC BY-NC-SA 4.0).
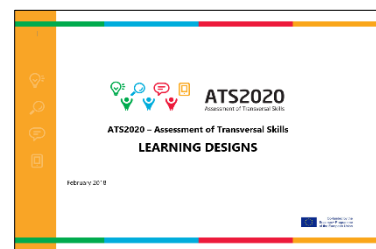
You can find a digital copy (pdf) of the "Learning Designs booklet" at https://resources.ats2020.eu/resource-details/LEDE/ld_booklet .

ATS2020 Training booklet

A training booklet was created at the early stages of the project, with the aim to introduce teachers and trainers to the ATS2020 project, providing an initial resource to support them towards a successful implementation of ATS2020 learning model for the development and assessment of transversal skills. The booklet is available at https://resources.ats2020.eu/resource-details/ADM/training_booklet. 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 among the ATS2020 stakeholders. Then, examples of previous implementations are presented and implementation issues and recommendations are discussed. Furthermore, the two main ePortfolio online learning environments (Mahara and O365) to be used in this project are presented and examples of learning activities developed for ePortfolio use are given for further guidance. Lastly, a suggested implementation path is outlined as guidance for the in-classroom implementation of the ATS2020 learning model.
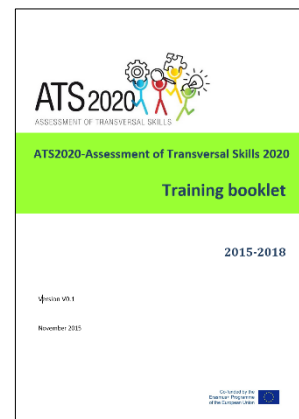
ATS2020 Training booklet

A toolkit was also created for the implementation of the ATS2020 learning model. It is available at https://resources.ats2020.eu/resource-details/ADM/toolkit. This toolkit can be used from schools and teachers to implement the ATS2020 learning model on their own. The ATS2020 toolkit aims to guide school leaders and teachers towards the implementation of the ATS2020 learning model in their schools with their students. It provides some general guidelines, along with step by step implementation suggestions. At the same time, it provides references to resources and tools that support the implementation, as well as examples and tips for good practice. The guide consists of two parts. Part A discusses the basic elements of the learning model, so as to achieve a common understanding among all parties involved. Part B presents a step by step guide to support the schools and teachers for the ATS2020 implementation.
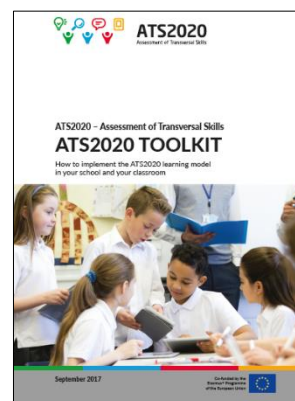
The toolkit is part of the dissemination material for the project with the aim to support its exploitation. Other dissemination material includes presentations for schools about the project, leaflets and brochures.

REFERENCES

Abrami, C. Ph. & Barrett, H. (2005). Directions for research and development on electronic portfolios. Canadian Journal of Learning and Technology, 31(3). Available online at http://cjlt.csj.ualberta.ca/index.php/cjlt/article/view/92/86.

Avraamidou, A. & Economou, A. (2011). Visualized Learning Design: The Challenges of transferring an innovation in the Cyprus educational system. In Cameron, L. & Dalziel, J. (Eds). In Proceedings of the 6th International LAMS & Learning Design Conference 2011: Learning design for a changing world, pp. 108-116. 8-9 December 2011, Sydney: LAMS Foundation.

Conole, G., Brasher, A., Cross, S., Weller, M., Clark, P. and White, J. (2008). Visualising learning design to foster and support good practice and creativity. Educational Media International, pp. 45(3), 177– 194.