Co-funded by the Erasmus+ Programme of the European Union

DESIGN THINKING FOR SUSTAINABILITY

Design Thinking For Sustainability Education

2019-1-TR01-KA201-076710

IO5. GOOD PRACTICES ON THE DEPLOYMENT OF DESIGN THINKING FOR SUSTAINABILITY EDUCATION STEMMING FROM EVALUATION ACTIVITIES

Task 5.3 Good practice guidelines on deployment of DT4S outputs in real-life educational contexts

ADVANCED TECHNOLOGY SYSTEMS

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Contents

1. INTRODUCTION 3
1.1 Definition of good practices 3
1.2 Criteria for identifying good practices 3
2. DT4S GOOD PRACTICE GUIDELINES 5
2.1 Documentation of good practices 5
3. DT4S GOOD PRACTICES EXAMPLES 10
3.1 Good practices from Turkey 10
Practice 1 - Accessible Education in Pandemic 10
Practice 2 - Hug the life 17
Practice 3 - Great Danger Drought 23
3.2. Good practices from Estonia 31
Practice 1 - Quick brainstorming activity 31
Practice 2 - A week long project 36
Practice 3 - A semester long project 41
3.3. Good practices from Greece 47
Practice 1 - Sign Pocket 47
Practice 2 - Reducing Food Waste 53
Practice 3 - Waste management, polluted environment, discarded waste 59
3.4. Good practices from Portugal 65
Practice 1 - Culture Heritage and Youth 65
Practice 2 - Don't trash our future: Recycle 71
Practice 3 - Sustainable mobility 78
3.5. Good practices from Romania 84
Practice 1 - Is this reusable? 84
Practice 2 - Sustainable development in project management 91
Practice 3 – Design Thinking for business processes 97
4. CONCLUSIONS 105
5. REFERENCES 105

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

1. INTRODUCTION

Task 5.3 *Good practice guidelines on deployment of DT4S outputs in real-life educational contexts* aims to collect good practice guidelines on how to best deploy the DT4S framework and tools, while maximising benefits.

1.1 Definition of good practices

In the context of this task, a good practice is defined as a method, plan, design, exercise, or lesson learnt that, through research and piloting experiences, has proven its reliability to support the achievement of the project objectives.

DT4S good practices provide knowledge on what methods work in specific educational contexts, and how they can be applied to further develop and implement the DT4S interventions adapted to similar educational challenges in other situations and contexts.

A template has been created to standardise the collection of best practices and to support the adoption process.

1.2 Criteria for identifying good practices

The identification of good practices requires an analysis of an educational context based on the set of criteria presented in Table 1.

Table 1. Criteria for identifying good practices

Criterion	Description
Relevance	The proposed good practice should respond to beneficiaries, institution needs, priorities, learning objectives, etc.
Coherence & Adequacy	The proposed good practice should be compatible with existing learning practices, should be easily aligned to respond to the requisites established by educational organisations and should be easy to adopt.
Effectiveness	The proposed good practice should support the achievement of specific objectives, and results.
Efficiency	The proposed good practice should produce results with a reasonable level of resources and time, mindful of the resources at the educator's disposition.
Impact	The proposed good practice should generate positive effects.
Sustainability	The proposed good practice should be implementable over a long period with the use of existing resources.
Possibility of duplication	The proposed practice, as carried out, should be replicable elsewhere.

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Criterion	Description
Observability	Potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.
Testability	The practice can be tried out before adoption.

These criteria are in line with the evaluation criteria defined by the OECD DAC Network on Development Evaluation (EvalNet)[1].

[1] https://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

2. DT4S GOOD PRACTICE GUIDELINES

This section presents details on the setting up and on the collections of DT4S good practices developed by the project partners.

2.1 Documentation of good practices

The DT4S good practices are documented by the project partners during the piloting of the DT4S solution. The following template was used for conducting a detailed documentation of an identified good practice. It focused on providing the evidence that would enable a successful adoption and implementation of the good practice.

The template comprises free sections: the good practice summary (Table 2), the good practice description (Table 3), and the good practice evaluation criteria (Table 4).

Table 2. Good practice summary

Partner name:	
Contact data:	
Title of good practice:	
Summary of good practice:	
What makes it a good practice?	

Table 3. Good practice description

Title of good practice:	*Please be concise and reflect the practice being documented.*
Introduction:	*Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*
Implementation of the practice:	• *How was the practice designed?* • *What were the main activities carried out?*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*
Results of the practice:	• *Which were the outcomes?*
Lessons learnt:	• *What recommendations can be made for those intending to adopt the documented "good practice"?*

Table 4. Good practice evaluation

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ○ Digital Literacy ○ Critical thinking ○ Problem solving ○ Communication ○ Collaboration ○ Creativity ○ Autonomy ○ Other The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ○ Other ○ The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ○ The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ○ The practice supports collaborative learning ○ The practice supports reflective learning ○ The practice cultivates self-regulated learners *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ○ Researching ○ Problem definition ○ Brainstorming ○ Collaborative work ○ Solution development ○ Prototyping ○ Testing ○ Other_____ ○ The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ○ The practice supports digital education activities ○ The practice is a ready-to-use educational resource ○ The practice is a free educational resource ○ The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ○ The practice involves hands-on experiences focused on real-world challenges ○ It ensures easy access to learning resources ○ It ensures a dynamic interaction between teachers and students ○ It allows students to learn anytime ○ It allows students to learn from anywhere ○ It allows students to build independent study habits *Comments*
Sustainability	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice can be implementable over a long period with the use of existing resources.	○ The practice will be available on the platform after the completion of the DT4S Project ○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ○ The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ○ A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ○ Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ○ The digital activity is available in the public section of the DT4S Platform ○ The contact data of the partner that designed and piloted the activity is available ○ The info-sheets for implementing the DT4S activities are available *Comments*

A set of options has been defined for each evaluation criteria to ease the assessment process and support a better understanding of the good practice parameters.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

3. DT4S GOOD PRACTICES EXAMPLES

This section references good practices designed and piloted by the project partners using the DT4S Platform. It collects good practices implemented in Turkey, Estonia, Greece, Portugal, and Romania.

3.1 Good practices from Turkey

Practice 1 - Accessible Education in Pandemic

The "Accessible Education in Pandemic" was designed by GOI on the DT4S Platform and piloted with students.

Table 5. Good practice summary Turkey

Partner name:	Governorship of İstanbul / GoI
Contact data:	abmerkez@istanbul.gov.tr
Title of good practice:	Accessible Education in Pandemic
Summary of good practice:	special needs, special education, disabled
What makes it a good practice?	Better practices for students with poor mutual attention, limited receptive language skills, attention deficit, hyperactivity, or severe intellectual disability.

Table 6. Good practice description Turkey

Title of good practice: *Please be concise and reflect the practice being documented.*	Accessible Education in Pandemic
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Through this activity the students have the opportunity to learn about the concept of disability, about students with disabilities and about the challenges they face when they enrol in the educational process. The activity was implemented in Turkish schools. The main objectives were: ● To get a better understanding of the disability ● To use brainstorming and research to understand the problem core.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• To use design thinking methodologies for a deeper understanding of the problem. • To use innovative thinking to provide new and better solutions. • To create prototypes of ideas. • To test prototypes. • To improve prototypes according to the results of testing sessions and feedback. • To work in teams on a joint goal. • To give and receive feedback. The practice was selected because raising awareness on disability and raising responsible individuals is a critical issue. Moreover, access to inclusive education is a basic human right and understanding inclusive education has become a key focus on policies, and action plans in the last two decades.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The class activity was structured to mirror the main steps of the design thinking methodology, and an assessment step was also integrated into the flow. A set of specific tasks were defined for each step, as follows: 1. Empathy • The group will make a research about disability; • The group will make a research on the given topics; • The group will do a further autonomous research about the topic and present what they found by including it the canvas (its preferable to think local); • The group will later organise all the information gathered. They can have an interview and share the recordings. 2. Define • students will develop their own opinions on disability. • Each participant will define the disability with their own words, define the problems

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	of disabled students to reach education, and tell the reflections of disabled people and their families. 3. Ideate ● discuss as a group about possible ideas for solutions for the problem statement ● achieve a consensus about the solution among all the ideas, ● highlight the selected solution 4. Prototype ● discuss if the solution is feasible ● identify what kind of information is needed to verify the efficiency of the proposed solution and how to collect that data to prove it ● test the solution ● have a group discussion ● decide if it is necessary to change some parameters to the test and to the data collection process ● present the choice made for the chosen solution 5. Test ● create an online presentation to their class ● collect feedback and organise an analysis session ● discuss with the teams separately so that the teacher can give personal feedback and students can assess their experience The activity was created and implemented by teachers.
Results of the practice: • *Which were the outcomes?*	Students improved their point of view about becoming a disabled, and improved their empathy.
Lessons learnt: • *What recommendations can be made for those intending to*	Improving students' empathy can be focused more. Teachers can invite students to close their eyes, think of themselves as a person with a disability,

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

adopt the documented "good practice"?	ask them to imagine their one day starting from the morning till the night, and give them some time to imagine. Then, the teacher can direct them some questions like: -what did you imagine? -what disability did you have? -how was your day? -what challenges did you xperience? -how was it different from your ordinary day? -how did you feel? -do you have any suggestions to facilitate the challenges you had?

Table 7. Good practice evaluation Turkey

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	The practice supports essential 21st century skills: ○ Digital Literacy ● **Critical thinking** ● **Problem solving** ○ Communication ○ Collaboration ○ Creativity ○ Autonomy ○ Other The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ● **Other** ○ The practices enable teacher improve their instruction methods *Comments* Identifying adequate models to implement inclusive education represents a key goal of

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	educational institutions across Europe. Building inclusive systems that provide a better-quality education for everyone are the instruments of changing discriminatory attitudes. An active and direct involvement of students in the process greatly improves the outcomes.
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ○ The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ○ The practice supports collaborative learning ○ The practice supports reflective learning ○ The practice cultivates self-regulated learners *Comments* Activities that implement the design thinking process align with current practices that focus on building critical thinking skills.
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● **Researching** ● **Problem definition** ○ Brainstorming ● **Collaborative work** ● **Solution development** ○ Prototyping ○ Testing ● **Other: Empathy** ○ The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice produces results with a reasonable level of resources and time.	○ The practice supports digital education activities ○ The practice is a ready-to-use educational resource ● **The practice is a free educational resource** ○ The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● **The practice involves hands-on experiences focused on real-world challenges** ○ It ensures easy access to learning resources ○ It ensures a dynamic interaction between teachers and students ○ It allows students to learn anytime ○ It allows students to learn from anywhere ○ It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● **The practice will be available on the platform after the completion of the DT4S Project** ● **The contact data of the practice designers will be available on the website after the completion of the DT4S Project** *Comments*
Adequacy	*Choose all that apply*

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.	○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ● **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* The practice is available on the DT4S Platform. It can be accessed, duplicated, reused, and adapted as needed to match specific needs of learning contexts. Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ● **Description of one case of the practice piloting is available in a DT4S deliverable** ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Comments The Governorship of İstanbul / GoI can be contacted to request specific information on the implementation of the best practice. Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● **The digital activity is available in the public section of the DT4S Platform** ○ The contact data of the partner that designed and piloted the activity is available ● **The info-sheets for implementing the DT4S activities are available** *Comments*

Practice 2 - Hug the life

Table 8. Good practice summary Turkey

Partner name:	Governorship of İstanbul / GoI
Contact data:	abmerkez@istanbul.gov.tr
Title of good practice:	Hug The Life
Summary of good practice:	homelessnes
What makes it a good practice?	Better practices for extrovert students with good communication skills, with awareness of their own environment, with responsibility.

Table 9. Good practice description Turkey

Title of good practice: *Please be concise and reflect the practice being documented.*	Hug The Life

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	The students will gain awareness of homeless people in their country and think about the reasons for that. As responsible individuals, the students will think about possible solutions for homeless people. The activity was implemented in Turkish schools. The main objectives were: ● To get to know the reasons leading people to be homeless, ● To get a better understanding of the problems of homeless people ● To use brainstorming and research to understand the problem core. ● To use design thinking methodologies for a deeper understanding of the problem. ● To use innovative thinking to provide new and better solutions. ● To create prototypes of ideas. ● To test prototypes. ● To improve prototypes according to the results of testing sessions and feedback. ● To work in teams on a joint goal. ● To give and receive feedback. The practice was selected because raising awareness of homeless people around us is a responsibility in society. Moreover, good health, well-being and a decent life are deserved by everyone. People devoid of them should be realised and solutions should be created for them.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The class activity was structured to mirror the main steps of the design thinking methodology, and an assessment step was also integrated into the flow. A set of specific tasks were defined for each step, as follows: 1. Empathy ● The group will make a research on the given topics; ● The group will do a further autonomous research about the topic and present what they found by including it the canvas (its preferable to think local); ● The group can also make an interview with people about how they use water in their daily life, whether they save, etc ● The group will later organise all the information gathered. They can share the

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	recordings. 2. Define ● Students will develop their own opinions on homelessness. ● Each participant will define the reasons for homlessness, the problems of homeless people. 3. Ideate ● discuss as a group about possible ideas for solutions for the problem statement ● achieve a consensus about the solution among all the ideas, ● highlight the selected solution 4. Prototype ● discuss if the solution is feasible ● identify what kind of information is needed to verify the efficiency of the proposed solution and how to collect that data to prove it ● test the solution ● have a group discussion ● decide if it is necessary to change some parameters to the test and to the data collection process ● present the choice made for the chosen solution 5. Test create an online presentation to their class collect feedback and organise an analysis session discuss with the teams separately so that the teacher can give personal feedback and students can assess their experience The activity was created and implemented by teachers.
Results of the practice: • *Which were the outcomes?*	Students improved their point of view about becoming a homeless people, improved their empathy.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	Improving students' skills on taking an action and involving in a local network can be supported. Students can be asked to search for local communities. They can be motivated to take part in voluntary actions of local organisations working

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	for homeless people for a certain time. After that, students can be allowed to share their experiences.

Table 10. Good practice evaluation Turkey

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ○ Digital Literacy ○ Critical thinking ● **Problem solving** ● **Communication** ● **Collaboration** ○ Creativity ○ Autonomy ○ Other The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ● **Other: Good health and well being** ○ The practices enable teacher improve their instruction methods *Comments* An active and direct involvement of students in the process and greatly improves their sensitivity to social problems, and raises their awareness for homeless people. Besides, they learn to make an effort on the issues that it deems lacking in the society within the limits of its own possibilities, without seeking any benefit in return.
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● **The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model** ● **The practice supports collaborative learning** ○ The practice supports reflective learning

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ The practice cultivates self-regulated learners *Comments* Activities that implement the design thinking process align with current practices that focus on building empathy and collaboration.
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ○ Researching ○ Problem definition ○ Brainstorming ● **Collaborative work** ● **Solution development** ○ Prototyping ○ Testing ● **Other: Responsibility; Networking** ○ The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ○ The practice supports digital education activities ○ The practice is a ready-to-use educational resource ● **The practice is a free educational resource** ○ The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● **The practice involves hands-on experiences focused on real-world challenges** ○ It ensures easy access to learning resources

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ It ensures a dynamic interaction between teachers and students ● **It allows students to learn anytime** ● **It allows students to learn from anywhere** ○ It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● **The practice will be available on the platform after the completion of the DT4S Project** ○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ● **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ● **Description of one case of the practice piloting is available in a DT4S deliverable** ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links: link to learning sheet
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● **The digital activity is available in the public section of the DT4S Platform** ○ The contact data of the partner that designed and piloted the activity is available ● **The info-sheets for implementing the DT4S activities are available** *Comments*

Practice 3 - Great Danger Drought

Table 11. Good practice summary Turkey

Partner name:	Governorship of İstanbul / GoI
Contact data:	abmerkez@istanbul.gov.tr
Title of good practice:	Great Danger Drought
Summary of good practice:	Drought, water resources, global warming
What makes it a good practice?	This activity provides opportunities for students' to reflect on sustainable practices applied to water consumption. They have to apply and improve

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	skills and competences related to research, decision making, identifying opportunities and applying obtained results.

Table 12. Good practice description Turkey

Title of good practice: *Please be concise and reflect the practice being documented.*	Great Danger Drought
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Through this activity the students have the opportunity to get to know the importance of water for living things, the threats for water and sea in the world, the problem of water lack in the world and the human impact on it. The activity was implemented in Turkish schools. The main objectives were: ● To get to know the reasons for draught, lack of water in the world ● To get a better understanding of the vitality of water for living beings ● To use brainstorming and research to understand the problem core. ● To use design thinking methodologies for a deeper understanding of the problem. ● To use innovative thinking to provide new and better solutions. ● To create prototypes of ideas. ● To test prototypes. ● To improve prototypes according to the results of testing sessions and feedback. ● To work in teams on a joint goal. ● To give and receive feedback. The practice was selected because raising awareness on lack of water and water consumption is a critical issue. Because climate change leads to less Access to clean water and sanitation all over the World.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which*	The class activity was structured to mirror the main steps of the design thinking methodology, and an assessment step was also integrated into the flow. A set of specific tasks were defined for each step, as follows: 1. Empathy ● The group will read the text in the resource link about means of water, its vitality in

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

activities are they specifically involved? • *What were the resource implications?*	ecosystem, threats for water and seas, the role of human beings, how to make water more sustainable; ● The group will make a research on the given topics; ● The group will do a further autonomous research about the topic and present what they found by including it the canvas (its preferable to think local); ● The group can also make an interview with people about how they use water in their daily life, whether they save, etc ● The group will later organise all the information gathered. They can share the recordings. 2. Define ● Students will develop their own opinions on the vitality of water for all living-beings. ● Each participant will define the problems leading to lack of water, the impacts, accessibility to water locally and globally. 3. Ideate ● discuss as a group about possible ideas for solutions for the problem statement ● achieve a consensus about the solution among all the ideas, ● highlight the selected solution 4. Prototype ● discuss if the solution is feasible ● identify what kind of information is needed to verify the efficiency of the proposed solution and how to collect that data to prove it ● test the solution ● have a group discussion ● decide if it is necessary to change some parameters to the test and to the data collection process ● present the choice made for the chosen solution 5. Test ● create an online presentation to their class ● collect feedback and organise an analysis session

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• discuss with the teams separately so that the teacher can give personal feedback and students can assess their experience. The activity was created and implemented by teachers.
Results of the practice: • *Which were the outcomes?*	Students improved their point of view about the importance of water and gained awareness of the lack of water in the World.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	It is important to introduce the ideas sequentially, respecting the order and the objectives of each stage of design thinking. Students can be motivated to make a change in their daily life to consumpt water less.

Table 13. Good practice evaluation Turkey

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ○ Digital Literacy ● **Critical thinking** ● **Problem solving** ○ Communication ○ Collaboration ○ Creativity ○ Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ● **Clean water and sanitation** ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ● **Climate action** ○ Life on land ○ Other: Good health and well being ○ The practices enable teacher improve their instruction methods *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	This practice was very relevant for all students involved. It has contributed to raising awareness of lack of water and importance for our planet. At the same time, it allows young people to start developing several competences, such as green skills, among others mentioned above.
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● **The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model** ● **The practice supports collaborative learning** ○ The practice supports reflective learning ○ The practice cultivates self-regulated learners *Comments* Activities that implement the design thinking process align with current practices that focus on raising awareness, problem solving and green skills.
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● **Researching** ● **Problem definition** ● **Brainstorming** ● **Collaborative work** ● **Solution development** ○ Prototyping ○ Testing ○ Other ○ The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ○ The practice supports digital education activities ○ The practice is a ready-to-use educational resource ● **The practice is a free educational resource** ○ The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● **The practice involves hands-on experiences focused on real-world challenges** ● **It ensures easy access to learning resources** ○ It ensures a dynamic interaction between teachers and students ○ It allows students to learn anytime ○ It allows students to learn from anywhere ○ It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● **The practice will be available on the platform after the completion of the DT4S Project** ○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and*	*Choose all that apply* ○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

how it considers the resources at the educator's disposition.	workflow shifts between teacher and students, it provides an assessment unit • **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* • **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform • **Description of one case of the practice piloting is available in a DT4S deliverable** ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links: link to learning sheet
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* • **The digital activity is available in the public section of the DT4S Platform** ○ The contact data of the partner that designed and piloted the activity is available

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• **The info-sheets for implementing the DT4S activities are available** *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

3.2. Good practices from Estonia

Practice 1 - Quick brainstorming activity

Table 14. Good practice 1 summary Estonia

Partner name:	Tallinn University
Contact data:	Triinu Jesmin Jaanus Terasmaa
Title of good practice:	Quick brainstorming activity
Summary of good practice:	When you only have few hours for a workshop then this is the script to follow
What makes it a good practice?	This activity has been tested and been proven to work.

Table 15. Good practice 1 description Estonia

Title of good practice: *Please be concise and reflect the practice being documented.*	Quick brainstorming activity
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	The topic was Water and this was carried out with high schoolers in one of the schools in the capital of Estonia. The learning objective was to make their school more water efficient in a sustainable way. The students selected this topic as a group.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?*	The practice was designed according to the classical model of design thinking. The first step was empathise where students had to gather relevant information. The second step was defined where students had to understand the problem at hand. Third step of the ideate was where students provided solutions to their problem. Fourth step of

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

• *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	prototyping is where students scheched their visuals for their solutions and the final step was a short presentation to their peers and supervisors where they got feedback. This workshop was run by two members of the consortium Triinu and Jaanus by the invitation of the teacher of this class. The implementers first gave a small lecture about environmental problems and design thinking. For the rest of the event, they stood by and answered the questions that the students had.
Results of the practice: • *Which were the outcomes?*	Each group of students came up with ideas how to make their school more water efficient
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	Do not expect too innovative results from a very short workshop. It is good to demonstrate the methodology of Design Thinking but not for real solutions

Table 16. Good practice 1 evaluation Estonia

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ○ Digital Literacy ● **Critical thinking** ○ Problem solving ● **Communication** ● **Collaboration** ○ Creativity ○ Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ● **Clean water and sanitation** ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ○ Other

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• **The practices enable teacher improve their instruction methods** *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ○ The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model • **The practice supports collaborative learning** ○ The practice supports reflective learning • **The practice cultivates self-regulated learners**
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ○ Researching ○ Problem definition • **Brainstorming** • **Collaborative work** ○ Solution development ○ Prototyping ○ Testing ○ Other_____ ○ The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* • **The practice supports digital education activities** • **The practice is a ready-to-use educational resource**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● **The practice is a free educational resource** ○ The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● **The practice involves hands-on experiences focused on real-world challenges** ○ It ensures easy access to learning resources ● **It ensures a dynamic interaction between teachers and students** ○ It allows students to learn anytime ○ It allows students to learn from anywhere ○ It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● **The practice will be available on the platform after the completion of the DT4S Project** ○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ● **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection**

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Comments
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links: https://dt4s.e-ce.uth.gr/#/lobbies/activities/presets/528/show
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ● **One case of the practice piloting is available digitally on the DT4S Platform** ○ Description of one case of the practice piloting is available in a DT4S deliverable ● **Description of one case of the practice piloting is available as a document on the DT4S Platform** ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links: link to learning sheet
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● **The digital activity is available in the public section of the DT4S Platform** ○ The contact data of the partner that designed and piloted the activity is available ● **The info-sheets for implementing the DT4S activities are available**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Comments

Practice 2 - A week long project

Table 17. Good practice 2 summary Estonia

Partner name:	Tallinn University
Contact data:	Triinu Jesmin Jaanus Terasmaa
Title of good practice:	A week long project
Summary of good practice:	When you have a weeks time for a workshop then this is the script to follow
What makes it a good practice?	This activity has been tested and been proven to work.

Table 18. Good practice 2 description Estonia

Title of good practice: *Please be concise and reflect on the practice being documented.*	A week long project
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	The topic was Energy and this was carried out with high schoolers in one of the schools in the capital of Estonia. The learning objective was to make their own city more energy/efficient in a sustainable way. The students selected this topic as a group.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?*	The practice was designed according to the classical model of design thinking. The first step was empathise where students had to gather relevant information. They had one week to notice energy related problems in their city. The next week, two members of the consortium, Triinu and Jaanus, were invited to the classroom by

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

• *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	the biology teacher of the school. The implementers first gave a small lecture about environmental problems, energy and design thinking. For the rest of the event, they stood by and answered the questions that the students had. The second step was defined where students had to understand the problem at hand. Third step of the ideate was where students provided solutions to their problem. Fourth step of prototyping is where students scheched their visuals for their solutions and the final step was a short presentation to their peers and supervisors where they got feedback.
Results of the practice: • *Which were the outcomes?*	Each group of students came up with ideas on how to make their school and city more energy efficient. All the ideas were thoroughly investigated and thought through and the ideas were implementable and the teacher took some of them to the school's administrative board and suggested the students submit their solutions to the city council as well.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	A week is enough time to investigate the problem in depth. The biggest emphasis should be on noticing the issues around the students and research - the empathise phase of Design Thinking.

Table 19. Good practice 2 evaluation Estonia

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ● **Digital Literacy** ● **Critical thinking** ● **Problem solving** ○ Communication ● **Collaboration** ● **Creativity** ● **Autonomy** ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ● **Affordable and clean energy** ○ Sustainable cities and communities

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ Responsible consumption and production ○ Climate action ○ Life on land ○ Other ● **The practices enable teacher improve their instruction methods** *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● **The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model** ● **The practice supports collaborative learning** ○ The practice supports reflective learning ○ The practice cultivates self-regulated learners *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● **Researching** ○ Problem definition ● **Brainstorming** ● **Collaborative work** ● **Solution development** ○ Prototyping ○ Testing ○ Other_____ ● **The practice teaches students how to investigate, discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems** *Comments*
Efficiency	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice produces results with a reasonable level of resources and time.	○ The practice supports digital education activities ● **The practice is a ready-to-use educational resource** ● **The practice is a free educational resource** ○ The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● **The practice involves hands-on experiences focused on real-world challenges** ○ It ensures easy access to learning resources ● **It ensures a dynamic interaction between teachers and students** ○ It allows students to learn anytime ○ It allows students to learn from anywhere ○ It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● **The practice will be available on the platform after the completion of the DT4S Project** ○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and*	*Choose all that apply* ○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

how it considers the resources at the educator's disposition.	workflow shifts between teacher and students, it provides an assessment unit • **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* • **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ○ Description of one case of the practice piloting is available in a DT4S deliverable • **Description of one case of the practice piloting is available as a document on the DT4S Platform** ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* • **The digital activity is available in the public section of the DT4S Platform**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ The contact data of the partner that designed and piloted the activity is available ● **The info-sheets for implementing the DT4S activities are available** *Comments*

Practice 3 - A semester long project

Table 20. Good practice 3 summary Estonia

Partner name:	Tallinn University
Contact data:	Triinu Jesmin Jaanus Terasmaa
Title of good practice:	A semester long project
Summary of good practice:	When you want your students to go in depth with a problem then this is the script to follow
What makes it a good practice?	This activity has been tested and been proven to work.

Table 21. Good practice 3 description Estonia

Title of good practice: *Please be concise and reflect the practice being documented.*	A semester long project
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	We used the DT4S platform to use Design Thinking methodology throughout a whole semester long course. The topic was climate change and the learning objective was to make educational videos about local climate change effects. The groups of students selected their own specific problem on which they wanted to work with.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The practice was designed according to the classical model of design thinking. First, two members of the consortium, Triinu and Jaanus gave lectures about climate change and design thinking. Secondly, the first step of Design thinking, empathise, was carried put for a week when students had to gather relevant information about climate change in Estonia. Then we had a meeting and the students presented their findings. The second step, define, where students had to understand the specific problem that they are working with for a week. We had another meeting where students presented their problems. Third step, ideate, was where students provided different solutions to their problem and this lasted for another week. After that we had a meeting where students presented their solutions. Fourth step of prototyping is where students scheched their visuals for their solutions that lasted for several weeks. After that they presented their prototypes in the meeting. The final step was a presentation to their peers and supervisors of their videos and students got feedback.
Results of the practice: • *Which were the outcomes?*	Each group of students worked on their climate change related topic and produced a video about it in the end. All the ideas were thoroughly investigated and thought through and the videos presented to an audience.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	A semester is a long time to investigate and work on the problem in depth. Weekly meetings are essential so the energy would not run down.

Table 22. Good practice 3 evaluation Estonia

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ● **Digital Literacy** ● **Critical thinking** ○ Problem solving ● **Communication** ● **Collaboration** ● **Creativity** ● **Autonomy**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ● **Climate action** ○ Life on land ○ Other ● **The practices enable teacher improve their instruction methods** *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● **The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model** ● **The practice supports collaborative learning** ● **The practice supports reflective learning** ● **The practice cultivates self-regulated learners** *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● **Researching** ● **Problem definition** ● **Brainstorming** ● **Collaborative work** ● **Solution development** ● **Prototyping** ● **Testing** ● **Other: digital content creation** ○ The practice teaches students how to investigate discover, ideate, experiment,

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* • **The practices enable teacher improve their instruction methods** • **The practice supports digital education activities** • **The practice is a ready-to-use educational resource** • **The practice is a free educational resource** ○ The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* • **The practice involves hands-on experiences focused on real-world challenges** • **It ensures easy access to learning resources** • **It ensures a dynamic interaction between teachers and students** • **It allows students to learn anytime** • **It allows students to learn from anywhere** • **It allows students to build independent study habits** *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* • **The practice will be available on the platform after the completion of the DT4S Project**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ● **The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit** ● **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ○ A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ● **One case of the practice piloting is available digitally on the DT4S Platform** ○ Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Comments Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● **The digital activity is available in the public section of the DT4S Platform** ○ The contact data of the partner that designed and piloted the activity is available ○ The info-sheets for implementing the DT4S activities are available *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

3.3. Good practices from Greece

Practice 1 - Sign Pocket

Table 23. Good practice 1 summary Greece

Partner name:	University of Thessaly
Contact data:	Hariklia Tsalapata Olivier Heidmann
Title of good practice:	Sign Pocket
Summary of good practice:	
What makes it a good practice?	Better practices for students on how to design software that will help the better and easier integration of the deaf in society.

Table 24. Good practice 1 description Greece

Title of good practice: *Please be concise and reflect the practice being documented.*	Sign Pocket
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Due to the fact that the participants themselves belong to this group of people, knowing from their personal experiences the difficulties that a deaf person has to face in his daily life, they thought of designing an application that can be used by everyone, in order to have direct communication and interaction with deaf people. The basic idea of the "Sign pocket design" was to design an electronic sign language dictionary for Android devices. The application can act as an electronic dictionary of sign language, both for the deaf and the hearing. It can fit in a pocket and will be available for use at any time. Every mobile or tablet user with Android software will be able to

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	download the application for free and get the electronic dictionary of the Cypriot Sign Language. The activity was implemented in Greek schools. The main objectives were: ● To design an electronic sign language dictionary for Android devices. ● To use brainstorming and research to understand the problem core. ● To use design thinking methodologies for a deeper understanding of the problem. ● To use innovative thinking to provide new and better solutions. ● To create prototypes of ideas. ● To test prototypes. ● To improve prototypes according to the results of testing sessions and feedback. ● To work in teams on a joint goal. ● To give and receive feedback. The reason that led the team to design the application, concerns the lack of media for deaf or hard of hearing people, as well as hearing impaired people. In order for the above-mentioned people to be able to be served in places such as public services, banks, cafes and restaurants, airports/ports/train stations, a sign language interpreter is often needed, to communicate hearing persons in their own dialect. Since this is not always possible, there is an urgent need to find new means of communication for these people with the rest of the world, which is why the team designed this application.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?*	The class activity was structured to mirror the main steps of the design thinking methodology. A set of specific tasks were defined for each step, as follows: 1. Empathy - The students will have to carry out research to figure out what is the problem given. - The students will have to define the challenge and explore the human context.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

• *What were the resource implications?*	2. Define - The students will have to observe, understand and create a point of view by identifying different ideas which can contribute to the reduction of the food waste, ideas that can be applied at individual level or community level. 3. Ideate - The students will have to participate in a brainstorming session to identify possible solutions to solve the problem. 4. Prototype - The student will have to create a prototype of the solution identified in the previous step. 5. Test - The student will have to present a plan of the implementation of the solution, to show what can be done and to start to refine the solution according to the feedback received.
Results of the practice: • *Which were the outcomes?*	In this activity, the students found the basic idea of the software, design it, and recorded the steps to complete their idea.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	

Table 15. Good practice 1 evaluation Greece

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ○ Digital Literacy ○ Critical thinking

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● **Problem solving** ● **Communication** ● **Collaboration** ● **Creativity** ○ Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ● **Other** ○ The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● **The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model** ● **The practice supports collaborative learning** ● **The practice supports reflective learning** ● **The practice cultivates self-regulated learners** *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● **Researching** ● **Problem definition** ● **Brainstorming** ● **Collaborative work**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• **Solution development** • **Prototyping** • **Testing** ○ Other_____ • **The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems** *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* • **The practice supports digital education activities** • **The practice is a ready-to-use educational resource** • **The practice is a free educational resource** • **The practice improves the use of teacher time** • **The practice eliminates the costs of physical instructional materials** *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* • **The practice involves hands-on experiences focused on real-world challenges** • **It ensures easy access to learning resources** • **It ensures a dynamic interaction between teachers and students** • **It allows students to learn anytime** • **It allows students to learn from anywhere** • **It allows students to build independent study habits** *Comments*
Sustainability	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice can be implementable over a long period with the use of existing resources.	• **The practice will be available on the platform after the completion of the DT4S Project** • **The contact data of the practice designers will be available on the website after the completion of the DT4S Project** *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* • **The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit** • **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* • **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform • **Description of one case of the practice piloting is available in a DT4S deliverable**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● **The digital activity is available in the public section of the DT4S Platform** ○ The contact data of the partner that designed and piloted the activity is available ● **The info-sheets for implementing the DT4S activities are available** *Comments*

Practice 2 - Reducing Food Waste

Table 26. Good practice 2 summary Greece

Partner name:	University of Thessaly
Contact data:	Hariklia Tsalapata Olivier Heidmann
Title of good practice:	Reducing Food Waste
Summary of good practice:	food, waste, consumption
What makes it a good practice?	Better practices for students on how to contribute to the improvement of the environment by using better ways to handle and reduce food waste.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Table 27. Good practice 2 description Greece

Title of good practice: *Please be concise and reflect the practice being documented.*	Food waste problem
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Through this activity the students have the opportunity to learn about the concept of food waste, understand better its impact on the environment, communities and daily life activities and to promote a behaviour change. Different ideas can be discussed which can promote the reduction of food waste such as ordering, prepping, and storage techniques, donations to feed people in need, recycling discarded food for other uses including animal feed, compost, and energy generation. The activity was implemented in Greek schools. The main objectives were: ● To get a better understanding of the concept of food waste. ● To use brainstorming and research to understand the problem core. ● To use design thinking methodologies for a deeper understanding of the problem. ● To use innovative thinking to provide new and better solutions. ● To create prototypes of ideas. ● To test prototypes. ● To improve prototypes according to the results of testing sessions and feedback. ● To work in teams on a joint goal. ● To give and receive feedback. The practice was selected because raising awareness on an increasingly recognised as a major global problem which is food waste and help students to adopt a more responsible behaviour towards reducing the food that they waste, to gain a better understanding of what foods they are wasting, why and what can be done.
Implementation of the practice:	The class activity was structured to mirror the main steps of the design thinking methodology.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

• *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	A set of specific tasks were defined for each step, as follows: 1. Empathy - The students will have to carry out research to figure out what is the problem given. - The students will have to define the challenge and explore the human context. 2. Define - The students will have to observe, understand and create a point of view by identifying different ideas which can contribute to the reduction of the food waste, ideas that can be applied at individual level or community level. 3. Ideate - The students will have to participate in a brainstorming session to identify possible solutions to solve the problem. The activity was created by teachers and implemented by students.
Results of the practice: • *Which were the outcomes?*	
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	

Table 28. Good practice 2 evaluation Greece

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ○ Digital Literacy ○ Critical thinking ● **Problem solving** ● **Communication** ● **Collaboration**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● **Creativity** ○ Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ● **Responsible consumption and production** ○ Climate action ○ Life on land ○ Other ○ The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● **The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model** ● **The practice supports collaborative learning** ● **The practice supports reflective learning** ● **The practice cultivates self-regulated learners** *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● **Researching** ● **Problem definition** ● **Brainstorming** ● **Collaborative work** ● **Solution development** ● **Prototyping** ● **Testing** ○ Other_____ ● **The practice teaches students how to investigate discover, ideate, experiment,**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* • **The practice supports digital education activities** • **The practice is a ready-to-use educational resource** • **The practice is a free educational resource** • **The practice improves the use of teacher time** • **The practice eliminates the costs of physical instructional materials** *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* • **The practice involves hands-on experiences focused on real-world challenges** • **It ensures easy access to learning resources** • **It ensures a dynamic interaction between teachers and students** • **It allows students to learn anytime** • **It allows students to learn from anywhere** • **It allows students to build independent study habits** *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* • **The practice will be available on the platform after the completion of the DT4S Project** • **The contact data of the practice designers will be available on the website after the completion of the DT4S Project** *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to*	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

the requisites established by educational organisations and how it considers the resources at the educator's disposition.	• **The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit** • **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* • **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform • **Description of one case of the practice piloting is available in a DT4S deliverable** ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* • **The digital activity is available in the public section of the DT4S Platform**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ The contact data of the partner that designed and piloted the activity is available ● **The info-sheets for implementing the DT4S activities are available** *Comments*

Practice 3 - Waste management, polluted environment, discarded waste

Table 29. Good practice 3 summary Greece

Partner name:	University of Thessaly
Contact data:	Hariklia Tsalapata Olivier Heidmann
Title of good practice:	Waste management, polluted environment, discarded waste
Summary of good practice:	waste, management, pollution, environment, discarded waste
What makes it a good practice?	Better practices for students on how to contribute to the improvement of the environment by using better ways to handle waste.

Table 30. Good practice 3 description Greece

Title of good practice: *Please be concise and reflect the practice being documented.*	Waste management, polluted environment, discarded waste
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Through this activity the students have the opportunity to learn about the concept of waste management and environmental pollution. Students were asked to comment on the pollution problem and furthermore suggest various ways to deal with this problem. The activity was implemented in Greek schools. The main objectives were:

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• To get a better understanding of the concept of waste management. • To use brainstorming and research to understand the problem core. • To use design thinking methodologies for a deeper understanding of the problem. • To use innovative thinking to provide new and better solutions. • To create prototypes of ideas. • To test prototypes. • To improve prototypes according to the results of testing sessions and feedback. • To work in teams on a joint goal. • To give and receive feedback. The practice was selected because raising awareness on an increasingly recognised as a major global problem which is environmental pollution and help students to adopt a more responsible behaviour and what can be done.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The class activity was structured to mirror the main steps of the design thinking methodology. A set of specific tasks were defined for each step, as follows: 1. Empathy - The students will have to carry out research to figure out what is the problem given. - The students will have to define the challenge and explore the human context. 2. Define - The students will have to observe, understand and create a point of view by identifying different ideas which can contribute to the reduction of the food waste, ideas that can be applied at individual level or community level. 3. Ideate - The students will have to participate in a brainstorming session to identify possible solutions to solve the problem.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	4. Prototype - The student will have to create a prototype of the solution identified in the previous step. 5. Test - The student will have to present a plan of the implementation of the solution, to show what can be done and to start to refine the solution according to the feedback received. The activity was created by teachers and implemented by students.
Results of the practice: • *Which were the outcomes?*	Students designed a small logo that reflected their team, a team name that was related to the work they were given, and a poster they designed against pollution and waste.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	

Table 31. Good practice 3 evaluation Greece

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ○ Digital Literacy ○ Critical thinking ● **Problem solving** ● **Communication** ● **Collaboration** ● **Creativity** ○ Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ● **Sustainable cities and communities**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ Responsible consumption and production ○ Climate action ○ Life on land ○ Other ○ The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● **The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model** ● **The practice supports collaborative learning** ● **The practice supports reflective learning** ● **The practice cultivates self-regulated learners** *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● **Researching** ● **Problem definition** ● **Brainstorming** ● **Collaborative work** ● **Solution development** ● **Prototyping** ● **Testing** ○ Other_____ ● **The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems** *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ● **The practice supports digital education activities** ● **The practice is a ready-to-use educational resource**

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• **The practice is a free educational resource** • **The practice improves the use of teacher time** • **The practice eliminates the costs of physical instructional materials** *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* • **The practice involves hands-on experiences focused on real-world challenges** • **It ensures easy access to learning resources** • **It ensures a dynamic interaction between teachers and students** • **It allows students to learn anytime** • **It allows students to learn from anywhere** • **It allows students to build independent study habits** *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* • **The practice will be available on the platform after the completion of the DT4S Project** • **The contact data of the practice designers will be available on the website after the completion of the DT4S Project** *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* • **The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit** • **The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection** *Comments*

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● **A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable** ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ● **Description of one case of the practice piloting is available in a DT4S deliverable** ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● **The digital activity is available in the public section of the DT4S Platform** ○ The contact data of the partner that designed and piloted the activity is available ● **The info-sheets for implementing the DT4S activities are available** *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

3.4. Good practices from Portugal

Practice 1 - Culture Heritage and Youth

Table 32. Good practice 1 summary Portugal

Partner name:	Virtual Campus LDA.
Contact data:	marlene_faria@virtual-campus.eu projects@virtual-campus.eu
Title of good practice:	Culture Heritage and Youth
Summary of good practice:	A simple way to explain the importance of cultural heritage to young people
What makes it a good practice?	This activity was tested with students and the feedback was very positive.

Table 33. Good practice 1 description Portugal

Title of good practice: *Please be concise and reflect on the practice being documented.*	Culture Heritage and Youth
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	The topic, Cultural Heritage and Youth, was addressed by a secondary school teacher from Carlos Amarante school (Braga, Portugal) with her 20 students. The practice was structured so that students understood what cultural heritage is and why it is important, always having to go through the 5 phases of design thinking to finish the activity. The main learning objectives were the following: • To raise students' awareness of cultural heritage; • To understand the Design Thinking pedagogical approach; • To deepen the students' knowledge on cultural heritage. The activity was selected to be developed in pairs by the 20 students who were also participating in the Erasmus+ project "Our Cultural Heritage and

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Youth". As it related to the theme of this project, it was a way to complement the students' education on the topic.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	In order to carry out the activity, 10 working groups were created and a session was held to present the platform to the students, explaining the tasks that should be executed in each phase. All the necessary information was sent by email, namely the link of the platform and the code of each working group. Afterwards, each pair chose a monument of the city of Braga to develop, based on it, the tasks proposed in each one of the 5 stages of design thinking (empathise, define, ideate, prototype and test), since the practice was designed according to the classical model of design thinking. It is also important to mention that the students were accompanied by three teachers during the activities, who were available to answer any questions they had regarding the platform or the proposed tasks. The teachers, respectively, taught English, Portuguese and History, an important factor as the former were able to assist in the more technical perspective of the platform, and the latter with more knowledge about the content requested at each stage of the activity. At the end of the practice, the students carried out the suggested improvements and each working group presented orally, in a videoconference session, the work produced.
Results of the practice: • *Which were the outcomes?*	Regarding the main outcomes of the practice, the students appreciated the challenge to deepen their knowledge about the chosen monument and the methodology that the platform adopts. On the other hand, teachers found the activity relevant as they were able to explore the platform's potentialities and understand how to make the best use of it.
Lessons learnt: • *What recommendations can be made for those intending to*	First, it is important to explore the public activities that are already created on the platform, as well as their respective themes , and only then move on to create one’s own themes and activities.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

adopt the documented "good practice"?	

Table 34. Good practice 1 evaluation Portugal

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ● Digital Literacy ● Critical thinking ● Problem solving ○ Communication ○ Collaboration ○ Creativity ● Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ● Other ● The practices enable teacher improve their instruction methods *Comments* This experience was enriching for both students and teachers and could be included in schools. It saves time for the teacher, as there are already several activities ready to be used and integrated into educational practices. In addition, it prepares the students for their integration in society with various skills, such as problem solving competences, autonomy and critical thinking.
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ● The practice supports collaborative learning

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● The practice supports reflective learning ○ The practice cultivates self-regulated learners *Comments* The activities presented in the DT4S platform are in line with the curricula and regulations that exist in Portugal, allowing teachers to explore new tools and to implement the Design Thinking Methodology. For educational institutions, it is also an added value as it promotes the development of essential skills for society and the world of work, by applying a collaborative and reflective learning approach.
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● Researching ● Problem definition ● Brainstorming ● Collaborative work ● Solution development ● Prototyping ● Testing ○ Other_____ ● The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments* The students demonstrated that they had learned about the topic and found the platform to be a dynamic and more appealing way to learn. The fact that the tasks were divided into stages facilitated their learning and made it easier for them to apply the design thinking methodology.
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ● The practice supports digital education activities ● The practice is a ready-to-use educational resource ● The practice is a free educational resource

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● The practice improves the use of teacher time ● The practice eliminates the costs of physical instructional materials *Comments* As the activity is structured in phases, it favours the management of time. The students can set achievable goals and reach them in a smoother and less anxious manner, and can harmonise them with other commitments.
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ○ The practice involves hands-on experiences focused on real-world challenges ● It ensures easy access to learning resources ● It ensures a dynamic interaction between teachers and students ● It allows students to learn anytime ● It allows students to learn from anywhere ○ It allows students to build independent study habits *Comments* The students came out of this activity satisfied, as they found this activity very interesting and dynamic. In fact, this practice represented for them an opportunity to learn autonomously and outside the classroom, feeling, at the same time, supported by the teacher, who was available at a distance to clarify any doubts they had.
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● The practice will be available on the platform after the completion of the DT4S Project ○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments* This practice has been made public and is available on the platform. In this sense, it can be duplicated and adapted to the desired historical monuments.
Adequacy	*Choose all that apply*

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.	• The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit • The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection *Comments* This practice motivates students to better understand their origins, as well as the importance of the historical heritage of their cities and country. Besides promoting the knowledge on this subject, which is assessed by the teacher at the presentation stage, it stimulates teamwork (as the working groups were organised in pairs) and allows the workflow shifts between teacher and students.
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* • A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* This exercise can be replicated without any constraints, only the historical monuments should be redefined and personalised according to teachers' preferences. Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* • One case of the practice piloting is available digitally on the DT4S Platform ○ Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Comments After the pilot testing, two evaluation questionnaires were distributed to students and teachers, allowing them to assess their experience with the practice. The feedback was overall quite positive. The practice has been tested, evaluated and is ready for use by other teachers on the DT4S platform. Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● The digital activity is available in the public section of the DT4S Platform ○ The contact data of the partner that designed and piloted the activity is available ● The info-sheets for implementing the DT4S activities are available *Comments* The exercise can be found in the public activities of the DT4S platform and teachers can adjust it according to their needs.

Practice 2 - Don't trash our future: Recycle

Table 35. Good practice 2 summary Portugal

Partner name:	Virtual Campus
Contact data:	marlene_faria@virtual-campus.eu projects@virtual-campus.eu
Title of good practice:	Don't trash our future: Recycle
Summary of good practice:	A dynamic and engaging approach to increase environmentally friendly behaviour in young people
What makes it a good practice?	This activity was carried out with a group of students and the feedback was very positive and encouraging.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Table 36. Good practice 2 description Portugal

Title of good practice: *Please be concise and reflect on the practice being documented.*	Don't trash our future: Recycle
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	This topic was developed by a teacher from Colégio Internato Claret, a private school located in Gaia, Portugal. The activity was addressed to 20 primary school students, aged between 12 and 14. The learning objective was to stimulate the students to present some basic information about the waste problem and, according to this, to present recycling as a solution to it. Then, it was intended that, with the information gathered, each student prepared a script that would serve as the basis for the creation of a video on how to recycle. It is important to note that students always had to go through the phases of design thinking to complete the activity. To develop this activity, several working groups were created, where students were distributed in pairs.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	In order to implement this practice, 10 working groups were set up in the classroom. The teacher presented the platform and the tasks to be performed during the activity. Since all students had access to a computer in the classroom, the teacher invited them to create a registration on the platform and to introduce the code corresponding to each working group. The students felt accompanied when carrying out this activity, as they were able to clarify all doubts directly with the teacher while exploring the platform. The practice was conducted over several lessons, always following the classic model of design thinking. Through the different stages, the students had the opportunity to develop the following tasks: • discuss with their classmates about the problem of waste and solutions for its management; • define recycling; • reflect on whether they actively participate in the recycling process;

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• what they know about the 3 R's rule; • encourage their colleagues to recycle, explaining its benefits and using the knowledge they have acquired on the subject. At the end of the practice, students presented their findings and the script used for the creation of the video.
Results of the practice: • *Which were the outcomes?*	Through this activity, the students were able to obtain a better understanding of waste management and recycling. They were very satisfied with their experience with the platform and found it very easy to use. Furthermore, they considered that the activity increased their motivation to learn about the topic. For the teacher responsible for this practice, the activity was also very positive, as it introduced a new method of active learning with her students and captivated their interest and attention.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	It is important to introduce the ideas sequentially, respecting the order and the objectives of each stage of design thinking.

Table 37. Good practice 2 evaluation Portugal

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ● Digital Literacy ● Critical thinking ● Problem solving ○ Communication ● Collaboration ○ Creativity ● Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● Sustainable cities and communities ● Responsible consumption and production ○ Climate action ○ Life on land ○ Other ○ The practices enable teacher improve their instruction methods *Comments* This practice was very relevant for all involved - students, teachers and school. It has contributed to raising young people's awareness on a topic that is extremely important for our society and for the environmental protection of our planet - it is a topic that affects all of us. At the same time, it allows young people to start developing several competences, such as green skills, among others mentioned above.
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ● The practice supports collaborative learning ● The practice supports reflective learning ○ The practice cultivates self-regulated learners *Comments* The DT4S platform and its activities enable teachers to explore new tools and to create more motivating learning experiences for students, applying the design thinking approach. In this way, it is an asset for educational institutions, as it allows the implementation of an innovative teaching method that also supports collaborative and reflective learning.
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● Researching ● Problem definition ● Brainstorming

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● Collaborative work ● Solution development ○ Prototyping ○ Testing ○ Other_____ ● The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comment* The students demonstrated that they had learned about the topic, being able to go through all the stages of learning until they reached the resolution of the problem.
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ● The practice supports digital education activities ● The practice is a ready-to-use educational resource ● The practice is a free educational resource ● The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials *Comments* This practice does not need a large investment of time. As it is structured in stages, it allows students to carry out each phase more calmly and autonomously to be able to assimilate the contents learned.
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● The practice involves hands-on experiences focused on real-world challenges ● It ensures easy access to learning resources ● It ensures a dynamic interaction between teachers and students ● It allows students to learn anytime ● It allows students to learn from anywhere ● It allows students to build independent study habits *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	This practice allows students to know more about a real and crucial topic for the future of our societies. By raising awareness about recycling and environmental issues, students will subsequently be able to apply the obtained learning to their everyday life and to further research about this subject in the future. In addition, a satisfaction survey conducted with the students showed that they appreciated this activity and that it contributed to increasing their interest in the topic.
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● The practice will be available on the platform after the completion of the DT4S Project ○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ○ The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection *Comments* All students are more aware of the environmental problems and the importance of recycling. Besides, they are also aware of the Design Thinking methodology as a tool for supporting innovative thinking. In this sense, it represents a practice that teachers can use with their students, being easily accessible through the internet connection and the project platform.
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ A detail description of the practice design is documented in an article/ scientific publication *Comments* This exercise can be replicated without any constraints. Links: https://dt4s.e-ce.uth.gr/#/lobbies/activities/presets/864/show
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ○ Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* The practice has been tested, evaluated and is ready for use by other teachers in the public activities of the DT4S platform. Links: https://dt4s.e-ce.uth.gr/#/lobbies/activities/presets/864/show
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● The digital activity is available in the public section of the DT4S Platform ○ The contact data of the partner that designed and piloted the activity is available ○ The info-sheets for implementing the DT4S activities are available *Comments* The exercise can be found on the DT4S platform and teachers can adjust it according to their needs.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Practice 3 - Sustainable mobility

Table 38. Good practice 3 summary Portugal

Partner name:	Virtual Campus Lda
Contact data:	carlos_carvalho@virtual-campus.eu projects@virtual-campus.eu
Title of good practice:	Sustainable mobility
Summary of good practice:	Sustainability; energy; mobility.
What makes it a good practice?	This activity provides opportunities for students' to reflect on sustainable practices applied to urban mobility. They have to apply and improve skills and competences related to research, decision making, identifying opportunities and applying obtained results.

Table 39. Good practice 3 summary Portugal

Title of good practice: *Please be concise and reflect on the practice being documented.*	Sustainable mobility
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Students will learn about the environmental costs of current mobility options, sustainability options for mobility and sustainable development goals and to discover ways to include these concepts in the implementation and management of a project. The activity was implemented in Portuguese schools. In the end, students were able to: - Know concepts related to sustainable development goals, sustainability strategies, environment protection, sustainable mobility. - Apply project management techniques to structure tasks and activities and manage working time. - Understand design thinking and apply it in other training situations. - Find solutions to problems in other areas by using Design Thinking.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	The practice was selected by the students and teachers because of its importance to the environment.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The teacher presented the platform and the tasks to be performed during the activity. Since all students had access to a computer in the classroom, the teacher invited them to create a registration on the platform and to introduce the code corresponding to each working group. Working groups were set up in the classroom and the activity was conducted in one session following the design thinking model. Through the different stages, the students had the opportunity to develop the following tasks: • discuss with their classmates about the problem of urban mobility and solutions for its management; • define sustainable mobility; • reflect on how sustainable mobility could be applied locally; • encourage the colleagues to apply it in their lives. At the end of the practice, students presented their findings and solutions in video.
Results of the practice: • *Which were the outcomes?*	At the end of the practice, each group of students presented their findings and solutions in a video. The whole class discussed the present solutions, their impact and applicability. Students committed to follow the identified practices.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	- Provide clear instructions regarding the tasks that students need to complete in each phase of the Design Thinking methodology. - Provide more examples of sustainable mobility. - More time needs to be allocated for the participation in the activity, at least 2 hours. - Smaller groups of students. - Better ways to disseminate the identified solutions

Table 40. Good practice 3 evaluation Portugal

Relevance *Please describe the relevance to beneficiaries, institution needs,*	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

priorities, learning objectives, etc.	The practice supports essential 21st century skills: ● Digital Literacy ● Critical thinking ● Problem solving ● Communication ● Collaboration ● Creativity ● Autonomy ○ Other: The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ● Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ○ Other ○ The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ● The practice supports collaborative learning ● The practice supports reflective learning ● The practice cultivates self-regulated learners *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● Researching ● Problem definition ● Brainstorming ● Collaborative work ● Solution development ● Prototyping

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● Testing ○ Other_____ ● The practice teaches students how to investigate, discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems. *Comment*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ● The practice supports digital education activities ● The practice is a ready-to-use educational resource ● The practice is a free educational resource ● The practice improves the use of teacher time ● The practice eliminates the costs of physical instructional materials *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● The practice involves hands-on experiences focused on real-world challenges ● It ensures easy access to learning resources ● It ensures a dynamic interaction between teachers and students ● It allows students to learn anytime ● It allows students to learn from anywhere ● It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● The practice will be available on the platform after the completion of the DT4S Project

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	○ The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ○ The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ○ The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● A detail description of the practice design, its learning objectives and structure is documented in a DT4S deliverable ○ A detail description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ● Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● The digital activity is available in the public section of the DT4S Platform ● The contact data of the partner that designed and piloted the activity is available ● The info-sheets for implementing the DT4S activities are available *Comments*

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

3.5. Good practices from Romania

Practice 1 - Is this reusable?

Table 41. Good practice 1 summary Romania

Partner name:	Advanced Technology Systems SRL
Contact data:	ioana.stefan@ats.com.ro anca.gheorghe@ats.com.ro antoniu.stefan@ats.com.ro monica.crintescu@ats.com.ro
Title of good practice:	Is this reusable?
Summary of good practice:	Packaging; Cardboard; Paper; Plastic; Metal; Wood; Glass; Rethink; Reuse; Reduce; Refuse Recycle; Green community.
What makes it a good practice?	Students can learn about how to reduce, reuse, reinvent and recycle in daily-life activities, in order to protect natural resources and adopt a responsible behaviour related to environmental protection.

Table 42. Good practice 1 description Romania

Title of good practice: *Please be concise and reflect on the practice being documented.*	Is this reusable?
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Through this activity the students have the opportunity to learn about the 5 Rs - Refuse, Reduce, Reuse, Rethink, Recycle and the importance of circular economy, which minimises resource consumption, waste, emissions and energy losses. Students will assimilate new knowledge related to environmental protection, judicious use of materials, reuse of different types of packaging, will better understand the need to reuse them, to protect natural resources. The activity was implemented in Romanian schools. The main objectives were: - The students to understand concepts such as: circular economy, environmental

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	protection, judicious use of resources, sustainable development. - The students to know how to structure their activities and better manage their working time. - The students to understand design thinking and to be able to use it later in other training situations. - The students to learn to work together. - To think critically. - To look in an organised way for solutions to problems in other areas of their lives. - Be inventive and trust their thinking and team members. - Provide feedback and support. The practice was selected because it raises awareness on waste management problems while promoting responsible behaviour towards "zero waste."
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The activity was structured to mirror the main steps of the design thinking methodology focusing on allowing students to cooperate in teams and discuss in groups in order to achieve a common goal. A set of specific tasks were defined for each step, as follows: 1. Empathise - The students watched videos about the planet's resources, existing types of packaging and their characteristics; how to choose a package; ways to reuse and recycle them; notions such as: circular economy, sustainable development. - Each student added on the platform different materials, regarding different types of packaging. It could be links, images, presentations and videos. - Each student was supported to understand better the importance of reuse or recycling. 2. Define - The students had to document themselves on different environmental problems that can be solved by reusing or as a last resort recycling. - The student will have to explain why not all packaging is wasteful or undesirable and

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	create a list of the reasons why manufacturers use packaging for their products, 3. Ideate - The students were encouraged to find as many solutions as possible for the type of cardboard packaging. - The students thought about different types of packaging and create ideas on how different objects can be reused, reduced, rethought or rejected to prevent them from ending up in recycling. - The students developed 3-5 ideas about reusing the type of packaging identified, in order to give a new life to the packaging. 4. Prototype - The students selected the best idea collected in level 3, the most interesting for the group, the most likely for implementation, the most unusual or the solution with the most options for collaborating with others. - The students designed a prototype or a three-dimensional representation of their repurposed type of packaging and sketch it in more detail 1. Test - The students made an online presentation and argue the choice made for the chosen solution, in terms of environmental protection. - The students participated in a general brainstorm session, to gather ideas for improvement or further development of the prototypes and to open-ended questions The activity was created and implemented by teachers.
Results of the practice: • *Which were the outcomes?*	The practice was applied in a piloting activity, organised with a number of 15 students, from grade 9, vocational education, having as subject of study the reusability of cardboard packaging. The activity was structured according to the curriculum, using an existing activity from the public activities section of the platform, but previously adapted, therefore, the tasks were minimised so that they can be completed during

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	one class hour. The activity was structured on the five levels of the Design Thinking methodology, each level comprising 2 or 3 tasks to be solved. Before starting the activity, information materials working were provided to the students. Both the student accounts and the teacher account were created by the Romanian partner. The activity started by presenting the students what they have to do in each level, how they should respond to the tasks in the activity and what is the role of the voting activity and how it will be put into practice. The voting was collected using the chat and the student who received the most votes had to support his/ her idea and present how it could be put into practice. The idea that collected the highest number of votes was crafting pots from recyclable materials (milk boxes / cardboard juice) that allow the planting and therefore selling of seedlings of different plants (in this case, tomatoes). A number of 52 notes were created during the activity. The prototyping and testing phases were not included into the online activity, because time did not allow it.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	The main lesson learnt were: - Organise a training session with students regarding the use of the platform before participating in the activity, for a better understanding of the workflow of the platform. - Made sure to provide clear instructions regarding the tasks that students need to complete in each phase of the Design Thinking methodology. - Provide more examples of cardboard recycling. - More time needs to be allocated for the participation in the activity, at least 2 hours. - The voting system was confusing for some of the participants, so the integration of an external tool, such a poll could be more useful for the voting activity.

Table 43. Good practice 1 evaluation Romania

Relevance	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.	The practice supports essential 21st century skills: ● Digital Literacy ● Critical thinking ● Problem solving ● Communication ● Collaboration ● Creativity ● Autonomy ● Other: Gamification The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ● Responsible consumption and production ● Climate action ● Life on land ○ Other ● The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ● The practice supports collaborative learning ● The practice supports reflective learning ● The practice cultivates self-regulated learners *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● Researching ● Problem definition

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	● Brainstorming ○ Collaborative work ● Solution development ○ Prototyping ○ Testing ○ Other_____ ● The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ● The practice supports digital education activities ● The practice is a ready-to-use educational resource ● The practice is a free educational resource ● The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● The practice involves hands-on experiences focused on real-world challenges ● It ensures easy access to learning resources ● It ensures a dynamic interaction between teachers and students ● It allows students to learn anytime ● It allows students to learn from anywhere ● It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● The practice will be available on the platform after the completion of the DT4S Project

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	• The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* • The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit • The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* • A detailed description of the practice design, its learning objectives and structure is documented in a DT4S deliverable ○ A detailed description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform • Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links:

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● The digital activity is available in the public section of the DT4S Platform ● The contact data of the partner that designed and piloted the activity is available ● The info-sheets for implementing the DT4S activities are available *Comments*

Practice 2 - Sustainable development in project management

Table 44. Good practice 2 summary Romania

Partner name:	Advanced Technology Systems SRL
Contact data:	ioana.stefan@ats.com.ro anca.gheorghe@ats.com.ro antoniu.stefan@ats.com.ro monica.crintescu@ats.com.ro
Title of good practice:	Sustainable development in project management
Summary of good practice:	Sustainability; project; management, SDGs
What makes it a good practice?	Students can learn about the importance of identifying critical opportunities in the development process of a project, to ensure that key decisions reflect a concern for the concept of sustainability during the implementation of the project and beyond.

Table 45. Good practice 2 summary Romania

Title of good practice: *Please be concise and reflect on the practice being documented.*	Sustainable development in project management
Introduction:	Through this activity the students have the opportunity to learn about sustainability and sustainable development goals and to discover

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please provide the context of and justification for the practice, by addressing items as such: • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	ways to include these concepts in the implementation and management of a project. The activity was implemented in Romanian schools. The main objectives were: - The students will understand concepts such as: project, project management, sustainable development goals, sustainability strategies, environment protection. - The students will know how to structure their activities and better manage their working time. - The students will understand design thinking and will be able to use it later in other training situations. - The students will learn to work together. - To think critically. - To look in an organised way for solutions to problems in other areas of their lives. - Be inventive and trust their thinking and team members. - Provide feedback and support. The practice was selected because it helps students to understand how to establish a relationship between Project management and sustainability practice, focusing on areas such as the environment, society and the economy.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The activity was structured to mirror the first three steps of the design thinking methodology, focusing on allowing students to cooperate in teams and discuss in groups in order to achieve a common goal. The steps Prototype and Test were not implemented due to the time restriction. A set of specific tasks were defined for each step, as follows: 2. Empathize - The students can perform research on the concept of sustainable development and its application in the field of project management. A list of possible materials will be provided. - Each student can add their ID in the notes created.

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	2. Define - The students can have to propose a sustainable practice in line with the Strategic Objectives for Sustainable Development, that can be applied in a project (e.g.: making promotional materials from recyclable materials). 3. Ideate - The students can vote in the chat for the idea that they think is the most innovative, possible to implement and with a high impact on environmental protection. The activity was created and implemented by teachers.
Results of the practice: • *Which were the outcomes?*	The practice was applied in a piloting activity, organised with a number of 30 students, from grade 9 and grade 10, full-time education, having as subject of study the meaning of sustainable development and the application of this concept in project management. The activity was created from scratch, because on the platform there was no activity that addresses this topic. The activity was created according to the subjects taught and according to the profile of the participating classes. The activity was structured on the five levels of the Design Thinking methodology, each level comprising 1 task to be solved. Before starting the activity, information materials and presentation of the way of working were provided to the students. Both the student accounts and the teacher account were created by the administrator of the platform, from the Romanian partner. The activity was carried out in the technological laboratory of the high school and was divided into two groups, of 11 participants, respectively 19 participants with time limited to 1 hour for each group. The activity was carried out by presenting the students what they have to do in each level, how they should respond to the tasks in the activity and what is the role of the voting activity and how it will be put into practice. The voting activity was realised using the chat and the students who received the most votes had to support their ideas and present how the ideas can be implemented. Three ideas were voted as best in the first group and

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	one idea in the second group. The best ideas were rewarded. A number of 113 notes were created during the activity, 42 from group 1 and 71 from group 2. The prototyping and testing phases were not put into practice, because time did not allow it.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	- Provide clear instructions regarding the tasks that students need to complete in each phase of the Design Thinking methodology. - Provide more examples of cardboard recycling. - More time needs to be allocated for the participation in the activity, at least 2 hours. - Smaller groups of students. No more than 10 because the platform can run slower.

Table 46. Good practice 2 evaluation Romania

Relevance *Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.*	*Choose all that apply* The practice supports essential 21st century skills: ● Digital Literacy ● Critical thinking ● Problem solving ● Communication ● Collaboration ● Creativity ● Autonomy ● Other: Gamification The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ● Sustainable cities and communities ○ Responsible consumption and production ● Climate action ○ Life on land ○ Other ● The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.	● The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ● The practice supports collaborative learning ● The practice supports reflective learning ● The practice cultivates self-regulated learners *Comments*
Effectiveness *Please explain how the practice supports the achievement of specific objectives, and results.*	*Choose all that apply* The practice supports the development of specific abilities such as: ● Researching ● Problem definition ● Brainstorming ○ Collaborative work ● Solution development ○ Prototyping ○ Testing ○ Other_____ ● The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ● The practice supports digital education activities ● The practice is a ready-to-use educational resource ● The practice is a free educational resource ● The practice improves the use of teacher time ○ The practice eliminates the costs of physical instructional materials *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● The practice involves hands-on experiences focused on real-world challenges ● It ensures easy access to learning resources ● It ensures a dynamic interaction between teachers and students ● It allows students to learn anytime ● It allows students to learn from anywhere ● It allows students to build independent study habits *Comments*
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● The practice will be available on the platform after the completion of the DT4S Project ● The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ● The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ● The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● A detailed description of the practice design, its learning objectives and structure is documented in a DT4S deliverable ○ A detailed description of the practice design is documented in an article/ scientific publication

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Comments Links:
Observability *Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.*	*Choose all that apply* ○ One case of the practice piloting is available digitally on the DT4S Platform ● Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● The digital activity is available in the public section of the DT4S Platform ● The contact data of the partner that designed and piloted the activity is available ● The info-sheets for implementing the DT4S activities are available *Comment*

Practice 3 – Design Thinking for business processes

Table 47. Good practice 3 summary Romania

Partner name:	Advanced Technology Systems SRL
Contact data:	ioana.stefan@ats.com.ro anca.gheorghe@ats.com.ro antoniu.stefan@ats.com.ro monica.crintescu@ats.com.ro

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Title of good practice:	Design Thinking for business processes
Summary of good practice:	Design; Design Thinking; User; UI; Business;
What makes it a good practice?	Students can acquire an in-depth understanding of the needs of end users, in order to create user-cantered software products or solutions. The iterative process of the practice offer support to comprehend the target group in a specific case, evaluate the solution and develop a set of practical methods useful in tackling an unknown problem.

Table 48. Good practice 3 description Romania

Title of good practice: *Please be concise and reflect on the practice being documented.*	Design Thinking for business processes
Introduction: *Please provide the context of and justification for the practice, by addressing items as such:* • *Which was the topic?* • *When and where were the activities carried out?* • *Which were the learning objectives?* • *How was the practice selected?*	Through this activity the participants have the opportunity to learn about the first stage in the development of a product/solution, which is the design stage. The main objectives were: - The participants to understand concepts such as: design, centred innovation, integrative thinking, design management, design as strategy and collaborative decision- making. - The participants to know how to structure their activities and better manage their working time. - The participants to understand design thinking and to be able to use it later in other training situations. - The participants to learn to work together. - To think critically. - To look in an organised way for solutions to problems in other areas of their lives. - Be inventive and trust their thinking and team members. - Provide feedback and support. The practice was selected because it offers a non-linear and iterative approach, were groups or teams, with different backgrounds, can apply it to define and understand the steps in designing and

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	developing an innovative solution, followed by the exploration of the user needs, generating ideas through brainstorming sessions, building prototypes of that solution and testing the solution.
Implementation of the practice: • *How was the practice designed?* • *What were the main activities carried out?* • *Who were the key implementers and collaborators? What are their roles? In which activities are they specifically involved?* • *What were the resource implications?*	The activity was structured to mirror the five steps of the design thinking methodology, focusing on allowing students to cooperate in teams and discuss in groups in order to achieve a common goal. A set of specific tasks were defined for each step, as follows: 1. Empathise - Analyse the target group and define the user requirements. - Gather insights about the particularities of the solution to be developed. - Collect design ideas. - Brainstorming on how the solution/ product can be made attractive for end-users. 2. Define - Define key features of the solution/product. - Cluster the key ideas. - Collect design proposals from all the groups/teams. 3. Ideate - Vote the best design proposal. - Create insights on post-it/ notes regarding the selected proposal - Brainstorming for the documentation of the key functionalities of the selected proposal 4. Prototype - Development of a self-explanatory representation of templates of the selected scenario of the design proposal. - Mock-ups for each screen of the solution. 5. Test - Development of the first solution, ready for testing. - Beta version of the solution - Documentation on the testing

Project Number: 2019-1-TR01-KA201-076710
Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Results of the practice: • *Which were the outcomes?*	The practice was applied in a piloting activity, organised with a number of 18 participants, to see how the Design Thinking methodology can be applied in business processes in order to design and develop innovative and sustainable solution/products and to understand the impact of written contributions and detailed explanations on the decision-making processes. Overall, the experiment has proven that the Design Thinking methodology can be successfully applied in collaborative decision-making, but with certain limitations. A manual and a clip on how to use the platform have been provided, and the only information available on the activity was the one that could be accessed directly on the platform. 10 out of the 18 participants had used the platform before in similar experiments. Even though the participants provided feedback for each of the phases, contributions and interactions remained limited. The chat function available on the platform was rarely used. Therefore, a second phase of the experiment was carried out, being supported by several voice calls sessions among the team members. Not all the team members participated in all of these sessions but the number of contributions has significantly increased during the voice call sessions.
Lessons learnt: • *What recommendations can be made for those intending to adopt the documented "good practice"?*	- A better explanation of the voting process by establishing additional rules for contributions. - Corroborate the contributions to an activity with voice & video calls to streamline the collaboration between team members. - The activity should be broken down to smaller components. For this particular case, participants have recommended splitting the main activity into two activities: one for the teacher interface, and another one for the student interface. - Provide specific information on how to use the DT4S platform.

Table 49. Good practice 3 evaluation Romania

Relevance	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please describe the relevance to beneficiaries, institution needs, priorities, learning objectives, etc.	The practice supports essential 21st century skills: ● Digital Literacy ● Critical thinking ● Problem solving ● Communication ● Collaboration ● Creativity ● Autonomy ● Other: Gamification The practice enables organisations support the achievement of Sustainable Development goals ○ Clean water and sanitation ○ Affordable and clean energy ○ Sustainable cities and communities ○ Responsible consumption and production ○ Climate action ○ Life on land ○ Other ● The practices enable teacher improve their instruction methods *Comments*
Coherence & Adequacy *Please explain the compatibility with existing learning practices and the requisites established by educational organisations, being easy to adopt.*	*Choose all that apply* ● The practice implements the Design Thinking methodology that is part of the broader project-based learning educational model ● The practice supports collaborative learning ● The practice supports reflective learning ● The practice cultivates self-regulated learners *Comments*
Effectiveness	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice supports the achievement of specific objectives, and results.	The practice supports the development of specific abilities such as: ● Researching ● Problem definition ● Brainstorming ○ Collaborative work ● Solution development ○ Prototyping ○ Testing ○ Other_____ ● The practice teaches students how to investigate discover, ideate, experiment, and evolve in search of innovative solutions to challenging problems *Comments*
Efficiency *Please explain how the practice produces results with a reasonable level of resources and time.*	*Choose all that apply* ● The practice supports digital education activities ● The practice is a ready-to-use educational resource ● The practice is a free educational resource ● The practice improves the use of teacher time ● The practice eliminates the costs of physical instructional materials *Comments*
Impact *Please explain how the practice generates positive effects.*	*Choose all that apply* ● The practice involves hands-on experiences focused on real-world challenges ● It ensures easy access to learning resources ● It ensures a dynamic interaction between teachers and students ● It allows students to learn anytime ● It allows students to learn from anywhere ● It allows students to build independent study habits

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

	Comments
Sustainability *Please explain how the practice can be implementable over a long period with the use of existing resources.*	*Choose all that apply* ● The practice will be available on the platform after the completion of the DT4S Project ● The contact data of the practice designers will be available on the website after the completion of the DT4S Project *Comments*
Adequacy *Please explain how the practice can be easily aligned to respond to the requisites established by educational organisations and how it considers the resources at the educator's disposition.*	*Choose all that apply* ● The practice is aligned with the requisites for digital classrooms: it is technology-based, it includes feedback loops and the workflow shifts between teacher and students, it provides an assessment unit ● The practice can be accessed directly on the DT4S Platform and it only requires access to a computer and an Internet connection *Comments*
Possibility of duplication *Please explain how the practice can be replicable elsewhere.*	*Choose all that apply* ● A detailed description of the practice design, its learning objectives and structure is documented in a DT4S deliverable ○ A detailed description of the practice design is documented in an article/ scientific publication *Comments* Links:
Observability	*Choose all that apply*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

Please explain how the practice potential users can see the results in practice, e.g. pilot/experimental or demonstration evidence provided by DT4S partners.	○ One case of the practice piloting is available digitally on the DT4S Platform ● Description of one case of the practice piloting is available in a DT4S deliverable ○ Description of one case of the practice piloting is available as a document on the DT4S Platform ○ Description of one case of the practice piloting is provided in an article/ scientific paper *Comments* Links:
Testability *Please explain how the practice can be tried out before adoption.*	*Choose all that apply* ● The digital activity is available in the public section of the DT4S Platform ● The contact data of the partner that designed and piloted the activity is available ● The info-sheets for implementing the DT4S activities are available *Comments*

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.

4. CONCLUSIONS

The good practice guidelines aimed to support practitioners who are planning to implement the DT4S learning interventions. Table 50 presents a summary of the good practices.

Table 50. List of good practices by partner

Good practice	Partner	Country
Accessible Education in Pandemic	Governorship of İstanbul / GoI	Turkey
Hug the life	Governorship of İstanbul / GoI	Turkey
Great Danger Drought	Governorship of İstanbul / GoI	Turkey
Quick brainstorming activity	Tallinn University	Estonia
A week long project	Tallinn University	Estonia
A semester long project	Tallinn University	Estonia
Sign Pocket	University of Thessaly	Greece
Reducing Food Waste	University of Thessaly	Greece
Waste management, polluted environment, discarded waste	University of Thessaly	Greece
Culture Heritage and Youth	Virtual Campus	Portugal
Don't trash our future: Recycle	Virtual Campus	Portugal
Sustainable mobility	Virtual Campus	Portugal
Is this reusable?	Advanced Technology Systems SRL	Romania
Sustainable development in project management	Advanced Technology Systems SRL	Romania
Design Thinking for business processes	Advanced Technology Systems SRL	Romania

5. REFERENCES

1. DT4S IO4 - Learning sheets. Accessible education in Pandemic
2. DT4S IO4 - Is this reusable?
3. Gheorghe A.F, Ștefan I.A., Ștefan A., Tsalapatas H., Heidmann O. Design Thinking for Business Innovation. The 17th International Scientific Conference eLearning and Software for Education, Bucharest, April 22-23, 2021.
4. Ștefan I.A., Ștefan A., Tsalapatas H., Heidmann O, Gheorghe A.F. Collaborative decision-making in software research projects: the innovation challenge. Information Technology and Quantitative Management (ITQM 2020&2021).

Funded by the Erasmus+ Program of the European Union. However, European Commission and Turkish National Agency cannot be held responsible for any use which may be made of the information contained therein.