Competence development of STE(A)M educators through online tools and communities

STE(A)MOnEdu - 612911-EPP-1-2019-1-EL-EPPKA3-PI-FORWARD

STEAM On Colu

D9.2: STE(A)M learning activity templates

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- Abstract: This document presents the set of learning activity templates developed by the STE(A)MOnEdu consortium and with the scope to guide educators and to serve as blueprints for the creation of new STE(A)M lessons / projects that can be implemented in the classroom (and outside of it).
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Abstract

STE(A)MOnEdu project delivers a wide range of STE(A)M related outputs such as a MOOC for educators, an education framework, a competence framework, a collection of good practices and policies, and a set of **learning activity templates**.

This document presents the set of learning activity templates developed by the STE(A)MOnEdu consortium with the scope to guide educators and to serve as blueprints for the creation of new STE(A)M lessons / projects that can be implemented in the classroom and outside of it. In addition to this abstract that also serves as an introduction, there are another 3 chapters described shortly below:

• Positioning the learning templates

The learning activity templates are part of a larger resource developed by the project – STE(A)M education framework. The framework includes competences, policies, methodologies, a body of knowledge, educational objects and learning activity templates. The latter contribute to support the professional development of educators and promote the adoption of STE(A)M approaches in the classroom.

The consortium uses **LAMS** to create and manage the learning activity templates. *LAMS is a web application for designing, managing and delivering online learning using collaborative learning activities*¹ (LAMS International). The project consortium identified LAMS as being a perfect match for supporting the development of STE(A)M learning activity templates and for using these in order to empower educators.

• Methodology to create learning activity templates

The process of developing learning activity templates has been using a methodology proposed by EOS and RDWEG as technical and pedagogical partner. The methodology includes five steps, from research on STE(A)M education good practices and LAMS templates, to analysis of best lesson methods for STE(A)M lessons and the creation of templates based on the findings of research and analysis.

• Learning templates created by the STE(A)MOnEdu partners and by the community of practice

STE(A)MOnEdu partners have developed 7 STE(A)M specific learning activity templates that are hosted on a LAMS platform belonging to RDEWG project partner: <u>https://pekesde.lams.sg/</u> These are built on eLearning strategies such as INQYIRED-based learning, PROBLEM-based learning and PROJECT-based learning. STE(A)MOnEdu partners have proactively participated in this task, by creating each, at least one learning activity template. The templates supported further the community of STE(A)MOnEdu educators to adapt new educational strategies and methods in order to create new effective STE(A)M lessons for their classes. This chapter is aimed at providing guidelines on how, when, why and where these templates can be used. The annex lists the learning templates created by the community of practice.

¹ LAMS International website <u>https://www.lamsinternational.com/</u>



1 The role of learning activity templates in effective teaching

The teacher's fundamental task is to get students to engage in learning activities that are likely to result in achieving [the intended learning] outcomes. It is helpful to remember that what the student does is actually more important that what the teacher does².

D9 – "STE(A)M learning activity templates" is part of the STE(A)MOnEdu project, which aims at supporting teachers and educators as pillars of the implementation of STE(A)M education policies and support their professional development either by blended training or by their participation in a community of stakeholders. This report summarises the work performed during the project.

Every learning activity should be intentional, meaningful and useful. Each learning activity should be aligned to learning outcomes of each lesson that you teach. The intent of the activity is then clear to both the teacher and the students. It is equally important that each activity is meaningful and ensures student development and advancement through the unit. Activities should build on previous activities and avoid being repetitive, they should enable students to engage with and develop their skills, knowledge, and understandings in different ways. Meaningful activities engage students in active, constructive, intentional, authentic, and cooperative ways.

Useful learning activities are ones where the student is able to take what they have learnt from engaging with the activity and use it in another context, or for another purpose. For example, students are able to directly apply the skills or knowledge they acquired to an assessment task, or to the next activity.

These general principles guided the STE(A)MOnEdu project partners in creating the STE(A)M specific learning activity templates, as part of a larger resource – the STE(A)M education framework. Besides learning activity templates, the framework includes competences, policies, methodologies, a body of knowledge, and educational objects.

1.1 What is LAMS?

LAMS is a new generation of e-learning system for authoring and running sequences of learning activities. It is a revolutionary new tool for designing, managing and delivering online collaborative learning activities. It provides educators with a highly intuitive visual authoring environment for creating sequences of learning activities. These activities can include a range of individual tasks, small group work and whole class activities based on both content and collaboration. LAMS can be used as a standalone system or in combination with other learning management systems (LMS) such as Moodle, Sakai, LRN, WebCT and BlackBoard.

² Schuell, T. J. (1986). Cognitive conceptions of learning. Review of Educational Research, 56, 411-436



1.2 Why using LAMS?

Key benefits of using LAMS

- 1. LAMS provides a highly intuitive visual authoring environment for creating sequences of learning activities.
- 2. LAMS incorporates single learner content (such as Learning Objects) as well as collaborative tasks such as discussion, voting and debate.
- 3. LAMS allows educators to capture, share and adapt digital lesson plans based on "best practice processes".
- 4. Evaluation reports on the use of LAMS report that educators find LAMS easy to use and that LAMS also helps them reflect more deeply on their teaching practice.
- 5. Students find LAMS and ICT very motivating and fosters greater student engagement
- 6. LAMS is open-source software licensed under the General Public License v2. So, no license fees, ever.
- 7. LAMS supports educational specifications such as <u>IMS Content Packaging</u>, <u>IMS</u> <u>Metadata</u>, <u>IMS Learning Design</u>.
- 8. LAMS has a <u>large community</u> of teachers, educators and technical developers that share LAMS best-practices and designs

1.3 How is LAMS used in this project?

The consortium uses LAMS to create and manage the learning activity templates. LAMS is a web application for designing, managing and delivering online learning using collaborative learning activities. The project consortium identified LAMS as being a perfect match for supporting the development of STE(A)M learning activity templates and for using these in order to empower educators.

This will be done within the blended course – in which the learning activity templates developed by the consortium will be used by educators with assistance of tutors in order to create new STE(A)M lesson plans to be implemented within their classes.



2 Methodology to create learning activity templates

The process of developing learning activity templates has been using a methodology proposed by EOS and RDEWG.

The methodology included research on STE(A)M education good practices and LAMS templates, analysis of best lesson methods for STE(A)M lessons, and the creation of templates based on the findings of research and analysis.







2.1 Methodological step 1 – research & analysis

First of all, EOS analysed the good practices on STE(A)M education that are available on the STE(A)MOnEdu platform (<u>https://STE(A)MOnEdu.eu/platform/practices</u>) to identify STE(A)M areas and topics that are successfully addressed by the community of educators. Moreover, research also covered the LAMS international community (<u>https://lamscommunity.org/</u>) and the SCIENTIX platform (<u>http://www.scientix.eu/</u>).

Educational Practices									
STEAM discipline	STEAM2021 Conference	Audience	Audience com	petence E	ducational/Training framework	Language	Items per p	page	
Science ^	- Any - 🗸 🗸	- Any - 🗸 🗸	- Any -	~	- Any -	✓ Any-	♥ 5	~	
Engineering Arts Mathematics —								Apply	
Title				Language	STEAM discipline	Published on	Author	Comments	Rate this Practice
Educational Robotics Geography with WeDo	and STEM Education Implement	ntation and Lesson Plan in the Subje	ct of 5th Grade	EL	Science, Engineering, Mathematics	Tue, 20/04/2021 - 19:42	Dim.Alexandris	7	very good 5 votes with an average rating of 5.
Με το Sammy οδηγό	την ιστορία της πόλης μου εξε	ερευνώ		EL	Science, Technology, Engineering, Arts, Mathematics	Fri, 16/04/2021 - 12:05	Marlen	2	very good 1 votes with an average rating of 5.
Οι ερευνητές των δέ	ντρων (Tree Detectives)			EL	Science, Technology, Engineering, Arts, Mathematics	Wed, 14/04/2021 - 23:19	Margarita_Samoutian	0	good 2 votes with an average rating of 4.
"SCIENTIX" Το Ευρωπ STEM	ταϊκό Δίκτυο Επαγγελματικής <i>ι</i>	Ανάπτυξης Εκπαιδευτικών για την Β	Εκπαίδευση	EL	Science, Technology, Engineering, Arts, Mathematics	Wed, 14/04/2021 - 14:46	NIK MAKRIS	1	No votes have been submitted yet.
Το Φως Διαδίδεται σ	την Οπτική Ίνα 3D Real Model			EL	Science	Tue, 13/04/2021 - 15:19	vasdrougas	1	very good 2 votes with an average rating of 5.
1 2 3 4	5 6 7 8 9 -	2 3							
Displaying 1 - 5 of 12	26 (26 pages total)								

Figure 2. Screenshot from STE(A)MOnEdu platform – collection of educational practices

2.2 Methodological step 2 – learning how to use LAMS

The project working group went through a process of accommodation with the LAMS platform that has been used to develop and host the learning activity templates (<u>https://pekesde.lams.sg/</u>). Also, training sessions have been organised by EOS in which the expert partner (i.e., RDEWG) provided partners with both examples and instructions on how to create the templates from scratch.





Figure 3. Training session – using LAMS in STE(A)MOnEdu project

2.3 Methodological step 3 – selecting the teaching methods

The consortium, with support of the expert partner RDEWG – analysed and selected the most relevant STE(A)M related teaching methods from a comprehensive list of general teaching methods within LAMS. Based on criteria such as relevance, usage and/or impact, the following main methods have been selected, based on which the first templates have been developed:

- 1. INQYIRED-based learning
- 2. PROBLEM-based learning
- 3. PROJECT-based learning

Here is the list of general teaching methods and strategies that have been analysed:

- <u>Planning Collaboration using the "Brainstorming" method within LAMS</u> <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=820522</u>
- <u>Planning collaboration using the "Think Pair Share" method within LAMS</u> <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=820767</u>
- <u>Planning collaboration using the "Focused Listing" method within LAMS</u> <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=820775</u>
- <u>Planning collaboration using the "STAD" method within LAMS</u> https://lamscommunity.org/lamscentral/sequence?seq%5fid=820529
- <u>Planning collaboration using the "Jigsaw" method within LAMS</u> <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=820536</u>
- <u>Planning collaboration using the "Jigsaw II" method within LAMS</u> https://lamscommunity.org/lamscentral/sequence?seq%5fid=820784



- <u>Planning collaboration using the "Team Expectations" method within LAMS</u> https://lamscommunity.org/lamscentral/sequence?seq%5fid=820805
- <u>Planning collaboration using the "One minute papers" method within LAMS</u> https://lamscommunity.org/lamscentral/sequence?seq%5fid=820990
- <u>Planning collaboration using the "Double Entry Journal" method within LAMS</u> <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=820578</u>
- <u>Planning collaboration using the "Paired Annotations" method within LAMS</u> <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=820571</u>
- <u>Planning collaboration using the "Three Step Interview" method within LAMS</u> https://lamscommunity.org/lamscentral/sequence?seq%5fid=820564
- <u>Planning collaboration using the "Group Investigation" method within</u> LAMS <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=820543</u>
- Open Questions
 <u>Template https://www.lamscommunity.org/lamscentral/sequence?seq_id=924466</u>
- PBL Template
 https://www.lamscommunity.org/lamscentral/sequence?seq%5Fid=1125655
- <u>Role Play Template Two roles</u>
 <u>https://www.lamscommunity.org/lamscentral/sequence?seq%5Fid=924470</u>
- Developing Scenario Learning templates 2x2 Branching
 https://www.lamscommunity.org/lamscentral/dl?seq id=1874100
- <u>Predict-Observe-Explain (POE) Template</u> <u>https://www.lamscommunity.org/lamscentral/dl?seq_id=1125648</u>
- Flipped Classroom Lesson Plan Template & Example Geography | Countries members of European Union https://lamscommunity.org/lamscentral/sequence?seq%5Fid=2352905
 vs
 Traditional Lesson Plan Template & Example - The countries of European Union

<u>https://www.lamscommunity.org/lamscentral/sequence?seq%5Fid=2352902</u>

2.4 Methodological step 4 – creating learning templates

STE(A)MOnEdu partners have developed 7 STE(A)M specific learning activity templates that are hosted on the LAMS platform belonging to RDEWG: <u>https://pekesde.lams.sg/</u>STE(A)MOnEdu partners have proactively participated in this task, by creating each, at least one learning activity template.

The learning activity templates include communicative and collaborative tools as well as tools designed for delivering and sharing resources, and also tools for assessing and evaluating student contributions.



D9.2: STE(A)M learning activity templates



Figure 4. Example of LAMS visual overview of a lesson

2.5 Methodological step 5 – defining a STE(A)M education scenario

Building upon the previous steps, a STE(A)M education scenario has been created by RDEWG. The scope of this document is to support the STE(A)MOnEdu community of educators to design their learning activities and then to implement them in the LAMS platform. The structure proposed by RDEWG and agreed by the project consortium is presented in the following pages:

STEAM Educational Scenario (template)

<u>Title</u>

Topic:

Disciplines:

[Interdisciplinary connects numerous subjects from Science, Technology, Engineering, (Arts) and Mathematics]

Big Idea:

Prior knowledge / Prerequisites:

<u>Context</u>

Class / Target age of students



Duration / Designed teaching-studying time (hours):

Size of class:

Educational model / Teaching Strategy *:

- INQYIRED-based learning
- PROBLEM-BASED LEARNING
- PROJECT-BASED LEARNING

Mode of delivery *:

- A. AOF Asynchronous Offline Activities
- B. AON Asynchronous Online Activities
- C. **F2F** Synchronous Face to Face Activities
- D. SON Synchronous Online Activities

<u>Aim</u>

To support students in developing converging and divergent skills (critical thinking)

Outcomes

[-Underlines common principles and approaches? Is not simply the sum of many components, but holistic for its various interrelations? Supports a complex growth of the learner: intellectual, emotional, and social development? Emphasizes the ethical component of STEAM? Contributes to the learners' personal development?]

Short Description/ Summary:

Connection with the real life. The practice is linked to the students' experiences and / or real life

Promote self-regulated learning in STE(A)M related activities

** Category of Activities:

Focus - Acquisition (Read, Watch, Listen) Investigation -Discovery– Detail (*surrounding the lesson idea*) Collaboration- Discussion – Application Practice – Production Presentation - Assessment – Reflection (*produce an even better final solution*)

* To facilitate learners in order to incorporate learning activities, assignments and assessments which require learners to acquire. -cognitive skills

- Information Processing Data Interpretation and Data Analysis skills
- Problem Solving and Engineering Thinking skills
- Scientific Investigation skills
- Computational Thinking and ICT skills



- Design Thinking, Creativity and Innovation skills
- Manipulative and Technological Skills
- Collaboration and Communication Skills

Schedule	Activities **	Description	Resources
Phase 1.			
Phase 2.			
Phase 3.			
Phase 4.			
Phase 5.			



3 Learning templates created by the STE(A)MOnEdu partners

3.1 Learning activity template 1

- Produced by: Fundația EOS Educating for an Open Society
- Title: STE(A)M education template 1
- URL: <u>https://pekesde.lams.sg/lams/r/bndnw</u>
- Guidelines (when and how it can be used):

With this template, educators have the possibility to create learning activities that are addressed to secondary school students (5th-8th grades) on how to create digital stories using Scratch. Students will also get the opportunity to use some Javascript to draw patterns and basic 2D shapes.

- What STE(A)M learning activities can be developed by using this template?
 Basic coding, digital storytelling, graphic design.
- What audience can be targeted by the learning activities developed by using this template?
 Secondary school students (5th-8th grades)
- What is normally the average run time for learning activities developed by using this template?

60 mins - if needed, it can be completed out of class.

 What is the delivery mode for learning activities developed by using this template? In class activity, but it can be organised online as well, if needed.



• Learning activity template's sequence:



3.2 Learning activity template 2

- Produced by: Fundația EOS Educating for an Open Society •
- Title: STE(A)M education template 2 •
- URL: https://pekesde.lams.sg/lams/r/bnddi •
- Guidelines (when and how it can be used): •

Beat the flood is an exciting hands-on challenge for 8-14 years. It enables pupils to consider the global impact of flooding caused by climate change, then design and build a model of a home on the fictitious island of Watu. The challenge can be used to deliver parts of the science, design and technology and maths curriculum in regular lessons, as an enrichment day, in a STE(A)M /science club or part of a primary-secondary transition activity.

- What STE(A)M learning activities can be developed by using this template? 0 STE(A)M combined lessons including parts of the science, design and technology and maths curriculum.
- What audience can be targeted by the learning activities developed by using this 0 template?

Primary and secondary school students (8-14 years)

• What is normally the average run time for learning activities developed by using this template?

150 mins – can be organised as a workshop, outside of class hours.

What is the delivery mode for learning activities developed by using this template? 0 In class, face-to-face activity.



Learning activity template's sequence:

Peer Review and F

Work in groups

Share Resources

D9.2: STE(A)M learning activity templates



3.3 Learning activity template 3

- Produced by: Regional Directorate of Education of Western Greece RDEWG, Greece
- Title: Why is the sky blue?
- URL: https://pekesde.lams.sg/lams/r/bnduj
- Guidelines (when and how it can be used):

This template introduces educators to the STE(A)M approach and how to apply it based on Team-Based Learning (TBL) teaching method and the use or Perkin's "Aesthetic experience" technique on the systematic observation of works of art. This session achieves a high level of student engagement in classroom activities and with the course in general. It provides the structural steps of the strategy throughout an example. The activities and the tools may be changed by the trainer according to the class synthesis and background as well as to the studied subject.

- What STE(A)M learning activities can be developed by using this template? This template helps applying and activities, in which you will working with a group of students to explore an essential question to answer or problem to solve. It allows to create different kind of learning activities, depending on the focus of the trainer, such as observing physical phenomena, predicting their impact in real life activities and explaining their reasoning.
- What audience can be targeted by the learning activities developed by using this template?

Secondary school students (14-17 years old).

- What is normally the average run time for learning activities developed by using this template?
 4-8 hours
- What is the delivery mode for learning activities developed by using this template? In class activity.



• Learning activity template's sequence:



3.4 Learning activity template 4

- Produced by: Computer Technology Institute and Press (CTI), Greece
- Title: Environmental footprint STE(A)M Predict Observe Explain (POE)
- URL: https://pekesde.lams.sg/lams/r/bnduj
- Guidelines (when and how it can be used):

This is a template using the eTeaching strategy "Predict-Observe-Explain". It provides the structural steps of the strategy throughout an example. The activities and the tools may be changed by the trainer according to the class synthesis and background as well as to the studied subject.

- What STE(A)M learning activities can be developed by using this template? This template helps applying and exploiting the "Predict-Observe-Explain" eTeaching strategy. It allows to create different kind of learning activities, depending on the focus of the trainer, such as observing physical phenomena, predicting their impact in real life activities and explaining their reasoning.
- What audience can be targeted by the learning activities developed by using this template?

Secondary schools students (14-16 years old).

- What is normally the average run time for learning activities developed by using this template?
 4-6 hours
- What is the delivery mode for learning activities developed by using this template? In class activity.
- Learning activity template's sequence:





3.5 Learning activity template 5

- Produced by: Colectic, Spain
- Title: STE(A)M Project Based Learning
- URL: <u>https://pekesde.lams.sg/lams/r/bndnk</u>
- Guidelines (when and how it can be used):

This is a Project Based Learning Template, aimed to create sequences using the strategy "Project-Based Learning" in secondary school STEAM education. The main idea of this methodological template is to help educators generate classroom projects that allow students to develop, as a group, a real project that will benefit their community. Through this proposal, students are encouraged to investigate their own territory, to observe the deficits that may exist, to value their own potential to contribute elements of value to their community, their critical spirit, their social qualities and aptitudes (generosity, effort, teamwork). It is interdisciplinary. It connects numerous subjects from Science, Technology, Engineering, Arts and Mathematics.

- What STE(A)M learning activities can be developed by using this template? This template helps define the framework of Project Based Learning on STEAM, and allows to create different kind of learning activities, depending on the focus that the trainer or the students choose. Some examples: to design and create toys for kindergarten children, using 3D design and 3D printing techniques; to design and create an automatically irrigated garden; programming of a video game presenting the new popular science books.
- What audience can be targeted by the learning activities developed by using this template?
 Secondary schools students.
- What is normally the average run time for learning activities developed by using this template?
 40 hours
- What is the delivery mode for learning activities developed by using this template? In class activity.



• Learning activity template's sequence:





3.6 Learning activity template 6

- Produced by: Stati Generali dell'Innovazione SGI
- Title: Metodologia STE(A)M
- URL: <u>https://pekesde.lams.sg/lams/r/bndny</u>
- Guidelines (when and how it can be used):

This template structures the training activity in the form of a board game. By using 4 different packs of cards questions are created which include steam activities, professions, objects and the SDGs of the 2030 agenda. The required activity is to work in groups trying to give plausible solutions. This innovative approach to the use of cards that develop both teamwork and problem-solving skills and emotional and social discourse but also the creative thinking and proposal of solutions with respect to carrier steam / stems that are accessible to all.

• What STE(A)M learning activities can be developed by using this template?

This model helps to apply and exploit the students' problem-solving strategy and allows the creation of different types of learning activities, depending on the teacher's focus. The main purpose is to use it to introduce students to the steam careers and goals of the 2030 agenda, but by changing the packs of cards to other themes this template can be used for any subject area.

• What audience can be targeted by the learning activities developed by using this template?

Secondary school students (14-18 years old).

• What is normally the average run time for learning activities developed by using this template?

The time for carrying out the activity can range from 1.30 hours up to 6 hours if, in addition to giving solutions to the questions created by the random ordering of the cards, students intend to create prototypes, applications or other solutions.

• What is the delivery mode for learning activities developed by using this template?

In class activity, but also online





• Learning activity template's sequence





3.7 Learning activity template 7

- Produced by: Helliwood, 21st Century Competence Centre
- Title: Start Coding with the Turtle*
- URL: <u>https://pekesde.lams.sg/lams/r/bnbwd</u>
- Guidelines (when and how it can be used):

This learning activity is the perfect starting point to dive into a first coding activity with the TurtleCoder. The TurtleCoder is an inclusive programming environment specifically designed to introduce all children from up from 8 years to programming. The programming language Logo serves as a basis. The development environment "TurtleCoder" offers the possibility to program own small scripts in Logo on the computer or the Tablet-PC. The purpose of TurtleCoder is to define the way the turtle must walk. While walking it draws a line and designs pictures. Completely without previous knowledge and self-explanatory. The tool is very easy to use. This learning activity provides the very first steps of using the tool and get involved in the world of coding.

- What STE(A)M learning activities can be developed by using this template? The use of this template allows the learner to combine coding with drawing. By drawing a line, the movement of the turtle can be followed easily by the learner. The learner has the opportunity to create colourful pictures, sign or symbols. The only step to do is to feed the turtle with codes.
- What audience can be targeted by the learning activities developed by using this template?

The template serves to pedagogues who want to dive into the world of coding. They do not need any coding knowledge to use this template as everything is explained from the introduction to the first steps up to writing the own code. The tool is already useable for 8 years old students.

- What is normally the average run time for learning activities developed by using this template?
 A school lesson from 45 to 90 minutes
- What is the delivery mode for learning activities developed by using this template? Online lesson, group activity, class activity.



• Learning activity template's sequence:





4 Annex – STE(A)M learning activity templates developed by trainees participating in the STE(A)MOnEdu blended training

Mechanical Energy

- URL: https://pekesde.lams.sg/lams/r/bnuwj
- Author: Güler ÇÖREKCİ
- Short description:
 - With the model created on the skateboard parking platform, energy is transformed from one form to another. Students make 5 applications in a frictionless environment and 3 applications in a frictional environment.
- Learning activity template's sequence:





Studying Earthquakes & Volcanoes in the homeland of Egeladoslearning activities

- URL: <u>https://pekesde.lams.sg/lams/r/bntwu</u>
- Author: Ioanna Stavroula
- Short description:
 - This learning activity template is inspired by Greek Mythology and the phrase: the "awakening or strike of Egelados" which is widely used to describe the earthquake in Greece, from the course of geology - geography of B High School Book "Earthquakes & Volcanoes". In order to learn about the effects of earthquakes in people's lives, students will connect the common cause of earthquakes and volcanoes with Greek mythology, the need to study earthquakes and they will become seismologists.
- Learning activity template's sequence:

Noticeboard -Earthqu	image Gallery	Noticeboard	Task List
Image Gallery Bra	Share Resources		

Learning activities with ozobot

- URL: <u>https://pekesde.lams.sg/lams/r/bntyy</u>
- Author: Otilia Maria Vasil
- Short description:
 - The Ozobot is a miniature intelligent robot that can follow lines or walk freely, can detect colours and can also be programmed. Students will learn robotics and in-game programming while working on applications or STEAM projects.
- Learning activity template's sequence:

Noticeboard	Image Gallery	Noticeboard Noticeboard
Task List	Image Gallery	Survey



Vaccination or not? What do Biology and Mathematics Prove?

- URL: <u>https://lamscommunity.org/lamscentral/sequence?seq_id=2455439</u>
- Author: Katerina Atmatzidou
- Short description:
 - Cross-curricular approach with the help of mathematics and biology so that students can research the scientific data to make a safe decision.
- Learning activity template's sequence:



Butterflies

- URL: <u>https://pekesde.lams.sg/lams/r/bntnk</u>
- Author: Eirini Tsara
- Short description:
 - The main idea of this learning activity template is that learners share what they know about butterflies in order to create a responsive video (Storytime) and scale it nicely to the parent element with a 16:9 aspect ratio.
- Learning activity template's sequence:

Introduction		Share what you know		Storytime	You	ur turn
	€ ¶ ¶	om caterpillar to Butterfly	Put the ima in the right o	ges order		Time to draw



Children's Games

- URL: <u>https://pekesde.lams.sg/lams/r/bntbd</u>
- Author: Sofronia Maravelaki
- Short description:
 - This learning activity template refers to Artful thinking approach using the Think-Pair-Share activity.
- Learning activity template's sequence:



From Tinkering to STE(A)M 4.0 with introduction to coding: WE WEIGH THE 'Pi NUMBER ', WE MEASURE 'GRAVITY CONSTANT g', WE INTRODUCE 'GOLDEN NUMBER'

- URL: <u>https://pekesde.lams.sg/lams/r/bntjn</u>
- Author: Anonymous
- Short description:
 - Often the students do not give the right importance to the constants in the approach to the study of Mathematics and Physics (for example 'Pi number', 'gravity constant g', 'Golden number') encountered not understanding their fundamental role in the analysis of the reality that surrounds us.
 The STE(A)M, TINKERING, IBSE, CBL, GAMING approaches seem to be the most appropriate learning methodologies to underline the importance of transdisciplinary, collaborative and creativity according to lifelong Learning (UE 2018), soft skills and life skills.



This project can then be extended to the introduction of the 'golden number' as another universal constant that we find in many fields: Mathematics, Physics, Science, Arts.

• Learning activity template's sequence:



The powerful air

- URL: <u>https://pekesde.lams.sg/lams/r/bnuyj</u>
- Author: Marina Ruano
- Short description:
 - Throughout this lesson students will discover some characteristics of the air. They will have some experiences that prove that the air is composed by matter and that it occupies a space.

And to start thinking ... how can we prove that the air occupies a space?

• Learning activity template's sequence:

Powerful air	What happens with th	Explanation	Make your hypothesis
Make a video!		Last Experience	Closure chat



Aqueous solutions NaCl in virtual lab « IrYdium »

- URL: <u>https://www.lamscommunity.org/lamscentral/sequence?seq%5fid=2448633</u>
- Author: Evangelia Bazouki
- Short description:
 - A learning activity template that uses a virtual lab on the basis of scientific method (prediction - experiment - confirmation/rejection). Included: lab instructions and worksheet. A rather simple approach to use for High School students.
- Learning activity template's sequence:



Olympic Games

- URL: <u>https://pekesde.lams.sg/lams/r/bnudd</u>
- Author: Nuria Serichol Augué
- Short description:
 - This learning activity template presents an activity where different disciplines can be shown in order to encourage and involve students with a little bit of History and evolution of the Olympic Games.
- Learning activity template's sequence:

Introduction
Task Fill in the gaps
Printer 3D



Heat-alarm with Micro:bit

- URL: <u>https://pekesde.lams.sg/lams/r/bnudb</u>
- Author: Alexandros Parousinas
- Short description:
 - A learning activity path of sequences that guide students to code a Micro:bit controller to measure the temperature of a room and if is very high, then play a sound again and again. In this scenario, students must have to understand the importance of a good algorithm before build the code and use the make code platform for Micro:bit to transform their algorithm to program that have to test it.

For this activity, we consider that students are familiar with make code environment.

• Learning activity template's sequence

heat alarm micro.bit	write the Algorithm Mi Image: Constraint of the second s	indmap the Algorithm
Sharing your ideas	• • • • • • • • • • • • • • • • • • •	Chat

Geography - Capitals of Europe

- URL: https://pekesde.lams.sg/lams/r/bndyd
- Author: Giorgos Fakiolakis
- Short description:
 - This is a learning activity template about Europe and particularly about the capitals of Europe countries.

Introduction sequence for a traditional starting short duration lesson.

• Learning activity template's sequence:



Capitals of Europe - branch 2

- URL: <u>https://pekesde.lams.sg/lams/r/bndyn</u>
- Author: Giorgos Fakiolakis
- Short description:
 - This is a learning activity template about Europe and particularly about the capitals of Europe countries.



• Learning activity template's sequence:



Blood Types

- URL: https://pekesde.lams.sg/lams/r/bnudj
- Author: Foteini Syntychaki
- Short description:

This learning activity template will help students understand the importance of blood types. Specifically, to be able to:

- Indicate which blood groups are in the ABO and Rhesus systems
- Distinguish how blood groups are determined based on the respective antigens and antibodies
- Describe how we identify which blood type a person has
- Indicate what are the compatible transfusions and what will happen to an incompatible transfusion
- Indicate the genes of the blood groups and what combinations of genes each blood group has
- Learning activity template's sequence:





Digital Citizenship - Digital Democracy

- URL: https://pekesde.lams.sg/lams/r/bnujt
- Author: Sotirios Christopoulos
- Short description:
 - This is a lesson about Digital Citizenship and particularly about the difficulties applying digital democracy
- Learning activity template's sequence:





BBC micro: bit - Give voice to the disabled

- URL: <u>https://pekesde.lams.sg/lams/r/bnnkt</u>
- Author: Stavroula Skiada
- Short description:
 - In this sequence, students will learn how to create a device using BBC micro: bit controller and Morse Code to facilitate the communication between a disabled person and its carer. Students make a connection between Tech4Good and SDGoal 10: Reduce inequalities.
- Learning activity template's sequence:



Creative writing

- URL: <u>https://pekesde.lams.sg/lams/r/bnnku</u>
- Author: Silvia Mazzeo
- Short description:
 - This is a project for Primary school students which focus on creative writing: give students some suggestions on writing stories enhancing their creativity.
- Learning activity template's sequence:



Creative writing	Who do you thing you	Now is your turn		Creating characters
Submit Files	Forum	Some question for yo	00	What makes a hero?
Q & A				

17 SDG for students

- URL: <u>https://pekesde.lams.sg/lams/r/bnnut</u>
- Author: Kristi Folia
- Short description:
 - This learning activity template is about an interdisciplinary project includes activities which are intended to motivate students to learn about the sustainability of our planet, thinking in a critical way and be active concerning the protection of the environment.
- Learning activity template's sequence:



Natural disasters

- URL: <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=2444174</u>
- Author: Stavroula Koyrgia



- Short description:
 - The topic of this learning activity template is "Nature disasters" and the selected audiences of this lesson are students from year 5 to 6.
 The main purpose of this lesson is to develop an interest of learn information of natural disasters and discuss different kinds of natural disasters and safety tips with students to make preparation for emergency situation and how to keep safe during natural disaster.





Natural solutions to prevent floods

- URL: <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=2454978</u>
- Author: Snježana Damjanović
- Short description:
 - This learning activity template has several objectives, such as: a) raising students' awareness of the risks of flood-related disasters due to unsustainable river flows; b) increase students' knowledge of available resources to prevent these risks and increase protection against floods and landslides.

Students will further analyse and identify risks, applying their knowledge of the natural sciences (physics, chemistry, geology and biology). Analysing the data of available research results, they will also cooperate and propose solutions to prevent such risks (such as embankment erosion, embankment permeability due to deforestation, deforestation on the riverbank, waste



disposal in favour of the river, embankment coverage by flood prevention plants, afforestation river banks, which increases flood resilience, management and planning policies, and a sustainable bioeconomy).

• Learning activity template's sequence:

Let's talk about flood!	Image Gallery	Natural flood protection?	Data Collection
Apply!	Share Resources	Survey	

Sense organs

- URL: <u>https://lamscommunity.org/lamscentral/sequence?seq%5Fid=2446879</u>
- Author: Luigia Palumbo
- Short description:
 - This is a "welcome project" for Middle School, focuses on well-being at school. The aim is to create a STE(A)M welcoming learning environment. It represents an extension of my previous project focused on Mathematics and Science, to the other STE(A)M disciplines, such as Technology, Engineering, Art, Music, Italian language.
- Learning activity template's sequence:

Intro	Table of elements
Statistic graph	Your origami school
Describe how to built the box Big cardboard school Nursery rhime	, Rap song
	Evaluation



Programming on squared paper

- URL: <u>https://www.lamscommunity.org/lamscentral/sequence?seq%5Fid=2450545</u>
- Author: Stefania Raschi
- Short description:
 - The specific objective of the traditional programming lesson on squared paper is to make students understand what programming really is.

To do this, students must be able to write a program that can be performed by other students and that allows them to reproduce a drawing (original or chosen from a set of predefined drawings) by colouring the boxes on a sheet of squared paper.

Students program using a symbolic language whose instructions allow them to move between the boxes on the sheet and colour them, then draw what the other students have programmed. In this process they also acquire the difference between program and algorithm.

In the last part of the lesson, students create simple representations for complex groupings of instructions. This is an excellent introduction to the concepts of functions and parameters.



• Learning activity template's sequence:

Let's talk about pollution!

- URL: <u>https://www.lamscommunity.org/lamscentral/sequence?seq%5fid=2448630#comm</u> <u>ents</u>
- Author: Oana Iacob
- Short description:
 - Introductory lesson about pollution (regarding air, water and soil pollution), students are asked to observe relevant pictures, to make statements about



them and to complete a mind map. In the end of the lesson, students answer a short quizz.

• Learning activity template's sequence:

Let's talk about polution!	Image Gallery	Notebook	Apply!
Polution in words	Home experiment	Questionaire	

Steaming with light and shadow

- URL: <u>https://www.lamscommunity.org/lamscentral/sequence?seq%5Fid=2449304</u>
- Author: Evi Klonou
- Short description:
 - Steaming with light and shadow through art and experimentation for kindergarten students. In this sequence students are introduced to the basic aspects of light and shadow. We could also add a presentation in translucent, opaque and transparent objects, see many paintings about light and shadow, create our own art and do a quiz at the end of the unit (these activities not included).
- Learning activity template's sequence:

Noticeboard	Share Resources	Assessment	Share Resources
Share Resources	Q & A	Noticeboard	Share Resources
Noticeboard	Submit Files		

DNA&RNA structure

- URL: <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=2450542</u>
- Author: Anthitsa Gkougkoustamou
- Short description:



- Upon completion of these lesson, students will be able to:
 - Describe the basic structural characteristics of a DNA molecule.
 - State how the information for our inherited characteristics is written on our DNA molecules.
 - Describe the basic structural characteristics of an RNA molecule
 - Recognise similarities and differences between DNA and RNA structure.
- Learning activity template's sequence:

	Introduction		Forensic DNA analysis	• 🗐	Checking out missconceptions		Watch a video on DNA structure		Construct a virtual DNA molecule	
	DNA structure quiz		Create two- dimentional DNA molecule		Grouping 1		Image Gallery for your contructed D			· ·
Chat & Sorib	Chat on the importance of	ence			Experiment: DNA extra	tion from strawber	INA extraction from strawberries		· · · · · · · · · · · · · · · · · · ·	
	Scribe		e e e e e e e e e e e e e e e e e e e	Ku -Stories nd the culpri	t Experiment: Ext	act your own DNA	DNA extraction from your own cells		Task Lis exper	t on the iment
			· · · · · · · · · · · · · · · · · · ·					· · · · · ·		
0	DNA vs vide	RNA	E Group	ing 2	Mindm. RNAsir and	ip DNA- nilarities dif	Surve	y	DN.	A analyst

Short revision of Coulomb's law

- URL: <u>https://www.lamscommunity.org/lamscentral/sequence?seq%5fid=2449315</u>
- Author: Aggeliki Stratogianni
- Short description:
 - This learning activity template presents a brief revision on Coulomb's law, so that students refresh and test their knowledge on charge's units as well as on the connection between the different aspects of Coulomb's equation.
- Learning activity template's sequence:





Noticeboard	Multiple Choice	Task List
¥		
Submit Files	Assessment	

Hardware and software

- URL: <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=2454973</u>
- Author: Mersini Dalaka
- Short description:
 - By watching a video and reading a text, students learn about computer hardware and software. Through activities and assessment, they gain a better understanding of these two concepts.
- Learning activity template's sequence:

Introduction		Preparation of students before the	Vote	At the time of the lesson
×				
Assessment			Image Gallery Hardware	
Ţ	·	Hardware	•	
		Software	Image Gallery Software	
 ↓ (
File Submission		Forum	Survey	



Romania: The land of authenticity, welcoming nature and captivating culture

- URL: <u>https://lamscommunity.org/lamscentral/sequence?seq%5fid=2447450</u>
- Author: Doinita Balasoiu
- Short description:
 - Outline of the learning templates activities:
 - attractive presentation of some tourist objectives in Romania
 - critical thinking for arguing one's own ideas
 - teamwork to solve work tasks
- Learning activity template's sequence:





References

- [1] LAMS International website <u>https://www.lamsinternational.com/</u>
- [2] Schuell, T. J. (1986). Cognitive conceptions of learning. Review of Educational Research, 56, 411-436