



<https://steam-active.pixel-online.org/>

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2024 03 13, Kaunas

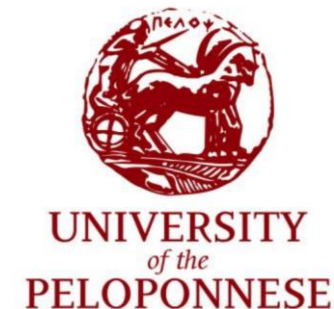
2021-1-ES01-KA220-HED-000032107



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Partneriai iš 6 ES šalių



1. Baskų krašto universitetas (UPV/EHU) (Ispanija)
2. Badeno-Viurtembergo kooperatinis valstybinis universitetas (DHBW) (Vokietija)
3. Peloponeso universitetas (Graikija)
4. Perudžos universitetas (Italija)
5. Kauno technologijos universitetas (Lietuva)
6. Pixel (Italija)
7. Mašinų ir staklių techninio mokymo institutas (Ispanija)



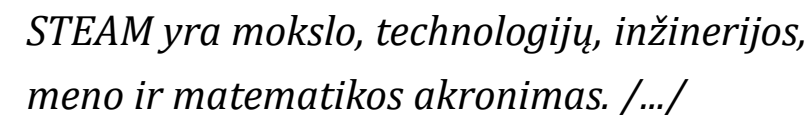
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- Sparti technologinė evoliucija kuria inovacijų kūrimo ir diegimo poreikį įmonėse.
- Švietimo institucijų uždavinys – **sukurti prasmingą, praktiniu suvokimu grįstą, mokymąsi ir ugdyti kompetencijas, kurios paruoštų besimokančiuosius atliepti rinkos poreikius.**
 - skatinti lyčių lygybę (balansą) tiek inžinerinėse srityse.



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- Gerinti mokslo inžinerinės srities kursų kokybę ir pasiūlą, taikant naujus/atnaujintus mokymo/si metodus ir medžiagą.
- Siekti geresnių inžinerijos sričių besimokančiųjų studijų rezultatų ir mažinti lyčių nelygybę.
- Suteikti dėstytojams/mokytojams daugiau žinių apie STEAM metodika grindžiamus metodus ir mokymo priemones.
- Suteikti dėstytojams/mokytojams nuoseklius, pakartotinai naudojamus ir adaptuojamus mokymo/si scenarijus, pagrįstus STEAM metodika.

PR1. <https://steam-active.pixel-online.org/methodologies.php>

Bibliografinė apžvalga

Protokolas skirtas dėstytojams ir mokytojams



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Home / Bibliographic Review

Bibliographic Review Protocol

Bibliographic Review

This Bibliographic Review section provides access to selected and commented examples of different STEAM perspectives and approaches. The contents promote a more aware understanding and shared definition of the characteristics that STEAM education should have in Engineering Schools.

Thematic Area Search by Keyword

» STEAM intervention (teaching strategies, etc.)

» Gender Inequality

» Sustainability and circular economy

» Students' Difficulties

» Definition and characteristics of STEAM

Search

Title	Thematic Area	Educational stage
"If you aren't White, Asian or Indian, you aren't an engineer": racial microaggressions in STEM education	Gender Inequality, Students' Difficulties	University Level
A framework for Epistemological Discussion of Integrated STEM Education	Definition and characteristics of STEAM	Secondary Level, University Level
A framework for Implementing an Engineering-Focused STEM Curriculum	Definition and characteristics of STEAM	Secondary Level
A Theoretical Framework for Developing an Intercultural STEAM Program for	STEAM intervention (teaching strategies,	Secondary Level

Last News

Steam-Active on IEEE 21-07-2023

IEEE Xplore Digital Library

Fifth Partners' Meeting 20-06-2023

Paper submitted at the EAEEIE conference 01-02-2023

STEAM-Active: Fourth Partners' Meeting 11-01-2023

Draft Version of the E-Learning Course content 30-12-2022

E-Learning Course: Work in Progress! 28-11-2022

Protocol for Teachers Available! 24-10-2022

Šioje bibliografinės apžvalgos dalyje galima susipažinti su atrinktais ir komentuojamais (populiariais) įvairių STEAM perspektyvas ir metodiką mokymo procese pristatančių publikacijų pavyzdžiais.

Publikacijų turinys skatina geriau suprasti ir bendrai apibrėžti STEAM ugdymo ypatybes, kuriomis turėtų pasižymėti inžinerijos, tikslųjų mokslų profilį turinčių ugdymo įstaigų mokymo turinys.

Paieškoje pasirinktinės tematikos:

- STEAM intervencija (mokymo strategijos, vertinimas)
- Lyčių lygybė
- Tvarumas ir žiedinė ekonomika
- Mokymosi sunkumai
- STEAM apibrėžimas ir charakteristikos



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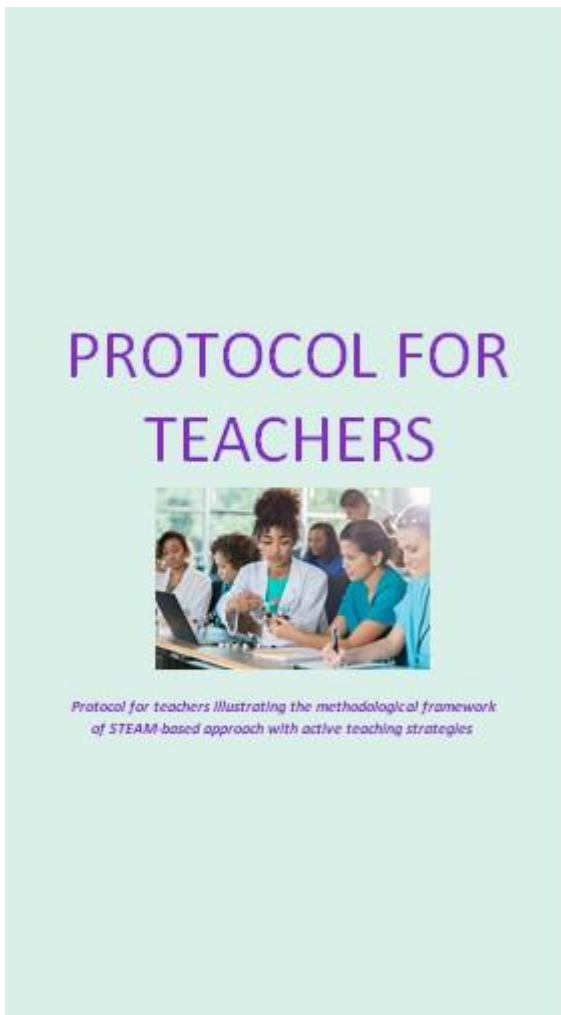
PR1. <https://steam-active.pixel-online.org/protocol.php>

Publikacijų apžvalga

Protokolas skirtas dėstytojams ir mokytojams

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1 dalis. Įvadas. STEAM apibrėžimas ir ypatybės

- 1.1. STEAM ugdymo istorija ir raida
- 1.2. Kas yra STEAM ugdymas? Apibrėžčių aptarimas
- 1.3. Integracijos tipai
 - 1.3.1 Konteksto svarba
 - 1.3.2 Kokius integracijos lygius naudojame STEAM-ACTIVE projekte?

2 dalis. STEAM inžinerijai. Mokymo mokymosi sekų kūrimas, įgyvendinimas ir vertinimas.

- 2.1. Projektais ir (arba) problemomis grindžiamas mokymasis
- 2.2. STEAM disciplinų sąsajos ir skirtumai.
- 2.3 STEAM į inžineriją orientuotiems kontekstams
- 2.4. TLS projektavimo etapai

3 dalis. STEAM, skirtas inžinierių lyčių lygybei ir aplinkosauginiam sąmoningumui

- 3.1. Skersinės ašies integravimas į TLS

4. Nuorodos

5. Priedai (STEAM-Active TLS struktūra)



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PR2. El. mokymo/si kursas

E-Learning Course



Basis of STEAM

Nowadays STEAM is a widely used acronym in the teaching context. STEAM projects are associated with active learning, fun, value for society, and diversity. However, the meaning of STEAM can vary with respect to the goals and the environment the acronym is used. To make this acronym more approachable, Module 1 covers the basis of STEAM, its evolution, features, and integration levels in practical application.



STEAM Active approach

This module deals with the "Ingredients of STEAM-Active methodological approach", "Ingredients of STEAM-Active teaching techniques approach" and "Teachers' characteristics/ingredients to be good applying STEAM-Active approach in our teaching".



Basis for designing a STEAM Active project

This third module starts by explaining the design protocol, expanding on the new terminology and how the contents of the previous modules are applied in the protocol. To better understand the design process, there will be an example of a STEAM Teaching-Learning Sequence. The importance of this guide will be highlighted by presenting the learning objectives of each activity, the recommended didactic technique for their development or the evaluation.

Table of Contents

Introduction

[What Does STEAM Mean?](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Find STEAM](#)

[What is STEAM and What is Not](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Evaluate Competency Models](#)

[STEAM Integration Levels](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Get an Overview of Digital Learning and Teaching Possibilities](#)

[Review the Situation](#)

[Progress in STEAM Active Integration Levels](#)

[Comments](#)

Table of Contents

Introduction

[Section 1 – What Are the "ingredients" of a STEAM-Active Methodological Approach?](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Implementing in Your Lessons The "Ingredients" of STEAM-Active Methodology](#)

[Section 2 – What Are The "Ingredients" of a STEAM-Active Teaching Techniques Approach?](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Implementing in Your Lessons Active Learning Techniques](#)

[Section 3 – What Are The Good teachers' Characteristics/Ingredients in a STEAM-Active Approach?](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Implementing in Your Lessons Active Learning Techniques](#)

[Comments](#)

Table of Contents

Introduction

[SECTION 1 – What steps do we follow to design that TLS?](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Questionnaire about steps to design a STEAM-Active TLS](#)

[SECTION 2 – The teachers' guide of the TLS](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Questionnaire about how to use an already designed STEAM-Active TLS](#)

[SECTION 3 – Description on how is adaptable the TLS](#)

[Online Resources](#)

[YouTube Videos](#)

[Tasks and Activities](#)

[Questionnaire on how is adaptable the TLS](#)

[Comments](#)



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Thanks for deciding to join the STEAM-Active project.

All fields are compulsory.

Name * Surname *

Confirm E-mail Address *

Confirm Password *

Organization * Country *

☐ I declare that I have read and accepted the [informative note](#) on privacy and the handling of all data submitted

Antispam

6 + 9 =

[Sign Up](#) [Already registered? Login](#)



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PR3. Mokymo-mokymosi sekos

Learning Sequences

A Collection of STEAM based Teaching-Learning Sequences that allow teachers to guide students in applying a project based learning methodology to solve socio-scientific-technological situations.



Electrical Efficiency of buildings

Improvement of Sustainable Development Goals for a building (1 building per student) considering the fixed electrical grid and local renewable generation possibilities, including collective self-consumption with neighbouring buildings.



Cycling tour and Tourism

Introduce the concept of micromobility in modern municipalities. Micromobility is one of the areas where modern municipalities should invest. Cycling is in the middle of circular economy and it needs to be integrated not as a physical exercise (only) but as a way of liv ...



Planning the Placement of Recycling Containers

Contributing to circular economy by planning the placement of the recycling containers in the urban area with considering the network of the recycling points and the local features such as buildings and population density.

1. Kelionės dviračiais ir turizmas
2. Perdirbimo kontenerių išdėstymo planavimas
3. Baterijų sistemos elektriniame transporte
4. Vaistų paros dozėms ruošti parinkimas ir išdėstymas vaistų organizatoriuje
5. Mechaninio apdirbimo staklėmis procesų efektyvumo tyrimas
6. Pastatų elektros energijos vartojimo efektyvumas
7. Pažangus eismo valdymas
8. Buriavimas Graikijos salose
9. Energijos lizdo parinkimas gamybai
10. Energijos kaupimo vaidmuo pereinant prie švarios energijos
11. Dyzelinių variklių efektyvumas
12. Objektų atpažinimas kokybei ir saugumui užtikrinti
13. Produktų pristatymo kelio planavimas
14. Efektyvų vandens išteklių naudojimą augalų laistymui viešose erdvėse užtikrinanti išmanioji sistema
15. ...



PR3. (pasiekiamo prisijungus) Mokymo-mokymosi sekos (mokymo planai)

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METHODOLOGIES** **E-LEARNING
COURSE** **LEARNING
SEQUENCES** **INFORMATION
AND CONTACTS**

Home / Learning Sequences / View

Cycling tour and Tourism

Country
Greece (GR)

Study Programme
Bachelor

Name of the programme
Electrical and Computer Engineering

Study Year
3

Subjects involved
Informatics Engineering and User Design



**Teaching Learning
Sequence Document**

 **Type: pdf**

Project Topic
Introduce the concept of micromobility in modern municipalities. Micromobility is one of the areas where modern municipalities should invest. Cycling is in the middle of circular economy and it needs to be integrated not as a physical exercise (only) but as a way of living. Students should prepare a report and design a mobile app that will promote cycling routes across the country combined with points of interest (POIs) of cultural, touristic and shopping interest.

Main guiding question
"What problem or project needs to be solved in order to promote cycling as a way of living and integrate it into modern municipalities?" This question prompts students to recognize the need for solutions that encourage and support cycling as a sustainable mode of transportation. It highlights the importance of addressing barriers, improving infrastructure, and designing innovative solutions to promote cycling and make it an integral part of daily life. By focusing on this question, students can identify the central problem or challenge that their project aims to solve and develop effective strategies to address it.

Last News

 Steam-Active on IEEE
21-07-2023

 Fifth Partners' Meeting
20-06-2023

 Paper submitted at the EAEEIE conference
01-02-2023

 STEAM-Active: Fourth Partners' Meeting
11-01-2023

 Draft Version of the E-Learning Course content
30-12-2022

 E-Learning Course: Work in Progress!
28-11-2022

Cycling tour and Tourism

1. General data	
Country	Greece
University Name	University of Peloponnese
Study Programme	☒ Bachelor ☐ Master ☐ PhD
Name of the programme	Electrical and Computer Engineering
Study Year	3
Subjects involved	☒ Interdisciplinary ☐ Transdisciplinary ☐ Metadisciplinary
Integration Type	

2. Context	
Number of students	15 students
Project Topic	Introduce the concept of micromobility in modern municipalities. Micromobility is one of the areas where modern municipalities should invest. Cycling is in the middle of circular economy and it needs to be integrated not as a physical exercise (only) but as a way of living. Students should prepare a report and design a mobile app that will promote cycling routes across the country combined with points of interest (POIs) of cultural, touristic and shopping interest.
ECTS	3
Resources	Infrastructure: Computer lab, Office, Internet access, whiteboard, Google Maps, Azure, OpenStreetMap Input data: map of students' choices, Points of interest in locations and any open data available.
Prior knowledge	NO
Expertise on PBL of teachers and students	Students had been working with PBL last year. Teachers are used to PBL with an experience with various expertise

3. Axes to consider	
This part will be completed with the proposals of each partner. The objective of this part is to create a list of possible strategies to incorporate those three axes into TLS that we can choose from later. Select at least two from each part.	
Gender equality	☐ Same number of female/male students ☐ Changing leadership roles (Changing between different roles during the project) ☒ Selection of topic with a gender perspective ☐ Having the participation of female STEAM professionals (Role-Models) ☐ Female protagonist ☐ Intervention protocol to order when each person participates and ask them if they consider that this protocol is necessary and why (assess power relations within the groups). ☐ Ask students to analyze the gender of the authors cited in the bibliography of an academic paper and present the resulting numbers. ☐ Critical analysis of the representation of women, through questions such as: who don't we know of any female authors?
	☐ How are women represented in the media? ☐ Making women invisible? ☐ Female protagonist

5. Relationship between different stages of the TLS				
Learning Pathway	Objective	Learning Demand	Methodological needs	Activities
Guiding question	Specific learning objective related to the question	Which students' difficulty can appear? e.g.	Which type of activity or methodology is needed to solve the guiding question?	* This column can be filled in at the end of the design, once the sequence of activities has been completed.
Circular economy	1. What is micromobility and why is it important for modern municipalities? • What are the benefits of cycling for individuals, communities, and the environment? • How does cycling contribute to the circular economy?	LO1: ☒ Low ☐ Medium ☐ High LD4: ☒ Low ☐ Medium ☐ High LD7: ☒ Low ☐ Medium ☐ High	Collective project understanding session, collective identification of required inputs, collective scheduling of collective new knowledge and understanding sessions.	A1
	2. Research and Analysis: • What is the current state of cycling infrastructure, routes, and mobile apps in our country or region? • What are some successful examples of apps that promote cycling and integrate points of interest? • Which cultural, touristic, and shopping destinations can be	LO1: ☒ Low ☐ Medium ☐ High LD4: ☒ Low ☐ Medium ☐ High LD7: ☒ Low ☐ Medium ☐ High	Collective report writing, Collaboration discussion	A1 A2



Supratimo gilinimas ir kūrybiškumo ugdymas mokantis matematikos ir gamtamokslinių mokomųjų dalykų

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2017-2019



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Projekto tikslas - ugdyti jaunimo supratimą ir mokymosi kultūrą **gamtos mokslų** (matematikos, fizikos, chemijos, biologijos) dalykuose, taip pat skatinti mokinių **kūrybiškumą**, kad mokslo žinios taptų geriau suprantamos ir būtų didesnė tikimybė jas pritaikyti realiame gyvenime.

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Sukurtais rezultatais siekiama suteikti mokymui/si novatoriškumo: pamokose taikant kūrybinius mokymo/si metodus bei pedagogines priemones didinti mokomųjų dalykų: fizikos, chemijos, biologijos ir matematikos supratimą bei gerinti besimokančiųjų motyvaciją.

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Ar žinote, apie meno ir mokslo draugystę?

Menas ir mokslas turi labai stiprią sąsają

Nobelio laureatai mokslo srityje:

25% daugiau nei bendras mokslininkų vidurkis (bmv) šoka, dainuoja, vaidina

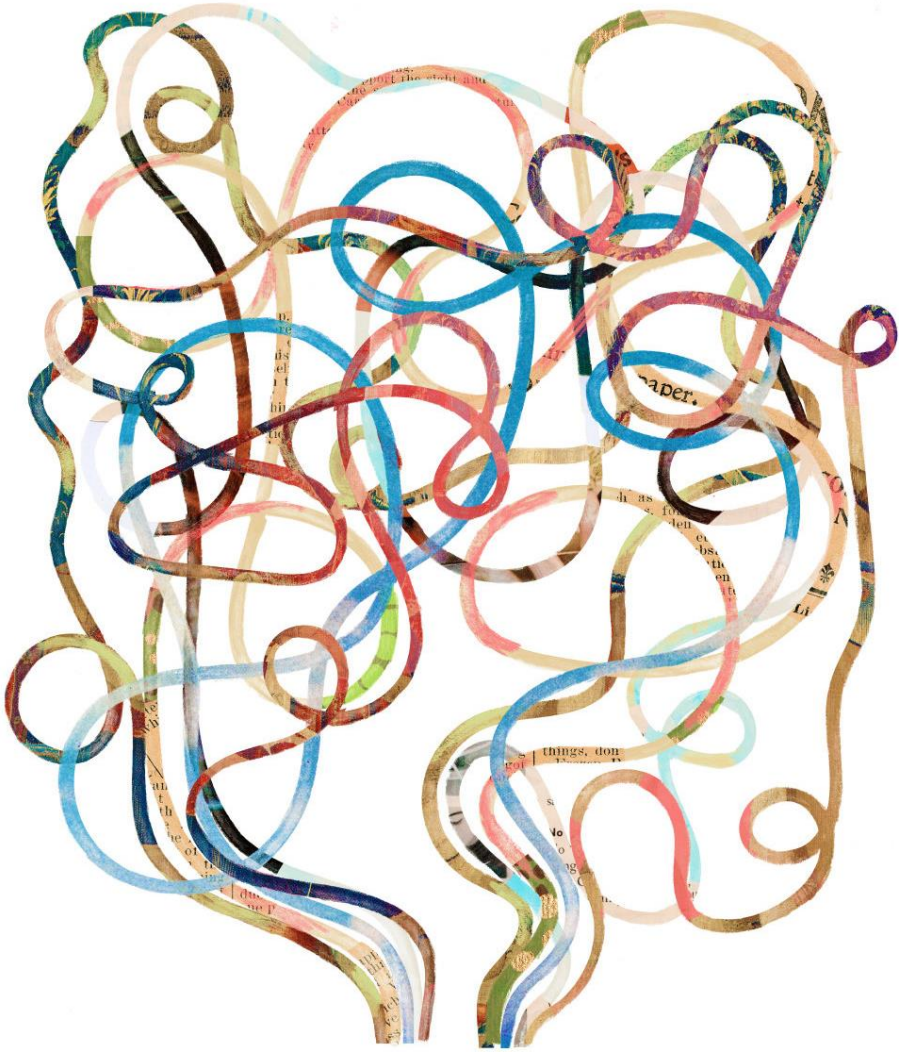
17% daugiau nei bmv yra dailininkai

12% daugiau nei bmv - poetai, rašytojai

8% daugiau nei bmv – rankdarbių meistrai

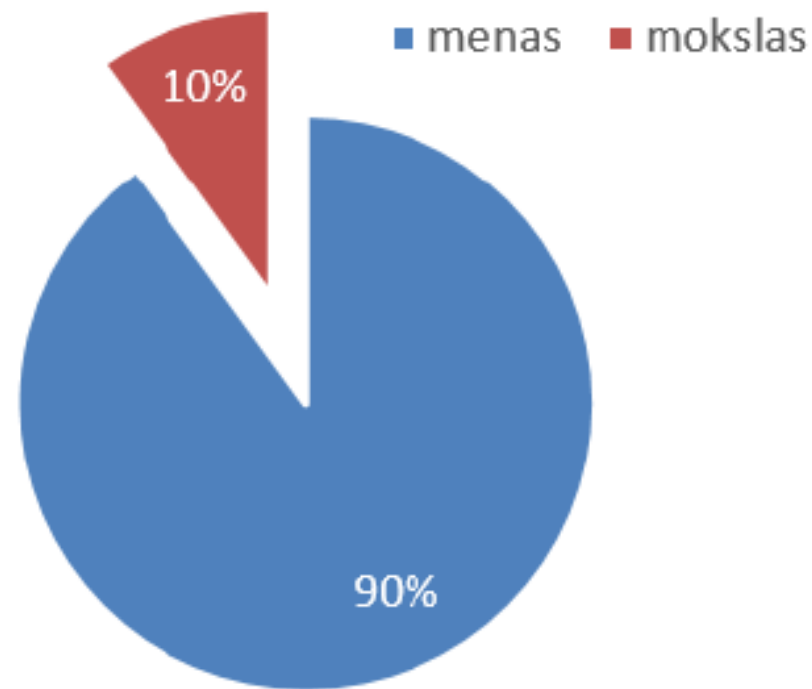
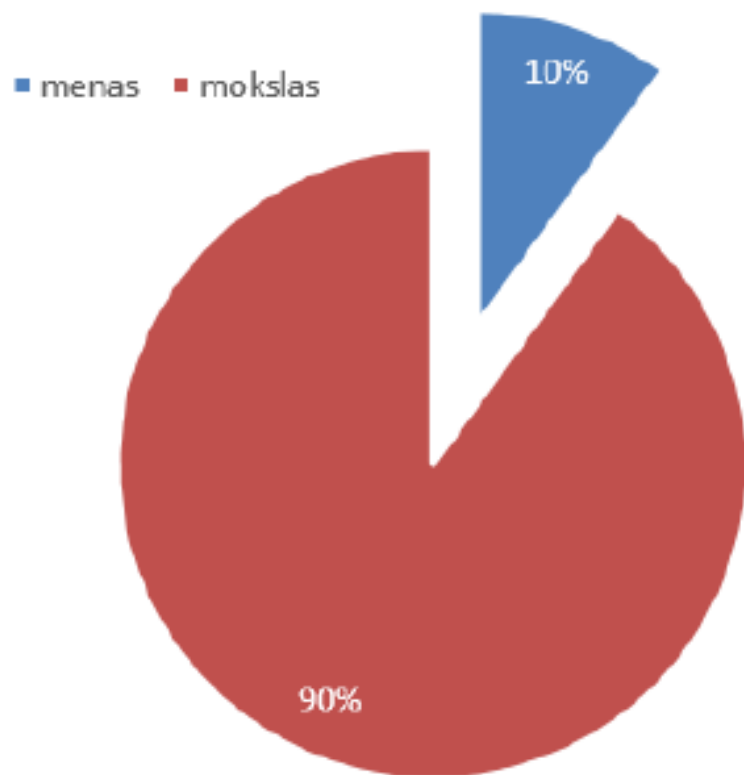
4% daugiau nei bmv – muzikos talentai

2% daugiau nei bmv - fotografijos ekspertai



Kaip? – 10% taisyklė

- Mokslinių dalykų mokytojams 10% meno
- Meno mokytojams 10% mokslo





GoScience Enhancing Comprehension in STEM education

@gosciencenhancingcomprehe5602 · 12 prenumeratorių · 44 vaizdo įrašai

The channel is created for the GoScience project. The idea of the project is to develop met... >

Prenumeruoti

Pagrindinis Vaizdo įrašai Grojaraščiai 🔍

Jums



GoScience Pixel Polymerisation

21 peržiūra · prieš 4 metus



Pixel Chemical traffic lights

9 views · prieš 4 metus



2 Mathematics Model Commutativityvideo

4 views · prieš 4 metus



Parabola

23 views · prieš 4 metus

Vaizdo įrašai ▶ Leisti viską



GoScience Pixel Polymerisation

21 peržiūra · prieš 4 metus



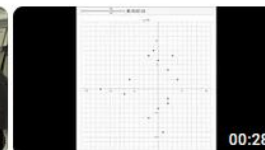
Pixel Iron properties

7 views · prieš 4 metus



Pixel Dalton's Law

6 views · prieš 4 metus



Brownian motion math model

10 peržiūrų · prieš 4 metus



Brownian motion chemistry experiment

86 views · prieš 4 metus



Pixel Chemical traffic lights

9 views · prieš 4 metus



Physical states of water (GoScience)



Mathematics Model Commutativityvideo



Difuzija per membraną



Žagsė (2018)

PG 2018/03/23 (IN) • Dramos, Komedijos • 1h 56m

76% Žiūrovų reitingas



Mokytoja iš pašaukimo

Apžvalga

Įkvepiantis pasakojimas apie nepaprastai atkaklią, be galo atsidavusią savo nelengvai profesijai, maištingą, metančią iššūkį visoms gyvenimo kliūtims, - Moterį-Mokytoją, nuo šešerių metų kenčiančią nuo Tureto sindromo, kuri savo didžiausią silpnybę paverčia didžiausia stiprybe....Po net keliolikos darbo pokalbių įvairiose mokyklose ir begalės blaiviu protu nepaaiškinamų šių mokymosi įstaigų vadovybės atmetimų, ji ir toliau užsispyrusiai siekia savo užsibrėžto gyvenime tikslo - tapti tik Mokytoja, nors ir nežiūrint į tai, jog yra baigusi net du aukštuosius ir turinti net porą mokslinių laipsnių, bei galinti įsidarbinti beveik kur tik panorėjusi. Bet jokie kiti prestižinio darbo pasiūlymai jos nė kiek nevilioja, nes anot jos, - Ji gimusi tik mokytojauti - Ji Mokytoja iš pašaukimo! Ir galiausiai priimta, kaip pakaitinė mokytoja, į savo buvusią Šv. Notkerio mokyklą...

Siddharth P. Malhotra
Director, Screenplay, Story

Ganesh Pandit
Screenplay, Story

Ankur Chaudhry
Screenplay, Story

Ambar Hadap
Screenplay, Story

Kviečiu sukurtus išteklius naudoti
mokymo procese ir dalintis su kitais!

vida.drasute@ktu.lt

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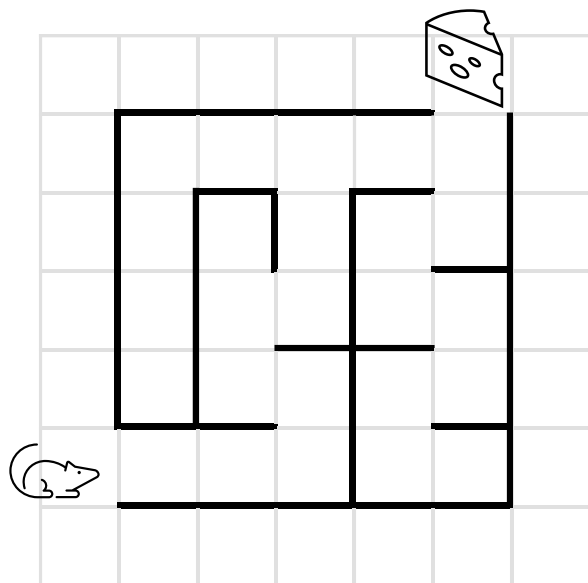
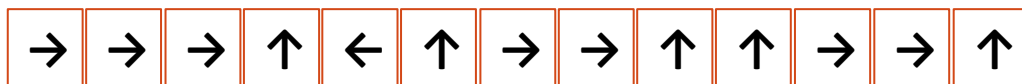
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1. Stačiakampiame tinklelyje sukurkite 10x10 labirintą:
 - labirinto sienomis gali būti tik horizontalios ir vertikalios linijos;
 - turi būti aiškiai pažymėta labirinto pradžia ir pabaiga.
2. Pateikite instrukcijas, kaip pereiti labirintą. Galite naudoti rodykles arba kitokius žymėjimus (pvz., D ($\rightarrow$) – judėti į dešinę, K ($\leftarrow$) – judėti į kairę, V ($\uparrow$) – judėti į viršų, Ž ($\downarrow$) – judėti žemyn)
3. Su kolega apsikeiskite labirintais ir instrukcijomis. Tiksliai vykdydami gautas instrukcijas pabandykite pereiti labirintą. **Net jeigu matote, kad instrukcijos yra klaidingos, šiame etape privalote jų laikytis.** Ar pavyko pasiekti finišą?



Žaidimas „Labirintas“

Instrukcijos:



Žymėjimai:

- – judėti į dešinę
- ← – judėti į kairę
- ↑ – judėti į viršų
- ↓ – judėti žemyn

Ar pelė pasiekė sūrį?

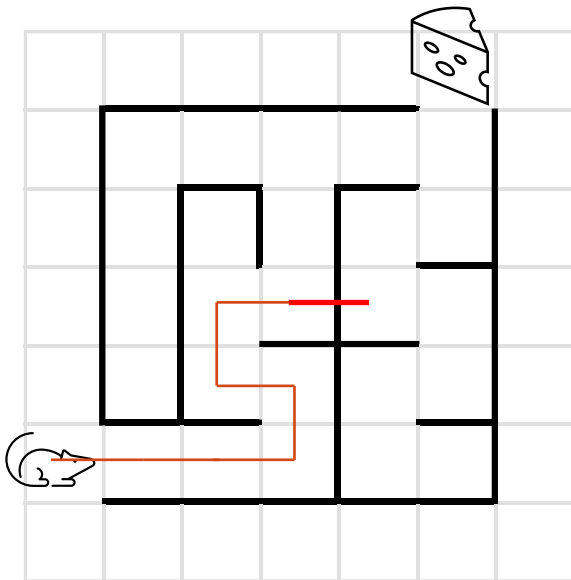


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Žaidimas „Labirintas“

Instrukcijos:



Žymėjimai:

- – judėti į dešinę
- ← – judėti į kairę
- ↑ – judėti į viršų
- ↓ – judėti žemyn

Ar pelė pasiekė sūrį?

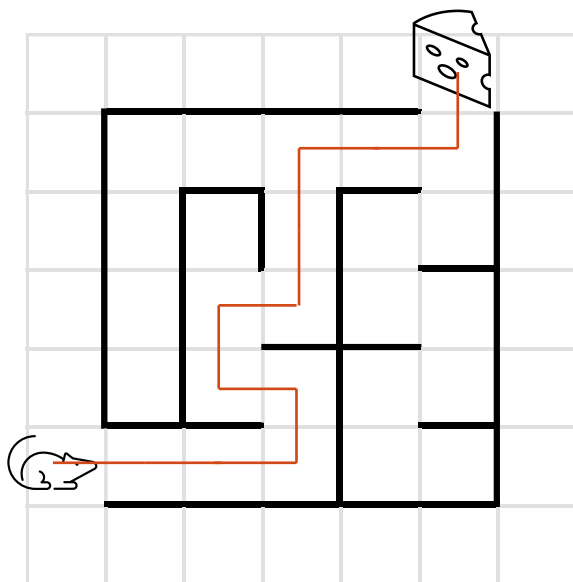
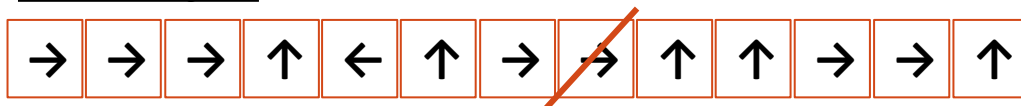


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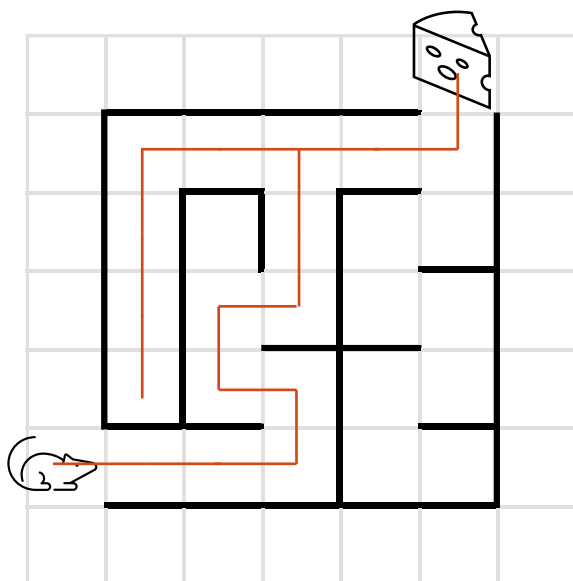
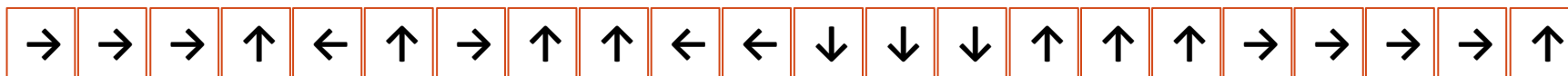


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Ar pelė pasiekė sūrį?

Ar duotos instrukcijos yra kokybiškos?

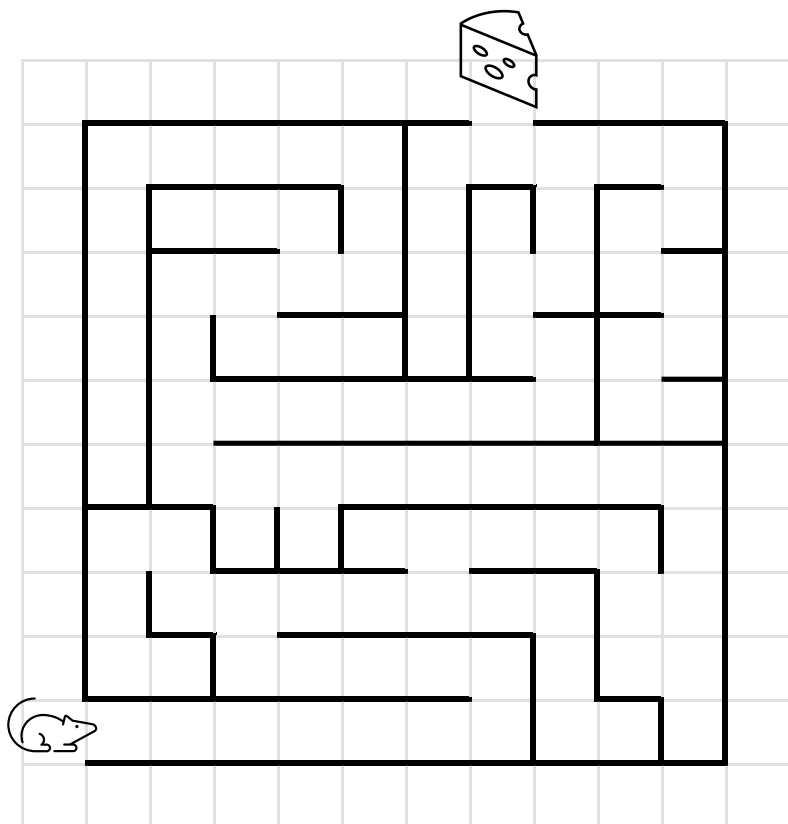
Kaip galima būtų pagerinti instrukcijas?



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Žaidimas „Labirintas“



Kūrybiškumas (istorijos, labirinto sukūrimas)

Programavimas, testavimas, programinio kodo vertinimas ir tobulinimas

Bendradarbiavimas (instrukcijų ir grįžtamojo ryšio teikimas)



1. Stačiakampiame 10x10 tinklelyje sukurkite labirintą (5 min.):
 - labirinto sienomis gali būti tik horizontalios ir vertikalios linijos;
 - turi būti aiškiai pažymėta labirinto pradžia ir pabaiga.
2. Pateikite instrukcijas, kaip pereiti labirintą. Galite naudoti rodykles arba kitokius žymėjimus (pvz., D (→) – judėti į dešinę, K (←) – judėti į kairę, V (↑) – judėti į viršų, Ž (↓) – judėti žemyn) (5 min.)
3. Su kolega apsikeiskite labirintais ir instrukcijomis. Tiksliai vykdydami gautas instrukcijas pabandykite pereiti labirintą. **Net jeigu matote, kad instrukcijos yra klaidingos, šiame etape privalote jų laikytis.** Ar pavyko pasiekti finišą? (5 min.)



1. Pasidalinkite praktikoje taikomų užduočių pavyzdžiais. Ar šios užduotys atitinka **STEAM-Active** projekte taikomą STEAM projekto apibrėžimą?

Science – Technology – Engineering – Art – Mathematics

2. Kokį STEAM apibrėžimą naudojate savo praktikoje?
3. Kokius STEAM užduočių privalumus / trūkumus pastebite praktikoje?

