BLOOM Stories

Title of your Story of (Online) Implementation

Why bioenergy?

Name of the author(s)

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Category

Please indicate with an "X" which prize category you wish to enter. Note that each category is judged according to specific criteria (to be found on the competition page and in Terms and Conditions). Only one category should be selected.	X
1. Teaching with bioeconomy in primary schools (individual work)	
2. Teaching with bioeconomy in secondary schools' STEM classes (individual work)	X
3. Integrated STEM teaching with bioeconomy – collaborative teaching (teams of two STEM teachers of different subjects)	
4. Integrated STEAM teaching with bioeconomy – collaborative teaching (teams of up to three teachers of different subjects, including at least one STEM teacher and at least one non-STEM teacher)	

The BLOOM resource used

Please indicate with an "X" which BLOOM School Box resource you implemented online or in your class.	X
Bloom your school with your biofuel and soap lab	
Examining the thermal properties of bio-based building materials	
Building a new environmental Future	
Growing plastic and new life for plastic	
How poop will change the world	
Don't waste your waste! - Raising Bioeconomy awareness	

BLOOM has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 773983. Neither the European Commission nor any person acting on behalf of the Commission is responsible for how the following information is used. The views expressed in this publication are the sole responsibility of the authors and do not necessarily reflect the views of the European Commission.

Please indicate with an "X" which BLOOM School Box resource you implemented online or in your class.	X
Yeast, biofuels and novel biotechnology techniques'	
Let's talk about bioenergy and our lives!	X
The benefits of composting – How we can produce organic fertilizer in our school garden	
Biofuel production from fruit waste	
Back to the Future	

Abstract

Please briefly summarise your (online) implementation (maximum 200 words). Note that this summary will be used to disseminate your work, so it should be concise and appropriately reflecting the content. Make sure to add up to 5 keywords that you think best describe your (online) implementation.

I created an online GoLab ILS (Inquiry Learning Space) for my 15-year-old students, using the BLOOM School Box as the main resource. I taught them about different energy forms in general and bioenergy. This lesson was integrated in the Romanian national curriculum for 9th grade: Energy unit. Usually, this unit is taught in a traditional way, so Bloom Box and GoLab inquiry learning platform seemed to me the perfect combination to innovate my teaching and to introduce my students to bioenergy and biofuels. My pupils' feedback was positive. The group posters created as lesson outcomes and presented by them to their peers served also as multipliers and knowledge boosters not only for their classmates. These posters became Science class materials for younger pupils in my school, because my 15 years old students are following a pedagogic specialisation: future kindergarten and primary school teachers after graduation.

Keywords: Bioenergy, Biomass, Biofuels, Bioeconomy

The implementation context

Please briefly describe the context of your (online) implementation, specifying: what subject(s) you chose to implement the resource in, what are the students' ages, the size of the group, previous familiarity with bioeconomy activities, etc. (maximum 200 words).
Please note that the competition looks to collect stories of (online) classroom implementation, so the context must appropriately reflect this.

The resource *Let's talk about bioenergy and our lives!* was implemented in a Physics online lesson on GoLab educational platform, with a group of 20 students aged 15 years old, organised in groups of 3-4 pupils.
I integrated this lesson in the national curriculum for 9 grades: Energy unit.
Teaching time was 2 classes of 50 minutes each.
At the end of the online lesson, I asked my students to create posters as final products.

Your story

What did you do? Please describe how you used the BLOOM School Box in your teaching. For example, what was the structure of the session(s); did you make any adaptations to the resource? *If you are entering the competition in categories 3 or 4 (collaborative teaching), describe how you worked together with your colleagues to carry out the lesson (maximum 400 words).*

Being an online lesson on the GoLab platform, I used the scenarios for an online inquiry-based learning space with this structure: orientation, conceptualisation, investigation, discussion, and conclusion.

Orientation phase was used for presenting the lesson resources to stimulate students' curiosity about bioenergy, bioeconomy, and biofuels, materials used:

- A new bioeconomy for a sustainable Europe - Video
- The Bioeconomy Starts here! Video
- The Bloom School Box

In the **conceptualisation** part of the lesson, pupils, working in teams, created a hypothesis to explain the key concepts of the lesson: bioenergy, bioeconomy, and biofuels. They used GoLab apps Hypothesis Scratchpad and Collaborative Tool. The research questions used corresponded to the BLOOM resource: What is energy? What is bioenergy? What is biomass? What is biofuel? What are the different types of biofuels? What are the advantages and disadvantages of biofuels?

The investigation was an innovative and engaging step of teamwork to verify the previous hypothesis.
In the discussion phase, students presented their group work to their classmates and uploaded their final products in the online space (Google Drive – see poster created by students, in Romanian).

Conclusions were drawn in the final phase of the lesson.
I adapted the used resources to my students' group of age, national curriculum, and profile/specialization (pedagogic profile).

Learning outcomes

What did you achieve? Please describe the main learning outcomes you achieved with the (online) implementation of the selected School Box resource. Tell us about anything that supports your case for achieving these learning outcomes. For example, student comments, or any other evidence that illustrates the benefits and impact of your use of the School Box resource.
Note that you MUST have permission to include any photographs or screenshots especially parental permission in the case of young people. Any pictures you include should be added directly to the entry form.

The main learning outcome of this implementation is the group posters created by my students. My students created posters about bioenergy to see it below or on Google Drive – see poster created by students, in Romanian. See examples in the Annex.

This class will become kindergarten and primary school teachers at the end of high school. Hopefully, they learned enough and will be able to apply the knowledge in different ways to their future pupils in kindergarten and primary school classes.

Teaching outcomes

What did you, as a teacher (or a group of teachers) get out of teaching with the BLOOM School Box? What would you say to other people thinking about using bioeconomy in their teaching?
If you are entering the competition in categories 3 or 4 (collaborative teaching), please also describe your experience in collaborating with teachers of other subjects in your classroom. What is different from traditional teaching? (maximum 200 words).

The learning scenarios created in my opinion is another outcome because I can use this lesson plan with other students in the future. I can use Bloom School Box resources to teach climate change topics, food waste, bioenergy and so much more.
As a Scientix Ambassador I can promote teaching bioeconomy and the of using it potential to other teachers.
I would highly recommend using BLOOM School Box to any teacher that is in search of an innovative way of engaging his/her pupils in Science and its meaning for today's societies challenges!

About the BLOOM project

BLOOM is an EU Coordination and Support Action implemented from 2017 to 2020. The project aims at bringing together partners from across Europe to debate, communicate, and engage the public in the potential of bioeconomy. An economy based on biomass promises to foster a circular economy and to enhance climate change mitigation, while reducing dependence on fossil fuels.Bioeconomy covers a broad range of sectors, from agriculture and the agrifood industry, to fisheries, forestry, biorefineries, chemistry and (bio) energy – but despite its many applications, it has yet to enter into the public consciousness as an exciting solution to societal challenges.

Annex


Biomasa este o masă de materie organică de origine biologică. Ea reprezintă componenta organică a naturii.
IMPACTUL BIOCOMBUSTIBILILOR ASUPRA MEDIULUI
Biocombustibilul reprezintă în general,orice material de origine naturală care poate fi folosit ca sursă de energie.
Energia înglobată în biomasă se eliberează prin metode variate,care însă,în cele din urmă,reprezintă procesul chimic de ardere.
TIPURI DE BIOCOMBUSTIBILI
-BIOETANOL
-BIODIESEL
-BIOGAZ
-BIOMETANOL
-BIO-ETBE
-BIO-MTBE
-BIOHIDROGEN
-ULEI VEGETAL CRUD
Energia este o mărime care indică capacitatea unui sistem fizic de a efectua lucrul mecanic.
Forma cea mai simplă de biocombustibil este lemnul.Acesta este cel mai răspândit şi cel mai uşor de obţinut.
Din punct de vedere ştiinţific, energia este o mărime care indică capacitatea unui sistem fizic de a efectua lucru mecanic, când trece printr-o transformare, din starea sa într-o altă stare, aleasă ca stare de referinţă.
Bioenergia este definită ca fiind o calitate a tuturor fiinţelor vii şi se manifestă prin emisii de fluide energetice care sunt receptate de oameni, animale şi plante.
Biocombustibilul reprezintă în general, orice material de origine naturală care poate fi folosit ca sursă de energie. Forma cea mai simplă de biocombustibil este lemnul. Alţi biocombustibili sunt fabricaţi din porumb, trestie de zahăr, soia, alge şi uleiuri vegetale.
Combustibili ecologici
Coji de migdale
Tescovină măsline
Porumb
Lemn de foc
Coji de alune
Sâmburi de măsline
Peleţi de toate tipurile
Avantajele biocombustibilului
-costul
-materialele
-siguranţa
-stimularea economică
Dezavantajele biocombustibilului
-energia produsă
-emisiile de carbon mari
-cost ridicat


ENERGIA ELECTRICĂ ESTE ENERGIA DERIVATĂ DIN ENERGIA ELECTRICĂ POTENŢIALĂ SAU ENERGIA CINETICĂ
TIPURI DE COMBUSTIBI:
Combustibili solizi~Carbunele si lemnul
Combustibili lichizi~Benzina,Motorina & GPL
Combustibili gazoşi~GAZ
BIOENERGIA este o forta Universala. Fara Bioenergie nu ar putea exista nici viata.
Biocombustibilul apara mediul
Biomasa este o masă de materie organică de origine biologică. Deci, biomasa reprezintă componenta organică a naturii.
ENERGIA
BIOCOMBUSTIBILUL este acel combustibil obţinut din materii prime vegetale
Ce este energia?
Combustibili ecologici
Coji de migdale
Tescovină măsline
Porumb
Lemn de foc
Coji de alune
Sâmburi de măsline
Peleţi de toate tipurile
AVANTAJELE BIOCOMBUSTIBILULUI: Costul, Materiale, Siguranţa, Stimularea economică, Biodegradabilitatea,Scaderea emisiei de carbon.
DEZAVANTAJELE BIOCOMBUSTIBILULUI: Energia produsă, Emisiile de carbon mari în cadrul producţiei, cost ridicat, Utilizarea apei.
Bioenergia este definită ca fiind o calitate a tuturor fiinţelor vii şi se manifestă prin emisii de fluide energetice care sunt receptate de oameni, animale şi plante.Bioenergia poate influenţa şi corpurile inerte, dar nu poate fi receptată de către acestea.
BIOENERGY
BIOMASA


Energia este capacitatea unui sistem fizic de a efectua lucru mecanic cand trece printr-o transformare. Adica este egala cu lucrul mecanic efectuat de o forta pe o anumita distanta sau, altfel spus, energia ne da abilitatea de a face ceva:miscare,incalzire etc.
Biomasa este partea biodegradabila a produselor, deseurilor si reziduurilor din agricultura, inclusiv substantele vegetale si animale, silvicultura si industriile conexe, precum si partea degradabila a deseurilor industriale si urbane.Biomasa reprezinta resursa regenerabila cea mai abundenta de pe planeta.Biomasa este prima forma de energie utilizata de om, odata cu descoperirea focului
Exista doua tipuri de biocombustibili:
de prima generatie
de a doua generatie
Prima generatie reprezinta biocombustibili facuti direct din culturi de plante sau din alte resurse care sunt cultivate anume cu scopul de a fi utilizate pentru combustibil
Biocombustibilul reprezinta in general, orice material de origine naturala care poate fi folosit ca sursa de energie.
Un studiu brazilian a folosit imagini de sateliti si studii de teren pentru a arata ca rata transformarii padurilor de teren agricol in zona Amazonului este strans legata de preturile globale la boabele de soia.