

GenB Learning Scenario Template

INTRODUCTION TO BIOECONOMY

Gunel Mustafayeva

OUR CONSORTIUM



INTRODUCTION TO BIOECONOMY

A GENB LEARNING SCENARIO

Author(s)

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Summary

My learning scenario is to combine the power of technology with the beauty of nature. My goal is for students to learn coding in ways that are interesting, motivating, and self-discovery. At the same time, the main goal is to make them understand how indispensable nature is for us.

The main goal of our school is to form the feelings of protecting the environment and nature in the students of our school, not to neglect the cleanliness of their environment and the world, to provide ecological education and, at the same time, to support the students in their studies - in their future lives. In fact, we started the whole story from cardboard, with my project "what useful items, devices, and useful models we can make for our school from various waste materials". As a result, students created a very creative cardboard house. The next steps are listed below in sequence. I would like to inform you that I personally prepared all the details of the models by training the students.

Keywords

Nature, HTML, CSS, coding, design, artwork

Introduction

GenB is a project funded by Horizon Europe, the European Union's funding programme for research and innovation, that runs from November 2022 until May 2025. It is focused on educating and empowering the Generation Bioeconomy (GenB), aware, sensitive, and interested in environmental issues, sustainability and circularity. It aims to raise awareness on Bioeconomy building on communication and education that encourage and reward young BIOVOICES to take a role in steering the transition towards more sustainable lifestyles.

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Overview

Name of deliverable

Subject(s)	<i>This is an interdisciplinary lesson (Informatics, Coding, Drawing, Biology, Life science). I would like to inform you that I gave this lesson to the students by combining the important topics of several lessons based on their interests. Like every teacher, I first of all try to develop the world views of my students. Interdisciplinary integration leads to the emergence of interesting lessons. These lessons give us important strength in our development.</i>
Topic(s)	<i>The beauty of nature gives elegance, development and new inventions to the power of technology</i>
Age of students	Students aged 14-18
Preparation time	30 days (4 hours with a break each day)
Teaching time	(4 hours with a break each day)
Online teaching material	https://www.coursera.org/ https://alison.com/shop https://code.visualstudio.com/ https://visualstudio.microsoft.com/ru/vs/ https://www.w3schools.com/ https://code.org/ https://www.kodable.com/ https://www.codecademy.com/ https://codecombat.com/ https://www.tynker.com/ https://dictionary.cambridge.org/grammar/british-grammar/nouns_2 https://learnenglish.britishcouncil.org/grammar/english-grammar-reference/nouns https://www.grammarly.com/blog/nouns/ Padlet, Google Classroom
Offline teaching material	Computer, mobile phone, colored pencils, colored paints, pen, decorations, colored plasticine, scissors, glue, colored paper
Resources used	https://drive.google.com/file/d/1L9fvp4ukkm30NSJ-jJZ2N3IJBykmifl/view?usp=sharing https://drive.google.com/file/d/1SX4rp8BJqwlTRRI79kziFAxRIR5GEGv7/view?usp=sharing

Name of deliverable

Aim of the lesson

First, I try to teach my students how to properly design a website. This is a task that requires a lot of patience, hard work, and sometimes you have to be very precise, an artist and even an engineer for the perfect match of text and images. I encourage all my students to be interested in all fields. The knowledge we get from every field helps us to be more creative and critical. Look at nature, society, space and create...

Trends

List the relevant trends that the lesson incorporates: <http://www.allourideas.org/trendiez/results>

Project-Based Learning: students get fact-based tasks, problems to solve and they work in groups. This kind of learning usually transcends traditional subjects.

Lifelong Learning: learning does not stop when leaving school.

Student Centered Learning: students and their needs are at the centre of the learning process.

Vocational Education: An increased focus on vocational (not academic) skills in the curriculum

21st century skills

Add here how the lesson plan corresponds to 21st century skills. To find out more: <http://www.p21.org/our-work/p21-framework>.

<https://www.etf.europa.eu/en>

<https://www.cambridgeenglish.org/>

<https://www.globalschoolalliance.com/>

STEM Strategy Criteria

Criteria definition

1. Curriculum implementation- Curriculum is based on research into teaching methods and learning approaches in other parts of the world. Curriculum implementation refers to how teachers deliver instruction and assessment through the use of specified resources provided in a curriculum.

In brief, there are three critical components to consider when attempt to implement a new curriculum and these components are

1. the speed of the implementation

2. communication during the implementation

Name of deliverable

3.support during the implementation

2.Infrastructure-The term "school infrastructure" refers to things like school buildings, playgrounds, public amenities, libraries, laboratories, and other facilities. A good school infrastructure with good spaces makes it a good place for the children to study. The impact of educational spaces on the students set out to identify the empirical well-being of students in schools. It makes it interesting and gets the children motivated to come to school, this in turn improves the attendance and interest of students in learning.

I know people love nature. We always want to see beautiful nature. But for this, you need to work hard, you need to protect nature. We never throw away the bread and flour products we eat. Because it takes so much hard work for wheat and grain to reach our table as bread. Not only man works hard for the grain to ripen, but also nature works hard.

As we know, the whole world had a hard time during the pandemic. Emotional tension increased especially among children, schoolchildren and students. There are many important factors in the increase of emotional stress in students. Climate change, increasing environmental problems, pandemic period and so on. We educators always want to teach students interesting lessons through new technologies. It is not so easy to make them interested in knowledge without tiring them. In this regard, additional lessons give them great motivation. Through these additional lessons, we can teach them to love nature.

It is better if such lessons are practical. It is necessary to direct students not only to new technologies, but also to nature. This will reduce their stress and motivate them.

We can protect nature by taking care of it and working on it. I would like the calls to love nature and protect nature in textbooks to be given to students as a separate lesson.The initiative I put forward is as follows - Schools should have "nature-related centers" as well as libraries, canteens, gymnasiums, and laboratory rooms. Pupils should take an active part in the green areas of their schools, in the cultivation of indoor plants and their care. Let them understand the struggle that nature gives by closely participating in the process of planting and growing a plant.These works can be added to their portfolio as an additional positive assessment.(A portfolio is a systematic collection of student work that represents student activities, accomplishments, and achievements over a specific period of time in one or more areas of the curriculum.)I believe that great results will be obtained.

Elements and criteria	How is this criterion addressed in the learning scenario
Instruction	
Personalization of learning	The lesson we present to you combines various subjects. This lesson in itself demonstrates the great effects of interdisciplinary integration.

Name of deliverable

Problem and project-based learning (PBL)	Students prefer to work in groups. At this time, the given task is completed quickly, research skills are perfected. On the other hand, project-based work leads ideas to inventions, friendships between students increase.
Inquiry-Based Science Education (IBSE)	Students learn how to integrate their skills through their results-oriented thinking. They are already developing their own research questions. This means that they can build schemes and sketches of the work they will do in their brains in advance.
Curriculum implementation	
Emphasis on STEM topics and competencies	Our curriculum emphasises key STEM competencies and STEM subjects.
Interdisciplinary instruction	Our main goal in our projects is to extract science from nature, extract art from science, combine technology with creativity and create new perfect projects. Students prepare projects in each class according to their subject and knowledge level. These projects show how they master other subjects.
Contextualization of STEM teaching	Lessons are connected to real-world experiences.
Assessment	
Continuous assessment	The purpose of formative assessment is to monitor student learning and provide ongoing feedback to staff and students. As a teacher, I would like to say that one of the most important issues in education is assessment. Correct, fair and encouraging assessment is the biggest motivation for the next lesson. Because the student knows that his work is properly evaluated and the teacher just wants him to progress in a positive direction.

Name of deliverable

Personalized assessment	<p>Personalized assessment and feedback are based on the idea that each student has unique strengths, weaknesses, interests, and learning styles. I always treat my students individually. Teachers, pedagogues should be closely familiar with their students' personalities, educational strengths, and their common problems. Teachers should communicate closely not only with students but also with their parents. Because the teacher-parent union is very important in the formation of the student and in achieving progress in education. Each student's progress and success is unique and unique to him. Therefore, evaluation should be motivating, fair and individual.</p>
Professionalization of staff	
Highly qualified professionals	<p>Our training and education center has STEM specialists who love their profession and are constantly working on themselves. They are constantly actively participating in the training of STEM centers and are successful in competitions.</p>
Existence of supporting (pedagogical) staff	<p>Assistant teaching staff actively participate in solving technological and security problems that arise in the classroom environment. You know that small problems can demotivate such classes.</p>
Professional development	<p>Our training and education center provides continuous professional development for teachers.</p>
School leadership and culture	
School leadership	<p>Leadership plays a major role in increasing schools' achievements and improving effective learning, which positively affects institutions, society and quality of life. This study aims to investigate the most effective tools and qualities for school leaders.</p>
High level of cooperation among staff	<p>Cooperation demonstrates the ability to work effectively and respectfully with diverse people or teams, make compromises, build consensus in decision-making, assume shared responsibility for collaborative work, and value the opinions and contributions of individual team members, from a position of firm self-identity.</p>

Name of deliverable

Inclusive culture	<p>An inclusive learning culture creates support between line managers and their teams, among team members, and beyond. In our education system, inclusive students are treated with great respect and attention. When I was a student, one of my closest student friends in the group belonged to such a sensitive group. We built a relationship with him in such a way that he never felt different and was always on good terms with us. Then, I have such people among my most successful colleagues, and I always have great respect for their love of life and their success at work.</p>
Connections	
With industry	<p>We often meet our students with workplaces and teams that are professionally engaged in this work for practice and self-development. They are specialists who know their work at a high level. Such practice and training give a great boost to self-confidence.</p>
With parents/guardians	<p>Establishing correct and sincere relations with students' parents encourages high achievement in the learning environment.</p>
With other schools and/or educational platforms	<p>We meet and network with representatives of other educational institutions at educational forums, educational exhibitions, and trainings.</p>

Name of deliverable

With universities and/or research centers	Universities are the most valuable research centers of all sciences and educational fields. Of course, we meet these specialists sometimes physically, sometimes online, and get excellent information from them.
With local communities	Working with the community is very important and convenient. It helps a lot in solving problems, organizing events or performing successfully in competitions.
School infrastructure	
Access to technology and equipment	Training and education center has internet access, laptops, and tablets.
High quality instruction classroom materials	The teaching and learning center is constantly monitoring new resources and making them available to teachers and students.

Lesson Plan

Describe here in detail all the activities during the lesson and the time they require.

The lesson I teach is placed in this folder with all the details and steps. Good luck to everyone!

Look at the website

<https://drive.google.com/drive/folders/1ATBwfdBxZPwX8HFoJrGVjnac05sPIL1r?usp=sharing>

First, a new folder is created on the desktop. Then all the files given by the link are uploaded to that folder. You can view the site by opening the "Index" file!

Name of activity	Procedure	Duration
------------------	-----------	----------

Name of deliverable

1

I begin to explain the topics I listed above in order. I often ask students what they do not understand?

These topics are shown on examples.

Then the students are divided into two groups and start coding the given web page. The most important thing in coding is to write the codes neatly. It is like writing in a notebook with the same name. Sloppy coding leads to confusion. At this point, you cannot go back and correct any mistakes. Because you can't see where the mistake is. Codes should be written in a neat, planned manner.

In coding, when students work in groups, the work to be done takes less time to prepare and is more interesting. They are able to work in a group and this gives good results in their further activities.

For the next two hours, we first begin our lesson by working on the KWL Chart. Because in addition to motivating students, it brings out difficult questions for them. We have discussions and even we all gain new knowledge.

Then we talked with the students about the benefits of the olive tree and olive oil.

In the rest of our time, we finalized the coding and reviewed it again in full detail.

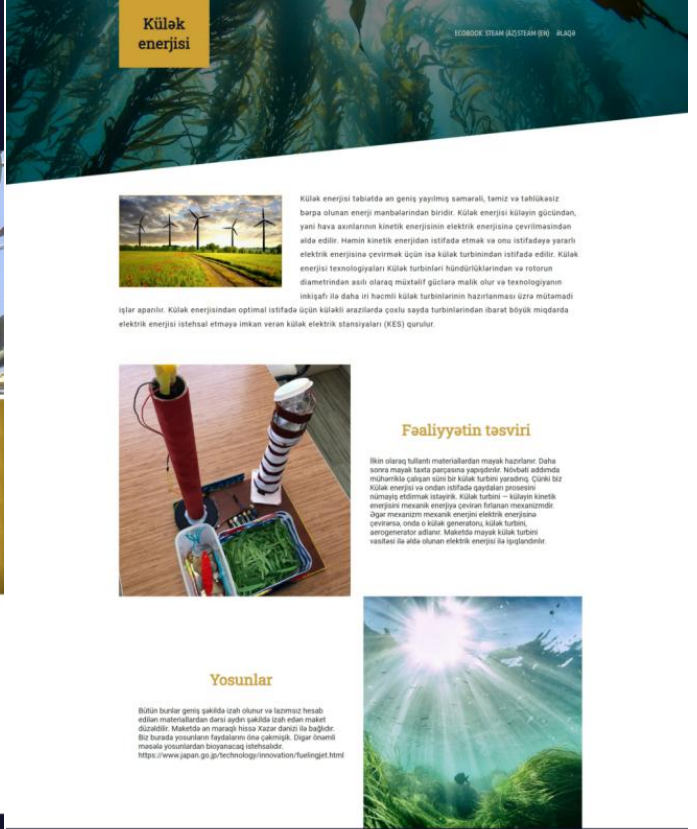
ECOBOOK

<https://fb.watch/sIDRDuMN8n/>

<https://drive.google.com/file/d/1IwnKWSIB6Fq-568lWhNspkVInGNHq19Z/view?usp=sharing> (link copy paste web browser)

<https://drive.google.com/file/d/1De6S4JqC78sEgh52RQQh7aSt9PSalcbq/view?usp=sharing>

Name of deliverable



Name of deliverable

Name of activity	Procedure	Duration
2	<p>The teacher says that today's lesson is to create a table in HTML format. Four corresponding pictures should be placed in front of the words given in the table. Each group can choose the name they want.</p> <p>Although students are very interested in coding, the work itself requires high precision and patience. But working with interesting topics and groups for students makes the learning environment faster and more interesting.</p> <p>Students focus on the given table and each group starts coding HTML and CSS after a small discussion among themselves. The teacher gives them opportunities to explore the correct codes and search the internet.</p> <p>Students implement a responsive layout to adapt the given web design to mobile, desktop platforms, i.e. different screen sizes. They then check out the web design on their mobile devices.</p> <p>Students eagerly try to submit the task they have completed that requires hard work and attention. Each group explains and presents the HTML and CSS pages they have coded on the whiteboard. Each part is discussed by other group members as they present. The teacher supports the students in the parts where they have difficulty.</p> <p>Let's take a look at the chart that created the ECO FRIENDS group. First of all, you know that Visual Studio Code must be included. A new folder should be opened on the computer and all the work done should be saved there.</p>	

HTML page

```

<!DOCTYPE html>

<html lang="en">

<head>

  <meta charset="UTF-8">

  <meta http-equiv="X-UA-Compatible" content="IE=edge">

  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <title><style class="scc"></style></title>

  <link
    Name of deliverable
    rel="stylesheet" href="style.css">

</head>

<body>

```

```
<div id="myDIV">
```

```
<table>
```

```
<table class="zui-table">

  <thead>

    <tr>

      <th style="color: crimson;">ECO FRIENDS</th>

      <th><span style="color:crimson">one</span></th>

      <th><span style="color:crimson">two</span></th>

      <th><span style="color:crimson">three</span></th>

      <th><span style="color:crimson">four</span></th>

    </tr>

  </thead>
```

```
<tbody>

<tr>

  <td>Fruit</td>

  <td></td>

  <td></td>

  <td></td>

  <td></td>

</tr>

<tr>

  <td>Vegetables</td>

  <td></td>

  <td></td>

  <td></td>

  <td></td>

</tr>

<tr>

  <td>Bird</td>
```

Name of deliverable


```
<td></td>

<td></td>

<td></td>

<td></td>
</tr>

<tr>

<td>Animal</td>

<td></td>

<td></td>

<td></td>

<td></td>
</tr>

<tr>

<td>Fish</td>

<td></td>

<td></td>

<td></td>

<td></td>
</tr>

<tr>

<td>Insect</td>

<td></td>

<td></td>

<td></td>

<td></td>
</tr>

<tr>

<td>Reptile</td>

<td></td>

<td></td>

<td></td>

<td></td>
</tr>
```

Name of deliverable


```
<tr>

  <td>Tree</td>

  <td></td>

  <td></td>

  <td></td>

  <td></td>

</tr>
```

```
</tbody>
```

```
</table>
```

```
</div>
```

```
</body>
```

```
</html>
```

CSS page

```
body{
  margin-top: 90px;
}

#myDIV {
  height:950px;
  background-color:rgb(252, 246, 252);
  border: 3px solid black;
  border-radius:50px;
  padding:80px;
}
```

Name of deliverable

```
table {
    background-color: rgb(252, 246, 252);
    background-position: 100%;
    border-collapse: collapse;
    width: 100%;
    border-color: rgb(252, 252, 252);
    font-size: 20px;
    padding-top: 90%;
    border-bottom: none;
    border-style: hidden;
    /*Remove all the outside
    borders of the existing table*/
}
```

```
td, th {
    border: 3px solid #999;
    padding: 4px;
    text-align: center;
    height: 60px;
    font-size: 50px;
}
```


```
.zui-table thead th {
    text-shadow: rgb(158, 97, 158);
    text-align: center;
}
```

Here is the resulting image

Name of deliverable


ECO FRIENDS	one	two	three	four
Fruit				
Vegetables				
Bird				
Animal				
Fish				
Insect				
Reptile				
Tree				

Name of deliverable

Name of activity	Procedure	Duration
3	<p>I begin to explain the lesson:</p> <p>https://docs.google.com/presentation/d/1fF3noK2epJdKo0NpyRq2njDR7llqj-jN/edit?usp=sharing&ouid=106255576385032980630&rtpof=true&sd=true</p> <p>After I explained the lesson, the students started to present the handicrafts we had made for two weeks. We invited other teachers and students to the lesson. In the lesson, the students expressed what ideas they wanted to convey to the world with their paintings. In the class, students made their presentations and it was very successful.</p> 	

Name of deliverable



Name of activity	Procedure	Duration
4	<p>In the next training, together with the students of the high school, we conducted an open-air lesson covering the topics of preparing ecological corners and planting potted flowers in the "Green class". Students were given extensive information about planting melons and planting melon plants. How to plant trees, how to take care of them, and the processes of pruning were watched with interest by the students.</p> <p>I would like to inform you that our school is located very close to the Caspian Sea. In this regard, we later organized an excursion to the coast of the Caspian Sea. There, together with the students, we shared interesting information about the flora and fauna of the Caspian Sea. In the end, we decided to study all this experience in an integrated way with several subjects. As a result, let's prepare important lesson models from household waste.</p>  <p>https://drive.google.com/file/d/1R24xG87hb-qfB_LdPMx_DIKyJaEEHRJ3/view?usp=sharing</p>	

Name of deliverable



Mock-up process:

<https://drive.google.com/file/d/1HPI0b1CQCrg0sdrfAZk4F8YtrZEGfHze/view?usp=sharing> (link copy paste web browser)

<https://drive.google.com/file/d/1CEOS5rwCbobwSZsi4K-lalefFdpYt3x5/view?usp=sharing> (link copy paste web browser)

Name of deliverable

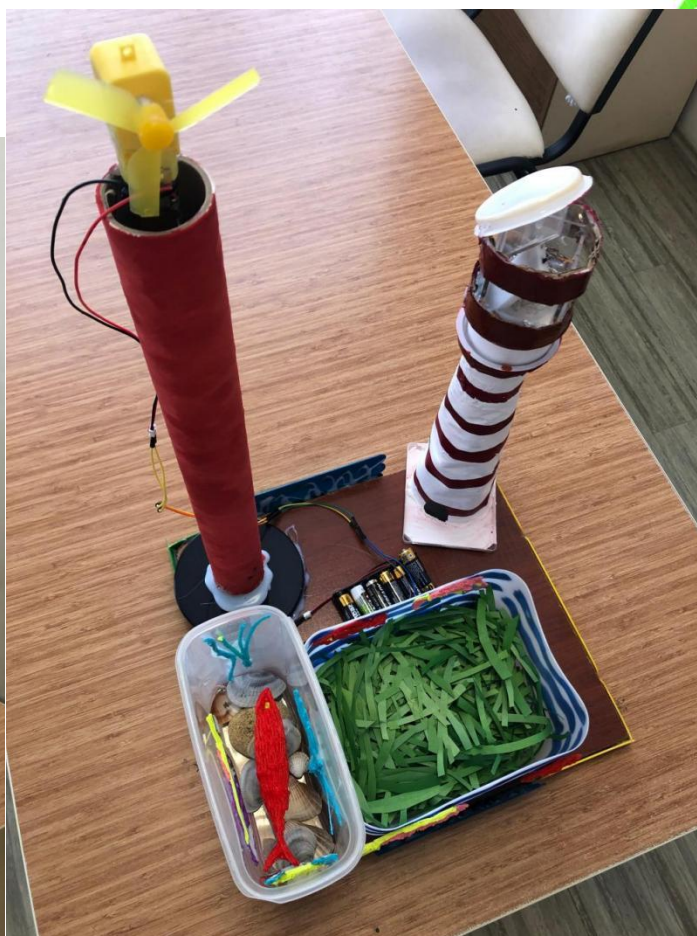


Name of deliverable

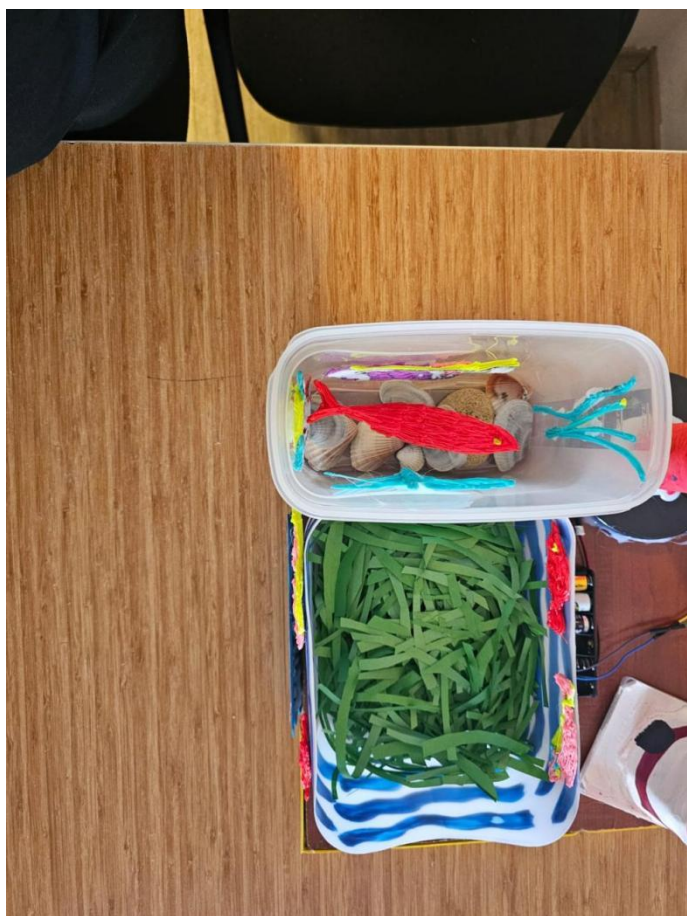


https://drive.google.com/file/d/1rO9nBzMAxyHsQSuz4nqZBYnm6l_NSaDL/view?usp=sharing (link copy paste web browser)

Name of deliverable



Name of deliverable



Name of deliverable

Name of activity	Procedure	Duration
5	 <p>In Minecraft: www.minecraft.net, students built one of the high-quality houses equipped with "smart" technologies in the village of Agalı and created a creative, educational and developmental work. The goal is to install scientific knowledge and research into the Minecraft game and create useful skills. We have prepared many lesson models at www.minecraft.net and learned important skills such as web engineering.</p> <p>Minecraft: www.minecraft.net in our "smart home" we have brought forward the feelings of care and love for nature, the ideas of protecting fauna and flora in the surrounding world.</p>	

https://drive.google.com/file/d/1Tl4hPcl5JrDima873uIQ_U9VjYuWUXk/view?usp=sharing (link copy paste edilərək web browser də açılır)



Name of deliverable



Students' work:

https://drive.google.com/file/d/14Eh4y_y83FDVOFVkQ4rcocn6o6CeUfYy/view?usp=sharing (link copy paste web browser)

<https://drive.google.com/file/d/1I3XdbYs56AiJ7GuMUJ1OrwLWohMaxt8e/view?usp=sharing> (link copy paste web browser)


Name of activity	Procedure	Duration
6	Organized by Gunel Mustafayeva, training was held at the school on "Vocational education in Azerbaijan", "Vocational training", "Adaptation of the content of vocational education to the requirements of the labor market", "Job search: determining our interests and skills". The purpose of the training is to provide students with detailed information about the activities of vocational education institutions, how to prepare qualified personnel according to the requirements of the labor market, and to support them. After that, discussions were held among the participants and their questions were answered.	

https://drive.google.com/file/d/1WyV6z2G3Nzn9B_8PIRrhQ_pIpV7QrtFO/view?usp=sharing (link copy paste web browser)

Name of deliverable

<https://drive.google.com/file/d/113kKu8OAn0LDfvfshkPoeOI2BhNgBEXS/view?usp=sharing> (link copy paste web browser)

<https://drive.google.com/file/d/1eg6a9n6OJ4tqmFcSuh-SWhwgc7E2UfvG/view?usp=sharing> (link copy paste web browser)

Name of activity	Procedure	Duration
7	<p>Dear students, don't throw away your toys!</p> <p>Bring them to STEAM class!</p> <p>Become an engineer in any field!</p> <p>Training topics:</p> <p>Renewable Energy Sources</p> <p>Environmental protection</p> <p>The role of bees on our planet</p> 	

Name of deliverable

Name of activity	Procedure	Duration
8	<p>National STEAM and national vocational skills</p> <p>On October 17, 2024, the Workshop "Protect Biodiversity" organized by Gunel Mustafayeva was successfully implemented.</p>	



The explanation of the lesson begins: <https://support.microsoft.com/en-us/windows/keep-your-computer-secure-at-home-c348f24f-a4f0-de5d-9e4a-e0fc156ab221>

The teacher asks the students a question and thus the introduction to the motivational lesson begins. How to embed images in HTML?

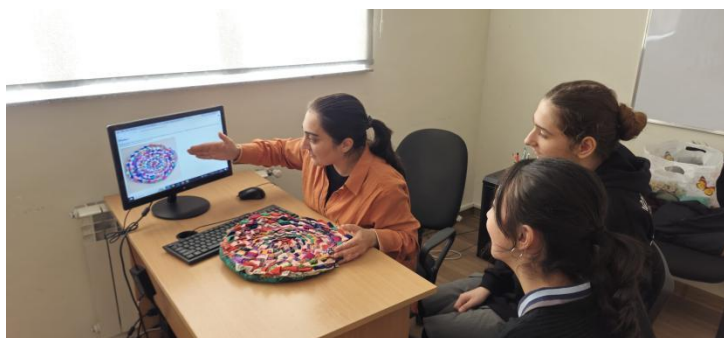
https://www.w3schools.com/html/html_images.asp

After learning the lesson together with the students, we posted a picture of the mattress we made ourselves on the https://az.wikipedia.org/wiki/Qurama_tikm%C9%99 page. My goal is not to forget our national values and bring them to science by combining them with technology.

<https://drive.google.com/file/d/1buvmEqa8jqZ8I9nG3gYX6DHoBWVO0dIW/view?usp=sharing>

We then created a web page about the mattress together with the students. We've done the coding here from scratch.

Name of deliverable



In addition, we have integrated the ancient patterns of the mattress into the eco bag. So, we created this bag at home, made from unnecessary fabrics and without spending any money. Most importantly, we have integrated our national patterns into this bag.

<https://drive.google.com/file/d/1qey06A8Yqkv1QFT6M6ON21vVMRTW3rIA/view?usp=sharing>



Name of deliverable



Assessment

Assessment for learning is an approach to teaching and learning that creates feedback which is then used to improve students' performance.

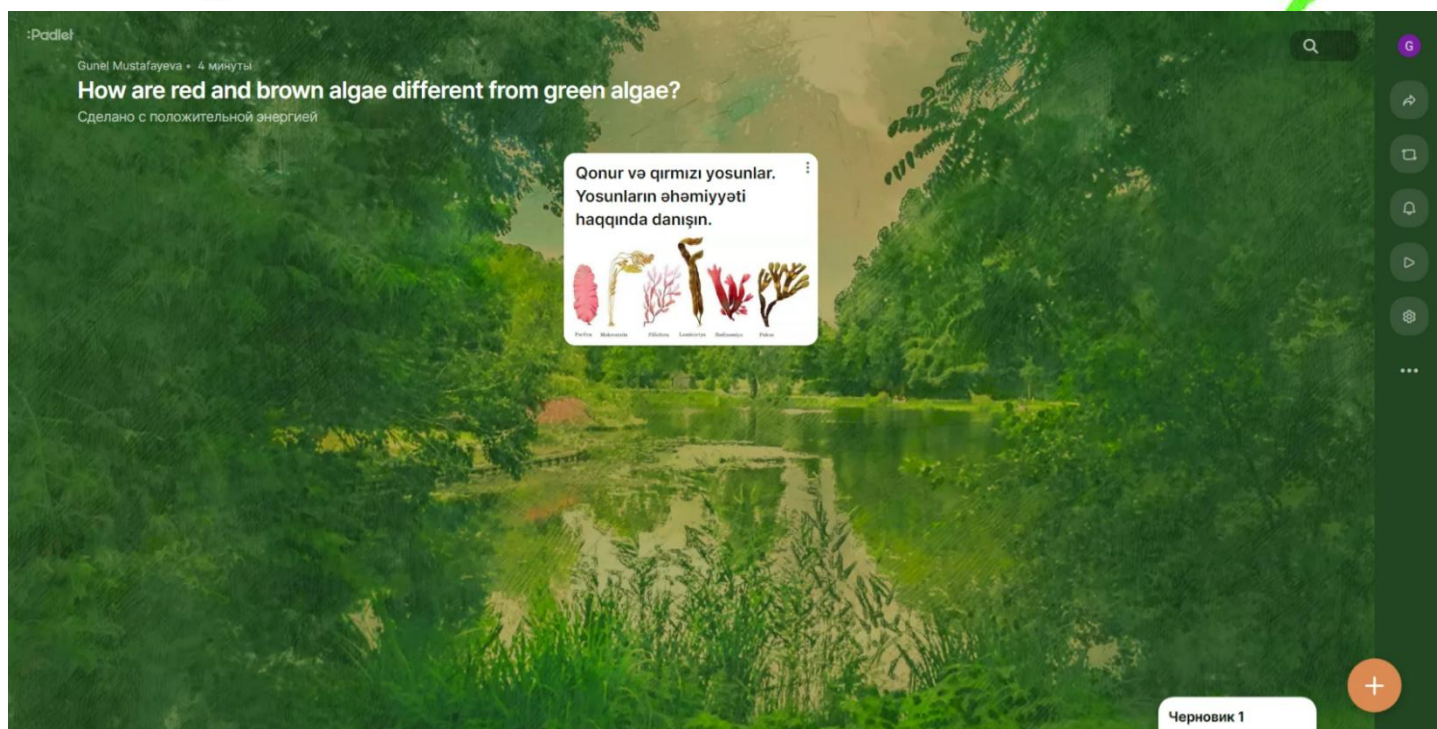
What have I learnt?

What have I found easy?

What have I found difficult?

What do I want to know now?

Name of deliverable



Student feedback

We conduct a student poll at the end of every half year. In general, students there evaluate the questions related to the quality of the lesson with 5-point system. Then they write their opinion in the comment section. These ideas can be related to all issues in the learning and teaching center. For example, what new things the student wants to see in the training and education center, the innovations he wishes for in the teaching process, issues he is critical of, and so on.

We used a Google Form to collect feedback from students at the end of the LS.



also use the 5W1H

Name of deliverable

Method. This is a very useful model.

We

5W1H – Who, What,

Where, When, Why, and How – is a basic

framework for exploring factors or consequences related to an issue, and is frequently used in journalism and in problem-solving processes. Its ubiquity is what makes it such a good framework for helping students generate details for their composition.

Teachers' remarks

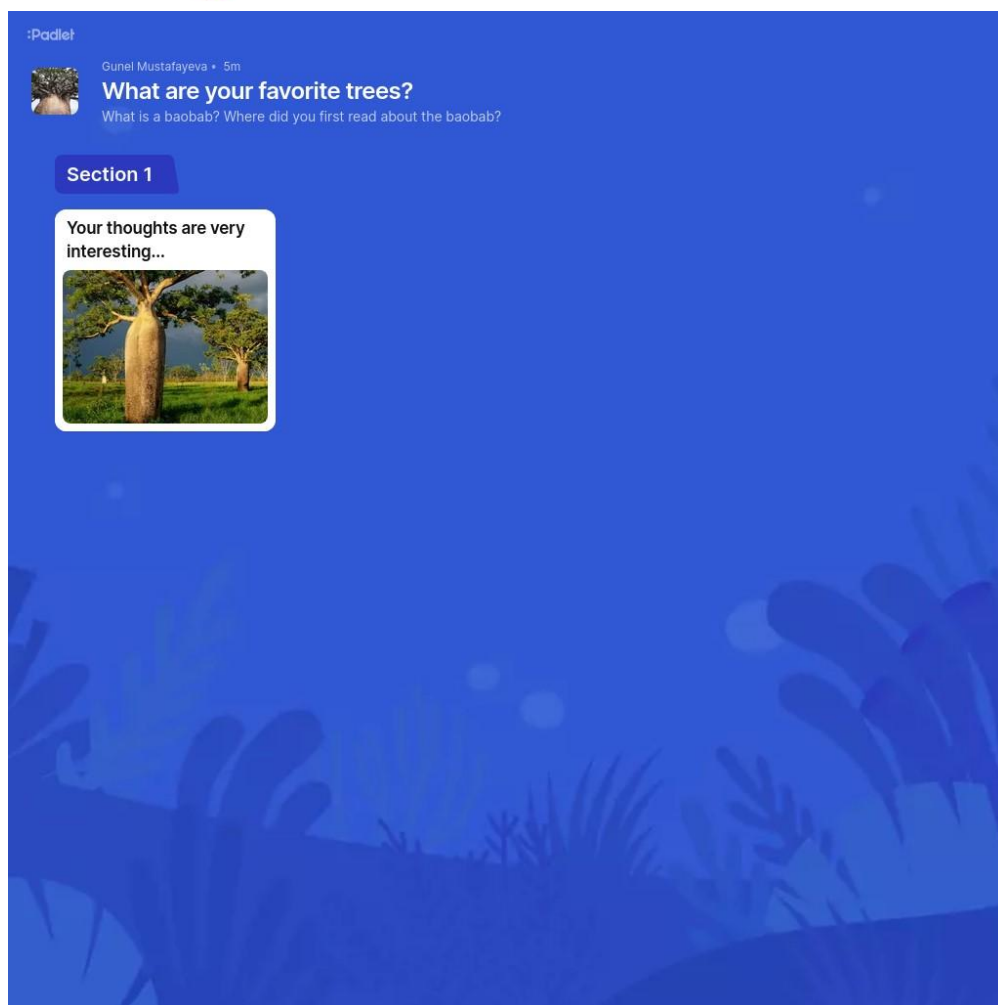
I believe that every training that is painstakingly implemented from the heart brings important benefits to the development of teachers and students. By teaching, the teacher becomes more familiar with the secrets of his profession, and the students consolidate the knowledge they have learned and acquire new knowledge. For me, studying should be voluntary, not compulsory. I try to make students love the lesson. The only way to do this is if the teacher also loves his profession.

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Annex(es)

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