# Modern Tech Integration in Humanities Teaching- a Practical Guide

*"In a fast-changing world, those who learn will inherit the earth, and those who learn to learn will lead the future."* **Eric Hoffer**

*"The future of work is not about jobs, but about skills."* **Richard Branson**

*"In an era of rapid change, those who combine technology with human compassion will shape the future of work and society."* **ChatGPT**

shape robotics
SMART LEARNING

# Table of contents

## Literature



## History



## Geography



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## Art education

# Note

## Before programming

1. The robots are charged and functional, which can be checked directly in the app.
2. The Hub is connected to the device you will program from. When connected, it will light up with one of six colors and the code will be visible in the app.
3. The Fable Blockly app is installed and updated on your programming device. You can download the latest version here: **Apple Store**, **Mac OS**, **Google Play**, **Microsoft**.
4. The robots have updated firmware. If necessary, you can update the firmware in the app. Go to the following links for **Hub**, **Spin**, **Joint**.
5. The Fable Face app is installed and running on your phone. You can download the latest version here: **App Store**, **Google Play**.
6. Make sure your internet connection is working.
7. Make sure Bluetooth is turned on and working on the device you'll be programming.

## While running programs

1. The same color should be shown for the robots and the Hub.
2. Use the appropriate codes for the robots in the application.
3. Watch out for overload messages! These messages indicate when a motor is overloaded and requires adjustments in the program, the subassembly in which it is located, or the operating environment.
4. An angle of zero degrees for the Joint module denotes a vertical engine position.

## Note

- The programs do not contain command blocks for character dialogs. These **(the texts and their playing time)** will be created and inserted into the program by the users, depending on the theme and objectives of the lessons.
- All the scenarios and programming examples in this manual are only **suggestions and starting points**, which can be used and developed according to the complexity of each lesson.
- Chroma **(green textile surface)** is used to add an artistic effect to the video material, allowing the creation of a contextual background (space, desert, forest, etc.). It is not a compulsory element in the process of creating and running experiments.

# Non-literary text: analysis and structure

LITERATURE

In this interactive lesson, students will understand the key concepts of the non-literary text as they explore the solar system through hands-on experiences and modern technologies such as ClassVR, interactive display and Fable robots.

## OBJECTIVES

- Defining the concept of a non-literary text, highlighting its particularities.
- Classifying different types of non-literary texts, such as scientific, technical, academic, journalistic or administrative texts.
- Identifying the logical structure of a nonliterary text: introduction, contents and conclusion.
- Identifying specific language techniques non-literary texts.
- Writing non-literary texts based on different topics or images.

## THEORETICAL ELEMENTS

- Definition of non-literary text
- Variety of contexts
- Features of non-literary text
- Purposes of non-literary text

**EXAMPLE**

A non-literary text is a form of **written expression** that focuses on conveying information and ideas clearly and objectively in various contexts.

# DIDACTIC SCENARIO

At this stage of the lesson, different non-literary texts such as recipes, instructions for using different gadgets, legal documents, invoices will be presented in order to understand the relevance of non-literary text and the fact that most of the texts we read every day are nonliterary texts.

The teacher will introduce the theoretical concepts associated with the non-literary text, including its definition and distinguishing features, the variety of contexts in which it can be encountered and its purposes.

# ACTIVITY 1

Students will watch a documentary about the solar system in which they will explore each planet and their distinct characteristics, including the order in the solar system. Using the virtual reality headsets, they will be able to observe details such as the size and composition of the planets up close.

**SOLAR SYSTEM CLICK HERE**

During the viewing, the teacher will read a non-literary text and ask students to pay attention to the structure, information and terms used in the text. At the end, students will be encouraged to answer the teacher's questions based on the information in the documentary, thus demonstrating their understanding and ability to apply the concepts learned.

## EXAMPLE

1. What is the purpose of the non-literary text read by the teacher?
2. Can figures of speech or marks of subjectivity be identified?
3. What kind of terms have been used to describe the solar system and planets? Give examples.
4. What is the main information presented in this documentary in the introduction, table of contents and conclusion?

| | INTRODUCTION | CONTENTS | CONCLUSION |
|---|---|---|---|
| ELEMENTS OBSSERVED IN VR | Example:<br>The Sun is made of hydrogen and helium, it emits energy, and the highest temperature is in the middle of its interior. | | |
| SPECIFIC TERMS | Example:<br>• Hydrogen<br>• Helium | | |

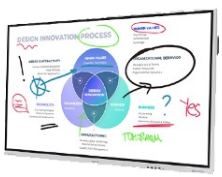
## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet



Interactive Display

## ACTIVITY 2

The teams will be tasked with assembling and programming Fable robots, capable of simulating the movement of the planets Venus, Earth and Mars. The teacher will place the first robot, representing the Sun, in the center of the classroom and it will rotate in place.

The teacher will draw attention to the commands displayed on the interactive display and the students will be encouraged to follow the same instructions.

Once programming is complete, the Venus, Earth and Mars robots will be positioned around the Sun and the teams will run the programs simultaneously.

**CONSTRUCTION**

**VIDEO**

CLICK HERE

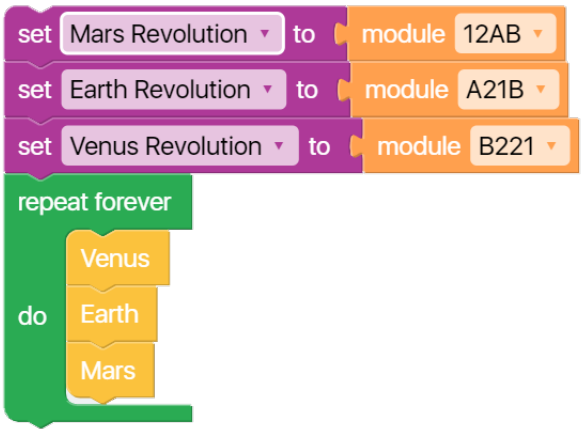
## CONCLUSION

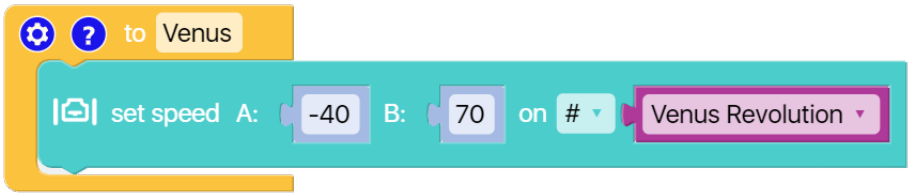
Recap new concepts taught in this lesson: non-literary text, jargon, variety of contexts and purposes.

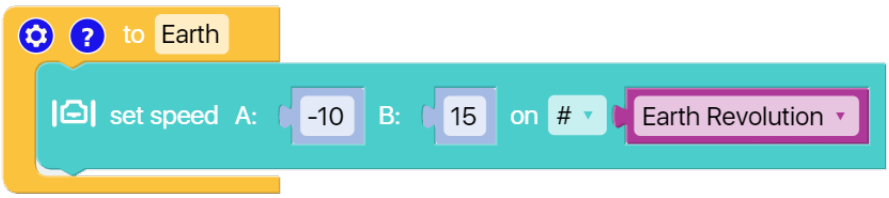
Non-literary texts play a crucial role in our daily lives by providing clear and practical information that guides our actions and decisions. Unlike literary texts, which focus on artistic expression and storytelling, non-literary texts are designed to convey facts, instructions, and explanations in a straightforward manner. This type of text can be found in a wide range of contexts, including legal documents, news articles, advertisements, and user manuals. Each of these forms serves a specific purpose, such as informing, instructing, or persuading, making non-literary texts indispensable tools for effective communication.

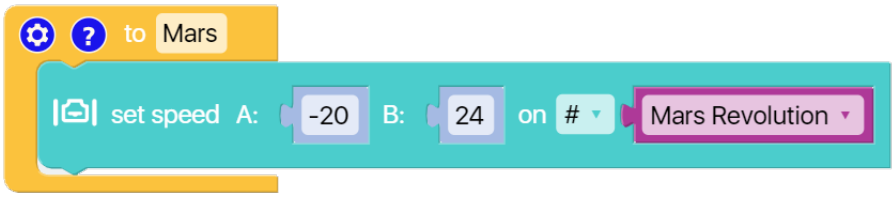
By understanding and correctly interpreting these texts, we can navigate complex situations, solve problems, and make informed choices in various aspects of life.

# PROGRAMMING



# Characterization techniques in literature

LITERATURE

In this lesson, students will understand key concepts such as literary character and means of characterization, exploring the fascinating world of literature through hands-on experiences and modern technologies such as virtual reality glasses, interactive displays and Fable robots.

OBJECTIVES

- Defining the concept of literary character, exemplifying the types of literary works in which it is present.
- Classifying literary characters according to certain criteria.
- Identification of the means used to characterize literary characters for their description.
- A detailed exploration of the environment in which the characters live using virtual reality headsets.

## THEOTETICAL ELEMENTS

- Definition of literary character
- Character classification
- Direct characterization
- Indirect characterization

**EXAMPLE**

The literary character is a **hypostasis of the human** who participates in the actions of a literary narrative text. They play an important role in epic and dramatic works, alongside the action and the narrator.

# DIDACTIC SCENARIO

At this stage of the lesson, the teacher projects on the interactive display images of some of the most famous characters in literature (Alice from Wonderland, Mowgli from "Jungle Book" etc). Students are encouraged to identify these characters and note their distinctive features based on their actions in the literary works. Then, the teacher introduces theoretical notions: definition, classification according to specific criteria (his/her role in the narrative, character traits or character development over time) and ways of characterization, such as direct characterization (by the narrator, other characters or through self-characterization) and indirect characterization (from the character's actions, thoughts, words, clothing, environment).

# ACTIVITY 1

The teacher invites the students on a virtual journey into the jungle world with the help of the ClassVR solution. While watching the documentary, the teacher uses the digital pointer to direct the students' attention to the natural landscape (e.g. vines, waterfalls, steep cliffs, plant and animal species).

JUNGLE
CLICK HERE

The teacher makes the students contemplate and compare the beauty and dangers of the real jungle with the one described in Rudyard Kipling's book. Afterwards, the teacher comes up with questions to bring the characters closer to the students.

## EXAMPLE

1. What character traits does Mowgli's environment bring out of him?
2. What are the key moments in Mowgli's life and how do they influence his path to becoming an accepted member of the jungle?
3. How is Mowgli perceived by the other jungle dwellers and how does this perception change over time?
4. What are Mowgli's relationships with other characters in The Jungle Book, such as Baloo, Banghera and Shere Khan, and how do these relationships influence his development?

| | MOWGLI AND BALOO | MOWGLI AND BAGHEERA | MOWGLI AND SHERE KHAN |
|---|---|---|---|
| TYPE OF RELATIONSHIP | Example: Friendly relationship. | | |
| SIGNIFICANT MOEMENTS | Example: Baloo teaches Mowgli how to survive in the jungle, how to get food, who they are and how to stay out of danger. | | |

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

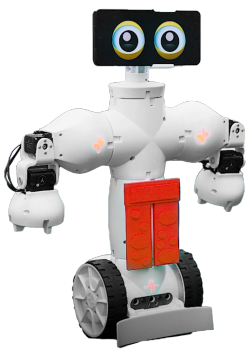
## ACTIVITY 2

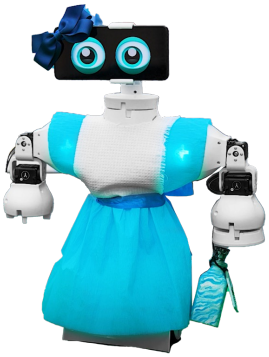
Students will be divided into teams. Each team will have to imagine a dialog between Alice and Mowgli. What topics will the characters tackle? Perhaps an ecological one or perhaps, being marked by the magic bottle, they will discuss the chemical composition of the liquor in the bottle, imagining giant mice and tiny felines? One team will program Mowgli and the other team will program Alice.

The topics chosen by the teams will be presented in the form of a small performance. Characters will be constructed from various Fable modules and accessories (decorated with sequins, beads, crepe paper, etc.) programmed to move, talk, sing and convey emotions.

At the end, students are invited to discuss which means of characterization were used.

**CONSTRUCTION**





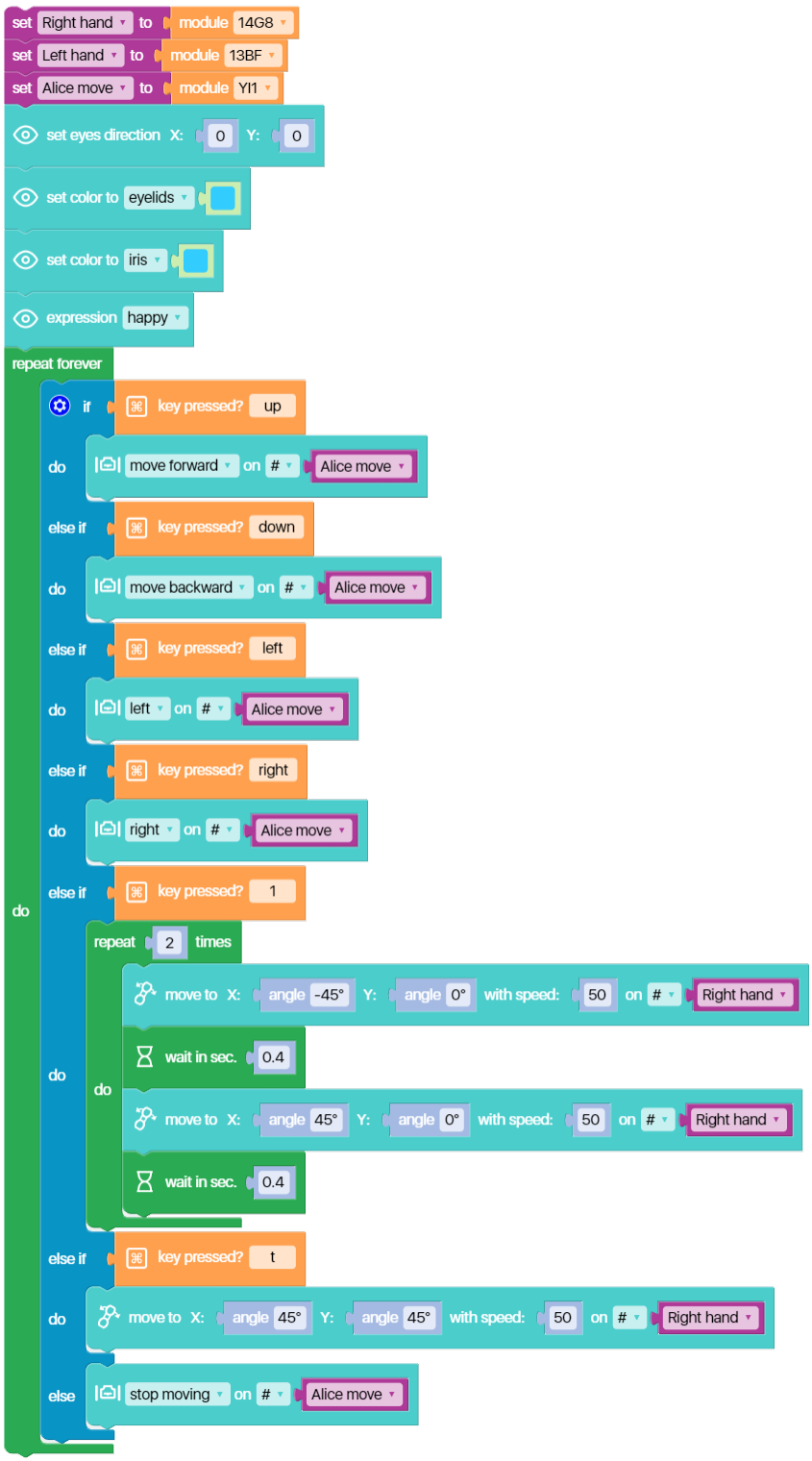
**VIDEO**

**CLICK HERE**

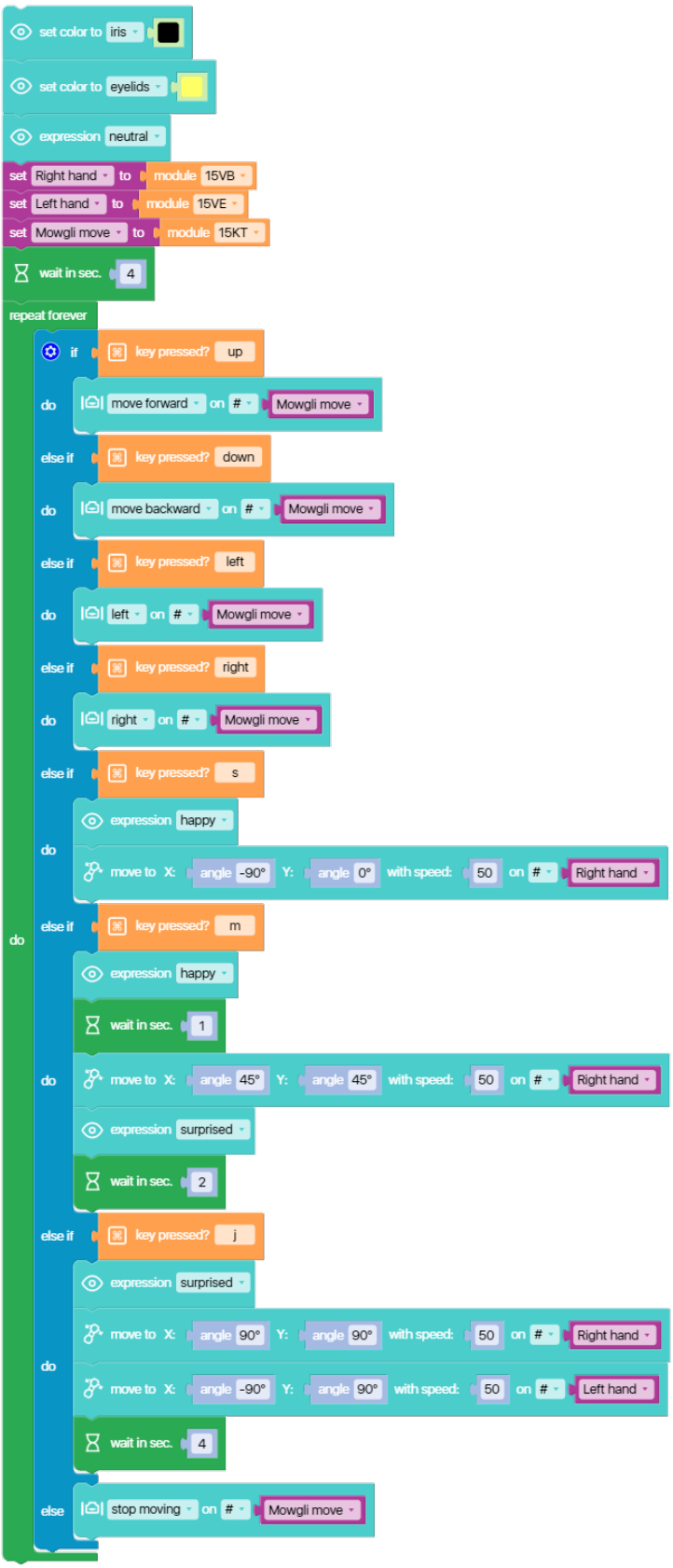
## CONCLUSION

Recap new concepts discussed in this lesson: character, character types, ways of characterization. Literary characters have a special importance in everyday life because of the values they possess. Associating with literary characters can influence an individual's personal development, helping them to better understand the world around them and to acquire certain virtues and principles. For example, interacting with strong characters can encourage students to overcome their fears, while identifying with empathetic characters can promote understanding and compassion towards others.

# ALICE PROGRAMMING



# MOWGLI PROGRAMMING



# Exploring poetry

LITERATURE

In this lesson, students will be guided through the world of poetry, studying theoretical aspects such as lyrical genre, artistic imagery, figures of speech, and elements of prose. They will explore the beauty and depth of two outstanding poetic texts using modern technologies and images of famous paintings.

OBJECTIVES

- Definition of the lyrical genre, a poetry, exemplifying its structure and the imagery it contains.
- Define and identify the elements of prosody in different lyrical texts.
- Identify and interpret artistic images and figures of speech in poems.
- The composition of lexical fields present in lyric texts for easy identification of the literary theme.

## THEORETICAL ELEMENTS

- Definition of the lyrical genre
- Elements of prosody
- Artistic images
- Figures of speech

**EXAMPLE**

The lyrical genre encompasses all works in which the poet **directly** expresses personal thoughts and emotions, often using the first person. It is considered the quintessential form of poetry.

# DIDACTIC SCENARIO

At this stage of the lesson, the teacher displays on the interactive display a series of pictures of famous paintings of lakes and aquatic vegetation. Students are encouraged to recognize the paintings and painters and to express their opinion about them. They will then answer the teacher's question: "What is the central element of each painting?".

The teacher will explain essential theoretical concepts such as the definition of lyrical genre and poetry, the structure of a poem, the elements of prosody. Students will also learn about the most common types of stanzas and the use of artistic imagery and figures of speech in poetry.

# ACTIVITY 1

The teacher will use ClassVR technology to offer students an immersive experience of the natural world around a lake, inspired by the poems "The Lake" by Alphonse de Lamartine and "The Lake" by Mihai Eminescu. Students will be invited to explore and discover the beauty and mystery of the nature that inspired these famous poems.

**THE LAKE**
**CLICK HERE**

They will be able to explore their surroundings, observe the details of nature, and enjoy the landscape. They will be able to float on the surface of the lake and admire the surrounding flora and fauna. The teacher displays the two poems on the interactive display, and students are invited to read them. The teacher asks questions to anchor the theoretical knowledge and help students interpret the meanings of the poems.

## EXAMPLE

1. What feelings and emotions does each poem convey the reader?
2. What figures of speech are used in the given poems? What artistic images do these figures of speech create?
3. Make up the semantic field of nature present in the two poems.
4. What are the central themes of Lamartine's "The Lake" and Eminescu's "The Lake"?
5. Specify the type of stanza, rhyme, and meter for each poem.

| | MIHAI EMINESCU | ALPHONSE DE LAMARTINE |
|---|---|---|
| THEME | Example: The main topics covered are the inevitable passage of time, nature and love. | |
| ELEMENTS OF PROSODY | Example: Seven quatrains; cross rhyme; eight syllable measure. | |

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

Painting tools

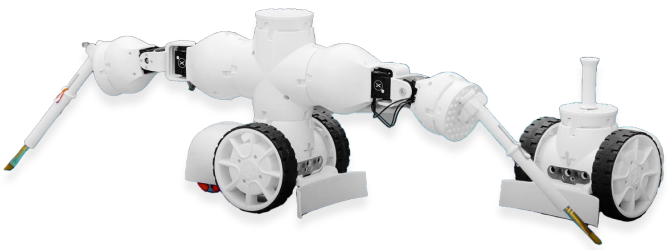
# ACTIVITY 2

Students will be organized in teams. One team will have the task of building and programming Fable robots to paint the lake from Alphonse de Lamartine's poem on an A3 sheet. The second team will be encouraged to use 3D pencils or a 3D printer to create the elements that are part of the lexical field of the word lake and that are found in the poem (forest, water lilies, boat, canes, etc).

The second team will place the created elements on the sheet of paper on which the lake has been painted, creating a breathtaking landscape.

The other teams will do the same for the poem "The Lake" by Mihai Eminescu.

**CONSTRUCTION**



**VIDEO**

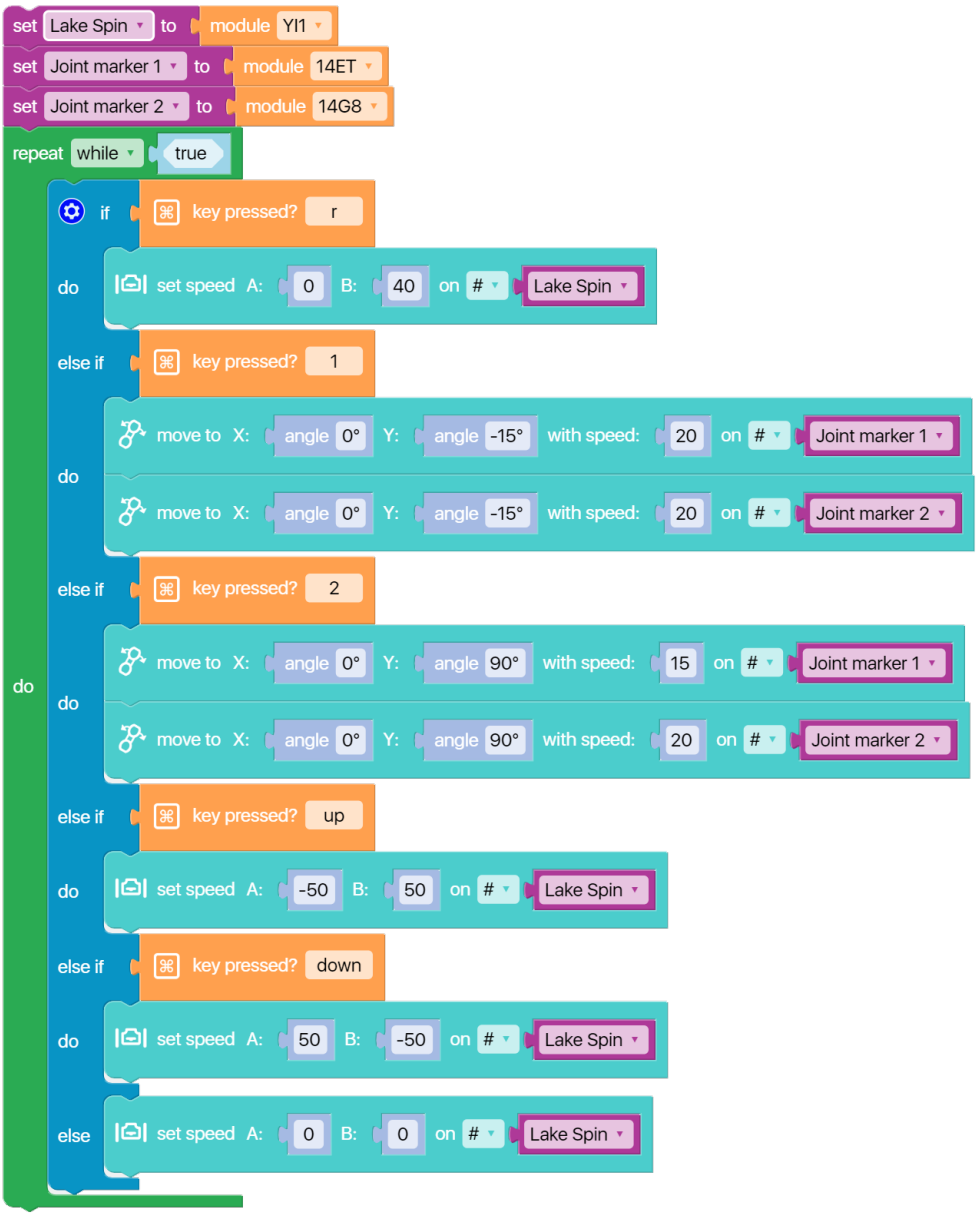
CLICK HERE

# CONCLUSION

Recap new concepts discussed in this lesson: lyrical genre, poetry, elements of prose, artistic imagery, figures of speech.

Over time, through poetry, people have been able to express their thoughts and feelings directly, using a special artistic language, stimulating their imagination and creativity and portraying aspects of reality such as: the beauty and importance of nature in our lives; love and the suffering in love; the irreversible passage of time and the importance of enjoying the present and people.

# PROGRAMMING



# Characteristics of the epic genre

LITERATURE

In this lesson, students will explore key theoretical concepts such as epic genre, epic genre species, and modes of exposition, traveling through time and space with the help of modern technology. Through virtual reality, they will take an immersive journey into the Middle Ages. Under the guidance of the teacher, using excerpts from "Don Quijote de la Mancha", students will discover the world of the Middle Ages.

OBJECTIVES

- Define the epic genre and its distinctive features: narrator, action, character, modes of exposition, etc.
- Recognizing the plot moments in a studied epic text and summarizing the action.
- Identifying the type of narrator and the type of narrative perspective in an epic.
- Argue, on the basis of the acquired information, on issues, using different teaching methods.

## THEORETICAL ELEMENTS

- Definition of the epic genre
- Definition of narrator
- Exposure modes
- Forms of the epic genre

**EXAMPLE**

The epic genre comprises literary works in which the author **indirectly** express his thoughts, feelings and experiences through the action, narrator and characters.

# DIDACTIC SCENARIO

At this stage of the lesson, the teacher shows the students some 3D printed objects, such as a helmet, a spear, a king's crown, a horse, a witch's hat, etc. The students will be encouraged to identify which historical period the objects belong to. Afterwards, they are asked to remember as much information as possible about this historical period from their history lessons.

The teacher also invites the pupils to present the duties of knights, priests, troubadours, etc. and introduces theoretical concepts.

# ACTIVITY 1

The teacher invites students on a virtual journey using ClassVR to explore a medieval castle. In this experience, students will explore the impressive architecture of the fortress, as well as ingenious defenses such as drawbridges, high walls and observation towers.

**MEDIEVAL CASTLE**
**CLICK HERE**

They will be invited to study the lifestyle of medieval people and understand the purpose and importance of a fortress. In the background, the teacher will play the songs of the troubadours Guillaume IX and Beatritz de Dia, the only female troubadour, to recreate the authentic atmosphere of the medieval era.

## EXAMPLE

1. How would you describe the medieval castle you visited in VR?
2. What was the purpose of armor and what do you think is the most important element of armor for a knight? Do you think the armor was comfortable?
3. What do you think were the values and ideals of medieval knights?
4. Based on the students' answers, the teacher introduces extracts from the novel Don Quijote de la Mancha by Miguel de Cervantes and asks the students to complete the table below:

| | DON QUIJOTE | SANCHO PANZA | DULCINEA DEL TOBOSO |
|---|---|---|---|
| TRAITS | Example: absurd, reader, avid, etc. | | |
| SIGNIFICANT MOMENTS | Example: The moment he decides to leave home dressed as an errant knight. | | |

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

Laptop/Tablet

Interactive Display

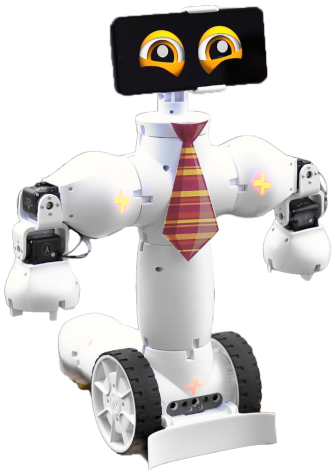
Painting tools

# ACTIVITY 2

In the lesson, the question "How is the action presented in epic works?" to answer, the teacher uses a sheet of paper with a diagram of the moments of the story (exposition - the initial situation, in which the place, time, and characters are presented; raising action - the moment that triggers the action; climax - the moment of maximum intensity; and denouement - the restoration of the initial balance) and the humanoid robot Fable, which has been programmed in advance to move gradually on the paper and provide detailed explanations for each element.

Through this interactive method, students are encouraged to better understand the structure and development of action in literary works.

**CONSTRUCTION**



**VIDEO**

**CLICK HERE**

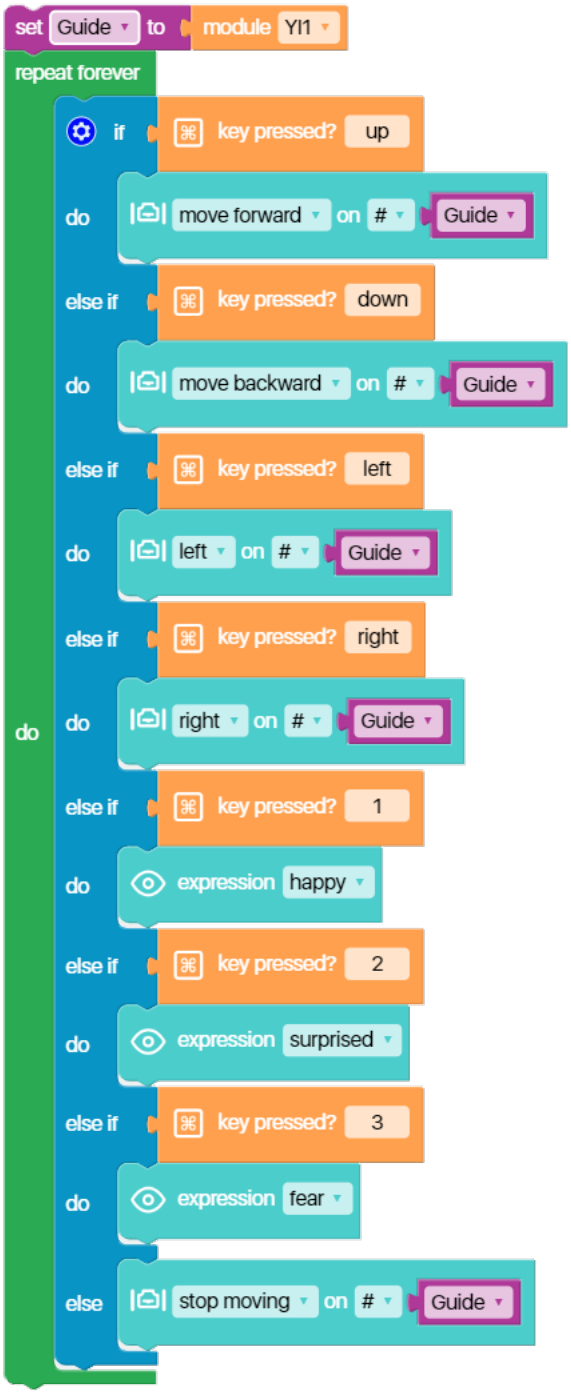
# CONCLUSION

Recap the new concepts discussed in this lesson: epic genre, narrator, narrative, narration, character, and story moments.

The epic genre remains a vital and enduring form of literature, capturing the grandeur of human experiences and societal complexities across different eras. Its defining features, such as a strong narrative, heroic figures, and the interplay of fate and divine intervention, reflect the values and ideals of the cultures from which these stories emerge.

The epic genre's blend of reality and the supernatural, along with its focus on collective memory and identity, offers timeless insights into human nature. By studying these texts, students gain a deeper understanding of both their historical context and the universal themes that still resonate today.

# PROGRAMMING



# Elements of the dramatic genre

LITERATURE

In this lesson, students will be invited to explore the world of theater and dramatic literature, discovering the secrets of Romeo and Juliet. Using the ClassVR solution, they will be taken behind the scenes of a theater, where they will discover the passion and hard work that goes into making a show. They will have the opportunity to see and identify the world's most famous theaters.

OBJECTIVES

- Defining the dramatic genre and its literary species.
- Classifying dramatic works according to a number of criteria: types of characters, ending, etc.
- Recognizing the structure of the dramatic genre (division into acts and scenes, respectively tableaux), the presence of dramatic conflict.
- Identifying types of auctorial interventions in dramatic text.
- Writing a dramatic text, applying acquired knowledge of the dramatic genre.

## THEORETICAL ELEMENTS

- Definition of the dramatic genre
- Stage directions
- Organization of the dramatic text
- Objectives of the non-literary text

**EXAMPLE**

The dramatic genre encompasses literary work intended to **be performed on stage**. The dramatic work imposes certain spatial and temporal limits, and the ideas and feelings of the playwright (dramatist) are expresses both indirectly through action and characters and directly trough captions.

# DIDACTIC SCENARIO

At this stage of the lesson, the teacher projects a presentation on the interactive display with representative images of prestigious theaters from around the world. The students are encouraged to identify these iconic buildings and to recognize the cities and countries where these theatres are located.

The teacher then introduces key theoretical concepts such as the definition of dramatic genre, understanding dramatic conflict and stage directions. The students will learn about the structure of a dramatic work, which can be divided into acts and scenes. The species of the dramatic genre will also be introduced, giving students a comprehensive perspective on the diversity and complexity of theater.

# ACTIVITY 1

The teacher invites students on a virtual journey to explore behind the scenes of the theater. Using the virtual reality headsets, the students will visit the rehearsal room, set and costume workshops, etc. Throughout the 'journey' the teacher will use the digital pointer, directing the students' attention to the elements they are about to tell the story.

**BACKSTAGE THEATHER CLICK HERE**

Students will then be encouraged to discover the 3D-printed pieces. After a short analysis, they will be asked to identify which play they belong to. Students will also receive a clue, a specific sound line from the play.

Having identified William Shakespeare's play, "Romeo and Juliet", the teacher asks questions to help the students gain a deeper understanding of the play's meaning.

## EXAMPLE

1. What are the main themes of "Romeo and Juliet"?
2. What are the main conflicts in the play?
3. Why is "Romeo and Juliet" considered a tragedy?
4. What are the most important character traits of the characters?

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

Laptop/Tablet

3D Printer

Interactive Display

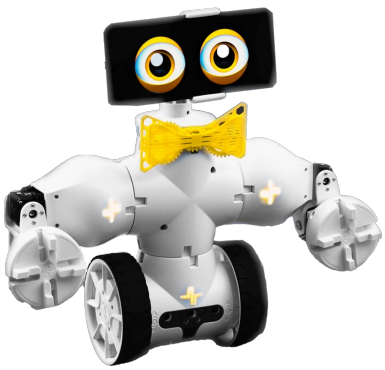
## ACTIVITY 2

The teacher announces that today's lesson will feature a special guide called Fable, which will provide information about various important cultural institutions, including the Gran Teatre del Liceu in Barcelona, the Globe Theatre in London, the I.L.Caragiale National Theatre in Bucharest, and others. These institutions have hosted and continue to host famous plays such as William Shakespeare's "Romeo and Juliet", Eugen Ionesco's "The Lesson" and "Phaedra" by Racine. Fable will provide students with exciting information about each of these theaters, designed to bring them closer to the world of theater.

The program is already done in Fable Blockly, and students can have an additional task where they can add points of interest, research and add new information to the code.

To make the lesson cross-curricular, the teacher can bring a map to the classroom and program the robot so that when it talks about a cultural institution, it is positioned over the country where that cultural institution is located, and when it moves on to the next institution, it moves on the map to the corresponding country.

### CONSTRUCTION



### VIDEO

CLICK HERE

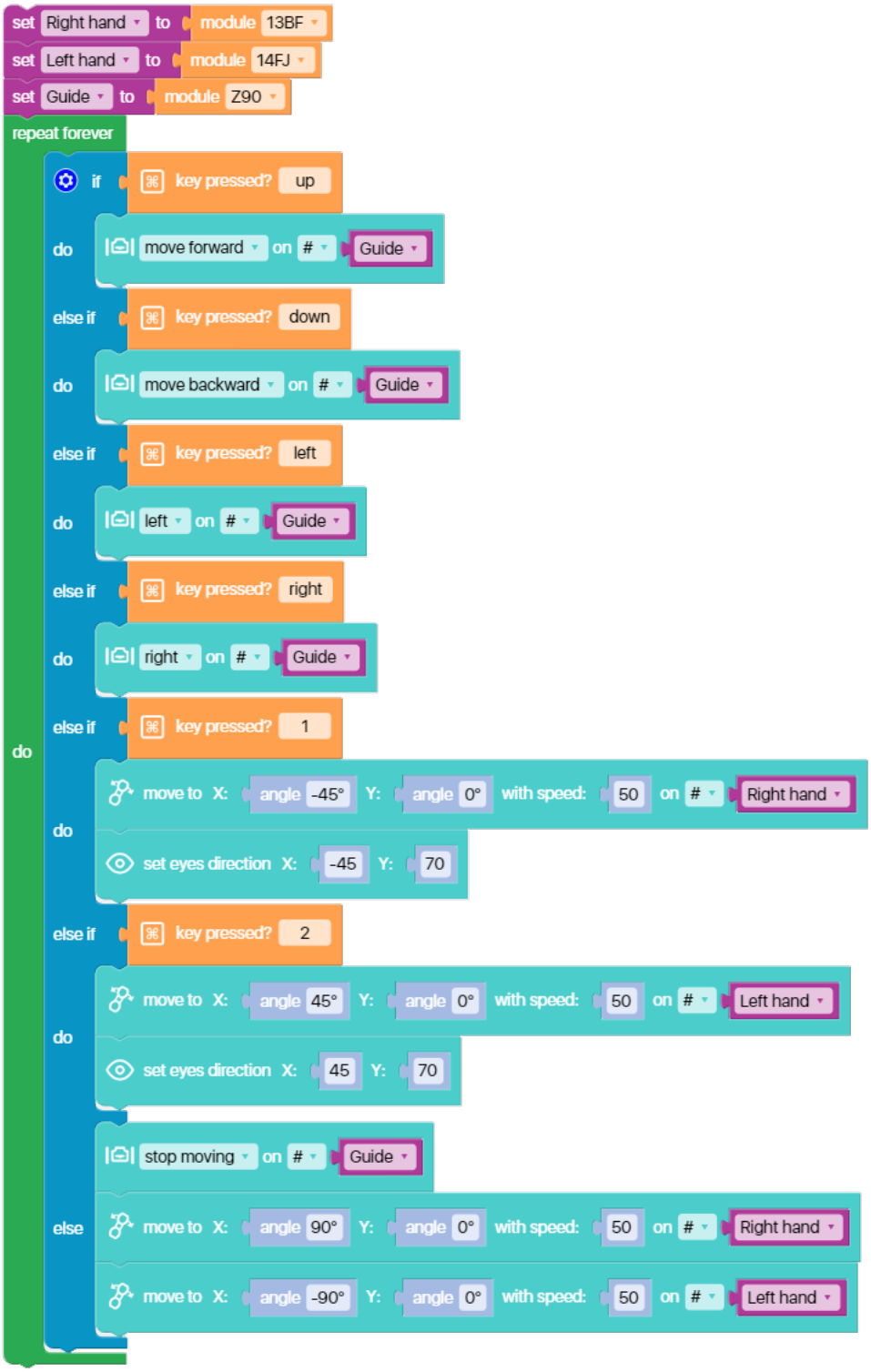
## CONCLUSION

Recap new concepts discussed in this lesson: dramatic genre, stage directions, comedy, drama, tragedy.

Dramatic works are particularly important because they explore deep moral, social, political, etc., themes and issues.

In Ancient Greece, an important philosopher—Aristotle—proposed the idea that, through the theater, man can achieve catharsis, a concept that involves purifying the body and soul from fears and passions. By watching a theatrical performance, the spectator can empathize strongly with the actors and identify with them.

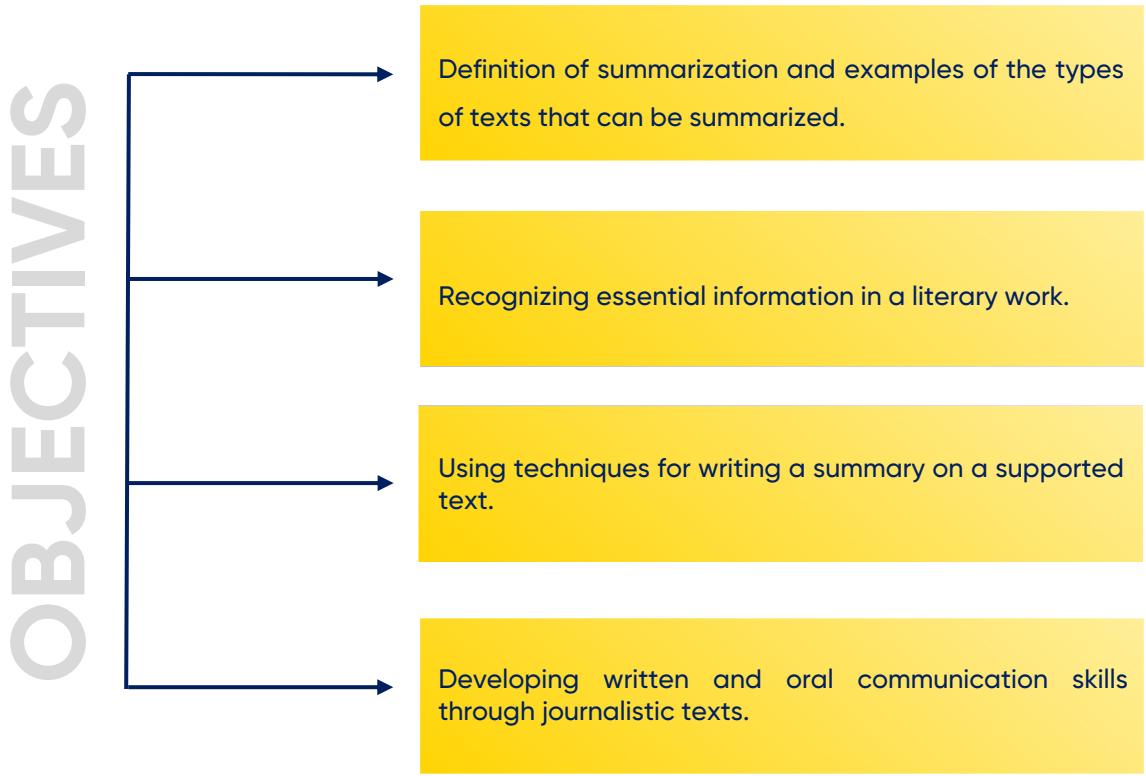
# PROGRAMMING



# Summary: methods and practices

LITERATURE

In this lesson, students will learn about the importance of the executive summary and the rules of summarizing in the context of the journalism profession. By experiencing the game of Quidditch in virtual reality, they will familiarize themselves with the Harry Potter universe. They will also, towards the end, become reporters covering the events of the game of Quidditch.




## THEORETICAL ELEMENTS

- Definition of summary
- Text types
- Steps in writing the summary
- Writing rules

**EXAMPLE**

A summary is a **succinct presentation** of significant information about an event or literary work. It can be written or oral.

# DIDACTIC SCENARIO

NEWS
CLICK HERE

At this stage of the lesson, students will watch a news story on the interactive display. The teacher will ask them questions to stimulate critical thinking, such as, "What kind of information is the journalist conveying?", "What kind of verb tense does the journalist use to present the news?", "What is the role of this news?" and "What questions does the news answer?"

Based on the students' answers, the teacher will conclude that the news story is a summary of the most important information about an event, presented in a concise and engaging way. The teacher will then introduce the theoretical concepts of the lesson: the definition of a summary, the types of texts that can be summarized, the steps in writing a summary and the rules that students should follow when writing a summary.

# ACTIVITY 1

HARRY POTTER GAME
CLICK HERE

Using the virtual reality headsets, the teacher invites students to get involved in the game of Quidditch from "Harry Potter and the Philosopher's Stone", written by J.K. Rowling. In this game, students will be transported into the magical world of Hogwarts, where they will experience a series of exciting challenges and adventures. These activities include the broomstick race, where they will simulate the spectacular flying and maneuvering of wizard players, magical duels, where they will learn and apply spells in friendly competition, and encounters with significant characters from the Harry Potter universe.

## EXAMPLE

The teacher display an extract from "Harry Potter and the Philisopher's Stone" by J. K. Rowlling on the interactive display. Students will summarize the extract, following the rules for writing a summary.

They will then check their summaries using the table below.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Words and expressions such as "the narrator"/"the author", "this passage is about..."etc. | | | | | |
| The events were recounted briefly and arranged chronologically. | | | | | |
| No quotes, figures of speech or descriptive passages from the text were included. | | | | | |
| Either the present tense or the present perfect tense was used. | | | | | |
| Direct speech has been transformed into indirect speech. | | | | | |
| The literary form of the words was used. | | | | | |
| Third person was used. | | | | | |

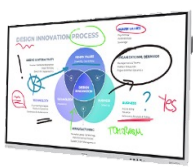
## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet



Interactive Display

Microphone

## ACTIVITY 2

Students will be divided into two teams. Team number one will have the task of writing a news report summarizing the events of the game Quidditch. They will have to highlight the key moments and significant details of the game and program and dress the Fable robot as a reporter. Team number two will be tasked with programming a robot, made up of Fable modules and a cell phone, to follow the reporter and record him as he moves around and reports on the spot. Each program will be loaded onto a computer with Fable Blockly installed.

During the activity, the interactive display behind them will play clips from the movie "Harry Potter and the Philosopher's Stone", in which the protagonists play Quidditch.

**CONSTRUCTION**

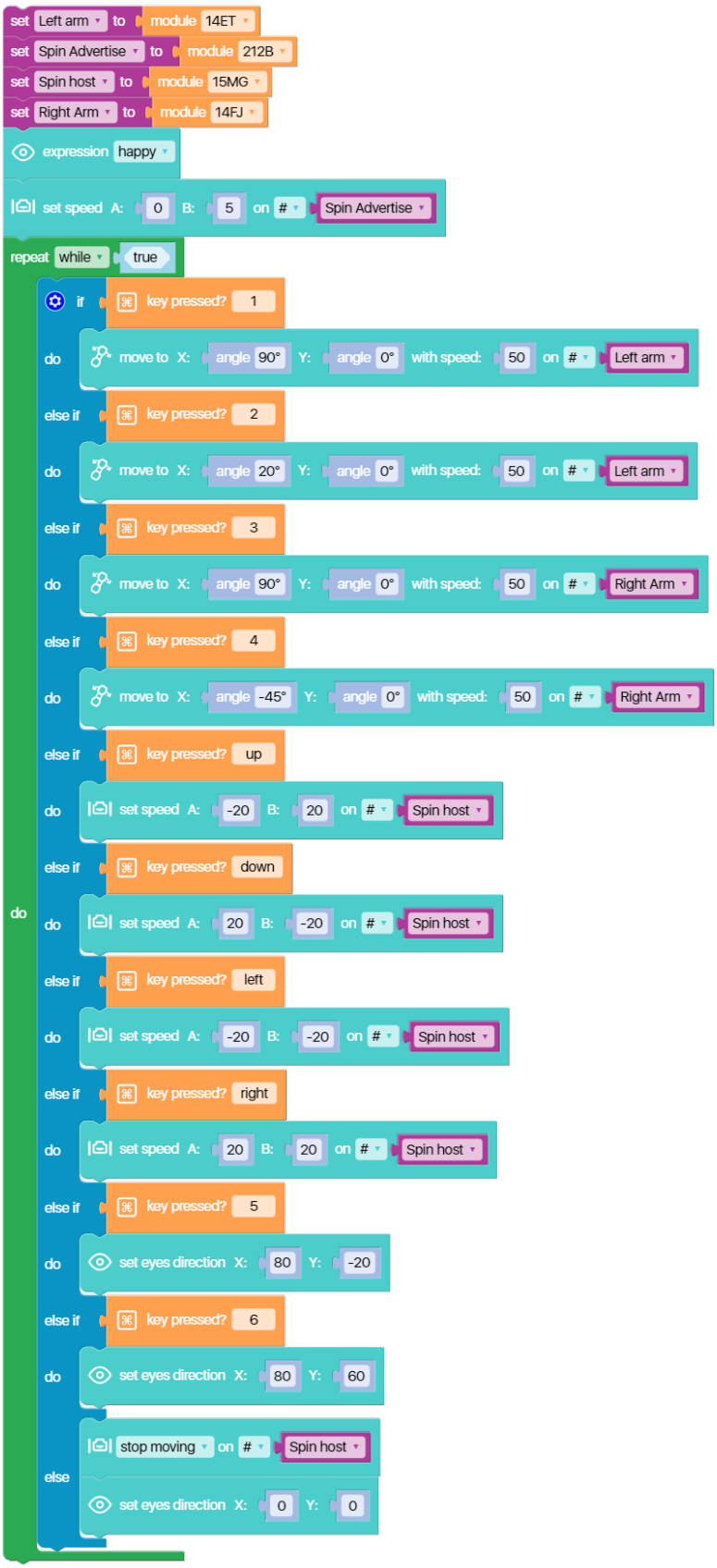
**VIDEO**

CLICK HERE

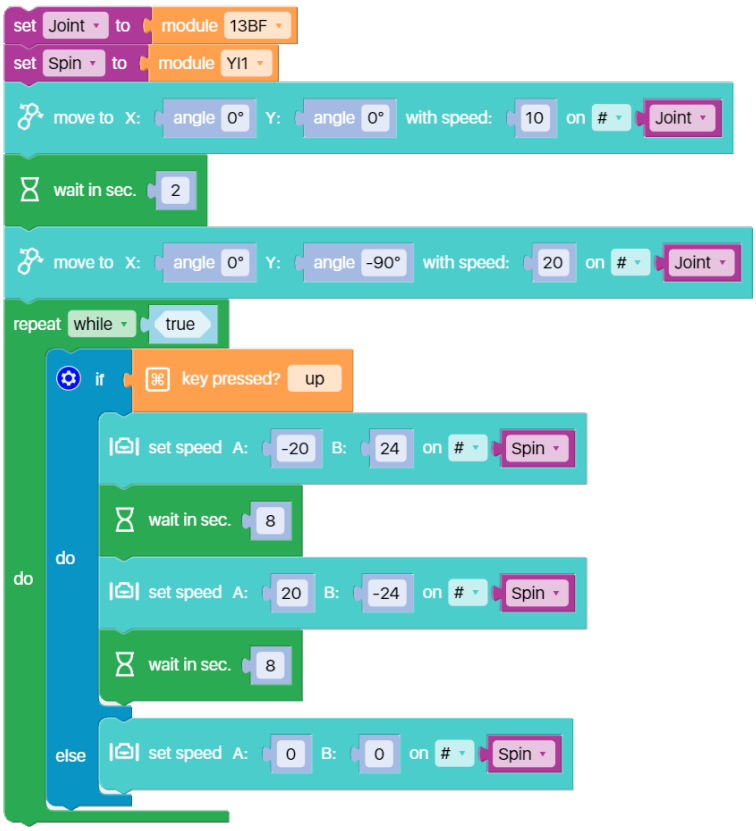
## CONCLUSION

Recap the new concepts discussed in this lesson: summary, news, and rules for writing a summary. The skills of summarization are essential for both academic and professional success. The practice of summarizing helps in honing analytical thinking, enabling students to identify and focus on key points, thereby improving their comprehension and communication abilities. Mastering these techniques also equips students to handle vast amounts of information efficiently, a valuable skill in today's information-rich world. As they continue to apply these methods, students will become more adept at distinguishing between essential and non-essential details, allowing them to create clear, concise, and effective summaries in various contexts.

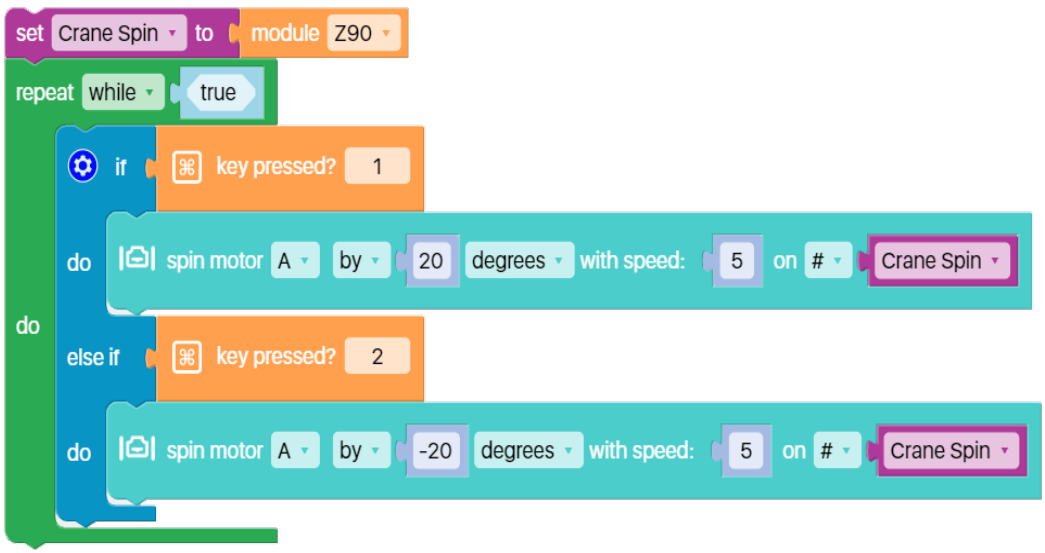
# REPORTER PROGRAMMING



# CAMERAMAN PROGRAMMING




# CRANE PROGRAMMING



# The argumentative text: Structure and persuasiveness

LITERATURE

In this lesson, children will explore the concept of an argumentative text. Students will learn about purpose, how to write, and the connectors between hypothesis, argument, and conclusion. They will also have the opportunity to participate in a real court trial using virtual reality technology and later organize a mock trial.

## OBJECTIVES

- Defining the argumentative text and identifying its purpose in communication concept.
- Identify hypothesis, argument and conclusion in an argumentative text.
- Writing an argumentative text, including a clear hypothesis, well-structured arguments and a relevant conclusion.
- Virtual reality headsets help you explore how a court case unfolds.

## THEORETICAL ELEMENTS

- Definition of the argumentation
- The purpose of argumentation
- The structure of argumentation
- Connectors

## EXAMPLE

Argumentation is a method of expressing and defending an opinion on a specific subject. It involves presenting **structured claims**, supported by **evidence** and **reasoning**, to persuade others to consider the validity of the viewpoint. This process encourages critical thinking and contributes to broader discussions by inviting responses and counterarguments.

# DIDACTIC SCENARIO

At this stage of the lesson, the teacher will display on the interactive display a detailed presentation containing interesting information about how legal trials were conducted in the past, focusing on the Roman Empire and the Medieval period. The presentation will include details of the different punishments meted out to defendants, such as wearing defamatory masks and the death penalty. Students will be encouraged to recall and discuss relevant information on the subject that they have learned in history classes.

The teacher will present the theoretical information on argumentation, explaining in detail the definition of argumentation, the structure of an argumentative text and the types of connectors to be used in this context. Students will learn how to construct a coherent and logical argumentative text, using appropriate connectors to link ideas and support the arguments presented.

# ACTIVITY 1

The teacher encourages students to use virtual reality headsets to explore the Supreme Court in London. Pupils will have the opportunity to see how modern architectural elements blend harmoniously with the ancient and will have access to three of the Court's most important courtrooms and explore the libraries.

**SUPREME COURT LONDON CLICK HERE**

The teacher then displays a court case on the interactive display. The students are encouraged to observe carefully how the lawyer builds his defense, makes his arguments, and supports them with relevant examples to strengthen his plea.

**TRIAL CLICK HERE**

## EXAMPLE

1. What is the hypothesis proposed by the defense and how was it presented?
2. What are the main arguments used to plead the client's innocence?
3. What was the lawyer's conclusion? Did he use any specific connectors to highlight it?
4. Write an argumentative text of at least 100 words to support your opinion on the introduction of robots in court.

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

3D Printer

Laptop/Tablet

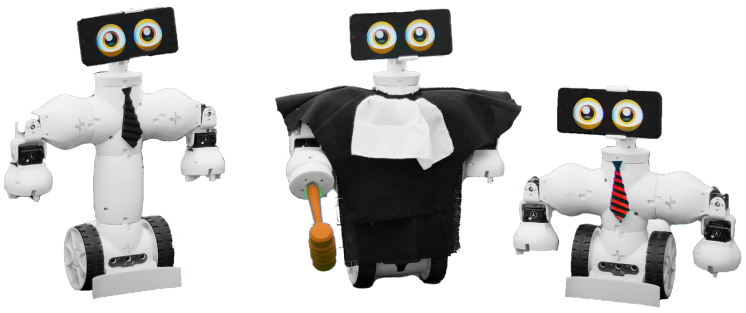
Interactive Display

## ACTIVITY 2

Students will be split into three teams to take part in a mock trial. The first team will represent the prosecution in a case against Harry Potter for using magic outside of school, which is forbidden to wizards under 17, and will program a Fable robot. The second team will represent the defense and program another Fable robot, presenting arguments to support Harry Potter's innocence, for example, that Harry used magic to defend himself. The third team will operate a Fable robot, which will act as a judge in the trial. The defense team will draft the pleading according to the structure of an argumentative text, using appropriate connectors to support the arguments presented. The Fable robot that will act as a judge will moderate the trial and announce the final verdict.

Each team will program on one computer with Fable Blockly installed.

**CONSTRUCTION**



**VIDEO**

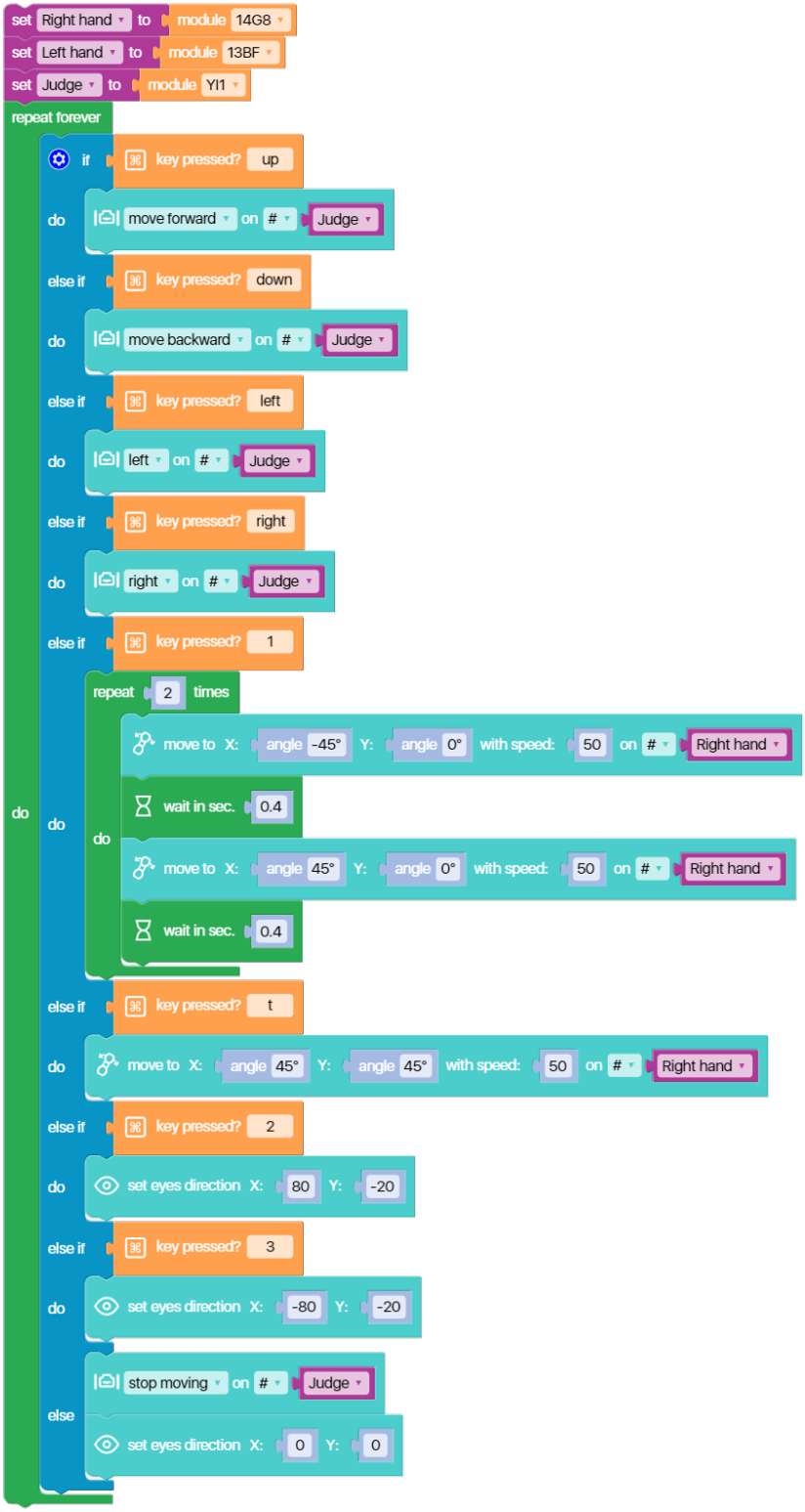
**CLICK HERE**

## CONCLUSION

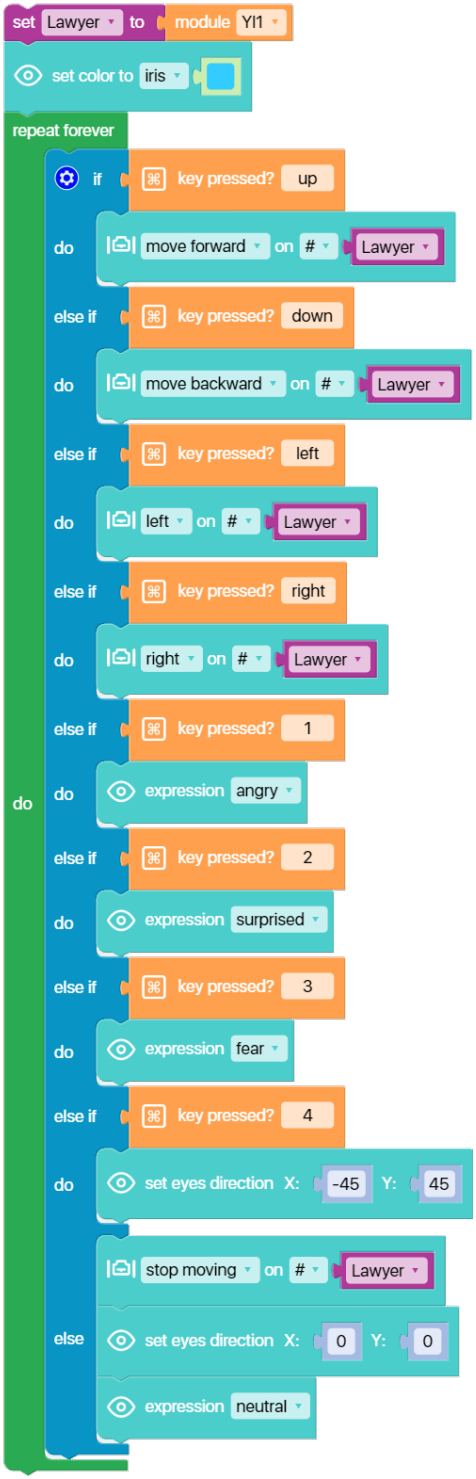
Recap the new concepts discussed in this lesson: argumentative text, hypothesis, argument, and conclusion.

Argumentative writing is of particular importance in everyday and professional communication (it is essential in the legal field). By delving into the components of an argumentative text—hypothesis, arguments, and conclusion—students learn to structure their thoughts logically and present their ideas in a coherent manner. The inclusion of connectors to link ideas smoothly not only enhances the flow of writing but also strengthens the overall persuasiveness of the argument.

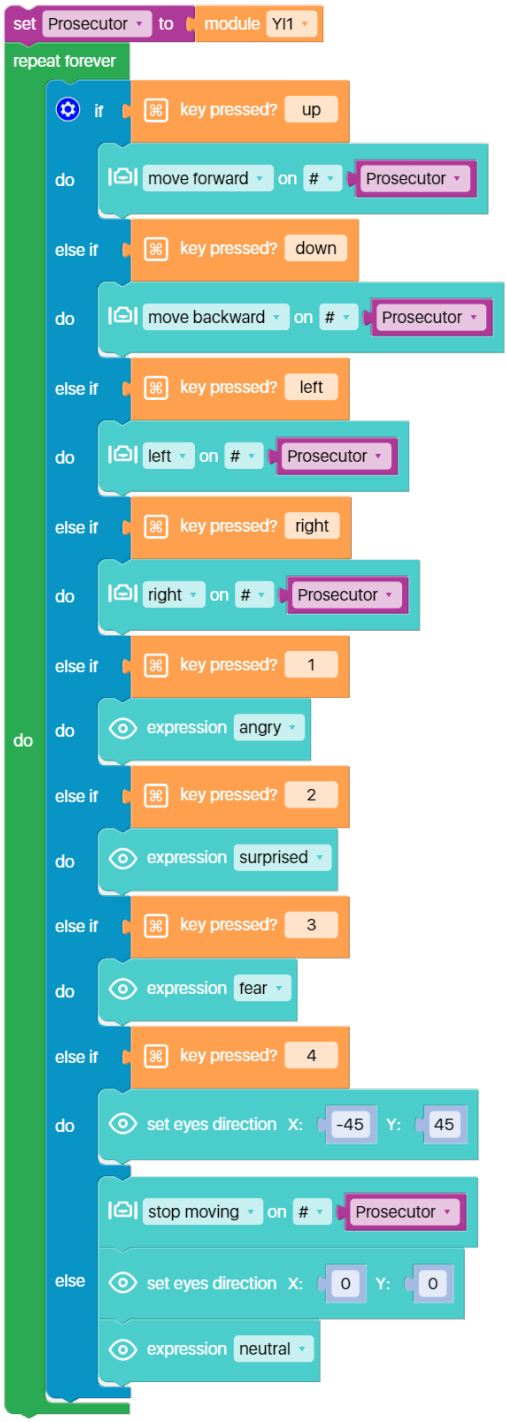
# JUDGE PROGRAMMING



## LAWYER PROGRAMMING




## PROSECUTOR PROGRAMMING



# Fable: analysis and interpretation

LITERATURE

In this lesson, students will take a foray into the world of fables, exploring the features of this literary species. To bring the concept closer and to illustrate the lessons we can learn from nature, the teacher and students will embark on a virtual journey through Ancient Egypt. During this mystery-filled adventure, students will discover the anthropomorphic and zoomorphic deities of ancient Egyptian religion, bringing to the fore the connections between the animal world and humans.

OBJECTIVES

- Definition of a fable and identifying structure and its literary features.
- Recognizing the specific features of a fable in a literary text.
- Identifying morals, values transmitted, or flaws satirized in a fable.
- Characterize the characters of the fable, by presenting their physical and moral traits.

## THEORETICAL ELEMENTS

- Definition of fable
- Classification of allegory
- Features and structure
- Authors

**EXAMPLE**

A fable is a subgenre of the epic, typically written in verse or prose on a smaller scale, where human flaws are satirized through allegory to impart moral lessons.

# DIDACTIC SCENARIO

To begin with, the teacher uses the interactive display to present information about the religion of the ancient Egyptians, including images of anthropomorphic and zoomorphic deities and their rituals. Through this method, students are able to observe and gain a deeper understanding of the significant aspects of this ancient culture, realizing that the techniques of humanizing animals, also used in fables, had been practiced for hundreds of thousands of years.

After that, the theoretical concepts related to fables will be introduced. Students will learn the definition and structure of a fable, as well as the significance of allegory in this literary species. They will also explore the main features of the fable and find out who are the most famous authors of this literary species.

# ACTIVITY 1

The teacher invites students to explore Queen Nefertiti's tomb, one of the most beautiful and best-preserved tombs of Ancient Egypt, using virtual reality headsets, giving them the chance to discover fascinating details about the life and culture of that ancient age.

**NEFERTITI TOMB**
**CLICK HERE**

During this engaging experience, the teacher uses the digital pointer to direct the students' attention to some of the remarkable deities and details of this wonderful ancient world. The teacher then asks students the following questions.

## EXAMPLE

1. Which deities are depicted in the drawings of the Queen's tomb? How are they represented, and what do they symbolize?
2. Why do you think the Egyptians workshipped animals and associated them with their gods?
3. Whan can humans learn from animals?
4. In line with modern values in a digital age, create 3D portraits of three possible deities and use your 3D printer to bring them to life.

| | | | |
|---|---|---|---|
| NAME | Example:<br>Dataxia | | |
| TRAITS | Example:<br>Goddess of information and data. She watches over the collection and interpretation of data, bringing wisdom and knowledge to those who seek it. | | |

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

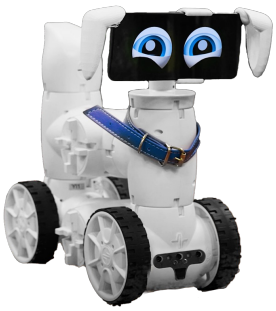
Collar

# ACTIVITY 2

Based on the students' answers to the question "What can humans learn from animals?", the teacher will encourage the students to act out a performance of La Fontaine's fable "The Wolf and the Dog". The class will work in three teams. Team number one will use the Fable modules to build and program the dog; team number two will build and program the "wolf," and team number three will accessorize the two characters. The teacher will deliver the allegorical narration at the beginning of the fable, while the Fable robots will be the actors involved in an exciting performance with a moral to match.

Afterwards, the teacher will ask the students the following questions: "Briefly characterize the characters," "Why is the dog loyal to his master? What is the price the dog pays?" "What are the main values and virtues presented in the fable?" etc.

**CONSTRUCTION**



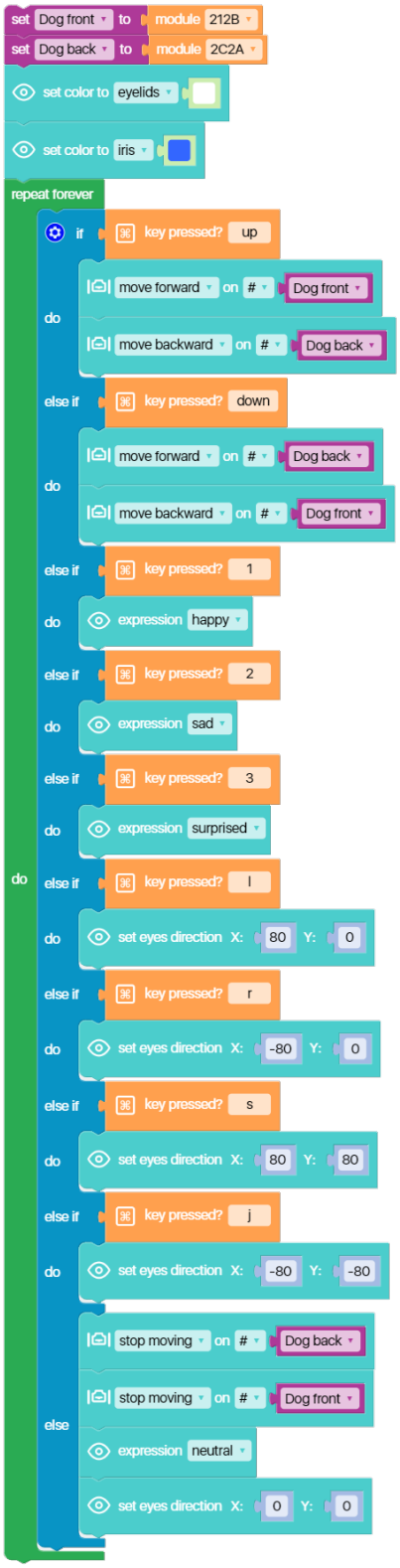
**VIDEO**

**CLICK HERE**

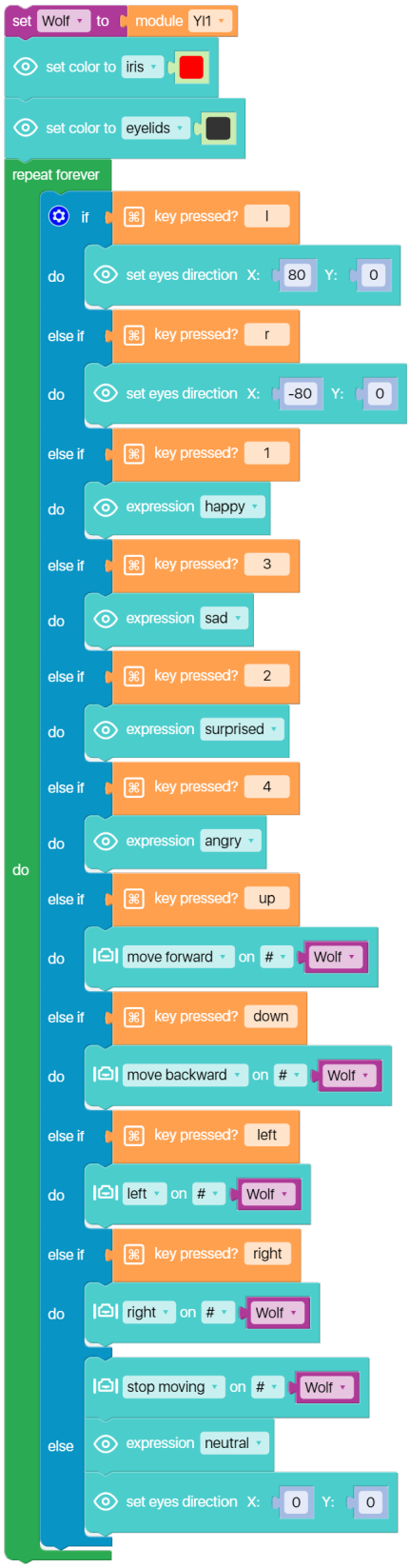
# CONCLUSION

Recap of the new concepts discussed in this lesson: fable, distinctive features of this literary species. Fables are important in everyday life because they offer an accessible and interesting way to convey moral and social lessons or satirize human flaws. Through these simple stories and allegorical characters, fables help us to understand and internalize values such as honesty, hard work, respect for others, the concept of freedom, etc.

# DOG PROGRAMMING




# WOLF PROGRAMMING



# Fairy tales: tradition and innovation

LITERATURE

In this lesson, students will explore the fascinating world of fairy tales and the Disney universe. Using virtual reality, they will travel through the magical realms of the Disney Parks and, with the help of 3D pencils, create personalized versions of fairytale characters. At the end, we will program the Fable robot to fulfill the tasks of a guide who will provide valuable information about the Disney "Empire".

## OBJECTIVES

- Defining fairy tales and identifying their characteristic features.
- Using reality virtual for exploring Disney theme parks.
- Analyze the role of characters from the fairy tales of the most famous authors and the Disney universe to see their impact on society.
- Create Disney fairytale characters using 3D crayons.
- Explore the Disney universe with Fable robots.

## THEORETICAL ELEMENTS

- Definition of the fairy tale
- Types of fairy tales
- Features of the fairy tale
- Structure of the fairy tale

**EXAMPLE**

The fairy tale is a **broad narrative species** with many real and fabulous characters, carriers of symbolic values (good and evil), with an action that involves the supernatural and which is subject to conventions.

# DIDACTIC SCENARIO

At this stage of the lesson, the teacher will present the students with a series of pictures of the most famous Disney characters and famous lines from them, to arouse curiosity and interest in the topic of the following discussion. The teacher then introduces the theoretical concepts related to fairy tales, emphasizing that fairy tales can be categorized as literary or folk, according to specific criteria. Distinguishing features of the fairy tale are also discussed, such as the presence of fabulous elements, typical formulas and characters representing moral polarities such as good and evil.

# ACTIVITY 1

Using virtual reality headsets, the teacher invites students to explore the fascinating world of Disney. On this virtual journey, students will step into several Disney theme parks and discover the adventures and heroes that fascinate them. They will visit Disneyland Paris, Disneyland Florida and Disneyland Hong Kong. The teacher will use the digital pointer to pinpoint important frames.

**DISNEYLAND PARIS**
**CLICK HERE**

**DISNEYLAND FLORIDA**
**CLICK HERE**

**DISNEYLAND HONG KONG**
**CLICK HERE**

## EXAMPLE

1. The teacher asks the students to use their 3D pencils to bring to life the Disney character who taught them the most important life lesson. The students argue their choice, and their creations are then used to re-enact the colorful and charming parades.
2. Compare the atmosphere and design of Disneyland Paris, Disneyland Florida and Disneyland Hong Kong. What distinctive elements do you notice in each of them?

| | DISNEYLAND PARIS | DISNEYLAND FLORIDA | DISNEYLAND HONG KONG |
|---|---|---|---|
| CHARACTERS AND MOMENTS | Example:<br>• Parade of famous Disney characters with the Cinderella's castle visible in the background | | |
| DISTINCTIVE ELEMENTS | Example:<br>• Typical characters of European fairy tales | | |

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

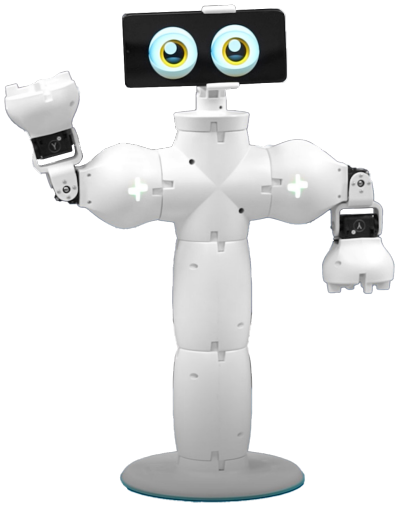
# ACTIVITY 2

The teacher challenges students to explore the world of Disney fairy tales through a "musical riddle".

The robot will be programmed to interact with students by playing familiar musical excerpts that they will associate with the titles of famous fairy tales. This exercise will make it easier to understand the importance of fairy tale messages as well as the impact of the musical component in the movie industry.

Beyond the fun of the exercise, students will be encouraged to find out more about the composers of the songs.

## CONSTRUCTION



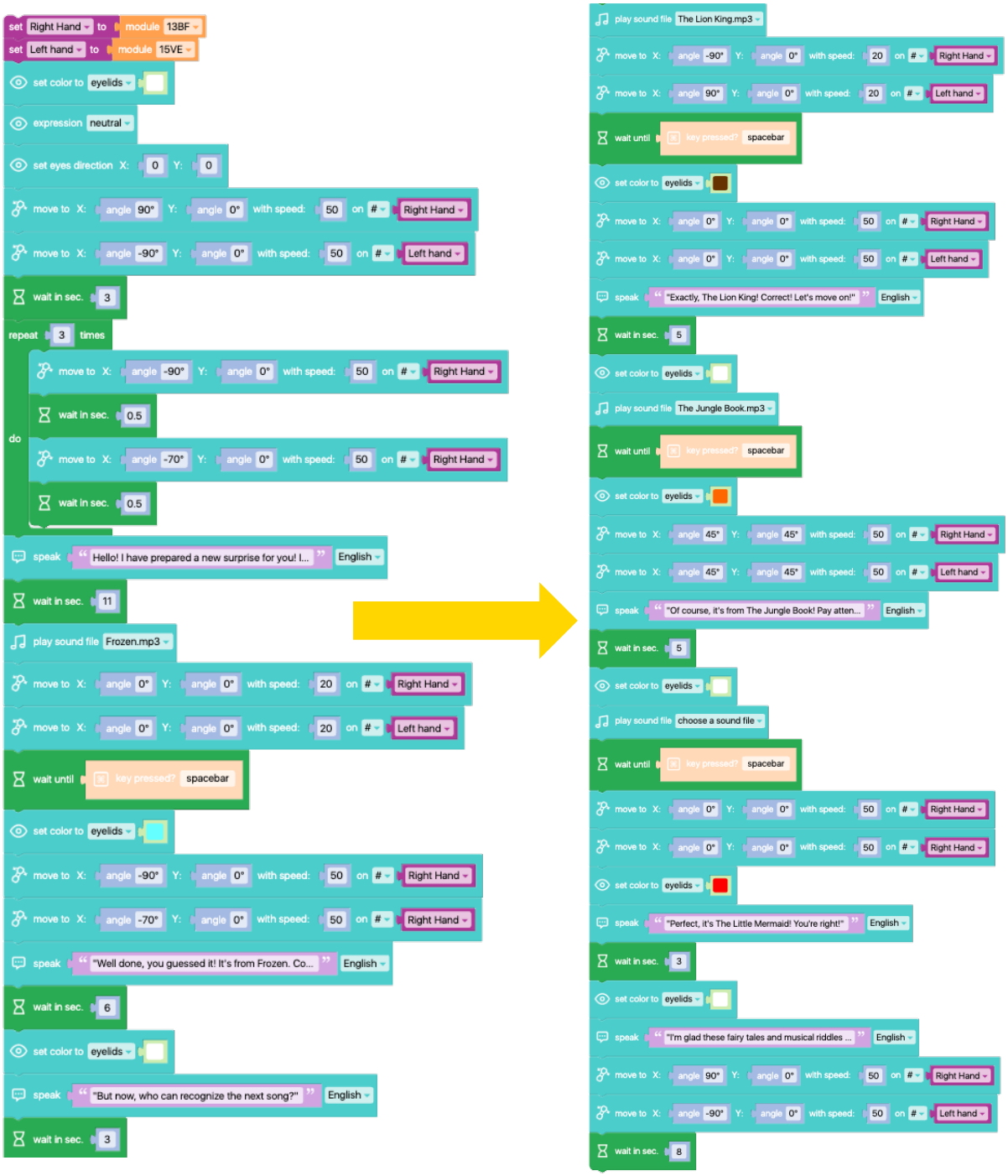
## VIDEO

CLICK HERE

# CONCLUSION

Recap of the new concepts discussed in this lesson: fairy tale, fairy tale features. The evolution of new technologies that dominate the course of life today has allowed humanity to experience the fascination of fairy tales through theme parks. They recreate fabulous stories and initiatory trails on a human scale and provide an opportunity to get to know and understand myths and legends in a playful way. So, the fairy-tale world, once accessible only through books, is now closer to us than ever.

# PROGRAMMING



# Recap

LITERATURE

In this lesson, students will begin by applying known grammar rules to correct a text. They will then have the opportunity to explore the world's earliest forms of writing through virtual reality. This immersive experience will transport them to the Lascaux Cave in France, where they can observe cave paintings and other early examples of written communication. Finally, students will review grammar rules with the assistance of the Fable robot and discuss the importance of accurate writing.

## OBJECTIVES

- Repetition and reinforcement of previously studied grammar concepts.
- Practicing and applying grammar rules in a practical exercise to correct a text full of errors.
- Exploring the earliest forms of writing, using virtual reality technology to visualize and understand the evolution of human writing over time.

## THEORETICAL ELEMENTS

- Modes and tenses
- Using commas correctly
- Plural of nouns
- Correct use of pronouns
- Indefinite articles
- Common mistakes

**EXAMPLE**

Use "**a**" before words that begin with a **consonant** sound and "**an**" before words that begin with a vowel sound. For example, "a book" and "an apple".

# DIDACTIC SCENARIO

As a first step, the teacher will project a text containing multiple grammatical errors on the interactive display and ask the students to identify and correct these errors.

The teacher will then use virtual reality to introduce students to the earliest forms of writing, giving them an exciting insight into the evolution of written language over time.

Finally, to explore and reinforce the theoretical concepts related to verb tenses and moods, plurals of nouns, the correct use of prepositions, pronouns, and numerals, and to identify and correct common grammar mistakes, the teacher will encourage students to use Fable robots and colored cards.

# ACTIVITY 1

The teacher tells the students that the oldest forms of writing include pictographs and ideograms, originally used to represent beings, objects, and actions, and that the oldest writing systems are the Lascaux Cave pictographs, Sumerian pictographs, Sumerian cuneiform writing, and Egyptian hieroglyphs.

Then, with virtual reality headsets, they will tour the Lascaux Cave, visit the ruins of the Tachara Palace of Darius The Great to see cuneiform writing, and finally stop in ancient Egypt to see hieroglyphs.

**LASCAUX CAVE**
**CLICK HERE**

**TACHARA PALACE**
**CLICK HERE**

**ANCIENT EGYPT**
**CLICK HERE**

## EXAMPLE

1. What are the oldest known forms of writing?
2. How have writing systems evolved over time?
3. How important were Lascaux Cave and Tachara Palace in the development and understanding of ancient writing systems?
4. What are the main characteristics and differences of the writing forms?

| | LASCAUX CAVE | TACHARA PALACE | EGYPTIAN INSCRIPTION |
|---|---|---|---|
| FORM OF WRITING | Example: Pictograms | | |
| CHARACTERISTICS | Example: Images of animals, people's practices from that period | | |

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

3D Printer

Laptop/Tablet

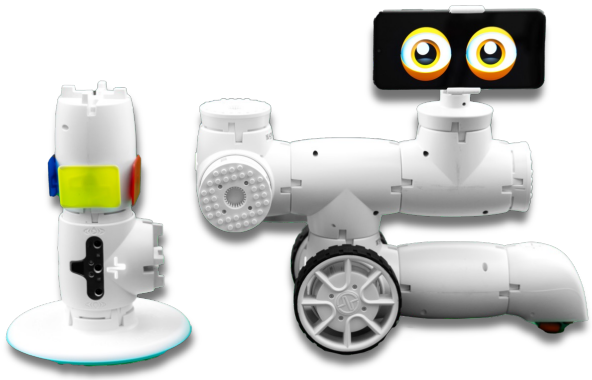
Interactive Display

# ACTIVITY 2

The teacher will involve the students in a unique activity to refresh the theoretical concepts in an exciting and interactive way.

Students will be divided into teams. Each team will be given a colored card and a short explanatory text about a grammar rule. Their task will be to program the Fable robots so that one robot positions the cards in front of the other robot's color sensor, and the other robot, when it identifies the appropriate card, speaks the associated grammar rule. The teacher will adapt the texts according to each class's needs and level of knowledge.

**CONSTRUCTION**



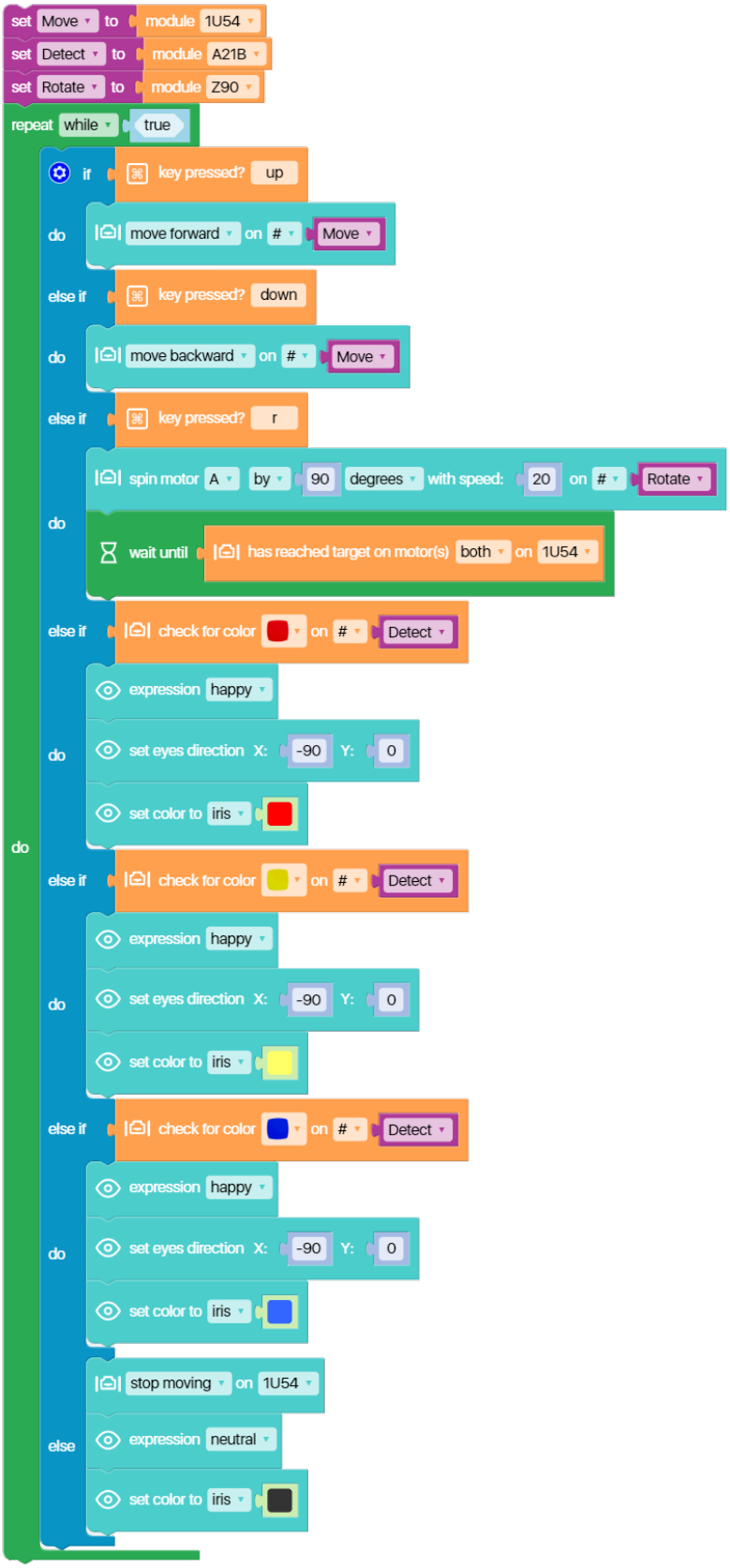
**VIDEO**

CLICK HERE

# CONCLUSION

Writing is one of mankind's greatest achievements, playing a key role in spreading culture and preserving history throughout the millennia. The Rosetta Stone, with identical inscriptions in three distinct languages, bears witness to the remarkable writing skills of our ancestors.
So not only does correct writing make it easier to convey and understand the message today, but it is also of great value to posterity.

# PROGRAMMING



# Historical time and space: Fundamental concepts

HISTORY

In this lesson, students will explore the concepts of historical time and space. They will travel back in time, discovering historical eras and the events that defined them. The teacher will then connect them with a museum guide via an online conference. Finally, they will use the Fable robots to take measurements of time, simulating the workings of a mechanical clock using pendulums.

## OBJECTIVES

- Defining the concepts of historical time and space to emphasize their importance in the study of history.
- Identify the historical epochs and significant events that mark the end of a periods and the beginning of another.
- A practical experiment to measure time, using a pendulum and a Fable robot.
- Analysis of the evolution of time measuring instruments and methods in a historical context, through interaction with a specialized guide in a museum dedicated to clocks.

## THEORETICAL ELEMENTS

- Historical time
- Historical epochs
- Historical space
- Curiosities

## EXAMPLE

**Prehistory:** the period between the appearance of the first humans and the development of the earliest forms of writing and state organization. It is divided into several distinct stages: Paleolithic, Mesolithic and Neolithic.

# DIDACTIC SCENARIO

At the first stage of the lesson, the teacher asks the students the question "What is the time?". Once he receives their answer, he prompts them to reflect on the ways in which ancient people could measure time, thus emphasizing the historical importance and evolution of time measurement over the centuries. The teacher can challenge the students to imagine life without modern clocks and discuss the difficulties our ancestors had in measuring time accurately.

If students know about the sundial, the teacher encourages them to present the mechanism to the whole class, giving them the opportunity to share and reinforce their knowledge. This may be an opportunity to discuss the concept of the 'gnomon' and how its shadow was used to indicate the time of day.

In the absence of students who know details about the sundial, the teacher will provide the necessary explanations, describing its history and operation. Later, to make the lesson more engaging and interactive, the teacher will take an instrument out of the 3D printer to demonstrate the functionality of the sundial. This can be a replica of an antique sundial or a simplified model that allows the students to better understand the principle of operation.

# ACTIVITY 1

The teacher will invite a guide from a clock museum to join them in the classroom via the video conferencing solution. The guide will present to the students information about the evolution of time measuring instruments over the centuries and details about the clocks in the museum collection.

**CLOCKMAKERS MUSEUM**
**LONDRA**
**CLICK HERE**

**LA CHEAUX DE FONDS**
**SWITZERLAND**
**CLICK HERE**

**CLOCK MUSEUM**
**PLOIESTI**
**CLICK HERE**

## MATERIALS NEEDED

Fable Elements

3D Pen

VR Headset

Laptop/Tablet

Interactive Display

## ACTIVITY 2

The teacher introduces the students to a pendulum, highlighting its importance in the evolution of timekeeping. Invented by Galileo Galilei in the 17th century, the pendulum played an important role in the technological advancement of horology. The professor gives a detailed explanation of the pendulum mechanism, illustrating how it oscillates freely around a fixed point. He emphasizes that the length of the pendulum wire is essential for accurate time measurement. For example, to measure one second, the length needs to be about one meter.

Students will be divided into teams. Each team will be given Fable accessories and 3D crayons to create a pendulum and a Fable robotic spin Fable. Each team will program the Fable robot using the Fable Blockly app so that it detects and counts the pendulum's oscillations, measuring the passage of time.

### CONSTRUCTION

### VIDEO

CLICK HERE

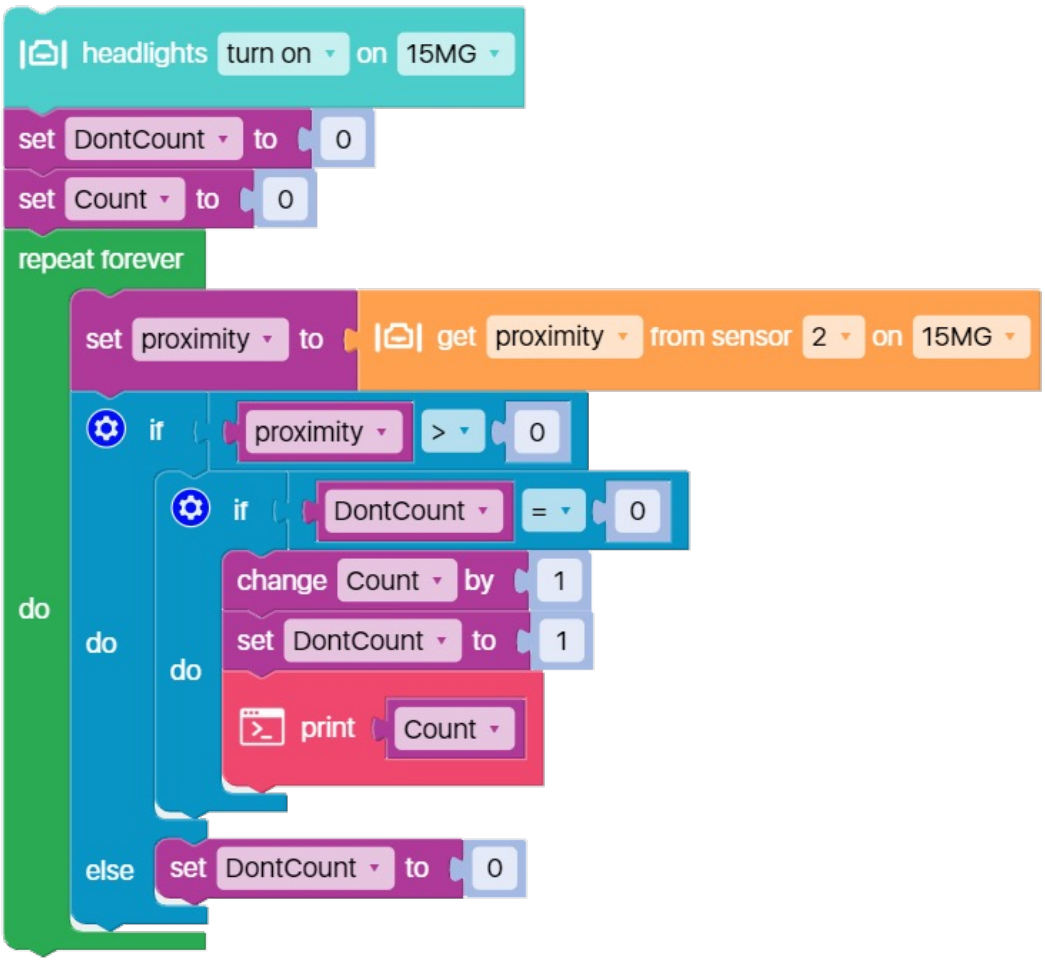
## CONCLUSION

Recap the new concepts discussed in this lesson: historical time, historical space, historical epochs, eras, etc.

Historical time and space are fundamental to understanding how past events have shaped the world today. By knowing when and where certain events took place, we can form a clear picture of their influence on the evolution of our society and culture. Historical time allows us to analyze and contextualize events, identify their causes and effects, and understand progress and regression in different periods.

Historical space, on the other hand, gives us the geographical perspective needed to understand how environment and location have influenced the development of civilizations, cultures and economies. In this way we can learn from the past and better appreciate the complexity of the world we live in.

# PROGRAMMING



# Greek civilization: Contributions and legacy

HISTORY

In this lesson, students will be introduced to the fascinating world of Ancient Greece, where they will explore significant historical moments such as the Medicean Wars and the Peloponnesian War. They will be guided on a virtual journey on the Acropolis of Athens. At the end of the lesson, students will analyze the myth of the Trojan War and explore the connection between it and the name "Trojans" used in computer science.

OBJECTIVES

- Identify the four tribes of Greeks who emigrated and settled in Greek territories.
- An account of the most important Greek armed conflicts.
- Explore the Acropolis of Athens and the relevant archaeological sites located on this hill through virtual reality.
- Making interdisciplinary connections between Greek mythology and contemporary terminology.

## THEORETICAL ELEMENTS

- Migratory tribes
- Major conflicts
- Peloponnesian War
- Trojan War

**EXAMPLE**

The Greeks migrated from the north to the south around the 12th century BC and settled in central, rocky Greece and the Aegean islands.

# DIDACTIC SCENARIO

The teacher shows the students some pictures of objects used in warfare by the ancient Greeks, such as a spear, a shield, Greek armor and a ship. Pupils are encouraged to identify these objects through the pictures, while the teacher briefly explains the history and usefulness of each object. Students are also encouraged to create their own models of these objects, which will be 3D printed by the end of the lesson. Examples: the spear (the most common weapon used by the ancient Greeks, as it could be used in hand-to-hand combat as well as at a distance); armor (it consisted of a helmet and protective plates for the chest and legs); the ship (it was of particular importance to the ancient Greeks, as it was the only means of transport that could link the islands they occupied).

The teacher will then introduce the theoretical concepts.

# ACTIVITY 1

The teacher initiates a virtual journey for students, giving them the opportunity to explore the Acropolis of Athens and discover the historical sites, using the ClassVR solution. The students will be able to visit the ruins of the Parthenon, an emblematic monument dedicated to the goddess of Athens, the temple of Erechtheion, known for its famous marble statues called The Caryatids, and the Dionysos.

ACROPOLIS OF ATHENS CLICK HERE

Theater, significant buildings erected in the period before and after the Medicean (Greco-Persian) Wars. During the virtual journey, the teacher will explain the mythological meanings and cultural implications of these monuments. The VR experience will be followed by a series of questions.

## EXAMPLE

1. What are the main architectural features of the Parthenon? How do these features fit into the cult of the goddess Athena?
2. What role did the Temple of Erechtheion play in Greek mythology and in the daily life of ancient Athenians? What do the caryatids - the women who support the roof of the temple - represent? What is their role?
3. What were the main religious functions and ceremonies associated with the Parthenon and the Erechtheion in ancient Greece?
4. The Dionysos Theater in Athens, inaugurated in the 6th century BC, is considered the oldest theater in the world. It was the setting for the famous tragic dramas of Aeschylus, Sophocles and Euripides, as well as the comedies of Aristophanes. How did Greek theater culture influence Roman antiquity and what impact did it have on Europe?

## MATERIALS NEEDED

Fable Elements

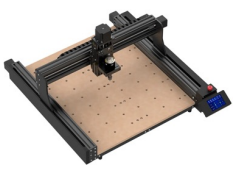
Phone

VR Headset

3D Printer

Laptop/Tablet

Interactive Display



CNC Machine

# ACTIVITY 2

The teacher will capture the students' attention with the story of Ulysses from the “Iliad”, telling how he built a wooden horse in which he hid Greek soldiers and tricked the Trojans into bringing him to their city.

The Fable robot will then be ingeniously transformed into a Trojan Horse. Using wooden laser-cut plates, the robot will appear as a cardholder. When the teacher inserts a card, the robot's sensors detect the action, and the robot will reveal that it is, in fact, a POS terminal. This activity will exemplify the concept of a "Trojan horse" and initiate a discussion about cyber trojans and the importance of cyber security.

## CONSTRUCTION

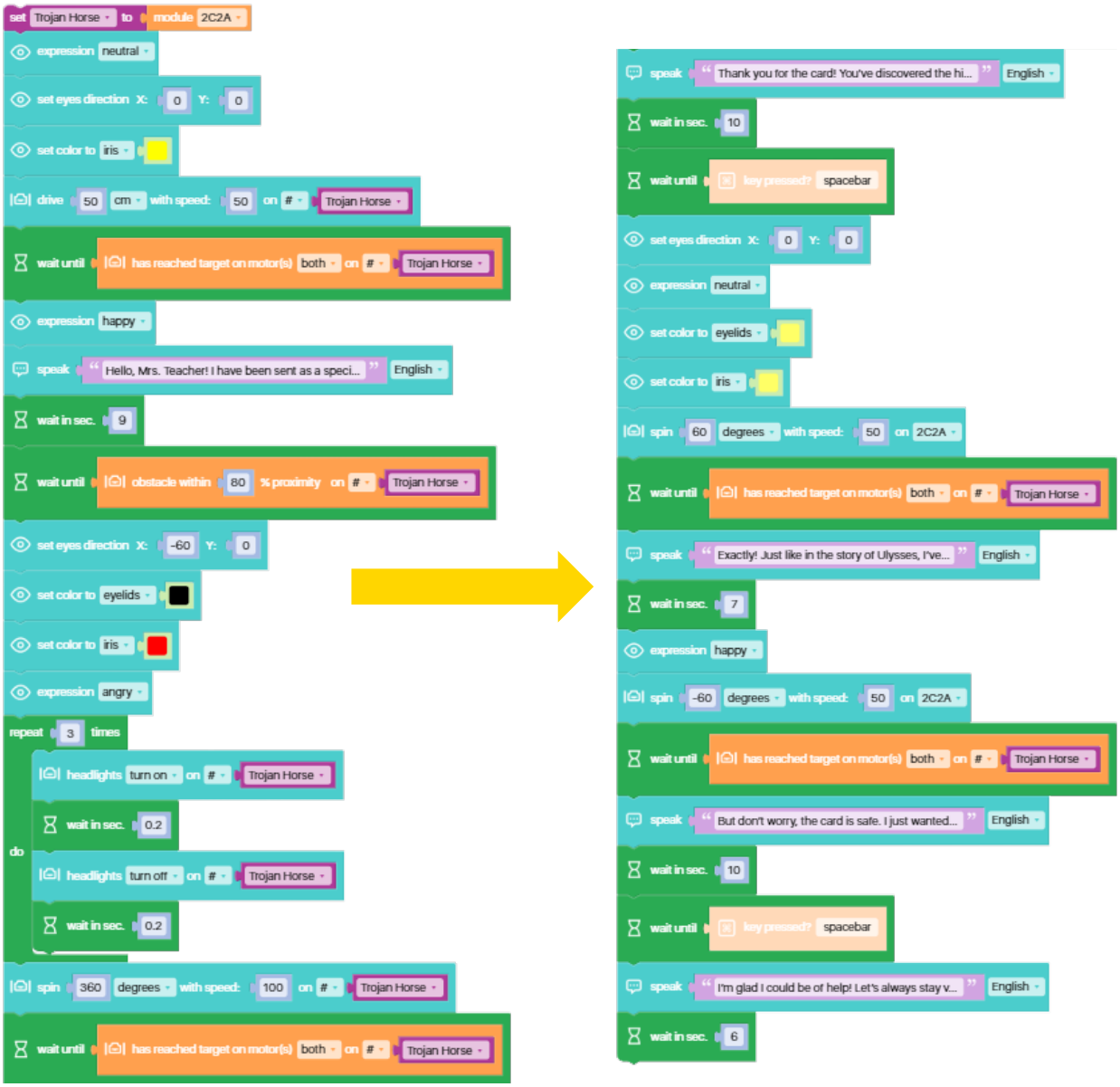
## VIDEO

CLICK HERE

# CONCLUSION

Myths have been of great importance in human history, and the ancient Greeks have one of the richest mythologies. Greek poets reworked myths, sometimes adding historical information, such as the battles between the Ionians and the Dorians or the Trojan War. These poems allow a deeper understanding of the ancient Greek people and their culture. The term "Trojans" is also used in analogy to computer viruses, referring to the Trojan people and their fatal mistake.

# PROGRAMMING



# Ottoman Empire: Expansion and influence

HISTORY

In this lesson, students will explore the history of the Ottoman Empire and important events related to its founder and great rulers. They will then discuss the Battle of Constantinople in 1453 and its aftermath. Students will have the opportunity to visualize Hagia Sofia with the help of virtual reality. Finally, they will program Fable robots to recreate the battle atmosphere during the siege of Constantinople.

## OBJECTIVES

- Presentation of the origins and structure of the Ottoman Empire and analyzing its impact on history and culture.
- Identify the role and contribution of Osman and other important rulers of the Ottoman Empire.
- Analyze the course and consequences of the Battle of Constantinople in 1453 in the history of Europe and the medieval world.
- Exploring the transformations of Hagia Sophia, highlighting the significant changes according to the political and religious developments in the region.
- Programming Fable robots to reenactment the siege of Constantinople.

## THEORETICAL ELEMENTS

- Founding of the Ottoman Empire
- Janissary army
- Fall of Constantinople
- Suleiman the Magnificent

## EXAMPLE

Muhammad II, also known as the Conqueror, conquered Constantinople in 1453, ending the **Byzantine Empire**. After capturing the city, Mohammed II moved the Ottoman capital to Constantinople, renaming it Istanbul.

# DIDACTIC SCENARIO

The teacher will show the students a series of representative images of objects and buildings from the Ottoman Empire, including swords, ceramics, clothing and outstanding architectural monuments. Buildings will include iconic examples such as the Suleymaniye Mosque and Topkapi Palace. Each image will be accompanied by relevant information about the objects and buildings. Pupils will be encouraged to identify the cultural origins of these artifacts and structures and to make assumptions about the people who created/built them, thus exploring historical and cultural aspects of the Ottoman Empire.

The professor presents relevant theoretical information, starting with the founding of the Ottoman Empire by Osman and its evolution up to the establishment of the famous army of the Janissaries. Key moments such as the fall of Constantinople in 1453 and the expansion under Suleiman the Magnificent, which peaked with the siege of Vienna and the conquest of significant territories in Europe, are discussed. Finally, the professor discusses the decline of the Ottoman Empire after the reign of Suleiman the Magnificent, marking the end of an era of glory and the beginning of major changes in the history of the empire.

# ACTIVITY 1

Students will explore Hagia Sophia, an impressive monument dating back to the Byzantine Empire, using virtual reality headsets. After the conquest of Constantinople in 1453 by Mohammed II, Hagia Sophia was converted into a mosque, reflecting the cultural and religious changes that took place in the city following its capture by the Ottomans. The VR experience will be followed by questions.

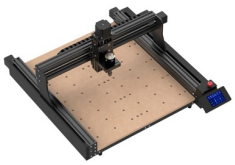
**HAGIA SOPHIA**
**CLICK HERE**

## EXAMPLE

1. What architectural highlights can you find in Hagia Sophia?
2. What are the main aspects of the Hagia Sophia's art and interior decoration and how do they reflect the interaction and cultural influence between the different religions and cultures of the period?
3. What are the main architectural and decorative changes that took place in Hagia Sophia after it was transformed into a mosque in 1453?
4. What significance and historical importance Hagia Sophia had for the Byzantine Empire and later for the Ottoman Empire?
5. What changes or additions were made to Hagia Sophia during the Ottoman conquest, and how have they affected the building's appearance and functionality?
6. How has Hagia Sophia been used throughout history?

## MATERIALS NEEDED

Fable Elements



CNC Machine

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

## ACTIVITY 2

The teacher divides the class into teams and asks each team to recreate the atmosphere of the siege of Constantinople in 1453, using Fable robots and a 3D printed catapult. Through this experiment, students will explore how the Ottoman Empire managed to destroy the city walls. The Fable robots will be involved in tightening the strings of the catapult.

The aim of the experiment is to demonstrate to the students the power and precision of this combat tool, giving them a deeper understanding of the military technologies used during the siege of Constantinople and their impact on the history and evolution of armed conflict.

**CONSTRUCTION**

**VIDEO**

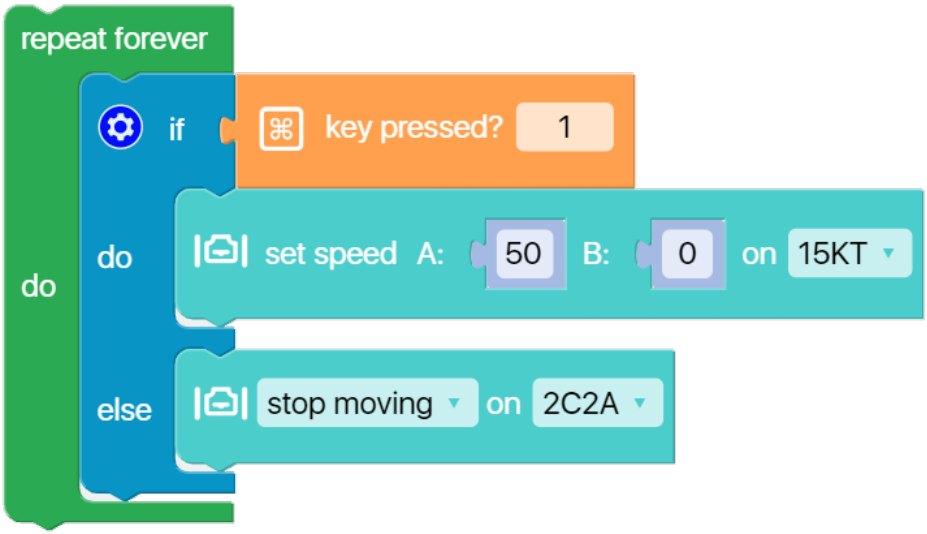
CLICK HERE

## CONCLUSION

In this lesson, students explored the history of the Ottoman Empire from its founding to its decline. They also discovered the transformation of Hagia Sophia from a Byzantine church to an Ottoman mosque.

The study of the historical aspects of the Ottoman Empire is of significant importance, as it contributes to a well-founded understanding of the context and evolution of society. The Ottoman impact in various areas, such as culture and language (marked by the presence of Turkish-origin words such as yogurt, coffee, and kebab) and other aspects of contemporary life, is still visible and significant. Through a detailed knowledge of the history of this empire, a broad and deep insight into the origin and influence of these aspects is gained, thus contributing to a richer and more complex understanding of our cultural past and present.

# PROGRAMMING



# Industrial Revolution: Types and use

HISTORY

During this lesson, students will travel back to the Industrial Revolution. Using the virtual glasses, they will analyze and compare the characteristics of a steam-powered train with those of a highspeed train. Students will also have the opportunity to understand how the steam engine revolutionized technology, bringing significant improvements to existing tools and machines.

OBJECTIVES

- Assessing the impact of the Industrial Revolution on society and the economy.
- Identification and analyzing the main technological innovations that characterized the Industrial Revolution.
- Comparing modern transportation, represented by highspeed trains, with the means of transportation used during the Industrial Revolution.
- Carrying out a practical experiment to illustrate the principle of operation of the crank-rod system.

## THEORETICAL ELEMENTS

- Premises of the Industrial Revolution
- Industrial Revolution unfolding
- First Industrial Revolution
- Second Industrial Revolution

## EXAMPLE

**The Industrial Revolution** began at the end of the 18th century in England and spread to other countries such as France, Germany and the USA during the first half of the 19th century.

# DIDACTIC SCENARIO

The teacher displays on the interactive display a presentation containing a series of pictures of the inventions that marked the Industrial Revolution and their inventors.

Examples: picture of a light bulb and picture of Thomas Alva Edison; picture of a steam-powered car and picture of Nicolas Joseph Cugnot; picture of a steam locomotive and picture of Richard Trevithick; picture of the first telephone and picture of Alexander Graham Bell.

Students are encouraged to identify them and answer the following questions: How have the innovations shown in the pictures evolved over time? Which of these inventions have remained unchanged? Identify three potential innovations that could appear in the future.

# ACTIVITY 1

The teacher invites students on a virtual journey where they will explore in detail a steam-powered train, a revolutionary invention for its time. They will learn how the steam engine works, which uses the burning of coal or other fuels to produce steam, which drives the pistons to set the train in motion.

**STEAM-POWERED TRAIN CLICK HERE**

During this experience, students will compare this type of train with modern high-speed trains, which use electricity and advanced technologies to reach high speeds safely and energy efficiently. For the proposed exercise, the teacher can integrate the reading of an informative text about steam engine trains during the virtual journey. The VR experience will be followed by a series of questions.

**HIGH-SPEED TRAIN CLICK HERE**

## EXAMPLE

1. What are the main differences in the operation and technologies used between steam and modern high-speed trains?
2. What advantages and disadvantages do you think steam trains had over modern trains in their heyday?
3. How do you think the introduction of steam trains has influenced the economic and social development of the regions where they have been implemented?
4. What lessons can we learn from the evolution of train technology, from steam to electricity in the context of sustainability and environmental impact?
5. What do you think the future of rail transport will look like in the light of the continuing advance of technology?

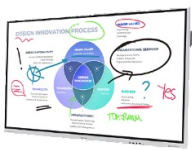
## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet



Interactive Display

# ACTIVITY 2

After the virtual reality experience, the teacher will introduce students to the fascinating world of the steam engine and its revolutionary impact on existing technologies. Students will explore how the steam engine has transformed tools and machines, making them more powerful, controllable and faster.

A notable example of this impact is the crank-rod, an essential mechanism that transforms linear motion into rotary motion and vice versa. Before the advent of the steam engine, this mechanism was used in a variety of applications, but with limited power and efficiency resources. After the integration of the steam engine, the crank-rod became a central element in improving the performance and efficiency of machinery.

During the lesson, the teacher will take a crank-rod system out of the 3D printer and attach it to a Fable Spin robotic module. This hands-on demonstration will allow the students to observe and understand the working mechanism of the crank-rod and how we can turn a rotational motion into a linear motion.

## CONSTRUCTION

## VIDEO

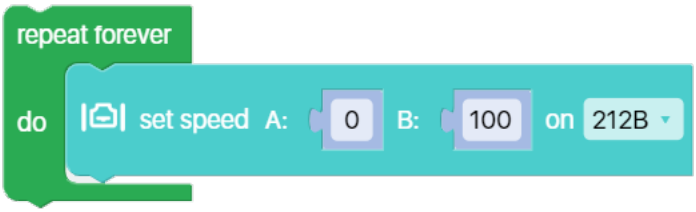
CLICK HERE

# CONCLUSION

The Industrial Revolution was a significant moment in human history, transforming the way society produces, consumes, and lives. It contributed to economic growth, rapid urbanization, and major social changes.

Textiles and metals were among the first sectors to benefit from technological innovation, speeding up production and creating new jobs. The development of transportation and energy systems made it easier to interconnect the world. However, the Industrial Revolution also brought challenges such as over-exploitation of resources and pollution.

# PROGRAMMING



# World War I: Background and impact

HISTORY

In this lesson, students will explore the causes and stages of the First World War and the technological innovations associated with it. They will use virtual reality to examine the first tanks and conduct an interactive experiment with Fable robots, which they will program to transmit coded messages.

## OBJECTIVES

- Identify the main factors that led to the conflict.
- Describe the important stages of the First World War chronologically.
- Assess the impact of technological innovations such as tanks, fighter planes and Morse code communication.
- A practical experiment to exemplify coded communication using Morse code.

## THEORETICAL ELEMENTS

- Causes of the First Word War
- Political-military alliances
- Stages of the First World War
- Technological innovations

**EXAMPLE**

**The Entente** (Allied Powers) was made up of Britain, France, Russia, Italy (from 1915), Japan, Romania (from 1916), USA (from 1917).

# DIDACTIC SCENARIO

The teacher will present on the interactive display a presentation with pictures of the monuments dedicated to the fallen heroes of the First World War.

Examples include the Tomb of the Unknown Soldier at the Arc de Triomphe in Paris, France; the Tomb of the Unknown Soldier in Bucharest, Romania, inaugurated in 1923, created by sculptor Emil Wilhelm Becker; the Monument of the Unknown Soldier in Belgrade, Serbia, designed by sculptor Ivan Mestrovic and completed between 1934-1938; and the Infinity Column in Târgu Jiu, Romania, inaugurated in 1938, sculpted by Constantin Brâncuși.

Afterward, the teacher will introduce theoretical information about the causes that led to the outbreak of the First World War, the composition of the political-military alliances between the Entente and the Central Powers, the main events organized in chronological order, the technological innovations used in the war and the importance of commemorating soldiers through these monuments.

# ACTIVITY 1

**TANKS**
**CLICK HERE**

Using virtual reality glasses, the teacher invites students to explore the characteristics of the first tanks used in the First World War. These armored vehicles, first introduced on the battlefield in 1916, revolutionized land warfare.

Students will be able to observe details such as the primitive design, limited mobility and armament of these early tanks and their strategic role in trench conflicts. The teacher will emphasize the importance of these technological innovations in the context of the evolution of military tactics and their impact on the outcome of warfare. The VR experience will be followed by questions.

## EXAMPLE

1. What were the main reasons why tanks were introduced on the battlefield in the First World War?
2. What features and functionalities did the first tanks have?
3. How did tanks influence military tactics and strategy during the First World War?
4. What technical and operational challenges did the first tanks and their crews face on the battlefield?
5. What was the enemy's reaction to the introduction of tanks, and how they tried to counter these new armored vehicles?

## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

# ACTIVITY 2

The teacher pre-programs the Fable robot to send a coded message through lights using Morse code. Morse code, developed in the 1830s and 1840s by Samuel Morse and Alfred Vail, is a system of telegraphy that uses sequences of dots and lines to represent letters, numbers, and punctuation marks. This system revolutionized communication in the 19th century, allowing information to be transmitted quickly over long distances, especially by telegraph.

The students will observe the sequences of lights emitted by the robot and note them down. Each sequence of lights corresponds to a particular set of dots and lines in Morse code. For example, a short light can represent a dot, and a long light can represent a line. Students will use a Morse code conversion table to decipher the message.

Through this experiment, students will discover how messages were sent between military units and command centers during the First World War.

## CONSTRUCTION

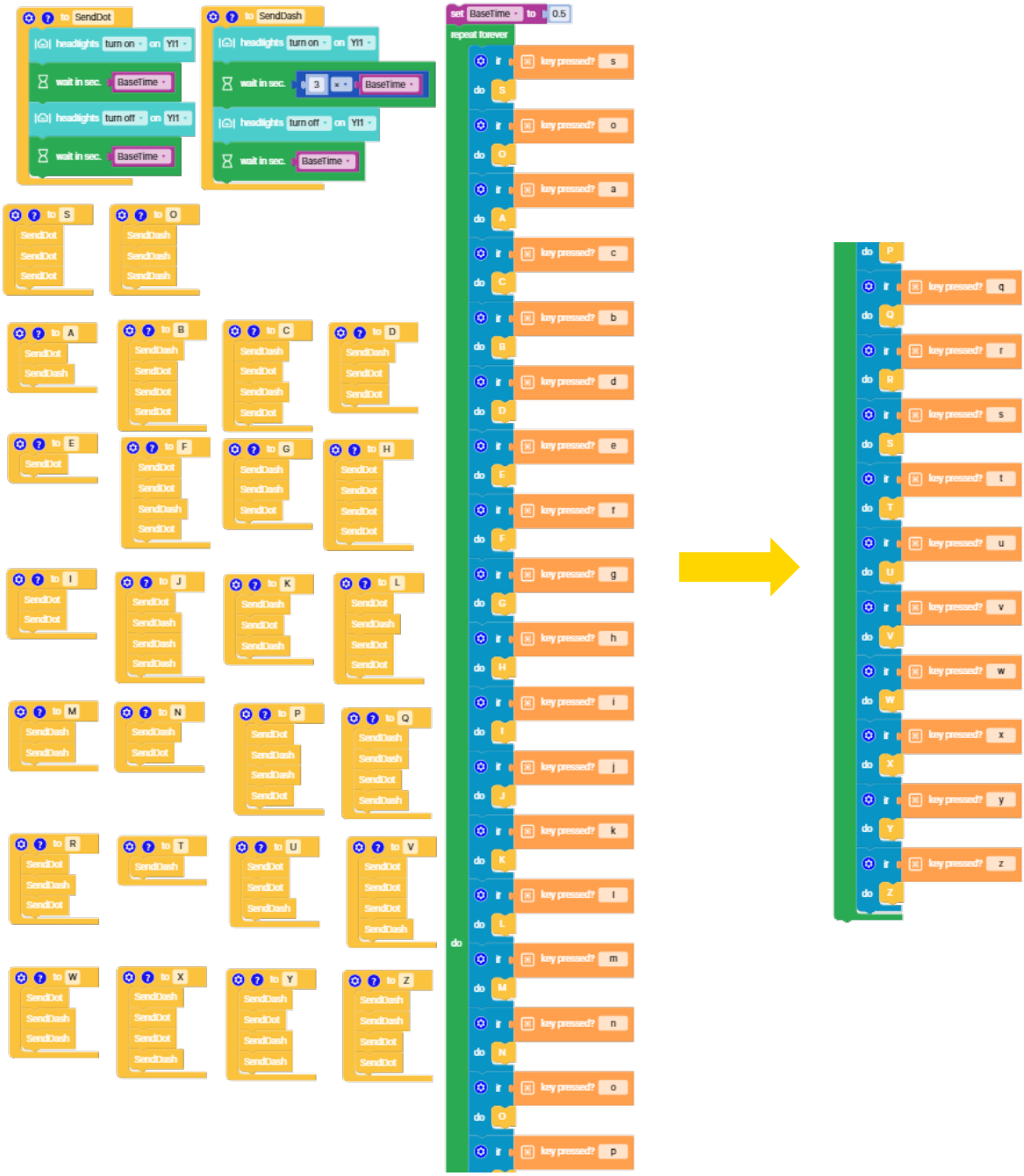
## VIDEO

**CLICK HERE**

# CONCLUSION

The First World War is one of the greatest conflicts in human history. It caused millions of deaths and injuries **(WWI statistics),** as well as the destruction of infrastructure and resources. It also caused geopolitical changes, including the collapse of empires. However, World War I was also a testing ground for technological innovations such as tanks and fighter planes.

# PROGRAMMING



# Geographical coordinates: Concepts and applications

GEOGRAPHY

In this lesson, students will explore concepts such as globe, map, equator, latitude, longitude. They will use Fable robots to simulate the process of locating on the map using geographic coordinates and measure distances on the physical map.

OBJECTIVES

- Define fundamental concepts such as: globe, map, geographical coordinates.
- Using Fable robots to simulate and demonstrate the map localization process.
- Determine the actual distances between different points marked on the map using the map scale.
- Practice mathematical calculations of geographical latitude and longitude.

## THEORETICAL ELEMENTS

- The geographical globe
- The map and the scale of the map
- Latitude
- Longitude

**EXAMPLE**

A **geographical globe** is a three-dimensional spherical representation of the planet, illustrating the continents, oceans and landforms (the physical globe) or showing the world's states (the political globe).

# DIDACTIC SCENARIO

The teacher will project on the blackboard a presentation that will include images of some of the oldest representations of the Earth. This will help students to understand the evolution of geographical knowledge over time.

Examples: the map of Hecataeus (6th century BC, Ancient Greece) is one of the earliest attempts to map the known world, centered on the Mediterranean Sea; the map of Eratosthenes (2nd century BC, Egypt), which introduces the terms latitude and longitude; the map of Ptolemy (2nd century AD, Egypt).

Then, the teacher will introduce theoretical information such as: geographical globe, map, map scale and how to calculate the real distance between two points on the map, geographical poles, equator, meridians and parallels, longitude, latitude.

# ACTIVITY 1

Using virtual reality headsets, students will explore different geographical regions such as Warsaw, the capital of Poland, a city full of history and culture. Warsaw is known for its diverse architecture, which includes modern buildings as well as historic buildings rebuilt after the destruction of World War II; the Rocky Mountains and the Colorado Plateau (The Rocky Mountains stretch across Canada and the United States; the Colorado Plateau, located in the southwestern United States, is renowned for its spectacular geological formations, including the Grand Canyon) and the Great Barrier Reef (located in the Coral Sea off the coast of Queensland, Australia, it is the largest coral reef system in the world).

The VR experience will be followed by exercises.

**GRAND CANYON CLICK HERE**

**GREAT BARRIER REEF CLICK CLICK HERE**

**WARSAW CLICK HERE**

## EXAMPLE

Determine the truth value of each statement below:

- The Great Barrier Reef is in the northern hemisphere.
  True / False
- Warsaw is located in the western hemisphere.
  True / False
- The Rocky Mountains stretch across Canada and the United States.
  True / False
- Eratosthenes introduced the concepts of latitude and longitude.
  True / False
- The Colorado Plateau is known for the Grand Canyon, located in the western hemisphere.
  True / False

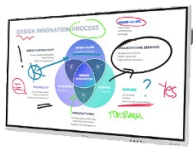
## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet



Interactive Display

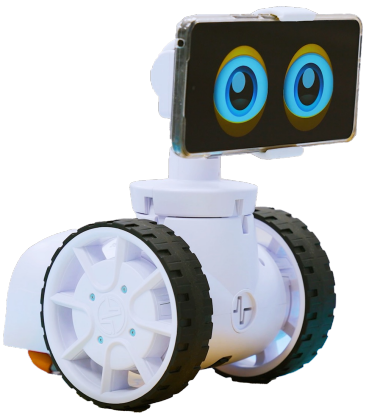
Map

## ACTIVIY 2

The teacher will organize the class into teams and program the robotic Spin module from Fable in Fable Blockly to move randomly on a physical map of the world placed on the floor. Using color sensors, the robot will recognize the nuances of specific landforms and give students clues, including latitude and longitude, to help them determine which country they are in. It will also present information about special tourist or cultural attractions in that country. Each team will identify the country and will mark the exact location of the robot on the map. Then, using the scale of the map, the students will calculate the actual distance between the points identified.

Sample text for robot: We're off to our first destination! I am at 36° north latitude and 112° west longitude. On the map, the area is marked in yellow, indicating a canyon. This impressive geologic formation developed due to rock erosion by the Colorado River and is known as the Grand Canyon. This spectacular canyon is recognized as one of the seven natural wonders of the world and is a popular tourist attraction. What country am I in?

**CONSTRUCTION**



**VIDEO**

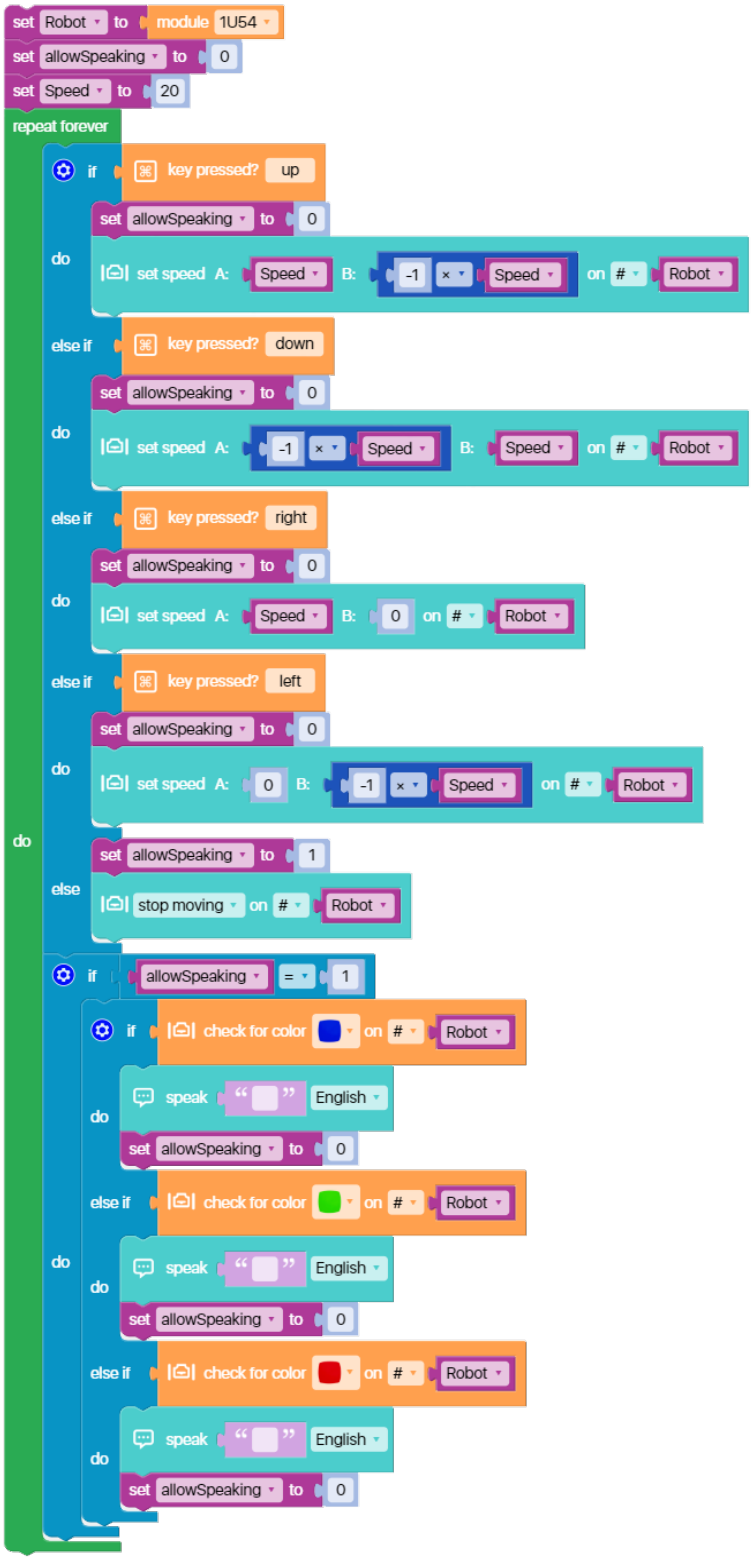
**CLICK HERE**

## CONCLUSION

Recap new concepts discussed in this lesson: Earth's axis, equator, parallels and meridians, latitude and longitude, etc.

Geographic coordinates are of particular importance in various fields, such as navigation, cartography, technological applications, and GPS navigation. They determine the precise position of every point on the Earth's surface.

# PROGRAMMING



# Earth's internal structure

GEOGRAPHY

In this lesson, students will explore the Earth's internal structure and the distinctive features of each geologic layer. Using virtual reality goggles, students will examine natural minerals located within the Earth's crust and study the human influence on the areas where they are mined.

OBJECTIVES

- Defining the main geologic layers: the core, mantle and crust.
- Description of the distinctive characteristics of each geologic layer.
- Identify main plates tectonic that make up the Earth's crust.
- Analyze a natural mineral in a realistic environment using virtual reality glasses.

## THEORETICAL ELEMENTS

- Earth's crust
- The mantle
- The nucleus
- Minerals and rocks

**EXAMPLE**

**The internal structure** comprises three important layers: the nucleus (inner and outer), the mantle (lower and upper) and the crust.

# DIDACTIC SCENARIO

To start, the teacher will take a section of the Earth's three inner layers (crust, mantle, and core) out of the 3D printer to visualize and present some general information about the Earth's structure.

Example: The Earth's crust is the solid outer layer of the planet, ranging in thickness from 5 km beneath the oceans to up to 70 km beneath continental mountains.

The mantle lies beneath the Earth's crust, extending to a depth of about 2,900 km. The core is located at the center of the Earth, it is divided into a liquid outer core and a solid inner core, composed mainly of iron and nickel. The outer core generates the Earth's magnetic field, which protects the planet from harmful solar radiation.

The teacher will use this presentation to provide students with information about the Earth's internal structure and how these layers influence the geological activity and natural phenomena that shape the surface of our planet.

# ACTIVITY 1

**SALT MINE**
**CLICK HERE**

To visualize one of the minerals found in the earth's crust, salt, students will take a virtual trip to a salt mine using virtual reality goggles. Students will have the opportunity to explore the underground galleries of the salt mine, observing the structure and texture of the salt deposits.

All the while, the teacher will read a text explaining that salt is a mineral formed from sodium chloride. The teacher will also detail the various industries in which salt is used, emphasizing its economic importance.

## EXAMPLE

1. What did you notice about the structure and texture of the salt deposits during the virtual trip?
2. How do salt layers form in the Earth's crust?
3. In which industries is salt used and why is this mineral so important?
4. How does salt influence different aspects of our daily lives?
5. What are the main environmental impacts of salt mining?
6. What measures can be taken to minimize negative environmental impacts?

## MATERIALS NEEDED

Fable Elements

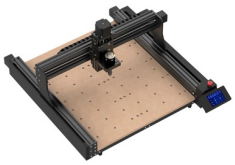
Phone

VR Headset

3D Printer

Laptop/Tablet

Interactive Display



CNC Machine

# ACTIVITY 2

Students will work in teams, with each team having access to two Spin robotic modules, equipped with wheels and motion sensors, as well as a phone with the Fable Face app installed.

Using Spin modules, students will simulate a horizontal seismic motion and interpret the resulting graph to assess the intensity of the earthquake.

The aim of the experiment is to give students a practical understanding of how seismologists analyze graphs during an earthquake and to show them how some phones can detect these movements.

## CONSTRUCTION

## VIDEO

CLICK HERE

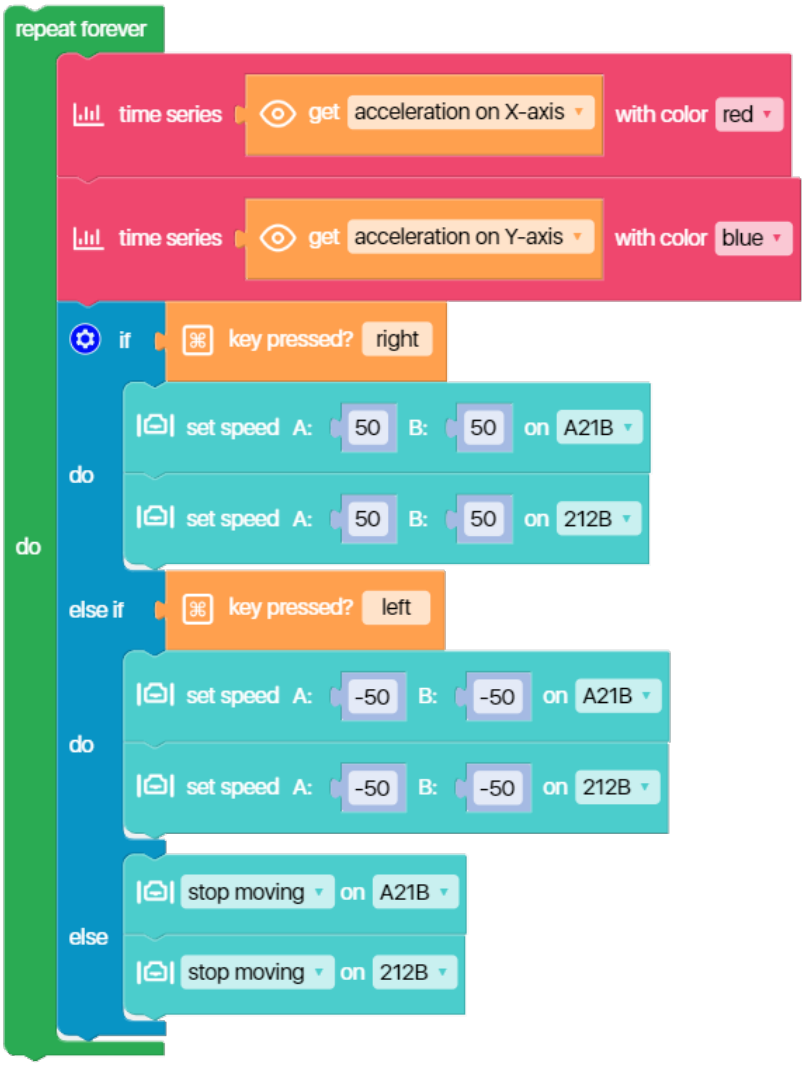
# CONCLUSION

Summarizing the essential information of the lesson: internal structure, crust, mantle, core, magma, tectonic plates.

The Earth is a complex and dynamic organism with matter in constant motion. Human activity, particularly the extraction of natural resources, can have a significant impact on its structure and functioning. Extraction can affect natural processes such as rock and mineral erosion, which can lead to problems such as land subsidence and landslides.

By exploring the Earth's internal structure, we can identify the distinctive features of each geological layer and better understand the mechanisms that govern our planet. This understanding can help us better anticipate and manage natural surface phenomena such as earthquakes, volcanic eruptions or landforms.

# PROGRAMMING



# Earth's climates
# Climate change: causes and effects

GEOGRAPHY

In this lesson, students will explore Earth's climate types and understand the features of each. Using virtual reality glasses, they will see the impact of climate change. Through debate, they will help find solutions for a sustainable future.

## OBJECTIVES

- Identifying the characteristics of different types of Earth's climates using Fable robots.
- Associating each climate type with specific natural environments and understanding the relationships between them.
- Debate and analyze possible solutions to combat climate change in a global context.
- An interactive simulation using virtual reality glasses to illustrate the impact of climate change.

## THEORETICAL ELEMENTS

- Warm zone
- Temperate zone
- Cold zone
- Climate types

## EXAMPLE

Influenced by factors such as geographical position, global solar radiation (direct and/or diffuse), air mass circulation, topography, seas and oceans, each area has different climates.

# DIDACTIC SCENARIO

The teacher uses an interactive display to show students a series of relevant images illustrating landscapes specific to different climates on Earth. Pupils are asked to examine these images and provide detailed observations on the distinct climatic characteristics of the regions concerned.

Examples: prepolar Alaskan landscape, equatorial forest landscape, desert landscape.

The teacher will start the lesson with a general overview of the Earth's climate zones. He will then use a map specially designed for this activity, colored differently for each climate type. To make the relationship between climate and landforms even better understood, the teacher will bring in objects created using a 3D printer to illustrate the different landforms.

# ACTIVITY 1

Students will be exposed to a visual simulation, using virtual reality goggles, illustrating the impact of climate change on the Earth. In this simulation, they will see how different regions of the world are affected by extreme weather phenomena such as rising sea levels, melting glaciers, desertification, and intensification of storms and hurricanes.

The aim of this activity is to motivate students to take action and be more concerned about protecting our planet in the face of climate change.

**CLIMATE CHANGE**
**CLICK HERE**

## EXAMPLE

1. What individual actions do you think we can take to reduce our impact on the environment and help fight climate change?
2. How can we educate and involve others in our efforts to protect the planet?
3. How can technology help fight climate change?

## MATERIALS NEEDED

Fable Elements

Phone

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

Map

# ACTIVITY 2

Using the Spin robotic module, students will explore the map and learn about each climate type. By simply pointing the color sensor at the colored map, the robot will identify the color and provide specific information about each climate type, highlighting the complex relationships between climate and landform.

This interactive method will enable students to gain a deeper understanding of the links between climate and landforms.

## CONSTRUCTION

## VIDEO

CLICK HERE

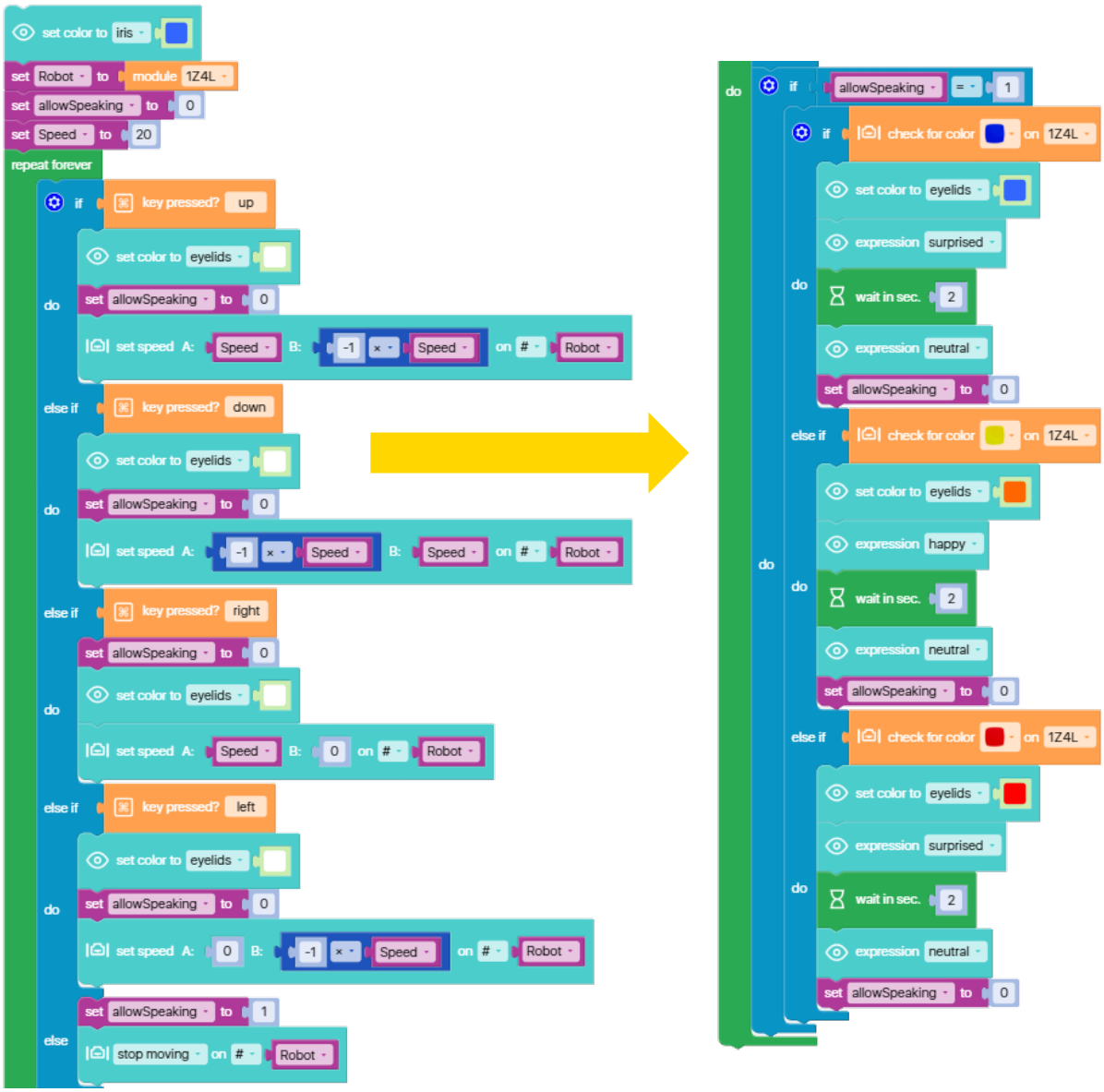
# CONCLUSION

Recap the new concepts discussed in this lesson: climate zone, climate, climate types, their features, monsoon, etc.

It's crucial to recognize that our actions, such as deforestation, intensive agriculture, urbanization, and industrialization, are not just local issues. They have a significant impact on climate globally, altering average temperatures, precipitation patterns, and even the frequency and intensity of extreme weather events. This understanding should motivate us to take responsibility and make positive changes.

Understanding the Earth's different climates and the consequences of climate change is essential for adapting to the environment and taking preventive measures. With this knowledge, we can identify strategies to protect and conserve the environment and minimize the negative impacts of human activities on it.

# PROGRAMMING



# Natural resources: Types and usage

GEOGRAPHY

In this lesson, students will study Earth's natural resources. They will explore a nature park in virtual reality to identify and understand the biosphere's resources, and then program and use a Fable robot to simulate the drilling process.

OBJECTIVES

- Define natural resources and emphasize their essential role in sustaining ecosystems.
- Classifying the Earth's natural resources according to certain criteria.
- Identifying the diversity of natural resources in the biosphere by exploring a nature park in virtual reality.
- Programming and using a Fable robot to simulate the drilling process of natural resources.

## THEORETICAL ELEMENTS

- Renewable natural resources
- Non-renewable natural resources
- Polluting natural resources
- Clean natural resources
- Lithosphere resources
- Resources of the hydrosphere
- Biosphere resources
- Atmospheric resources

## EXAMPLE

**Natural resources** are essential elements of the environment that are used by humans for different purposes. They can be grouped according to a number of criteria: their recoverability (renewable/non-renewable), the way they affect the environment (polluting/non-polluting), etc.

# DIDACTIC SCENARIO

The teacher will print out pictures representing various natural resources, such as oil, coal, water, wood, solar energy, etc. The teacher will start by explaining to the students the importance of natural resources, their role in the global economy, and their impact on the environment.

Students will be grouped in teams of 4-5 members. Each team will designate a representative who will randomly select an image. The representative will not see the selected image but will hold it facing his/her classmates. Teammates will provide descriptive clues to help the representative guess the natural resource. If the identification is correct, the team receives one point. If the answer is wrong, they move on to the next image. After each round, teams will switch representatives so that all members have a chance to participate in the guess.

# ACTIVITY 1

The teacher may choose to have students use ClassVR technology to visit either a nature park to explore the natural resources of the biosphere or an oil drilling station to understand the process of extracting and using energy resources.

Depending on the choice, the aim of this activity is either to enable pupils to observe and study the natural resources of the biosphere and hydrosphere, or to familiarize pupils with the process of extracting natural resources, especially oil.

Any VR experience will be followed by questions.

**NATURAL PARK**
**CLICK HERE**

**OIL DRILLING**
**CLICK HERE**

## EXAMPLE

1. How can the Lena Pillars Nature Park be described in terms of landscape and geological formations?
2. What are the main plant and animal species that live in the Lena Pillars Nature Park area?
3. What natural resources are identified in the Lena Pillars Nature Park video and to what extent are these resources exhaustible or renewable?
4. What is the main process by which underground oil is extracted?
5. What measures should be taken during the drilling process to prevent groundwater contamination?
6. How can oil drilling affect the environment and local communities?

## MATERIALS NEEDED

Fable Elements

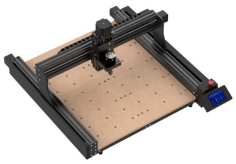
Sand

VR Headset

3D Printer

Laptop/Tablet

Interactive Display



CNC Machine

# ACTIVITY 2

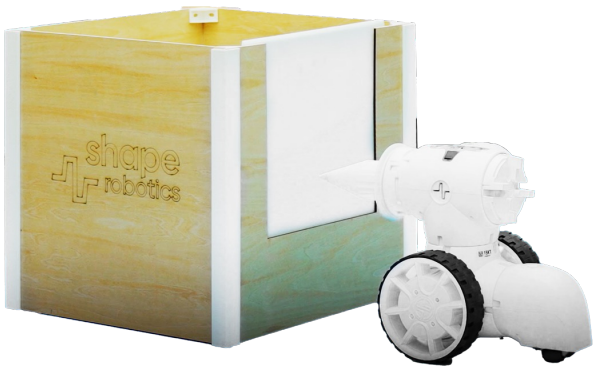
The teacher organizes the students into teams. Each team is given the necessary materials to build a model of a pond with natural resources (e.g. sand, water, wood).

One construction variant involves using five plywood tiles, a piece of soft polystyrene, sand and a Fable robot equipped with a 3D-printed, spiral-shaped, 3D-printed, sharp-tipped attachment.

This experiment aims to simulate the drilling operation in a safe and friendly environment.

In this way, students will understand the process of drilling for natural resources and the importance of this activity in terms of sustainable exploitation and use of these resources. .

**CONSTRUCTION**




**VIDEO**

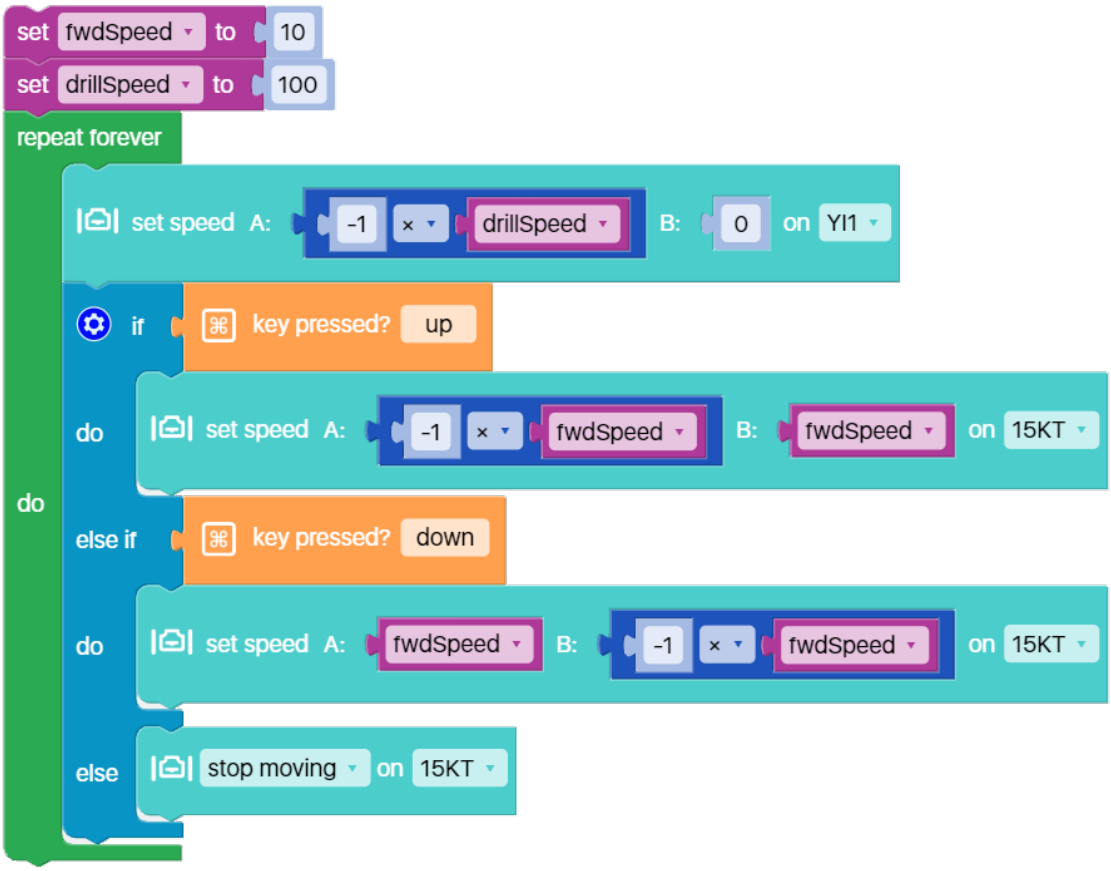
**CLICK HERE**

# CONCLUSION

Recap new concepts discussed in this lesson: renewable/non-renewable resources, lithosphere/biosphere/atmosphere resources, etc.

It is important to understand that the Earth's natural resources are essential, sustaining human life and activity, and to be aware of the need to protect them, especially non-renewable ones. Responsible, efficient and sustainable consumption of these resources is vital, given both our current and future needs. The proper management of polluting resources is also essential to protect the environment through compliance and recycling of recyclable materials.

# PROGRAMMING



# Political map of the world: Evolution and importance

GEOGRAPHY

In this lesson, students will analyze political maps and study their evolution over time. They will have the opportunity to explore the most beautiful capital cities in virtual reality and recreate different routes used by merchants using the Fable robot.

OBJECTIVES

- Organizing interactive exercises for recognizing and learning the flags of countries.
- Analyze changes in the political map over time and highlight the causes.
- Explore politically important cities in virtual reality, observing their geographical and cultural characteristics.
- Assessment of students' knowledge about matching flags with their countries using the Kahoot application.

## THEORETICAL ELEMENTS

- Definition of the political map
- Changes of the political map
- The great colonial empires
- The break-up of the URSS

## EXAMPLE

**The political map of the world** is a cartographic representation of the states in existence at a given point in time, reflecting the ever-changing global political evolution and dynamics.

# DIDACTIC SCENARIO

The teacher will use an interactive display for a quiz. A country flag will be displayed on the screen and students will be encouraged to identify the country corresponding to each flag.

The teacher will then present theoretical information about political maps, starting with the definition of a political map and continuing with its evolution over time. Information will be discussed, such as how they looked before the modern era, when geographical and territorial details were emphasized, and how they look today, including political, social and economic information.

# ACTIVITY 1

Students will use virtual reality headsets to visit several cities located on different continents. This experience will allow students to observe the architecture, monuments, squares and other distinctive features of each city. They will record their observations and participate in discussions on the political, cultural and historical importance of these cities.

For example, in Paris, the capital of France, students will discuss the cultural and artistic importance of Paris, its role in European history, including the German occupation during World War II.

By virtually exploring the world's great capitals, students will have the opportunity to observe the cultural, architectural and historical diversity of these cities. These capitals are not only administrative centers but also symbols of national identity and historical evolution.

**MADRID**
**CLICK HERE**

**PARIS**
**CLICK HERE**

## EXAMPLE

1. What cultural or architectural aspects did you notice in the cities you visited virtually?
2. How does the architecture and infrastructure of each city reflect the culture and history of that country?
3. How does each city's geographical location contribute to its economic and cultural development?
4. Have you noticed differences between capital cities in developed and developing countries? developing?
5. What are the differences? How do you think the history of each city has influenced its current development?
6. What aspects of each city have most impressed you and why?
7. Which capital city do you think would be the most interesting to visit in real life on the basis of your virtual experience?

## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

## ACTIVITY 2

The teacher and students will create a timeline with the help of a sticky tape, highlighting key moments in history that have influenced changes in the political map over time. The robot will be programmed to give statements designed to assess students' knowledge. If the student thinks the answer is correct, it will touch the phone screen with one finger; if the student thinks the statement is wrong, it will touch the phone screen with two fingers. Once the robot indicates that the student has marked the information incorrectly, it will say "incorrect answer, you have one more attempt," and the teacher will provide additional explanations.

The aim of the project is to consolidate knowledge and stimulate active participation in the educational process.

### CONSTRUCTION

### VIDEO

CLICK HERE

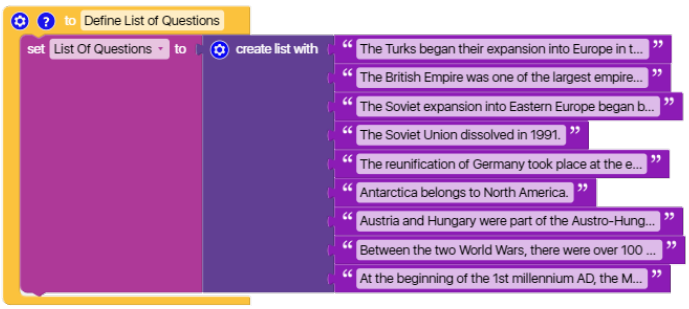
## CONCLUSION

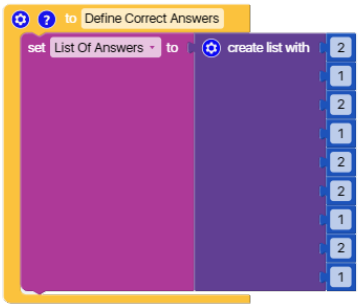
Recap new concepts discussed in this lesson: political map, colonialist empire, etc.

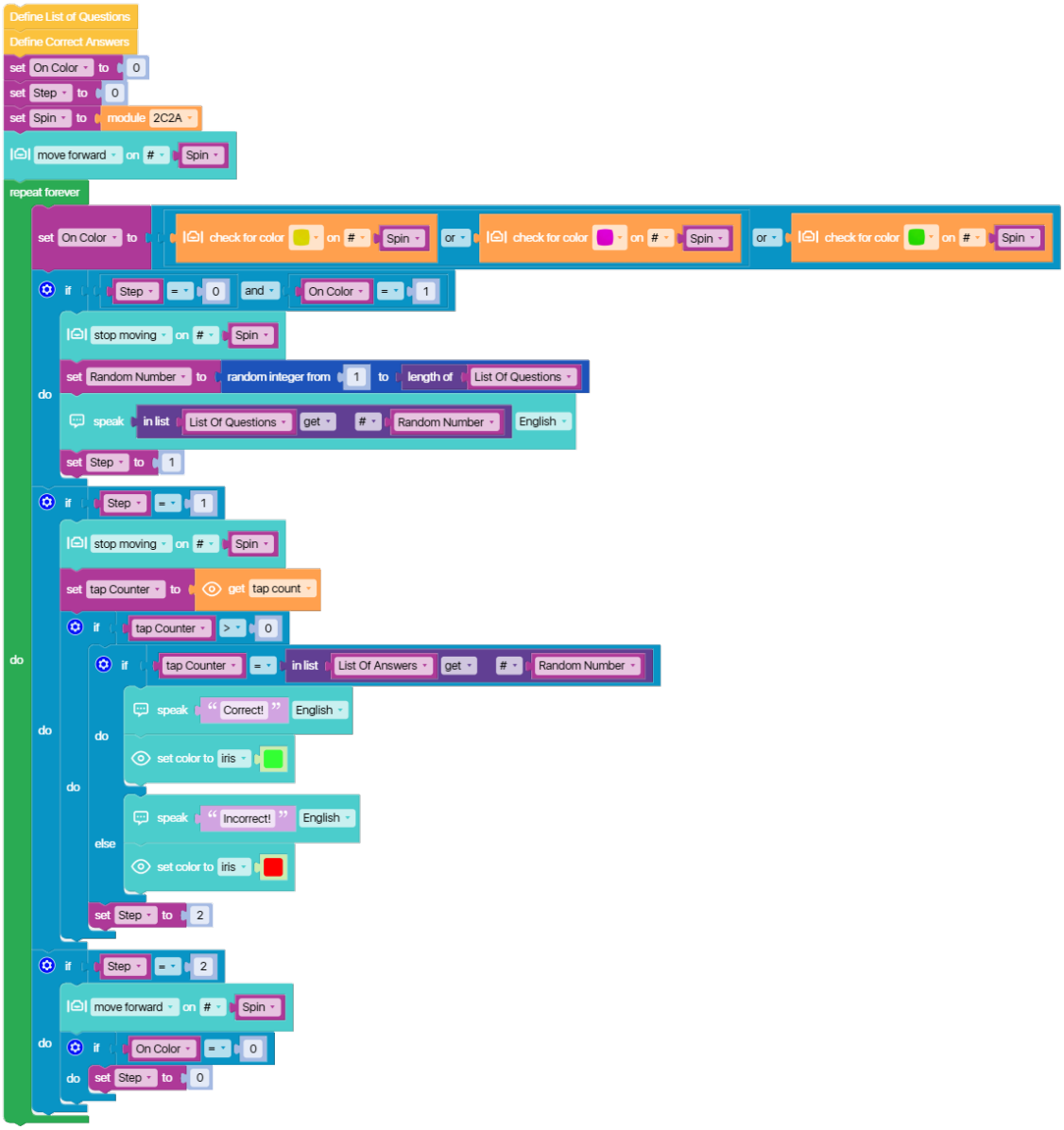
The study of the evolution of geopolitical maps provides an in-depth understanding of major changes in history and how they have influenced the current configuration of our world. For example, by analyzing geopolitical maps from the period of European colonialism, we can understand the expansion of European empires and the division of territories in Africa, Asia and the Americas.

Also, by analyzing political and territorial changes, it is possible to understand the dynamics of past and present international relations, the challenges and threats that the international community is currently facing, as well as cooperation between states.

# PROGRAMMING



# Music rests

MUSIC

In this lesson, students will discuss musical rests and their essential role in the performance of musical pieces. They will examine different types of rests by participating in a concert using virtual reality. Students will also learn when and how to effectively use rests during musical performance by programming and interacting with the Fable robot.

OBJECTIVES

- Recognizing different types of rests in musical scores.
- Understanding role and importance of rests in music performance.
- Identify musical rests and their duration during a virtual concert.
- Development of an experiment using the Fable robot to facilitate the understanding of the concept of rests and time-outs.

## THEORETICAL ELEMENTS

- Definition of musical rests
- The role of music rests
- Duration of rests
- Types of musical rests

**EXAMPLE**

**Rests** are segments of silence in a musical composition. They are moments when the performer or instrument does not make any sound but are essential to the structure and correct interpretation of a piece of music.

# DIDACTIC SCENARIO

At this stage of the lesson, students will listen to a piece of music carefully selected by the teacher, containing well-defined pauses. The teacher will encourage students to pay attention to the structure of the piece and to note the exact moments when the music pauses.

After listening, a discussion will follow in which the students will analyze together how these pauses contribute to the rhythm and overall interpretation of the piece. They will discuss the impact of pauses on the dynamics of the music, their role in creating artistic tension, and how they influence the listener's perception and emotions.

# ACTIVITY 1

Students will use virtual reality goggles to participate in a concert by the Rotterdam Philharmonic Orchestra performing the Fifth Symphony by Beethoven, one of the most important and famous composers in music history. The Fifth Symphony is part of a series of nine symphonies and has been nicknamed the Symphony of Destiny in the past.

**5TH SYMPHONY BEETHOVEN CLICK HERE**

Through this technology, they will be "transported" directly into the concert hall, having the opportunity to see and experience the atmosphere of such an event and listen to the symphony from different perspectives of the orchestra, being in turn closer to the conductor, violinists, drummers and other musicians. The VR experience will be followed by a series of questions.

## EXAMPLE

1. Who was Ludwig van Beethoven, and why is he considered one of the most important composers in the history of music?
2. Identify and describe the passages in the Fifth Symphony where you feel an increase in tension and explain how these effects are created.
3. Observe the reactions of the musicians and conductor during the performance. How Do they contribute to the overall atmosphere of the concert?
4. Analyze the role of the conductor in maintaining the rhythm and dynamics of the piece. How do the musicians interpret the conductor's signals?
5. The Fifth Symphony has been dubbed the "Symphony of Destiny". In your opinion, how does music reflect the idea of destiny?

## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet

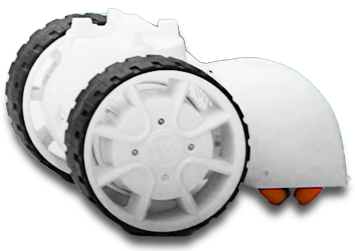
Interactive Display

## ACTIVITY 2

The teacher will create three paths (green, blue, red) on A3 sheets, representing different rhythmic movements on different rests. The robot will run at a constant speed, set at 50%.

To highlight the duration of the rests, the robot will beep each time it identifies a color. By changing the distance between the colored strips, the duration of the rests will also change. The sound is generated directly from the Fable Blockly program and the musical note chosen is "Do". This activity will help students understand and apply different types of musical rests in an interactive and fun way. Rests help to emphasize certain notes or passages, giving the rhythm a clear and coherent structure. This is crucial in musical genres that rely heavily on rhythm, such as jazz and classical music.

### CONSTRUCTION



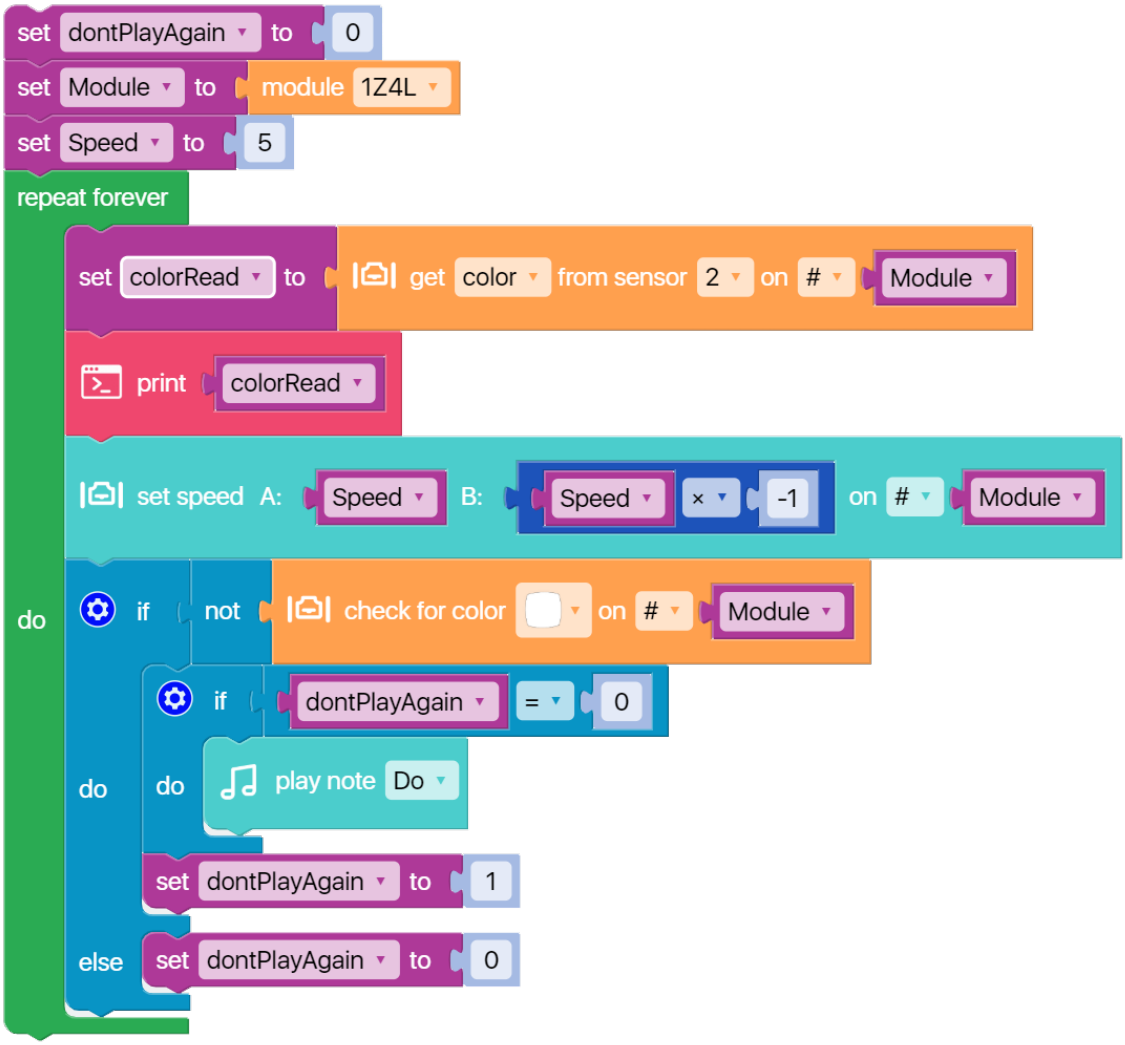
### VIDEO

CLICK HERE

## CONCLUSION

Recap new concepts discussed in this lesson: musical rests, types of rests, and their purpose. Musical rests are fundamental components in the notation and performance of music, providing the structure and dynamics necessary to create a complete and varied listening experience. Understanding and applying rests correctly is essential for any musician, whether performer or composer. Rests can be used to convey emotions and intentions. They can suggest introspection, stillness or transition. A skilled musician uses rests to communicate the nuances and subtleties of a piece, adding depth and expressiveness to the performance.

# PROGRAMMING



# Conducting techniques: Movements and meanings

MUSIC

In this lesson, students will explore the role of the conductor in an orchestra, understand when and why a conductor is needed, learn about essential conducting movements, and observe the instruments used by the conductor. Students will participate in interactive and experiential activities to apply and deepen their knowledge.

OBJECTIVES

- Identification and description role of the conductor in conducting an orchestra.
- Analyze the essential movements used by the conductor to communicate with the orchestra.
- Perform different styles of conducting in a classical concert.
- Applying theoretical knowledge through practical activities using VR technology and the Fable robot.

## THEORETICAL ELEMENTS

- The conductor
- The role of the conductor
- Conducting movements
- Tempo

**EXAMPLE**

A **conductor** is the person responsible for coordinating and directing an orchestra or choir. The conductor interprets the musical score and uses specific gestures to indicate the tempo, dynamics and expressiveness desired from the musicians.

# DIDACTIC SCENARIO

The teacher will start the lesson by asking the students if they have ever been to a symphony concert and what they have noticed about the person standing in front of the orchestra and moving their arms.

Afterwards, the teacher will show a short video clip of a famous conductor in action on the interactive display and the students will discuss what they have seen and what they think the conductor's movements mean.

The professor will then show a presentation of the world's most famous conductors, each of them explaining what has made them stand out. Examples of conductors: Carlos Kleiber, Arturo Toscanini, Colin Davis, Sergiu Celibidache.

# ACTIVITY 1

Students will use virtual reality glasses to attend a classical music concert. Using this technology, they will be able to observe the conductor's every move in detail. The main aim of this activity is for the students to understand the role of the conductor in the performance of music and to observe how the conductor's gestures influence the dynamics and tempo of the piece played by the orchestra.

CONDUCTING MOVEMENTS 1 CLICK HERE

Students will be encouraged to follow the conductor's movements carefully, trying to identify the gestures discussed earlier, such as those for articulating notes, changing tempo and adjusting dynamics. They will notice how the conductor's fluid, continuous movements indicate legato, and how short, precise movements signal staccato.

CONDUCTING MOVEMENTS 2 CLICK HERE

In addition, students will be able to see how the conductor adjusts the tempo of the piece: wide, slow movements for slower tempos, such as Adagio, and fast, energetic movements for fast tempos, such as Allegro.

## EXAMPLE

1. Is the conductor indicating a fast or slow tempo with his movements?
2. What conducting gestures were you able to identify during the concert?
3. How important is the conductor's eye contact and attention to different sections of the the orchestra during the concert? How do these elements contribute to the cohesion and expressiveness of the ensemble?

## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

## ACTIVITY 2

The Fable robot will be programmed to mimic the actions of a conductor. When starting the program, the robot will execute movements corresponding to the Adagio tempo. These include up, down, left and right movements. By combining the four movements, students can create other "conductor" actions (e.g. Largo, Grave, Lento).

As the robot performs its movements, students will be invited to imitate its gestures to better learn, understand and reinforce the information, emphasizing the purpose and importance of each gesture in the context of a rehearsal or concert.

### CONSTRUCTION

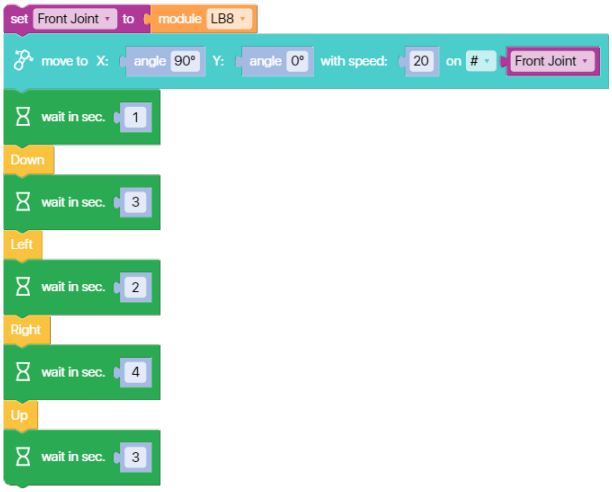
### VIDEO

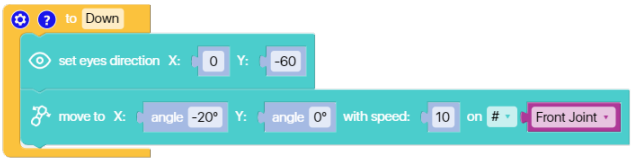
CLICK HERE

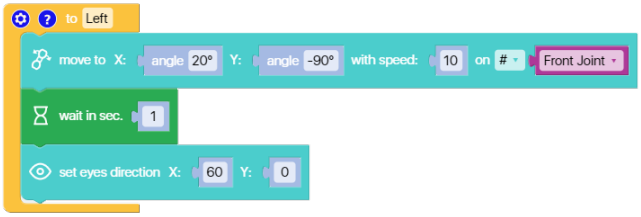
## CONCLUSION

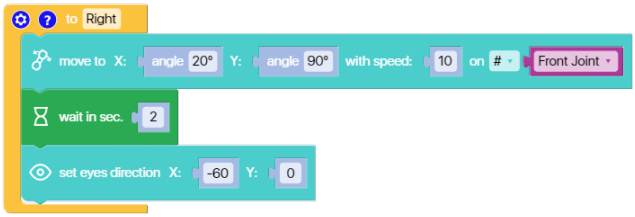
Recap of the new concepts discussed in this lesson: conductor, conducting movement, tempo, etc. The conductor is essential to the success of an orchestra, being responsible for the technical coordination and artistic interpretation of musical works. Without the conductor, the orchestra would lose the coherence, expressiveness and interpretative quality needed to transform a simple performance into an exciting and moving musical experience. The conductor studies the score and the composer's intentions in depth. Moreover, he identifies and corrects technical problems that may arise during rehearsals. This includes adjusting the sound balance between sections, correcting intonation or rhythm mistakes and optimizing the interpretation.

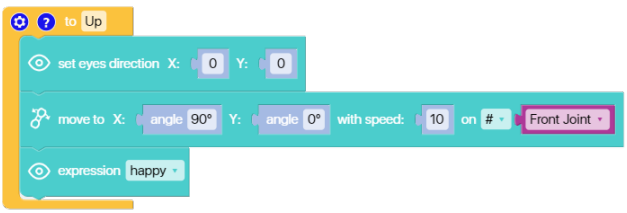
# PROGRAMMING



# Acoustic enclosures: Design and performance

MUSIC

In this lesson, students will learn what an acoustic enclosure is and its role in sound production. They will also discover which instruments have a sound box. Then, using virtual reality headsets, they will observe how violins are made. Finally, they will use the Fable robot to explore how the size of the acoustic enclosure influences the sound of an instrument.

OBJECTIVES

- Define the acoustic enclosure and describe its role in amplifying and enhancing sound.
- Understanding how to classify and operate musical instruments built with acoustic enclosures.
- Gain knowledge about making a violin through exposure to 360° experiences.
- Comparative analysis of the sounds generated by Fable robots when hitting three drums of different acoustic sizes.

## THEORETICAL ELEMENTS

- Acoustic enclosure
- The role of the acoustic enclosure
- Types of acoustic enclosure
- Musical instruments

**EXAMPLE**

An **acoustic enclosure** is a space specially designed to improve the sound quality of a musical instrument or sound system.

# DIDACTIC SCENARIO

Students will listen to sounds produced by different musical instruments: piano, guitar, violin and drums. They will be guided to discuss the differences they hear in pitch, timbre and intensity. This introductory activity will give them a context for understanding the musical concepts that will be presented during the lesson.

Following this activity, the teacher will introduce theoretical notions about acoustic enclosures: what they are and what their role is, how many types of acoustic enclosures there are, what the differences are between them, and which instruments have acoustic enclosures. Students will also learn how they influence the sound produced by instruments.

# ACTIVITY 1

Students will use virtual reality goggles to explore a workshop where violins are made. They will have the opportunity to observe in detail the process of making these instruments, with a focus on the construction of the acoustic enclosure. They will follow the essential steps of the manufacturing process and understand how each component contributes to the final sound quality.

**CRAFTSMAN CLICK HERE**

They will also discover the story of the master luthier and his motivation for making musical instruments.

During the show, the teacher can also tell the students the story of the famous Stradivarius violins, which are known for their exceptional sound and the craftsmanship with which they were built by the Italian violin-maker Antonio Stradivari in the 17th-18th centuries.

The VR experience will be followed by a series of questions.

## EXAMPLE

1. What are the main steps in making a violin?
2. What materials are used in violin construction and why are these materials chosen?
3. How do the shape and size of the acoustic enclosure contribute to the sound quality of the violin?
4. Draw a violin and label each part of the instrument. Briefly explain the function of each part.
5. In a short essay, describe the story of the luthier craftsman in the workshop you virtually visited and his motivation for creating violins. How do you think his passion influences the quality of the instruments he makes?

## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

Painting tools

# ACTIVITY 2

„The Fable Drummer" will help students understand how the size of the acoustic enclosure influences sound. Equipped with 3D-printed accessories, the robot will be programmed to hit different-sized drums.

Pupils will also be able to watch a sound meter that will, in real-time, indicate the decibels for each drum hit.

Students will be able to compare sound differences and participate in discussions about how the volume of the acoustic enclosure influences both the frequency and amplitude of the sound produced.

## CONSTRUCTION

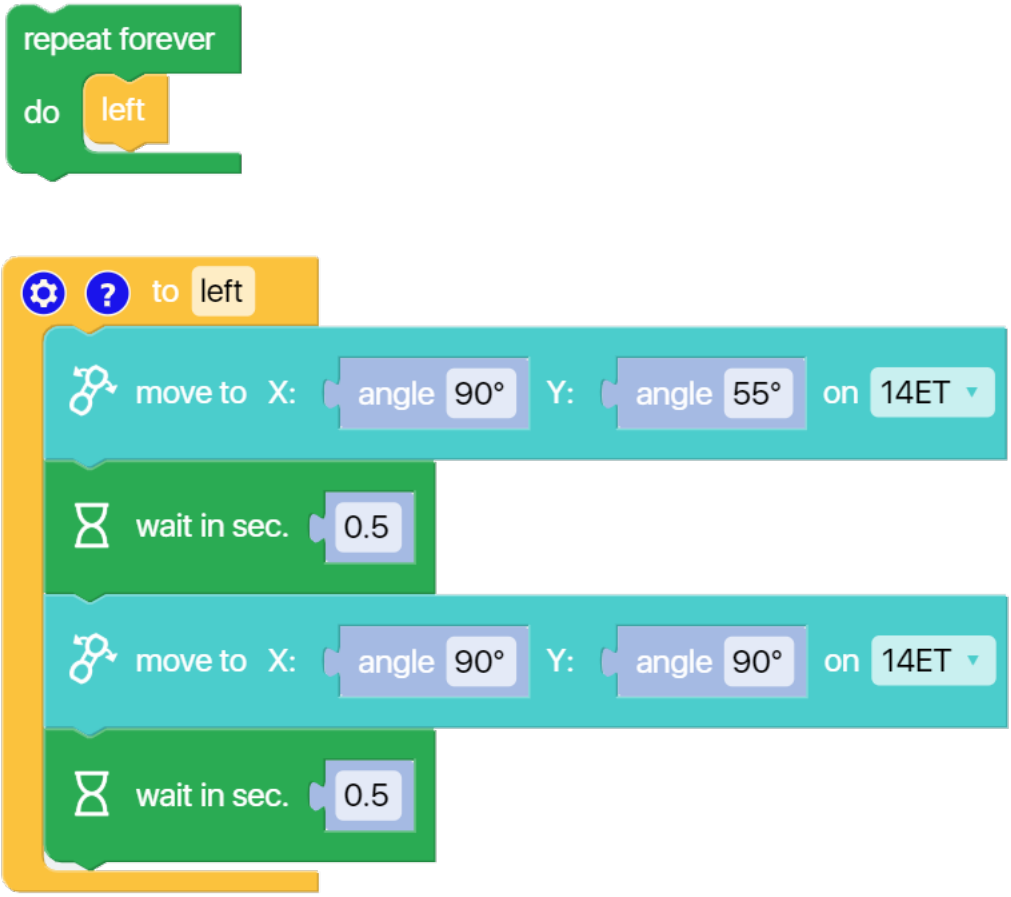
## VIDEO

CLICK HERE

# CONCLUSION

Review new concepts discussed in this lesson: acoustic enclosure, its role, instruments with acoustic enclosures, etc. Studying acoustic enclosures is essential to understanding how sound is amplified and perceived. A well-constructed acoustic enclosure contributes to a faithful reproduction of the sound emitted by loudspeakers or musical instruments. The acoustic enclosure can also be designed to direct and disperse sound in a controlled and uniform way in the surrounding space. By using suitable materials and appropriate construction technologies, the acoustic enclosure can absorb and attenuate unwanted resonances and acoustic reflections, thereby reducing distortion and improving the clarity and fidelity of sound.

## PROGRAMMING



# Using geometric shapes in art

ARTS

In this lesson, students will explore geometric shapes and how they have been used in modern art, with an emphasis on cubism. They will visit a modern art museum using ClassVR to observe and analyze famous works of art. Finally, they will program the Fable robot to create cubist portraits.

OBJECTIVES

- Recognizing basic geometric shapes and understanding their importance in artistic compositions.
- Explore the characteristics of cubism and its stages through an in-depth study of works of art.
- Acquiring the knowledge of analyzing and interpreting works of art, in particular the use of geometric shapes in artistic compositions.
- Making portraits or cubist artworks using the Fable robot to explore and apply cubism principles and techniques in a practical context.

## THEORETICAL ELEMENTS

- Geometric shapes
- Cubism
- Stages of cubism
- Pablo Picasso

**EXAMPLE**

**Cubism** is an avant-garde artistic movement that emerged at the beginning of the 20th century and revolutionized traditional conceptions of art and representation.

# DIDACTIC SCENARIO

The teacher will display a series of significant portraits by famous artists on the interactive display, illustrating the evolution and transformations in painting in the context of different artistic trends.

Examples include Leonardo da Vinci's 'Mona Lisa,' a representative of the Italian Renaissance, which stands out for its subtle details and enigmatic expression. Rembrandt's "Self-Portrait", an example of the Baroque style, is distinguished by the artist's strong luminosity and deep introspection. Also, Georges Braque's 'Woman with Guitar', a clear example of cubism, illustrates the fragmentation of form and the use of multiple planes to create a new perspective on the subject.

These portraits reflect not only the artists' technical skills but also the spirit and ideas that defined the different artistic eras.

# ACTIVITY 1

The teacher will organize a virtual visit for students to a museum of modern art, using virtual reality goggles to explore works of art created using geometric shapes. Students will have the opportunity to examine in detail various works of modern and contemporary art, including works by Pablo Picasso.

**BERGGRUEN MUSEUM PICASSO EXHIBITION CLICK HERE**

Examples of works on display include works that illustrate how Picasso used simple geometric lines and shapes to create complex and meaningful compositions. This will enable students to understand how artists can translate ideas and emotions into the geometric language of shapes.

## EXAMPLE

1. Who was Pablo Picasso and why he is considered one of the most important artists in art history?
2. What are the main geometric shapes you notice in Pablo's work? Picasso?
3. How do you think the use of geometric shapes influences the message or impact artwork?
4. What symbolism or meaning do you attribute to the use of certain geometric shapes in art?
5. Why do you think modern and contemporary artists resort to the use of forms geometric shapes in their artistic creations?

## MATERIALS NEEDED

Fable Elements

VR Headset

Laptop/Tablet

Interactive Display

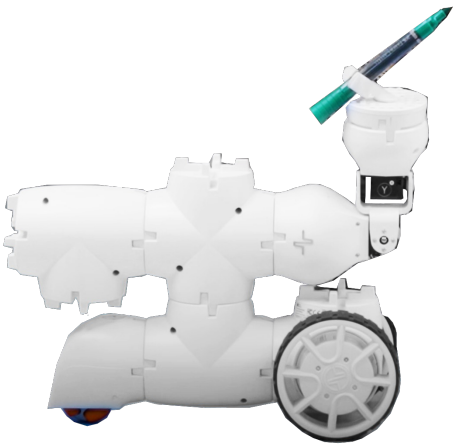
## ACTIVITY 2

Students will program the Fable robot in Fable Blockly to explore Picasso's art by drawing geometric shapes that, when combined, will create cubist artwork inspired by the great artist. They will use both the Spin module to move around the sheet of paper and the Joint module, equipped with a marker, to draw various geometric shapes.

Students will be inspired by famous works such as 'Woman with Flower' or the 'Woman Weeping' series, outstanding examples of Picasso's cubism.

This activity will allow them to better understand the principles of cubism and experience Picasso's creative process.

### CONSTRUCTION



### VIDEO

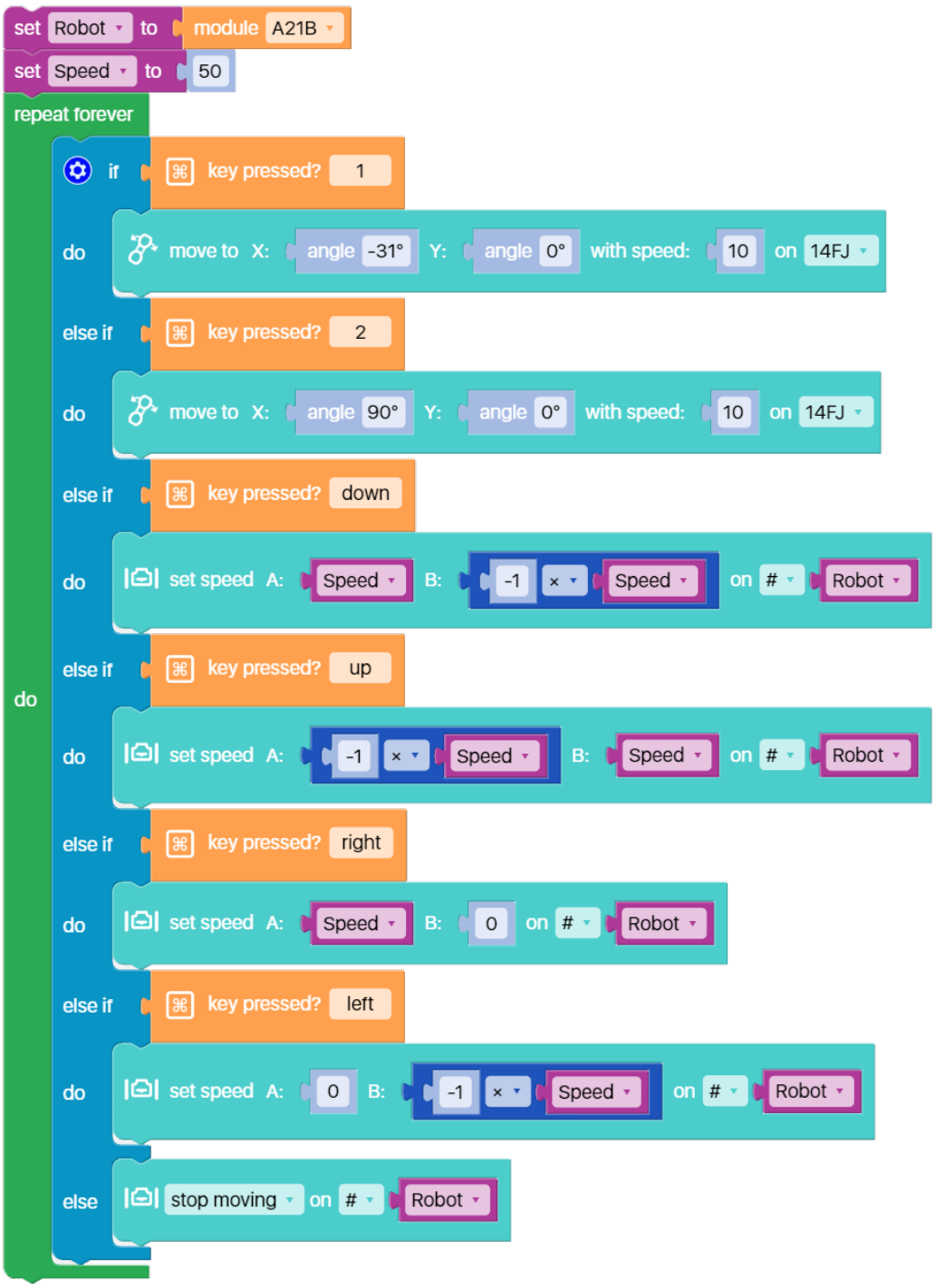
CLICK HERE

## CONCLUSION

Recap of new concepts discussed in this lesson: cubism, famous painters, etc. Cubism was not only an artistic movement but also a true revolution in the way we perceive and understand the world around us. Although Cubism was predominantly associated with painting, its influence spread to other artistic fields such as sculpture, architecture, and even music.

In music, the influence of cubism was manifested in approaches that emphasized fragmentation, abstraction and experimentation with formal structures. Composers such as Igor Stravinsky and Arnold Schoenberg explored cubist ideas in their musical works, bringing elements of dissonance, polyrhythms and rhythmic fractures into their compositions.

# PROGRAMMING



# Exploring colors in art

ARTS

In this lesson, students will have the opportunity to use naturally obtained paints in painting. Afterward, they will deepen their theoretical knowledge about colors and their fundamental properties. They will discover the creative power of expressionist painters by participating in an exhibition using virtual reality headsets. To demonstrate how light and filters can influence color perception, students will participate in an interactive experiment using the Fable robot.

OBJECTIVES

- Extracting natural pigments from food and using them to create natural paints.
- Study the basic principles of color and light in art.
- Acquiring the knowledge to analyze and interpret compositions artistic, expressionist.
- Analyze the effects of using color filters on light and objects.

## THEORETICAL ELEMENTS

- Colors and their meanings
- Color theory
- Chromatic circle
- Color harmony

## EXAMPLE

**Colors** are perceived by light reflected from objects and captured by the human eye, being an essential component of our visual world. They encompass both physical and psychological aspects and have diverse cultural and emotional meanings.

# DIDACTIC SCENARIO

Students will use natural food pigments to create colors. Through a hands-on activity, they will experience first-hand the process of extracting colors from natural sources and see how they can be applied in art and design.

Students will use various foods containing natural pigments to extract juices or colored pastes by different methods, such as scraping, grating, blanching, blending, and filtering. They will be actively involved in the preparation of natural dyes and will test the colors obtained by painting on sheets of white paper.

This activity will help them understand how they can use natural resources to create pigments for the arts.

# ACTIVITY 1

Students will use the virtual reality headset to participate in an exhibition dedicated to the expressionist painter Carlos Monteiro. This experience will allow students to examine various modern expressionist artworks in detail. These works are often seen as intense spectacles of color, where every nuance and every line contributes to conveying a particular emotion or message.

**CARLOS MONTEIRO**
**CLICK HERE**

Expressionism is a modernist artistic movement that emerged as a reaction against rigid aesthetic conventions in fine art. It focuses mainly on line and color. Expressionist works are characterized by the intensity of the colors and the artists' freedom of expression in conveying deep emotions and feelings.

## EXAMPLE

1. How the intense colors in Carlos Monteiro's work help express emotions and feelings?
2. What are the main features of expressionism that you can observe in the works on display?
3. How do you think line and form are used in expressionist works to convey messages or ideas?
4. What are the similarities and differences between expressionism and other artistic movements, like impressionism or cubism?
5. What do you think about the artist's freedom of expression in expressionist art in compared to more conventional artistic styles?

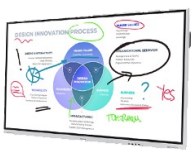
## MATERIALS NEEDED

Fable Elements

VR Headset

PhotoFilters

Laptop/Tablet



Interactive Display

# ACTIVITY 2

In this activity, a Fable robot will be programmed to manipulate a light source (example: a flashlight). Another robot will be programmed to sequentially place colored filters (red, blue, green, yellow) in front of the light source, which will illuminate a white object. Students will be encouraged to examine the color changes of the object according to the filter applied.

This activity will give students a better understanding of how color theory works and how artists and designers use light and color filters to create different visual effects. By using the Fable robot, students will be able to observe these changes in an interactive and practical way, reinforcing their theoretical knowledge.

## CONSTRUCTION

## VIDEO

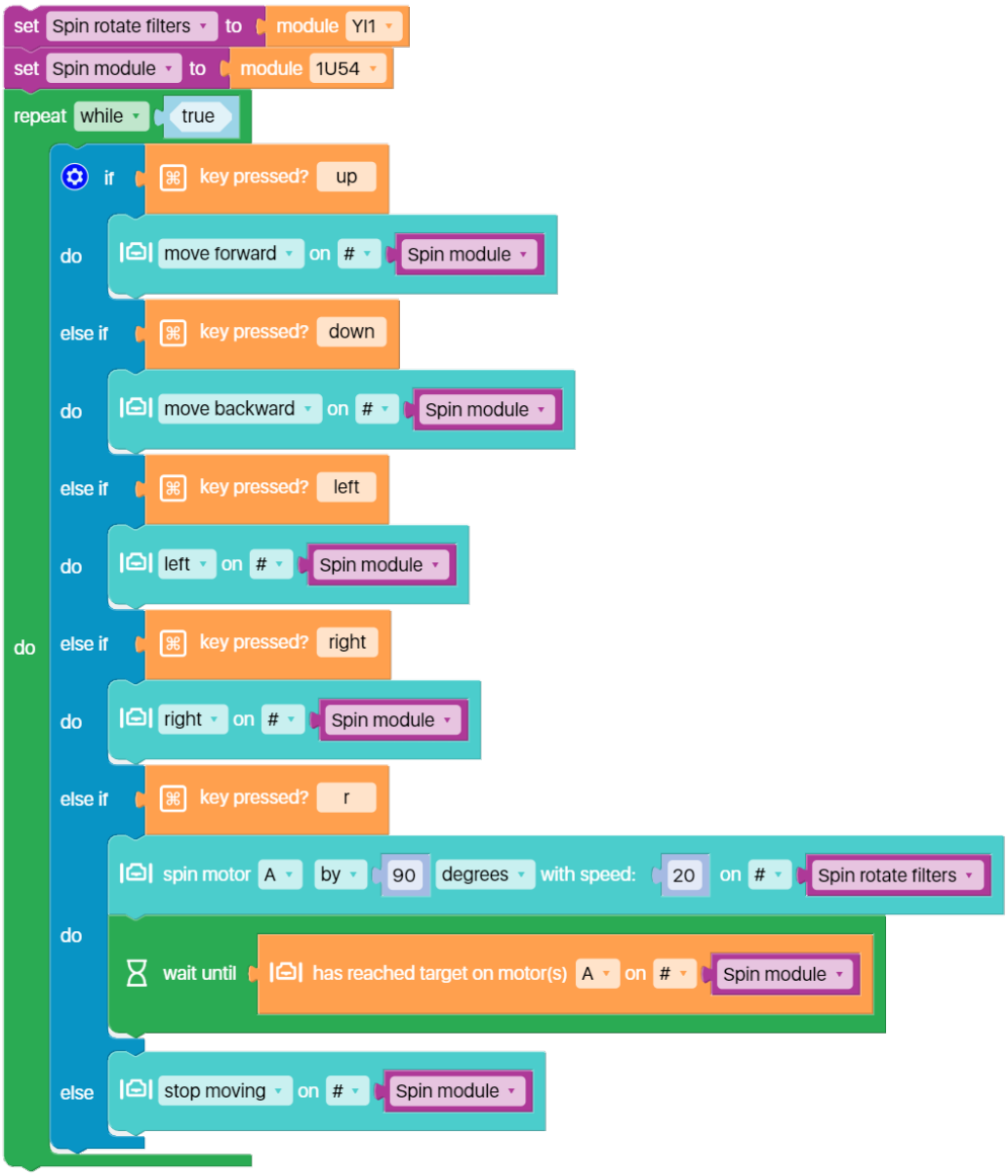
CLICK HERE

# CONCLUSION

Review the new concepts discussed in this lesson: color theory, color wheel, hue, saturation, hue, saturation, complementary colors, etc.

Color and light are essential tools for artists and designers to convey emotions, messages and ideas in their work. Understanding color theory and how colors interact enables them to create harmonious visual compositions and convey the desired messages in their work. In fields such as graphic design, product design and architecture, color knowledge and light are key to creating attractive and functional products and spaces.

# PROGRAMMING



# Color patterns: Theory and application

ARTS

In this lesson, students will explore color models, such as RGB and CMYK, and their applications in digital design, print, photography, cinematography, and digital technology. They will explore the concept of design and its vital role in different fields, using virtual reality to illustrate its practical application. At the end of the lesson, students will use the Fable robot to measure the proportions of red, green, and blue in various colors, reinforcing their understanding of how colors are used and interpreted in modern technological environments.

OBJECTIVES

- Defining RGB and CMYK color models, essential in digital design and printing, by presenting the specific differences.
- Gain knowledge of primary and secondary colors by exploring additive and subtractive patterns.
- Exploring the concept of design and the role of the professionals involved in order to understand the importance of technologies in creating pleasant and functional human experiences.
- Conduct a practical experiment with Fable robots to measure the proportions of red, green and blue in different colors.

## THEORETICAL ELEMENTS

- Color pattern definition
- Additive/substractive models
- Definition of color standard systems
- RGB model
- CMYK model
- Pantone and RAL schemes

**EXAMPLE**

A **color model** or color system is an abstract mathematical method used to determine and specify colors and the relationships between them.

# DIDACTIC SCENARIO

In this phase of the lesson, students will explore primary and secondary colors in the traditional additive (RGB) and subtractive (CMYK) models. They will use white paper or cardboard, watercolor or tempera colors (red, green, blue, cyan, magenta, yellow), and brushes.

The activity will start with a theoretical explanation of how primary colors are combined to obtain secondary colors in each pattern. The students will then create a pie chart to illustrate this process and will discuss and analyze the results in a discussion and conclusions session.

# ACTIVITY 1

After studying color systems in depth and understanding their usefulness for designers, students will watch a short video in virtual reality to explore the world of design. The video will introduce them to the concept of design and highlight the essential role of the people involved, such as architects and engineers, and the systems they use, including mechanical, electronic, and ergonomic systems.

**DESIGN**
**CLICK HERE**

They will learn that design covers a wide range of fields, including mobile apps and urban landscape design. There are now new technologies and advanced degree programs, such as those offered at the Melbourne School of Design, which include architecture, construction and design. A key aspect of successful design is creating a pleasurable and functional human experience.

## EXAMPLE

1. It explains how RGB and CMYK color models work and gives examples of situations where each model is preferred.

2. How does the use of color systems influence the work of designers in different areas of design? Explain the importance of the right choice of colors in design and give concrete examples of applications.

3. Why is it important to choose the right color model (RGB or CMYK) depending on the type of design project? Discuss how choosing the right color model can influence the quality and accuracy of colors in design projects, whether digital or print.

## MATERIALS NEEDED

Fable Elements

VR Headset

3D Printer

Laptop/Tablet

Interactive Display

## ACTIVITY 2

In this activity, the Fable robot will be programmed to analyze and identify colors using its sensors. Students will use sets of colored cards to allow the robot to detect different colors. Programming will allow the RGB values corresponding to each detected color to be displayed on the screen. This interactive experience will help students understand the process of color decomposition in practice, giving them the opportunity to apply this knowledge to their art and design projects.

### CONSTRUCTION

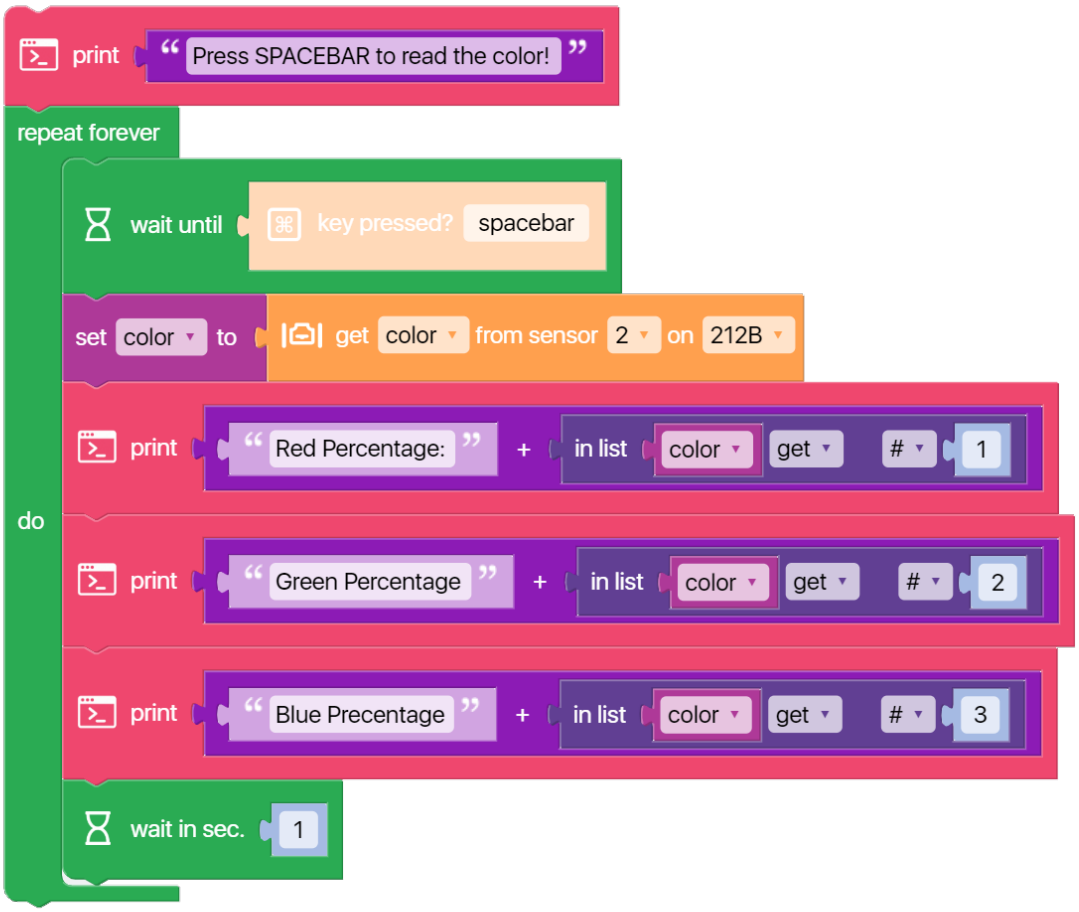
### VIDEO

CLICK HERE

## CONCLUSION

Review new concepts discussed in this lesson: color model, RGB, CMYK. Studying color models helps students understand how colors work and how they can be manipulated to achieve specific visual effects. This understanding is not only important in the context of art and design, but also has significant implications in other areas such as photography, film and digital technology, advertising, and clothing. Through this lesson, students will develop essential skills for their future careers in creative and technological fields. These skills will help them to create complex visual compositions, work effectively with modern digital technologies, and understand how to use color to convey emotions and messages effectively.

# PROGRAMMING



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