COMPILATION OF AR BASED CASE STUDIES SUPPORTING THE TEACHING OF SDGS

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Compilation of AR Based Case Studies supporting the teaching of SDGs

Introduction:

The ARTSe project addresses two crucial priorities within the European Union, namely the need to encourage a higher level of sustainability on our lifestyles and to promulgate digitalisation within member states. ARTSe pursues a specific goal of developing an AR assisted curriculum for Sustainable Development which is cross curricular and extends beyond national boundaries in its applicability and is supported by a guidebook, AR supported case studies, lesson plans and Augmented Reality experiences to be used as pedagogical tools. Although educators are the main beneficiaries of this project, the overarching objective is to stimulate the current Gen Zers and the forthcoming Generation Alpha students by creating an educational environment where physical and virtual worlds intermingle. AR enhances the interactivity between student and learning, encourages student engagement and promulgates collaboration and peer learning. All resources are intended to extend beyond the physical confines of classrooms to render themselves valid and relevant for use in virtual classrooms.

This is a compilation of AR based case studies that focus on the following SDGs:

- **SDG3: Good Health and Well-being**
- **SDG6: Clean Water & Sanitation**
- **SDG7: Affordable and Clean Energy**
- **SDG9: Industry, Innovation & Infrastructure**
- **SDG11: Sustainable Cities and Communities**
- **SDG12: Responsible Consumption & Production**

For each SDG, there are a number of case studies that use one of three platforms, namely the bespoke app that was created as part of this project, Zappar and Halo AR. Guidelines for educators to use these three platforms to use and/or create their own case studies can be found in the ARTse publication: **Guide on How To Develop AR Content for SD Education**. Given the ubiquity of smartphones, we encourage schools to start embracing methodology that incorporates their use as a key educational tool. The use of assistive technology such as 3D learning tools will also balance the social/psychological divide since it allows everyone to learn at their own pace.

Methodology

The case studies created in this document are the result of a collaboration between the school partners in this project. The six SDGs chosen for the project were distributed among the three school partners as follows:

GCHSS Malta : SDG 3 and SDG 12
Harjunrinteen Koulu Finland: SDG 6 and SDG 9
IIS Tommaso d'Oria : SDG 7 and SDG11

Each school took responsibility to design, develop, test and amend case studies in relation to the SDGs chosen.

The methodology used to create the augmented reality case studies shown in this document involved several steps. The first was to identify the educational objectives of each case study. This were obtained on the basis of the lesson plans that were created as an integral part of the curriculum developed in this project. Case studies could be used for instruction purposes, to generate debate and/or to assess understanding of subject matter. Once the educational objectives were established, the next step was to develop the content that will be presented through AR.

The content development process was broken down into several stages. The first stage involved creating the content that would be used in the AR experience. This involved deciding which software platforms were to be used. Initially the focus was on the use of the Zappar App. However, after several consultations and discussions between the school partners, it was decided to expand the horizon to include other platforms that might be more affordable to schools. In this way the project would ensure a higher level of accessibility and practicality. This also required school partners to test different tools that could be integrated in the case studies such as videos, text, voice messages, amongst others. The next stage was to integrate the content with the AR platform.

Following the Alpha stage, the next step was to test the AR experiences. This was done in two ways: project partners were able to test material which was uploaded on a shared Google Drive, while students were able to use the AR experience in a classroom setting during the LTTA meetings. This provided valuable feedback on the effectiveness of the AR experience in achieving its educational objectives. It also helped identify any technical issues that needed to be addressed. Once this was done, the material created could move to the Beta stage.

Apart from these case studies which are freely available to all, this project is also presenting a guidebook to explain in detail how new case studies can be created. This will enable educators and trainers to create compelling and effective AR experiences that enhance learning and engagement.

Case Studies using the ARTse App:

One of the aims of this project was to create a bespoke app for augmented reality (AR) experiences both in a classroom setting and as part of an extracurricular activity. The first step was to clearly define the educational goals of the app since this helped guide the design process and ensure that the app is aligned with the curriculum and learning objectives.

Next, the content and visual assets for the AR experience had to be developed. This involved creating 3D models, animations, and other multimedia content that would help educators deepen student understanding of content, create discussions and collaborations, and assess content assimilation. The 3D models created in these case studies can be a powerful tool to enhance student engagement and learning. The creation of these case studies is a result of a tight collaboration between the school partners and Diversitas, the Croatian partner entrusted with the design and development of the AR experience.

Similar to the paper-based AR supported case studies, school partners took responsibility in determining the objectives and creating the content to be used. These case studies can be an integral part of the lesson plans that were created to support the curriculum designed in this project, or can be used as stand-alone educational resources. Diversitas worked with school partners as follows:

GCHSS Malta : SDG 3 and SDG 12
Harjunrinteen Koulu Finland: SDG 6 and SDG 9
IIS Tommaso d'Oria : SDG 7 and SDG11

Testing the AR experience of the different case studies has been a critical step in this project. The Alpha testing was conducted in two stages. Partners were given the opportunity to test and provide feedback on specific case studies during the Transnational Project Meetings held in Malta, Finland and Italy. As a result of this the Croatian partners fine-tuned the AR experience to make it more meaningful to students. The second level of testing was done by the students themselves during the Learning, Teaching and Training Activities held in the same three countries. The Croatian partners received feedback from both students and educators and this was used to continue to enhance the AR experience of the case studies supported by the app. Educators were then asked to reassess the amended versions to ensure that each case study is effective in achieving the desired educational goals and that it is engaging and enjoyable to use.

While some of the case studies are earmarked as part of a classroom experience, others can be used outside the classroom. Moreover consideration was also given to the possible reality that education is conducted online and therefore these case studies were designed to ensure adaptability to such a scenario. These case studies can be used for stand-alone exercises or integrated as part of the lessons as indicated in the book: Curriculum for Training Educators on AR in Sustainable Development.

SDG3: Good Health and Well-being

Who can benefit?

Educators in the following fields, amongst others – physical education,

personal and social development, psychology, sociology, biology,

home economics/family and consumer sciences, sustainable development,

English as a foreign language, European studies.

Platforms:

Case studies 1 and 2 use Zappar

Case studies 3 and 4 use Halo AR

App Supported Case Study

SDG Targets Covered

3.4 - Promote Mental Health and Well-being

3.5 - Prevention and Treatment of Substance Abuse (including Drug Abuse and Harmful Use of Alcohol)

3.8 - Achieve access to Quality Essential Health Care Services

Objectives:

Case Study 1: Fighting Substance Abuse

Case Study 2: Brain to Body Exercise

Case Study 3: Benefits of Physical Activity

Case Study 4: Eating Disorders

App Supported Case Study: This case study aims at creating awareness of the need to exercise by assigning a number of short physical activities that have to be done within a specified time period. Each activity is supported by close ended questions that help reinforce student knowledge of issues related to health and well-being.

Case Study 1: Fighting Substance Abuse

Case Study 2: Brain to Body Exercise

BRAIN TO BODY AR EXERCISE

Case Study for Curriculum SDG 3 – Good Health & Well-Being

The scope of this AR Exercise is to supplement the handout and lesson on Substance Abuse. It assesses student comprehension of material related to the important nutrients for survival, vital organs and the negative effects of drug abuse. By downloading the Zappar App on your mobile device (from AppStore or Google Play) and pointing toward this flyer, the representation below of a healthy human brain and one that has been affected by substance abuse will change into a 3D representation of both brains.

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AR-based Quiz

Are you familiar with the brain-body connection? Test your knowledge through the AR-based Quiz below.

Which organ is directly responsible for decision making?

Which organ connects the brain to the rest of the body?

Breathing is a _____ action.

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Case Study 3: Benefits of Physical Activity

ARTse – SDG 3 – Good Health & Well-being

Benefits of physical activity

Discussion Points:

How can physical activity improve us? Discuss the main benefits.

Reflect on your daily life and how you can make it better. Discuss.

Finish this part of the lesson with a 5 minute indoor physical workout.

"Do something today that your future self will thank you for."

-Sean Patrick Flanery

Case Study 4: Eating Disorders

3 GOOD HEALTH AND WELL-BEING

ARTse – SDG 3 – Good Health & Well-being

Case study – Eating Disorders

Discussion Points:

What are eating disorders ?

Is it right to report a friend you suspect has an eating disorder?

What could the signs of an eating disorder be?

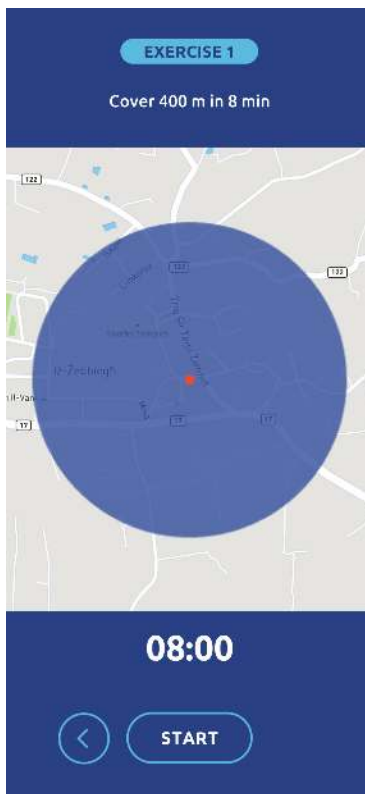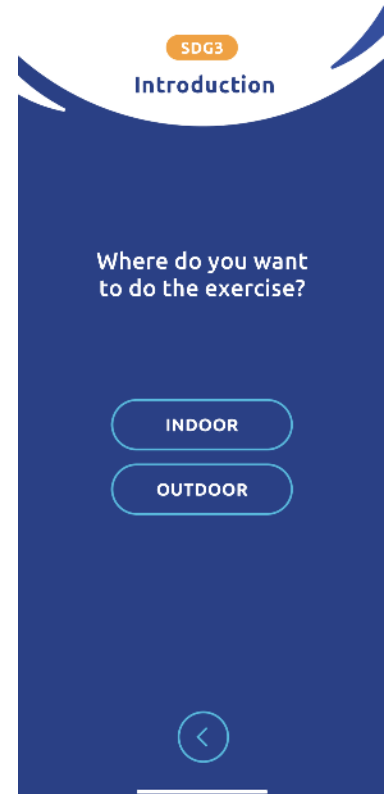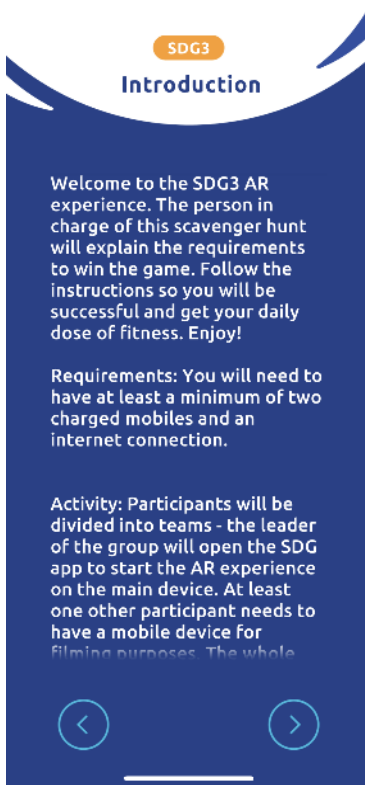What can be done to treat and recover from eating disorders?

Conclusion:

All the world is full of suffering. It is also full of overcoming.

— *Helen Keller* —

AZ QUOTES

App Supported Case Study

SDG3
Introduction

Welcome to the SDG3 AR experience. The person in charge of this scavenger hunt will explain the requirements to win the game. Follow the instructions so you will be successful and get your daily dose of fitness. Enjoy!

Requirements: You will need to have at least a minimum of two charged mobiles and an internet connection.

Activity: Participants will be divided into teams - the leader of the group will open the SDG app to start the AR experience on the main device. At least one other participant needs to have a mobile device for filming purposes. The whole

SDG3
Good health and well being

SDG3 focuses on the right for every world citizen to have a healthy life and strives to promote well-being for all.

To achieve a sustainable world the human population has to be kept healthy. The main objectives for the lessons are physical well-being, substance abuse and mental health.

⬇ **Resources**

AR EXPERIENCE

SDG3
Introduction

Where do you want to do the exercise?

INDOOR

OUTDOOR

EXERCISE 1

Cover 400 m in 8 min

08:00

START

EXERCISE 1

KEEP GOING!
You will do better next time.

Which of the following facts about mental disorders are NOT correct?

- They may occur spontaneously without a trigger
- They are caused by poverty ✓
- They are a result of malevolent spiritual intent ✓
- Is rarely, if ever, caused by stress alone
- Often requires professional intervention
- Is usually caused by nutritional factors ✓
- Can lead to interpersonal and social impairment
- Is caused by personal weaknesses ✓

NEXT LESSON

EXERCISE 3

Follow Artsy to complete 5 leg hops on each leg

SDG6: Clean Water & Sanitation

Who can benefit?

Educators in the following fields, amongst others – civics, robotics, technology, environmental studies, science, physical education, biology, home economics, sustainable development

Platforms:

Case studies 1 and 3 uses Halo AR

Case study 2 uses Zappar

App Supported Case Study

SDG Targets Covered

6.1 - By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

6.2 - By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation.

6.4 - By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

Objectives: Case Study 1: SDG Targets and Indicators

Case Study 2: Intelligent Water Consumption

Case Study 3: Mind Map AR

App Supported Case Study: This case study aims to give students a more realistic idea about what kind of situation prevails in many countries. Students have to find "water" from nearby areas using a live map algorithm.

Case Study 1: SDG Targets and Indicators

SDG 6 targets and indicators

Case Study for Lesson SDG 6 – Clean water and sanitation

6 CLEAN WATER AND SANITATION

Video Source - Youtube: https://youtu.be/hYfZw-bpfJw

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Case Study 2: Intelligent Water Consumption

Our Water Footprint
Maximising on the Invaluable Resource

Case Study for SDG 6 – Clean Water and Sanitisation

Intelligent Water Consumption 101

Video Source – Youtube: https://www.youtube.com/watch?v=3_onEg4y1u8

The aim of this case-study is to demonstrate the importance of water in our life, and to exhibit ways through which we can contribute to its sustainable use. By downloading the Zappar App on your mobile (from AppStore or Google Play) and pointing toward this flyer, you will see a video clip of how this task can be performed. You can also learn more about our ARTse project by pointing your mobile to the logos below.

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Case Study 3: Mind Map AR

SDG 6 Mind map AR

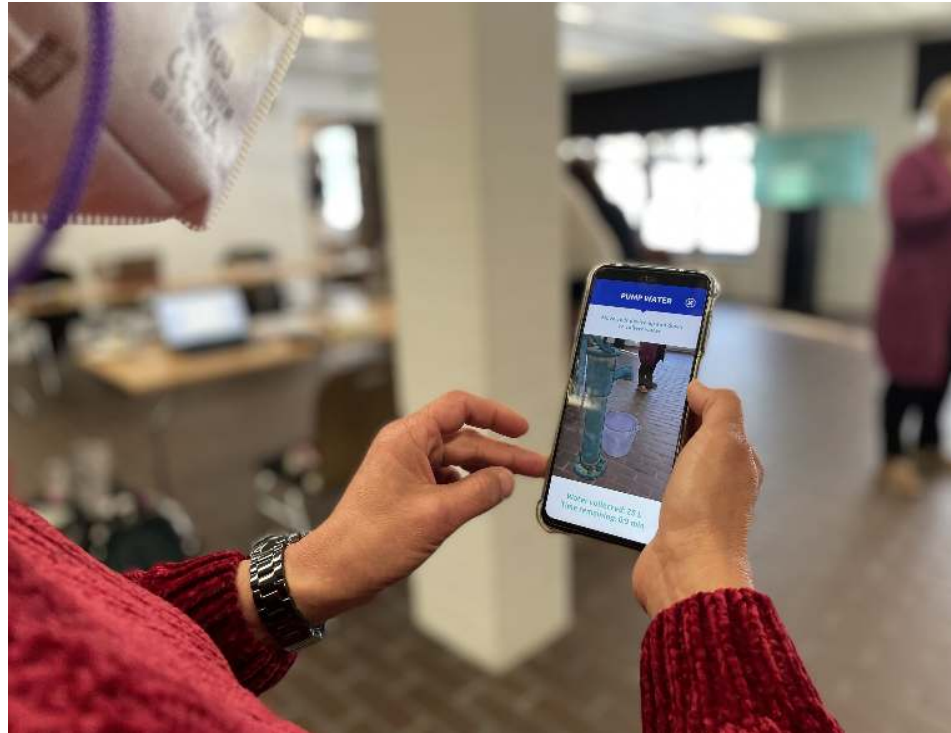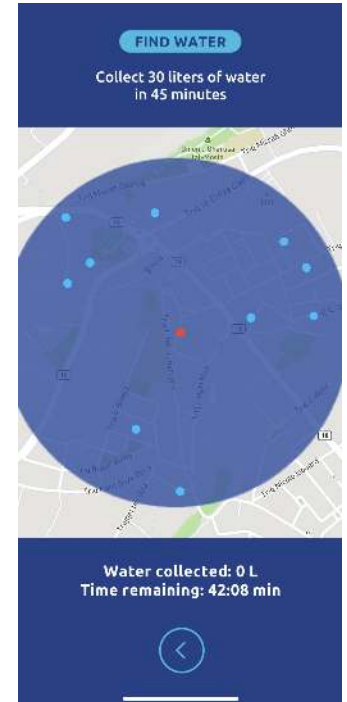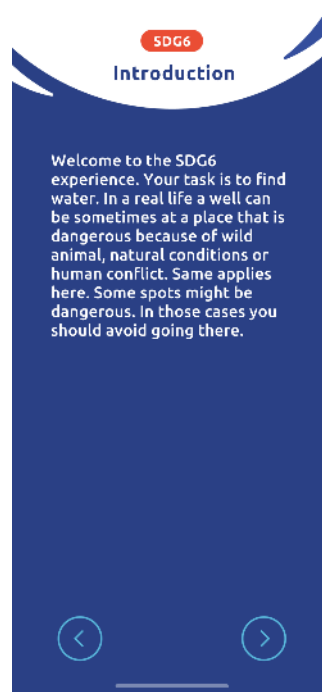*Case Study for Lesson SDG 6 – Clean water and sanitation*

Video Source - Youtube: https://youtu.be/WAiC8WLeEz8

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HALO
AR

https://haloco.de/dgw60or
Powered by **Halo AR**

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App Supported Case Study

SDG6

Clear water and sanitation

Today, 2.2 billion people lack access to safely managed drinking water services and 4.2 billion people lack safely managed sanitation services. The impact on child mortality rates is more than 297 000 children under five who die annually from diarrhoea diseases due to poor sanitation, poor hygiene, or

⬇ Resources

AR EXPERIENCE

SDG6

Introduction

Welcome to the SDG6 experience. Your task is to find water. In a real life a well can be sometimes at a place that is dangerous because of wild animal, natural conditions or human conflict. Same applies here. Some spots might be dangerous. In those cases you should avoid going there.

FIND WATER

Collect 30 liters of water in 45 minutes

Water collected: 0 L
Time remaining: 42:08 min

SDG7: Affordable and Clean Energy

Who can benefit?   Educators in the following fields, amongst others – civic education, geography, physical education, technology, IT, science, sustainable development, history.

Platforms: Case studies 1 uses Zappar

Case studies 2 uses Halo AR

App Supported Case Study

SDG Targets Covered   7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services.

7.2 - By 2030, substantially increase the share of renewable energy in the global energy mix.

7.3 - By 2030, double the global rate of improvement in energy efficiency.

7.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.

7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.

Objectives: Case Study 1: Photovoltaic Features

Case Study 2: How to Save Energy at Home

App Supported Case Study: This case study aims at creating awareness on how much electricity can be produced from renewable sources, namely solar and wind power. Students learn how wind turbines and solar panels work, and get a feel of what they would look like in a real environment. Each activity is supported by close ended questions that help reinforce student knowledge of issues related to health and well-being.

Case Study 1: Photovoltaic Features

Photovoltaic panels
Energy

Case Study for Lesson SDG 7 – Affordable and clean energy

Photovoltaic features

https://www.youtube.com/watch?v=0aNaVkl4l0

Photo by Andreas Gücklhorn on Unsplash

The aim of this case study is to make people aware of the main characteristics of photovoltaic panels, how they work and where they should be placed. By downloading the Zappar App on your mobile (from AppStore or Google Play) and pointing toward this flyer, you will see a video clip about basics technologies of photovoltaic panels. You can also learn more about our ARTse project by pointing your mobile to the logos below.

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AR-based Quiz

In this section, we will be testing whether you are familiar with the terms of multilayer silicon unit, reduce electicity bills, continous energy supplies. Through an AR-based Quiz, we will learn more about this scary world.
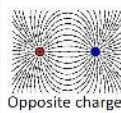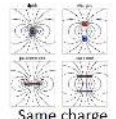
Opposite charge

Q1: A photovoltaic cell is typically a multilayer silicon unit able to transform and conduct energy. This energy comes from the charges generated by the photovoltaic effect in the semimetal; which kind of charges are them?

Same charge

SHORT-TERM

Q2: In which timeframe photovoltaic panels may reduce the electicity bills?

LONG-TERM

FALSE

Q3: The term "photo" derives from a Greek word meaning "light". True or false?

TRUE

Q4: In which of the two weather conditions the photovoltaic panels is more likely to guarantee an adequate charge?

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Case Study 2: How to Save Energy at Home

How to save energy at home

Case Study for Lesson SDG 7 – Affordable and clean enrgy

In this section, we will be testing whether you are familiar with a correct use of energy at home. After carefully considering your habits, scan the QR code and move over the picture.

Scan the QR code and move over the question title. Then answer the question about your personal habits.
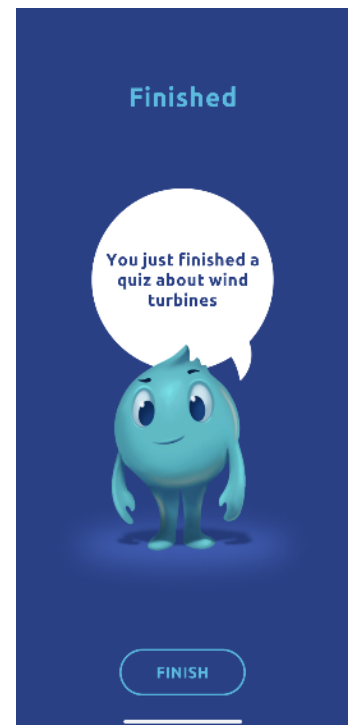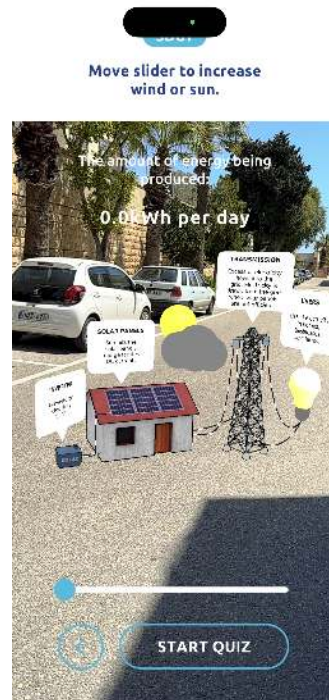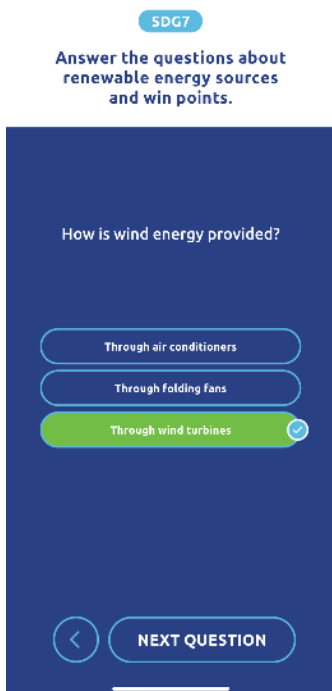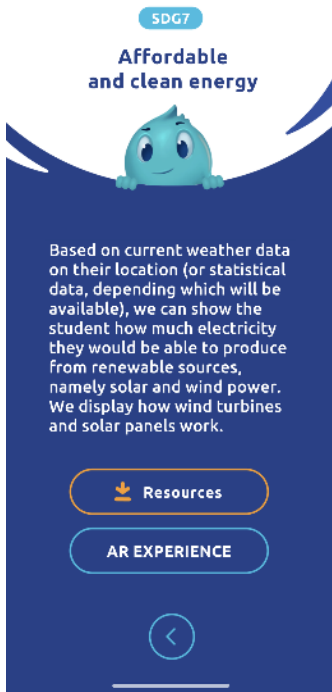
Are you an energy saver at home?

To conclude, prepare a list of thinks both you already do and you don't.

App Supported Case Study

SDG7

Affordable and clean energy

Based on current weather data on their location (or statistical data, depending which will be available), we can show the student how much electricity they would be able to produce from renewable sources, namely solar and wind power. We display how wind turbines and solar panels work.

⬇ Resources

AR EXPERIENCE

SDG7

Weather

18.9°C
Clouds
Wind: 3.6m/s

Based on the weather today, choose what would produce the most clean energy:

WIND TURBINES

SOLAR PANELS

Move slider to increase wind or sun.

The amount of energy being produced:
6kWh per day

START QUIZ

SDG7

Answer the questions about renewable energy sources and win points.

How is wind energy provided?

Through air conditioners

Through folding fans

Through wind turbines ✓

NEXT QUESTION

Move slider to increase wind or sun.

The amount of energy being produced:
0.0kWh per day

START QUIZ

Finished

You just finished a quiz about wind turbines

FINISH

SDG9: Industry, Innovation & Infrastructure

Who can benefit?   Educators in the following fields, amongst others – civics, robotics, technology, environmental studies, science, physical education, biology, home economics, sustainable development

Platforms: Case studies 1, 2 and 3 use Halo AR

App Supported Case Study

SDG Targets Covered

9.1 - Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

9.2 - By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

9.a - Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States 18

9.b - Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities

9.c - Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

Objectives: Case Study 1: How to Make a Change

Case Study 2: Infograph

Case Study 3: Venngage Poster

App Supported Case Study: This case study aims to highlight the connection between industries, innovations and infrastructure. Students scan different objects and get relevant information about the composition of the objects. Students will be able to understand the importance of constructing new, greener infrastructure and the role of smart technology to reduce environmental impacts and increase efficiency in the use of natural resources. During the activity a series of questions will help students review what has been learned for this topic.

Case Study 1: How to Make a Change

SDG 9 How to make a change?

Case Study for Lesson SDG 9 – Industries, innovation and infrastructure

Video Source : Youtube: https://youtu.be/NU6rc_vm9rs

1. How industries, innovations and infrastructure are connected to each other?
2. How SDG9 is connected to other SDGs?
3. What we can do as individuals to help SDG9 targets to come reality?

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Case Study 2: Infograph

Case Study 3: Venngage Poster

App Supported Case Study

SDG9

Industry, innovation and infrastructure

Investments in transport, irrigation, energy and information and communications technology have been crucial to driving economic growth and empowering communities in many countries. The growth of new industries means improvement in the standard of living for many of us.

⬇ Resources

AR EXPERIENCE

‹

SDG9

Scan these items

You found 1/5 ⌄

Street Sign
Computer Keyboard ✓
Traffic Lights
Car
Table Lamp

SDG9

Congratulations!

You found a Computer Keyboard

Keyboard keys (buttons) typically have a set of characters engraved or printed on them, and each press of a key typically corresponds to a single written symbol. However, producing some symbols may require pressing and holding several keys simultaneously or in sequence. While most keys produce characters (letters, numbers or symbols), other keys (such as

›

SDG9

Congratulations!

You found a Car

Electric vehicles typically have a smaller carbon footprint than gasoline cars, even when accounting for the electricity used for charging.

Electric vehicles (EVs) have no tailpipe emissions. Generating the electricity used to charge EVs, however, may create carbon pollution. The amount varies widely based on how local power is generated, e.g.
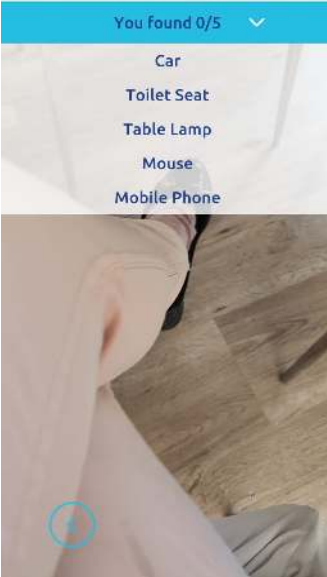
›

SDG9

Scan these items

You found 0/5 ⌄

Car
Toilet Seat
Table Lamp
Mouse
Mobile Phone

SDG9

Congratulations!

You found a Mobile Phone

Mobile phones were primarily designed for voice communication. Today, mobile phones support many additional services, and accessories, such as email, Internet browsing, gaming, Bluetooth, camera, messaging, music and videos and navigation.

›

SDG11: Sustainable Cities and Communities

Who can benefit?

Educators in the following fields, amongst others – civic education, geography, physical education, technology, IT, science, sustainable development, history.

Platforms:

Case study 1 uses Zappar

Case study 2 uses Halo AR

App Supported Case Study

SDG Targets Covered

11.1 - By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

11.2 - By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

11.3 - By 2030, enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.

11.4 - By 2030, strengthen efforts to protect and safeguard the world's cultural and natural heritage.

Objectives: Case Study 1: Cities between Pandemic and Famine

Case Study 2: Overtourism and Overpopulation

App Supported Case Study: This vehicle-specific case study allows learners to choose between different modes of transportation and instantly achieve a change in both air quality and mobility. The drive is to have the most sustainable means of transport and generate less CO_2 while creating an awareness of the main causes of climate change and natural disasters. Students are also asked to answer a set of questions which help them visualise the impact of their decisions on the environment.

Case Study 1: Cities between Pandemic and Famine

Urban disasters
Epidemic

Case Study for Lesson SDG 11 – Sustainable cities and communities.

Cities between pandemic and famine

The aim of this case study is to make people aware of how mortality rate during great epidemics has been determined by the increase in urban populations. By downloading the Zappar App on your mobile (from AppStore or Google Play) and pointing toward this flyer, you will see a video clip about the history of epidemics in the world. You can also learn more about our ARTse project by pointing your mobile to the logos below.

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AR-based Quiz

In this section, we will be testing whether you are familiar with the terms of epidemic, pandemic, plague, and both the social causes and the consequences associated with them. Through an AR-based Quiz, we will learn more about this scary world.

Q1: The "Great Plague" in Athens of 430-429 BC described by Thucydides was probably a pandemic of
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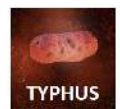
Q2: The social consequences of agriculture may cause harmful effects, such as massacres of cattle, invasions of frogs, flies, mosquitoes, grasshoppers, pustules and ulcers throughout the body. They are first described in
----

Q3: In the overcrowded cities of the first half of the 19th century, the spread of the infection was facilitated by
----

Q4: The population density has also affected the Covid-19 pandemic. Which cities, among the wealthiest in the world, have been hit particularly early and hard?

SMALL POX

TYPHUS

SANITARY CONDITIONS

HOLY BIBLE

LONDON /NEW YORK

FOOD SHORTAGES

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ARTse
ERASMUS+
www.artse-erasmus.com

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Case Study 2: Overtourism and Overpopulation

Overtourism and Overpopulation
Mass Tourism

Case Study for Lesson SDG 11 – Sustainable cities and communities.

The aim of this case study is to show how mass tourism can have a dreadful impact on our cities. Learners can therefore become aware of some wrong behaviours to avoid and become more responsible tourists when visiting cities. Scan the QR code and move over the picture.

shorturl.at/cnlI58

Answer the following questions based on the video and your own research:

1. Nowaday, how is the city of Venice trying to manage the huge flow of tourists?
2. Are large cruise ships still allowed to enter the Venice lagoon?
3. Does tourism still account for the 8 percent of global greenhouse emission?
4. Are works of art still damaged accidentally or deribelatly by tourist?
5. Fines for behaviour have been introduced in cities all over the world. Find some example.

App Supported Case Study
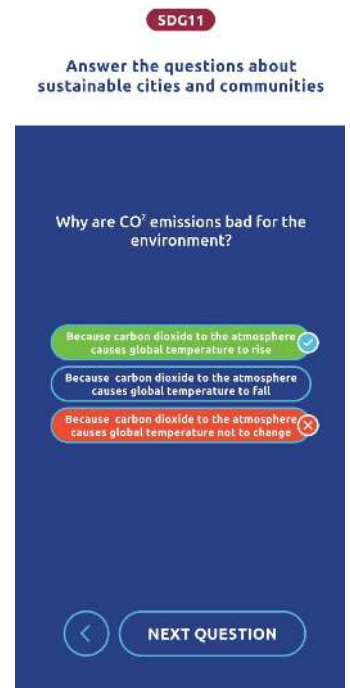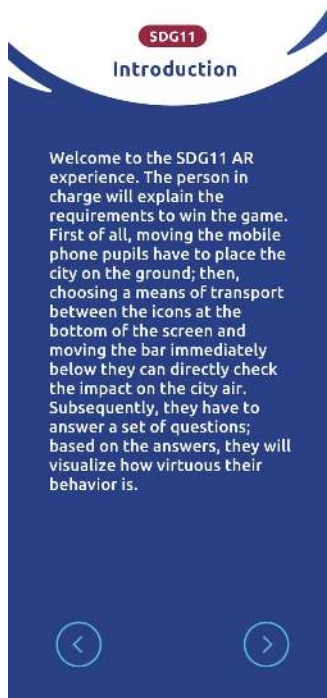
SDG12: Responsible Consumption & Production

Who can benefit? Educators in the following fields, amongst others – business subjects, environmental subjects, science subjects, sociology, geography, home economics, sustainable development, English as a foreign language, law and policy, civics, graphic design and art, European studies.

Platforms: Case studies 1 and 3 use Zappar

Case study 2 uses Halo AR

App Supported Case Study

SDG Targets Covered 12.2 - Sustainable Management And Use Of Natural Resources

12.3 - Halve Global Per Capita Food Waste

12.4 - Responsible Management Of Chemicals And Waste

12.5 - Substantially Reduce Waste Generation

12.6 - Encourage Companies To Adopt Sustainable Practices And Sustainability Reporting

12.7 - Promote Universal Understanding of Sustainable Lifestyles

Objectives: Case Study 1: Coffee Beans Journey

Case Study 2: Nestle Steps up Coffee Sustainability Effort

Case Study 3: Preventing Repulsive Sights & Odours in the Kitchen

App Supported Case Study: This case study highlights the importance of adopting consumption and production patterns that do not have negative impacts on the planet. Students can visualise the journey of the coffee bean from plant to consumption and waste disposal. During this journey a set of questions and relevant information are presented to ensure student understanding of the topic.

Case Study 1: Coffee Beans Journey

Product Life Cycle

Case Study for Lesson SDG 12 – Responsible Production and Consumption

The Coffee Beans Journey

They are cleaned, triaged and processed

Beans are ground

Beans are the seeds of the coffee cherry

They go through a roasting process

Freshly roasted beans make the best cup of coffee

Video Source:
https://www.ted.com/talks/a_j_jacobs_the_life_cycle_of_a_cup_of_coffee?language=en

The aim of this case-study is to show users the life-cycle for the production of coffee – from coffee plantation to the coffee drink. By downloading the Zappar App on your mobile (from AppStore or Google Play) and pointing toward this flyer, you will see a video clip of how this task can be performed. You can also learn more about our ARTse project by pointing your mobile to the logos below.

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AR-based Quiz

In this section, we will be testing your knowledge regarding the life cycle of coffee based on the video overleaf using the AR-based Quiz.

Q1: Which of the following countries is likely to grow coffee?

Q2: To determine the coffee quality, a process called _____ is used.

Q3: The roasting cycle takes _____ minutes

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Case Study 2: Nestle Steps up Coffee Sustainability Effort

ARTse – SDG 12

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Sustainable Production and Consumption

Case Study - Nestle steps up Coffee Sustainability Efforts

(October 4 2022)

Food giant Nestle pledged on Tuesday over $1 billion by 2030 on efforts to source coffee sustainably, more than double its previous pledge, as challenges linked to climate change pose particular risks for the bean.

Discussion Points:

1. Nestle is pledging $1 billion to make coffee more sustainable. Do you think this is a good investment for Nestle?
2. What are regenerative agricultural practices. Write a short report of 100 words or discuss in class.
3. What would happen if agricultural land becomes unproductive? Is only coffee affected?

Conclusion:

WHICH EU MEMBER STATE/S PRODUCE THE MOST ROASTED COFFEE?

Case Study 3: Preventing Repulsive Sights & Odours in the Kitchen

App Supported Case Study