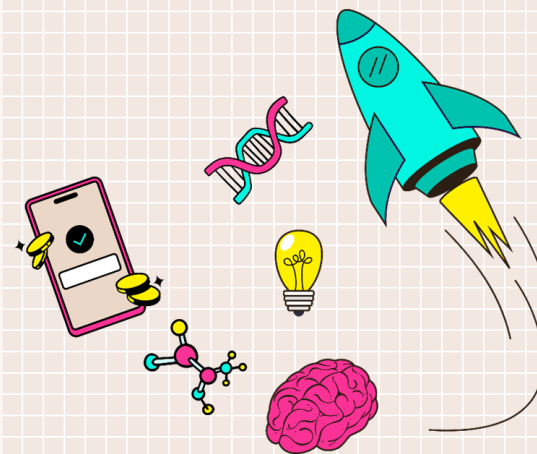


We Did It in Poland!



Lesson duration: 45 min.

Target group: students of grades 4, 5, and 6 of primary school

General objective



Students learn about examples of contemporary achievements of Polish women and men – from technological startups and scientific discoveries to social innovations and civic initiatives.

Knowledge | The Student:



- understands the concepts of *invention* and *innovation*, can identify the differences between them and provide examples;
- knows selected Polish innovations and their creators, including the Bionic Pancreas, Booksy, Kalman Mars Rover, BLIK, Payments by Sight, Vidre+, and ElevenLabs;
- knows that Poland is a modern and creative country where ideas recognized worldwide are created;
- understands that innovations solve people's problems and make everyday life easier;
- can identify various fields in which Poles achieve success — science, technology, entrepreneurship, medicine;
- knows that the process of creating innovation requires cooperation, perseverance, and courage.

Skills | The Student:



- analyzes and distinguishes between the concepts of *invention* and *innovation*;
- recognizes Polish inventions based on descriptions, illustrations, and examples;
- works in a team or in pairs, communicating and dividing tasks within thematic stations;
- reads information from texts and illustrations, can find

- necessary data on information cards;
- expresses their opinion in a discussion about the usefulness of particular innovations;
- draws conclusions about the impact of innovations on the world and people's lives;
- creates their own idea for a new innovation and can explain how it could help others;
- presents the results of group work and participates in the final reflection.

Attitudes | The Student:



- develops a sense of national pride and identifies with the modern, innovative image of Poland;
- feels respect for scientists, engineers, and entrepreneurs who create inventions;
- understands that everyone can be creative and has the potential to come up with solutions;
- appreciates the value of teamwork and learning from others;
- develops intellectual curiosity and a desire to gain knowledge about modern technologies;
- builds ecological and social awareness – understands that innovations can serve both people and the planet.

Forms of work

- individual – working with an innovation card (analysis and selection), final reflection;
- in pairs – discussing the differences between an invention and an innovation, organizing concepts, solving worksheet tasks;
- group work – working with the station method (exploring innovations, completing worksheets, filling in information);
- whole-class – presenting the results of group work, shared discussion, and lesson summary;
- activating – rotating between task stations;
- reflective – sharing opinions, ideas for personal innovations, and final discussion.

Methods:

- guided discussion – introducing the concepts of *invention* and *innovation*, reflection on pride;
- visual method – working with illustrations, presentations, and educational films;
- task station method (rotational) – active learning through action and information discovery;
- problem-solving method – analysis: “How does a given innovation help people?”;
- activating method – quiz, reflective questions, collective reasoning;
- mini project method – creating an idea for one’s own innovation;
- integrative and reflective method – final discussion: “What did I remember?”, “What inspired me?”

Teaching aids

- worksheets with Polish innovations (description + illustration);
- set of educational stations – each with an information card and a task;
- photos with the names of innovations;
- board/flipchart for writing definitions and conclusions;
- cards with tasks and reflective questions (e.g. “How does this innovation help people?”);
- stationery materials – crayons, pencils, notebooks, A3 sheets for group work;
- devices for watching films;
- posters or banners with the slogans of the *We Did It in Poland* campaign;
- rewards / stickers / badges for active participation (to boost motivation).

LESSON PLAN

INTRODUCTORY PHASE – INTRODUCTION	Time 5 min.
The teacher, referring to the sense of pride discussed in the previous lesson, asks the students to work in pairs or groups of 3–4 and think	

about what they are proud of today. Perhaps something happened recently that made them feel very pleased with themselves.

The students' answers may vary widely, but since this task is based on their general knowledge and personal experience, it is worth giving them 2–3 minutes as a group to reflect and discuss.

Example introduction and guiding questions: *In the previous lesson, we talked about pride. We mentioned our own achievements as well as the achievements of Polish people that make us proud. Some time has passed – now, talk in pairs about what you are proud of today. How do you feel when you experience this emotion?*

The teacher then asks willing students to share their thoughts with the group.

IMPLEMENTATION PHASE

Time 35 min.

1. Introduction to the topic (approx. 5 minutes)

The teacher asks students to think in pairs about what an invention is and what an innovation is.

Information for the teacher:

An invention is an idea for something completely new that did not exist before – for example, a new type of toy that solves a certain problem.

An innovation, on the other hand, is an idea that is new but has already been applied in practice to improve or enhance something. For instance, if someone invents a new, faster way of moving around, and later that idea is improved to make it even faster and more useful for everyone – that's an innovation.

Example definition:

Invention: *something that did not exist before – for example, the invention of the wheel was an invention because no one had come up with such an idea before. It's a way to solve a problem – for instance, inventing a toothbrush to make cleaning teeth easier.*

Innovation: *an idea for improving something that already exists – for example, after the invention of the car, people later created faster, better, and safer cars – that's innovation. It's about applying your new*

idea in practice so it can help many people.

Example: *When someone invented the telephone, they created something that had never existed before. Later, when someone introduced innovation by creating the smartphone – improving the phone by adding new functions and possibilities – that was innovation.*

The teacher leads a short class discussion about what innovations are and why they are important.

2. Presentation of Innovations (approx. 10 minutes)

The teacher shows students pictures of various innovations (**Appendix no. 1**).

Students try to guess what each innovation is about, based on its name and illustration.

Each student or pair receives a photocopy featuring 8 different innovations (**Appendix no. 2**).

Their task is to decide which of these innovations and inventions are Polish.

The teacher checks the answers together with the students – all of these innovations and inventions are Polish.

INPOST PARCEL LOCKER – *a convenient and contactless way to collect parcels. Parcel lockers are special cabinets with many small doors. Each compartment can hold a parcel waiting for its owner. Parcel lockers operate 24 hours a day, 7 days a week. The creator is Rafał Brzoska, founder of the company InPost. Parcel lockers were invented in Poland, so they are a Polish invention.*

BIONIC PANCREAS – *a fully functional, 3D-printed bionic organ. The pancreas is an organ in our body that helps digest food and control blood sugar levels. Sometimes the pancreas stops working properly (for example, in people with diabetes), and then help is needed. The bionic pancreas is a special device “printed” from living cells using a special 3D printer.*

BOOKSY – *a mobile app that allows users to book appointments with hairdressers, beauticians, or physiotherapists 24 hours a day, 7 days a*

week. It operates not only in Poland but also in the USA, the UK, France, and Spain.

MARS ROVER KALMAN – a special robot vehicle built by students of the AGH University of Science and Technology in Kraków. It looks a bit like a small off-road car, but it has no driver. It can move autonomously, explore terrain, and help humans in difficult places – for example, in deserts or even on Mars.

SUMMARY PHASE

5 min.

The teacher gathers the students in one place and invites volunteers to share their thoughts about Polish innovations. The teacher asks additional questions:

- Which innovation seems the most interesting to you?
- Which one would you like to learn more about?
- Which one would be most useful to you right now in your life?
- What could make people's lives on Earth easier – or maybe your own life?
- What kind of innovation do you think is missing? Try to propose your own idea.

Suggested adaptations

Barriers and potential challenges

Introducing the concepts: “invention” and “innovation”

Challenge: abstract concepts – students may find it difficult to see the difference.

Adaptation:

- Instead of definitions, use real-life examples:
- “Someone invented a water bottle – that’s an invention.”
- “Someone added a filter and a spout to make drinking easier – that’s an innovation.”

Use a **graphic organizer**:

idea → prototype → used by people = **INNOVATION**

- For students with language difficulties:
- Show pictograms and illustrations instead of long descriptions.

Allow them to respond with one sentence or by choosing between two options.

Presentation of innovations

Challenge: a large amount of information and new vocabulary (AI, bionics, app).

Adaptation:

- Describe each innovation using the same simple structure:
What is it? → What is it used for? → Who does it help?
- Turn more difficult content into multiple-choice questions. Instead of: "Explain how ElevenLabs technology works," ask: "Does ElevenLabs help with speaking or with paying?"
- Students with SEN can work with only 2–3 examples instead of the full set.

Station-based method – task-oriented work

Challenge: independent selection of information, reading longer descriptions, and cooperating in a group. Longer texts can be replaced with audio materials accessed via a QR code.

Adaptation:

- Create mixed pairs (a more confident student with one who needs support).
Each group receives clearly defined roles:
- reader, note-taker, timekeeper, presenter.

Worksheets:

- For more difficult information:
- Highlight key words on the worksheets.
- Add a short summary in the margin.
- Simplify responses: replace longer written answers with fill-in-the-blanks, ✓/✗ checkboxes or matching pairs.

Additional support:

Allow students to use:

- illustrations instead of text,
- audio recordings or a video instead of long reading tasks.
- Students with concentration difficulties can stay at one station instead of rotating through all of them.

Project task: "Invent Your Own Innovation"

Challenge: highly abstract; requires creativity and planning.

Adaptation:

Instead of a full project, use a ready-made template:

1. Problem:
2. Who has this problem?
3. My idea:
4. How does it help?

Alternative forms of expression:

- A drawing plus one sentence instead of a written description.
- An oral response instead of a written one.
- Choosing from examples: "I would like to improve: ___ (e.g., a backpack / a phone / a bus stop)."

Lesson summary – discussion

Challenge: students have difficulty formulating conclusions.

Adaptation:


Use **closed questions and sentence starters:**

- "The innovation I liked the most was..."
- "I learned that Poles..."

Allow students to:

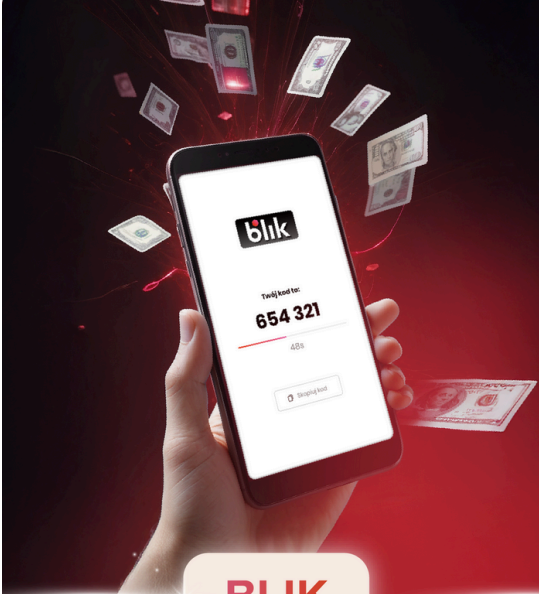
- respond with a single word,
- choose a picture symbolizing an emotion or interest,
- vote by raising their hand.

Załącznik nr 1 – Karty polskich innowacji



ElevenLabs

Our technology can generate natural-sounding voices and sounds in 32 languages.




BLIK

Team of financial experts came up with modern virtual payment technology.



**ILR – 33 AMBER
2K Rocket**

We have flown into space on green fuel.



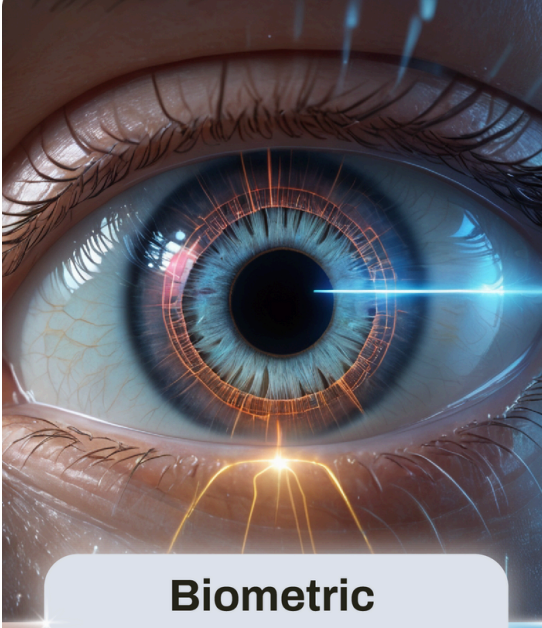
Bionic Pancreas

Fully functional, 3D printed bionic organ.




Kalman by AGH Space Systems

Polish students have built an innovative Mars rover.



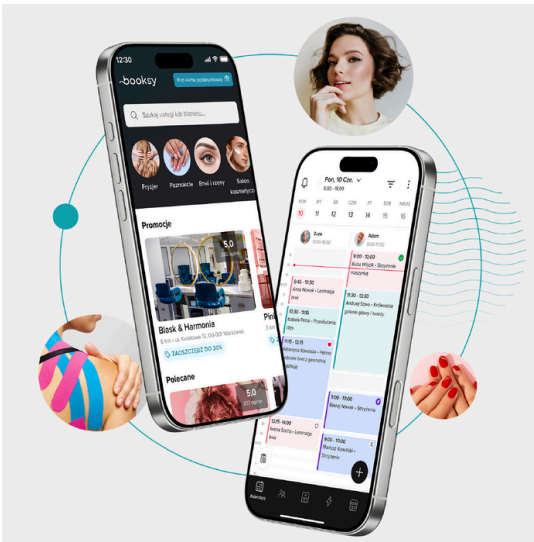
Biometric Checkout Program

We have performed world's first payment with a glance.



BioCam.ai Capsule Endoscopy

Revolutionary AI-powered capsule that delivers fast, non-invasive digestive system diagnostics from home.

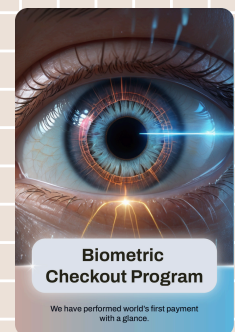
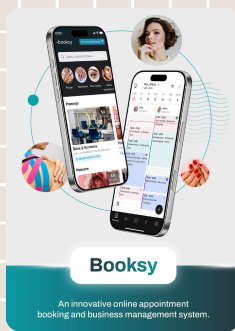


Booksy

An innovative online appointment booking and business management system.

Appendix no. 2 -Is this polish innovation?

IS THIS A POLISH INNOVATION?



Appendix no. 3 – educational stations



INPOST PARCEL LOCKER

Convenient and contactless parcel collection

InPost is a leading logistics solutions provider for the e-commerce industry in Europe, which revolutionized the parcel delivery market by introducing Paczkomat® machines. The first devices appeared in 2009 and quickly became the most popular method for sending and receiving parcels.

By the end of 2024, the InPost Group operated nearly 47,000 modern Paczkomat® machines across 9 countries (the United Kingdom, France, Poland, Italy, Spain, Portugal, Belgium, Luxembourg, and the Netherlands). In 2024 alone, the company handled over one billion parcels.



EKOzwrot – instead of throwing away things that are still in good condition, you can give them away for reuse.

How to do it?

1. Pack the items you want to give away.
2. Generate a shipping code. If you're sending an EKOzwrot through the app, choose "New shipment," then "Return," and click the green button "Donate to Foundation."
3. Place the code on the parcel. Send it for free using the nearest Paczkomat® machine.

Why is it worth sending EKOzwroty?

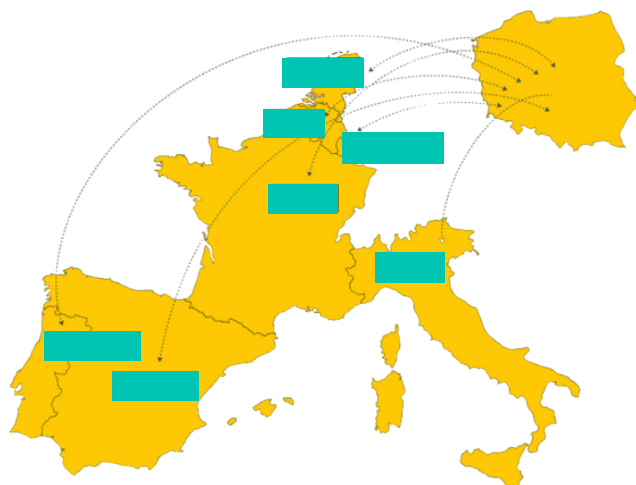
- ✓ It's completely free and InPost Parcel Lockers are everywhere – on average just a 6-minute walk from you!
- ✓ Over 72% of donated items can be reused!
- ✓ When you pass things on, you reduce waste and help cut down on trash. minutes.



EXERCISES

INPOST PARCEL LOCKER

In which countries, besides Poland, can we also find Paczkomat machines?



What items of yours that you no longer use can you give away as part of the EKOzwrot program?

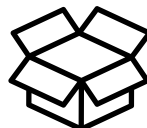
1.
2.
3.

Write which 3 items you can send via a Paczkomat that would fit into boxes with the dimensions below:

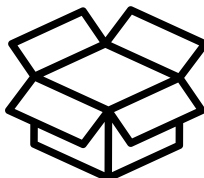
- small parcel: 8x38x64



- medium parcel: 19x38x64



- large parcel: 41x38x64



BIONIC* PANCREAS

A fully functional 3D-printed organ

The bionic pancreas is a method of alternative treatment for type I diabetes and for patients with chronic pancreatitis. It is a fully functional, 3D-printed bionic organ with a vascular system, developed using living cells. It is the world's first bionic organ printed with 3D printing technology, ready to enter the clinical trial phase.

The bionic pancreas produces insulin and glucagon, and its vascular system ensures full integration with the patient's circulatory system. This gives hope to patients, offering a chance to regain a normal life.



*** Bionic = living**

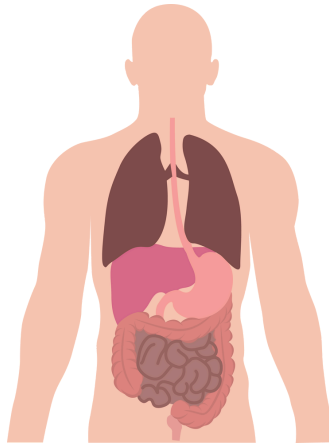
How is a bionic pancreas made?



EXERCISES

BIONIC PANCREAS

Look at the internal organs of the human body. Find the pancreas and label it.



Choose the correct answer:

The bionic pancreas is the first in the world:

- a) a living organ printed using 3D printing technology
- b) an oral medicine that replaces insulin
- c) an artificial prosthesis supporting heart function

Read the sentence and fill in the missing blanks.

The bionic pancreas is an alternative method for treating
----- type I and chronic-----.

Design a bionic body part.

Draw a bionic body part and finish the sentence: "Our bionic body part helps people because..."

AGH KALMAN ROVER

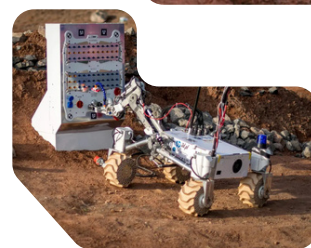
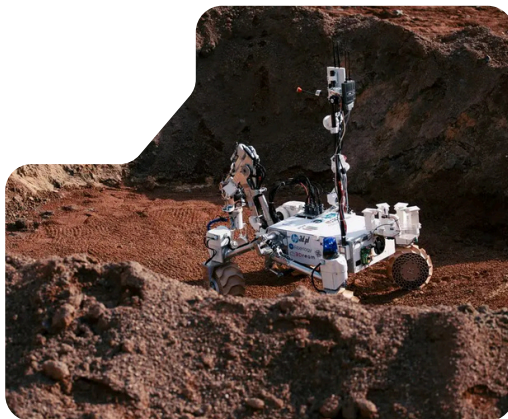
Polish students have built an innovative planetary rover.

Kalman is a technologically advanced, mobile, and autonomous exploration robot. The rover features a lightweight frame, a precise manipulator, and a gripper equipped with a camera system and interchangeable jaws. It stands out with its modular structure, which makes servicing and upgrading easier. The robot can perform research, maintenance, and support tasks.

Among the latest achievements of the robot and its team are:

- first place at the University Rover Challenge 2024,
- second place at the European Rover Challenge 2024,
- first place at the Canadian International Rover Challenge 2023, and
- first place at the European Rover Challenge 2023.

The goal of the project is to create a fully functional robot capable of traversing the challenging terrain of Mars and the Moon, testing new technologies essential for exploration, analyzing soil samples in search of signs of life, and assisting astronauts with minimal operator intervention.



EXERCISES

AGHKALMAN ROVER

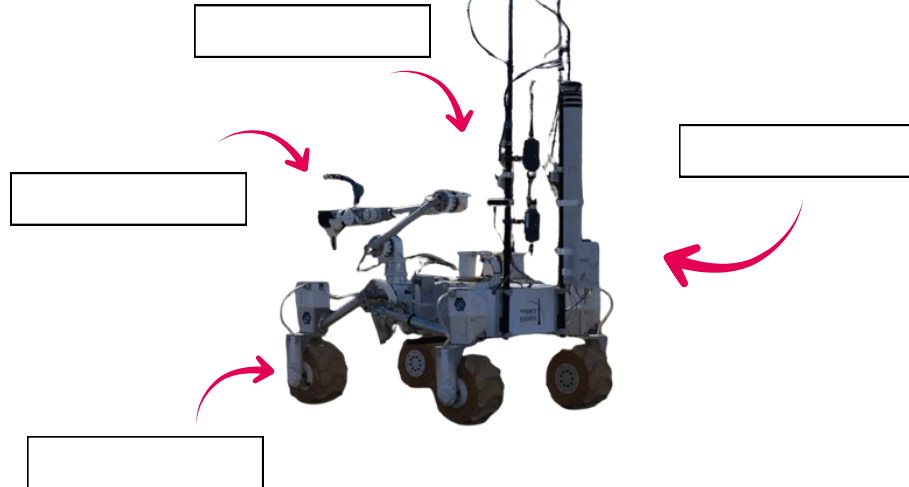
Match the parts of the rover:

off-road wheels

manipulator

gripper

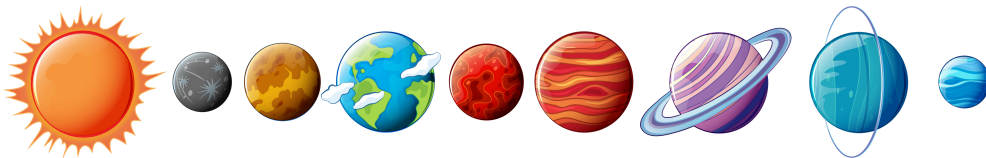
lightweight frame



Fill in the missing words – using your own ideas.

If we could, we would send the rover _____
_____, to explore _____.
_____. With its actions,
it would support the work of... _____.

Point to Mars and Earth.



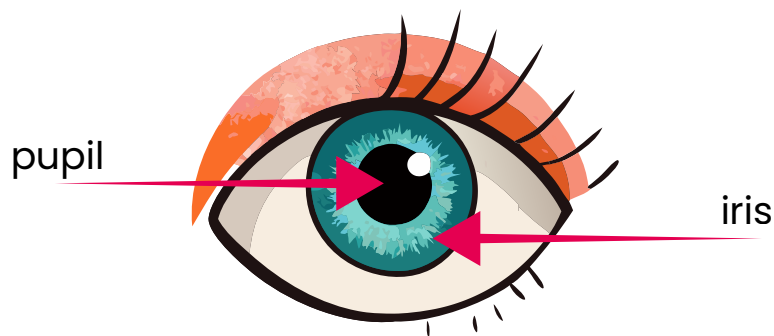
PAYMENT WITH A GLANCE

The first biometric payment based on the fusion of iris and facial recognition was made in Poland!

In Poland, a pilot project for modern biometric payments took place, allowing people to pay for their shopping... with just one glance! The system combines facial and iris recognition, making payments fast, convenient, and secure.

With biometrics, there's no need for a payment card or phone – just look into the camera. Research shows that as many as 90% of people who tried this method were satisfied, and over 60% found it more convenient than other payment methods.

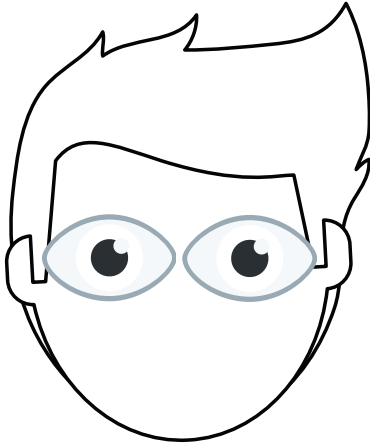
This is the first solution of its kind in Poland and one of the first in Europe – a technology that could completely change the way we shop in physical stores.



EXERCISES

PAYMENT WITH A GLANCE

**Point to the iris and the pupil.
Color the iris.**



Choose the correct answer:

Payment with a glance is considered very safe because...

- a) the camera checks if your eyes are open
- b) every person has a unique iris pattern
- c) the camera records all your shopping and saves it at the bank
- d) you also need to enter a PIN and show your ID

Fill in the missing words.

Biometric payment is a fusion of iris and facial recognition, which allows you to pay for purchases with a single glance.....!

Imagine you are a creator of modern technologies. Invent an innovative way of paying in the future that does not yet exist.

Name it:

How it works?

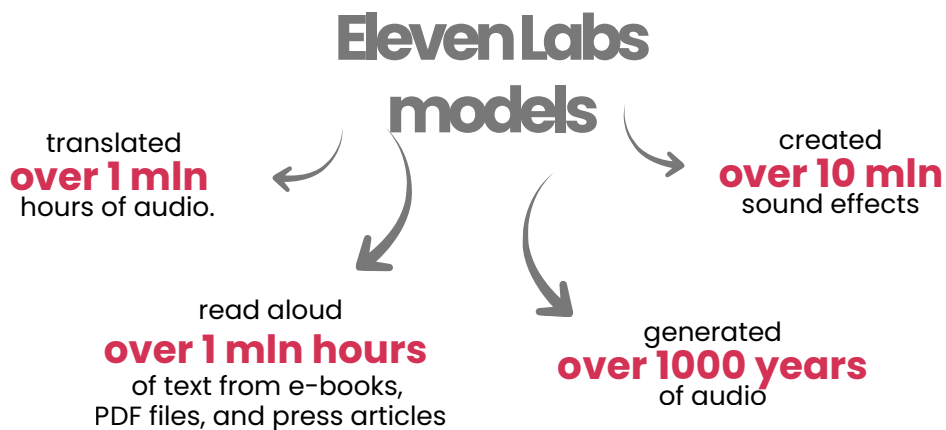
ELEVEN LABS

A global leader in the generative audio artificial intelligence sector that originates from Poland

ElevenLabs is a research company developing audio AI. The company creates artificial intelligence that listens, understands, and responds like a human. It offers tools that make voice a natural way to interact with technology. Its mission is to ensure that everyone can access digital content in their own language and with any voice. ElevenLabs offers the ability to generate naturally sounding voices and sounds in 32 languages.

In January 2024, the company achieved unicorn status with a valuation exceeding \$1 billion – and just a year later, its value tripled, reaching \$3.3 billion.

ElevenLabs technology is used for recording audiobooks and articles, animating game characters, supporting film preproduction, localizing multimedia in entertainment, creating dynamic audio content for advertising and social media, and training medical staff. It also restores voices to those who have lost them and supports people with disabilities in their everyday lives.



EXERCISES

ELEVEN LABS

Choose the correct answers.

ElevenLabs is used for:

- a) recording audiobooks
- b) recording articles
- c) animating game characters
- d) supporting film preproduction
- e) localizing multimedia in entertainment
- f) creating dynamic audio content for advertising and social media
- g) training medical staff

In how many languages can audio be generated using ElevenLabs technology?

.....

Fill in the missing word.



JA unicorn in business means a company valued at over \$ lub €.

Create your own unicorn – a robot that helps others.

Draw a robot that helps people in their everyday lives. Give your device a name. Write down 3 things the robot can say or do. Think about who this robot would help the most.

VIDRE+™

Innovative packaging for products that helps keep them fresh

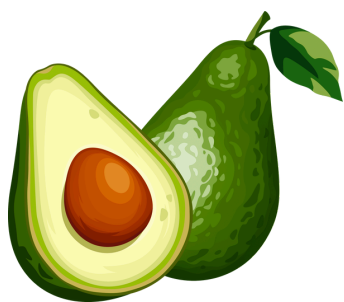
Vidre+™ is an innovative technology that revolutionizes the management of product freshness. It can be applied at every stage of the distribution chain – from producers to retail – and works on fruits, vegetables, flowers, and potted plants. Thanks to its patented active substance, applied in the form of a sticker or packaging, Vidre+™ extends freshness, preserves texture, firmness, taste, and appearance of products, minimizing waste and maximizing value for the food and floristry industries.



Vidre+™ is a solution that effectively prevents food waste by keeping products fresh for longer. As a result, it reduces food losses, lowers costs for producers and retailers, and decreases the carbon footprint. Its simple application – in the form of a sticker or packaging – makes the technology accessible even to smaller producers.

Avocado

is a great example of Vidre+™ in action.



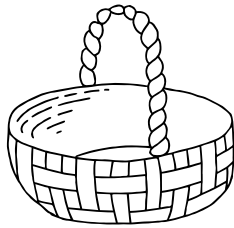
The result?

- 100% green fruit even after 46 days
- Extended shelf life
- Slower ripening
- Delayed softening
- Prevention of pulp damage

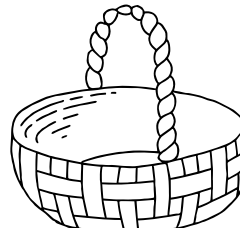
EXERCISES

VIDRE+™

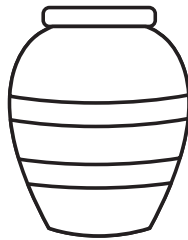
Name two of your favorite products that Vidre+ will help stay fresh for longer:



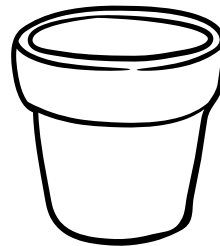
FRUITS



VEGETABLES



FLOWERS



POTTED PLANTS

A major success of Vidre+™ is enabling the transport of avocados from South America to Asia. Mark both continents on the world map.





Modern virtual payment technology



BLIK has been operating in Poland since 2015 and has truly revolutionized the way people make payments. It has made payments fast, convenient, and secure. Today, it is the most popular mobile payment system in Poland, with 20 million users. You can pay with BLIK in all banking apps without needing a card.

Internet access
a banking app
smartphone



What do you need to pay with BLIK?

It is a fast and secure way to pay using your phone. Before anyone can use it, the bank must verify that it is really that person. This is called verification – the bank confirms the user's identity, for example through an SMS message, the app, or a call with customer service. Thanks to this, no stranger can "link" their phone to your account. Once you have a banking app with BLIK, several security features protect you.

Once you have a banking app with BLIK, several security features protect you:

- **PIN, fingerprint, or password** – without one of these, no one can access your app.
- **BLIK code** – a six-digit number that is valid for only 2 minutes! After that, it expires and can't be used again.
- **Transaction confirmation** – before you pay, the app shows who you're sending money to and how much.

If you pay more than 50 PLN, the bank will ask you to enter your PIN. You don't need to provide your card number or hold your phone to the terminal – the code is enough. But every user must also be careful. Never share your BLIK code with anyone – even if they pretend to be your friend!



EXERCISES



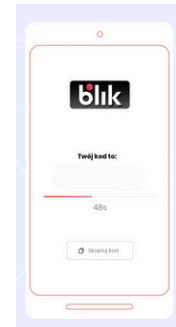
Modern virtual payment technology

What do you need to pay with BLIK?

- a) ID card
- b) banking app
- c) payment card
- d) internet access
- e) phone

Create your own code.

Remember how many digits it should have!



Are these situations safe (✓) or dangerous (✗)?

	✓	✗
Someone you don't know asks you to provide your BLIK code over the Internet.	<input type="checkbox"/>	<input type="checkbox"/>
You open a link from an SMS claiming to be from a "courier" to pay an extra 2 zł.	<input type="checkbox"/>	<input type="checkbox"/>
You help your parent pay a bill by checking the details in the app.	<input type="checkbox"/>	<input type="checkbox"/>
You buy a game online in a store with a padlock icon.	<input type="checkbox"/>	<input type="checkbox"/>
You see a contest online that says "Click and win a phone" – you enter your personal information.	<input type="checkbox"/>	<input type="checkbox"/>
You set strong passwords on websites and don't reveal them to anyone.	<input type="checkbox"/>	<input type="checkbox"/>

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