

27 kwietnia 2026



# CLILove STEAM-owanie – integracja CLIL i STEAM w praktyce edukacyjnej

**27.04.2026**

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## CLIL

- Zintegrowane kształcenie przedmiotowo-językowe, to podejście edukacyjne łączące naukę języka obcego z przekazywaniem treści z innych dziedzin (np. historia, biologia, technika).
- Jest rekomendowana przez Komisję Europejską, ponieważ stawia na praktyczne użycie języka jako narzędzia poznawczego, a nie tylko jako przedmiotu nauczania

📍 Świętokrzyskie, Kielce

## CLIL-owe STEAM-owanie ↗

Opiekunowie:

 Izabela Krzak-Borkowska



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## STEAM

- Innowacyjne podejście edukacyjne, oparte na integracji nauki, technologii, inżynierii, sztuki i matematyki. Głównym celem tego modelu jest ukierunkowanie uczniów na poszerzanie wiedzy, rozwijanie umiejętności dialogu oraz krytycznego myślenia.



## Dobre praktyki II Liceum Ogólnokształcącym im. J. Śniadeckiego w Kielcach





## Dobre praktyki II Liceum Ogólnokształcącym im. J. Śniadeckiego w Kielcach



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# Mitosis, meiosis and apoptosis

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## RESPIRATORY SYSTEM DISEASES

The main causes of **respiratory diseases** are:

- environmental pollution—chemical or biological,
- indoor pollution, e.g. risk factors at work, home, garage,
- inadequate diet – obesity, overweight, anemia, malnutrition
- genetic burden—**asthma, cancer, cystic fibrosis, COPD.**



Air pollution can lead to respiratory system diseases, it consists of gas and dusty compounds such as:

- nitrogen oxides and sulfur oxides
- benzopyrene
- suspended dust

Air pollution can cause

- tumors e.g. lung cancer
- chronic infections
- insomnia and head aches
- lowered immunity
- bronchial asthma
- chronic obstructive pulmonary disease

Ingredients of cigarettes and e-cigarettes

- nicotine – found in tobacco that stimulates the brain and creates addiction
- carbon monoxide – produced when tobacco is burned, causes oxygen deprivation
- tar substances – found in crude oil
- cadmium – heavy metal that accumulates in the body
- glycerin – used to produce thicker vapor
- flavorings – various chemical compounds used to provide different tastes
- acrolein – a toxic compound that can cause lung damage

Diagnostic tests for the respiratory system assess organ health and overall efficiency. Common methods include:

### Chest X-ray

A low-dose X-ray captures an image of the chest, showing areas where tissues absorb different amounts of radiation. It helps detect lung diseases like cancer, pneumonia, and tuberculosis.

### Bronchoscopy

This endoscopic procedure uses a camera-equipped bronchoscope to view the respiratory tract, collect tissue samples, or remove foreign objects.

### Spirometry

A non-invasive test measuring lung capacity. The patient breathes into a device that evaluates the volume of inhaled and exhaled air, assessing lung function.

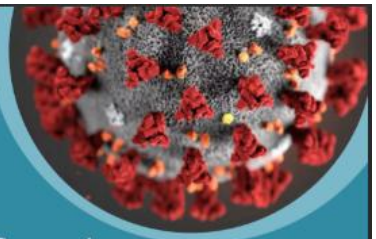
The social effects of smoking Smoking often leads to stigmatization and exclusion from many people who disapprove of the habit due to its well known health effects. This addiction also is a significant burden for individuals and families, as the cost of purchasing cigarettes adds up over time. Smokers also often experience psychological stress related to the awareness of smoking's health risks and the societal pressure to quit. The constant struggle between the desire to smoke and the knowledge that it is harmful can create feelings of guilt, shame, and self-loathing. Nicotine withdrawal is known to lead to mood swings, irritability, and frustration. Smokers who are trying to quit may experience emotional instability, which can further wreck their interpersonal relationships.





# COVID-19

COVID-19 IS AN CONTAGIOUS DISEASE OF RESPIRATORY SYSTEM. IT IS CAUSED BY SARS-COV-2 VIRUS AND IT WAS FIRST DISCOVERED AT THE END OF 2019. THE VIRUS CAUSED A GLOBAL PANDEMIC WHICH LASTED FROM MARCH 2021 UNTIL MAY 2023.



## 1 Transmission and prevention

COVID-19 SPREADS THROUGH DROPLET ROUTE OF INFECTION. IT CAN BE PREVENTED BY REGULAR AND SCRUPULOUS HAND WASHING, KEEPING DISTANCE FROM PEOPLE WITH SYMPTOMS AND COVERING NOSE AND MOUTH WITH A MASK.

## 4 Treatment

THERE IS NOT ANY CONFIRMED TARGET WAY OF TREATING COVID-19. SYMPTOMATIC TREATMENT IS COMMONLY USED BUT IT IS RATHER SUPPOSED TO MANAGE SYMPTOMS AND SUPPORT FUNCTIONING OF THE ORGANISM.

## 2 Diagnosis

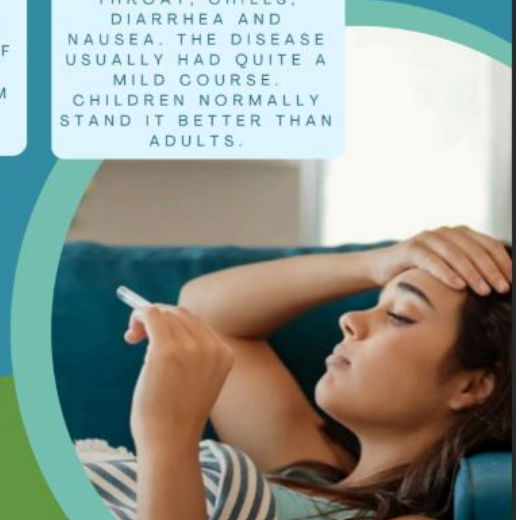
IT CAN BE DIAGNOSED IN DIFFERENT WAYS. ONE OF THEM IS REVERSE-TRANSCRIPTION POLYMERASE CHAIN REACTION (RT-PCR) WHICH IS BASED ON NASAL-THROATY SWAB OR SPITTLE SAMPLE. IT CAN BE ALSO DONE WITH BLOOD SAMPLE BUT IT TAKES MUCH MORE TIME. ANOTHER WAY OF DIAGNOSIS IS TESTING ANTIBODIES IN BLOOD SERUM BUT IT IS NOT ALWAYS ACCURATE.

## 3 Symptoms

THE MOST COMMON SYMPTOMS ARE FEVER, DRY COUGH AND FATIGUE. SOME PEOPLE ALSO SUFFER FROM HEADACHE, CHEST ACHE, SORE THROAT, CHILLS, DIARRHEA AND NAUSEA. THE DISEASE USUALLY HAD QUITE A MILD COURSE. CHILDREN NORMALLY STAND IT BETTER THAN ADULTS.

## 5 Statistics

THERE WERE AROUND 700 MILLION CASES OF COVID-19, MOST OF WHICH APPEARED AT THE BEGINNING OF 2022. MORTALITY RATE IS AROUND 3%. THE MOST DEATHS OCCURED FROM THE END OF 2020 TO THE BEGINNING OF 2021.





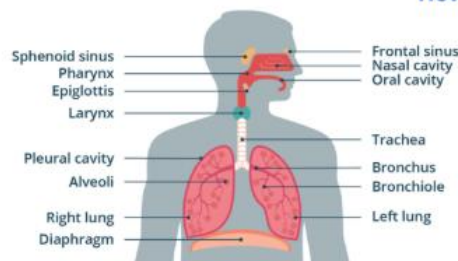
**Why is smoking cigarettes so dangerous?**  
The main ingredient of every cigarette is nicotine, but they also contain tarry substances, carbon monoxide and sulfur monoxide, ammonia, heavy metals and many others. Tobacco smoke inhaled into the lungs, along with all the harmful substances, is distributed throughout the entire body, which is responsible for changes both at the cellular and systemic level.

### Flu/influenza

- Cause: infection with different types of influenza virus
- Routes of infection: droplet route
- Prevention:
  1. Get an annual flu vaccine.
  2. Avoid close contact with sick individuals.
  3. Cover your mouth and nose when coughing or sneezing.

### Flu symptoms

- Fever or chills
- Cough
- Sore throat
- Runny or stuffy nose
- Muscle or body aches
- Fatigue (feeling very tired)
- Headaches



## Respiratory diseases

### Lung cancer

- Cause: changes in the genetic material
- Factors of disease:
  - I. Smoking cigarettes
  - II. Genetic tendencies
  - III. Other diseases (tuberculosis, COPD)
  - IV. Air pollution
  - V. Toxic materials
- Prevention:

1. No smoking and avoiding contact with cigarette smoke
2. Avoid places with heavily polluted air
3. Conducting periodic tests (chest X-ray)

### Symptoms of lung cancer:

1. Chronic cough
2. Hemoptysis
3. Shortness of breath
4. Chest pain
5. Hoarseness

**How does smoking cigarettes affect our body?**

- Lung Damage
- Cancer Risk
- Heart Disease
- Weakened Immune System
- Respiratory Issues
- Addiction
- Cerebral Hypoxia
- And a lots more.

**What counts as air pollution?**

- Nitrogen and sulfur oxides
- Benzo[a]pyrene
- Particulate matter (PM)

**The impact of air pollution may include, among others:**

- cancers, e.g. lung cancer
- chronic infections
- insomnia and headaches
- respiratory system diseases, for example: bronchial asthma
- circulatory system diseases
- reduction of the body's immunity

Healthy lungs



Smoker's lungs





## RESPIRATORY SYSTEM







Let's describe various respiratory diseases and their causes.

### Diagnosis of respiratory system

- **Bronchoscopy** is a medical procedure in which a thin, flexible tube (bronchoscope) is inserted through the nose or mouth into the airways to examine the lungs and air passages. It allows doctors to inspect the lungs for abnormalities, collect tissue samples (biopsy), remove blockages, or diagnose conditions like infections, tumors, or chronic lung diseases. The procedure is typically done under local anesthesia or sedation.
- **Spirometry** is a common test used to measure lung function. It assesses how much air you can inhale and exhale, and how quickly. The test helps diagnose conditions like asthma, COPD, and other respiratory disorders by measuring parameters such as forced vital capacity (FVC) and forced expiratory volume (FEV1).
- A chest X-ray is an imaging test that uses low levels of radiation to create pictures of the chest, including the heart, lungs, and bones. It helps diagnose conditions like pneumonia, lung infections, tumors, fractures, and other respiratory diseases. The procedure is quick, non-invasive, and commonly used in routine medical exams.

### Diseases of respiratory system

<p><b>Influenza</b></p> <p><b>Cause</b> Infection with various strains of the influenza virus, sometimes with an acute course. Every few years there are waves of influenza illnesses - epidemics.</p> <p><b>Route and symptoms</b> mainly droplet route Symptoms: high temperature sore throat headache cough slight runny nose muscle pain, chills very tired may cause complications</p> <p><b>WILL YOU BE MY? MR. GRYPA</b>  #no to chorujemy!</p>	<p><b>Lung cancer</b></p> <p><b>Cause</b> The change in genetic material which is usually the result of smoking</p> <p><b>Route and symptoms</b> A new cough that doesn't go away. Chest pain. Coughing up blood, even a small amount. Hoarseness. Shortness of breath. Wheezing.</p> 
<p><b>Angina Pectoris</b></p> <p><b>Cause</b> Infection with bacteria, most often streptococci, rarely the cause is a virus or fungi</p> <p><b>Route and Symptoms</b> Mainly droplet route Symptoms: Sore throat Muscle and joint pain Slight fever Pharyngitis Conjunctivitis Diarrhea Hoarseness Diarrhea</p> <p><b>angina pectoris</b>  Inflammation on the tonsils</p>	<p><b>Asthma</b></p> <p><b>Cause</b> Mainly caused by genetic variables and environment eg. tobacco smoke</p> <p><b>Route and Symptoms</b> Lowered physical capability Wheezing Cough Dyspnoea</p> 

### Smoking Cigaretts



- These toxic substances in cigarettes have various harmful effects on the body:
1. **Nicotine** - It stimulates the nervous system, causing addiction, increased heart rate, and high blood pressure.
  2. **Tar** - It accumulates in the lungs, causing chronic respiratory diseases, lung cancer, and other lung damage.
  3. **Carbon Monoxide** - It reduces the oxygen-carrying capacity of the blood, leading to heart strain and respiratory issues.
  4. **Benzene** - It damages bone marrow and increases the risk of leukemia and other cancers.
  5. **Ammonia** - It irritates the lungs, making breathing difficult and worsening existing respiratory conditions.
  6. **Hydrogen Cyanide** - It interferes with the body's ability to use oxygen, causing damage to the heart and lungs.

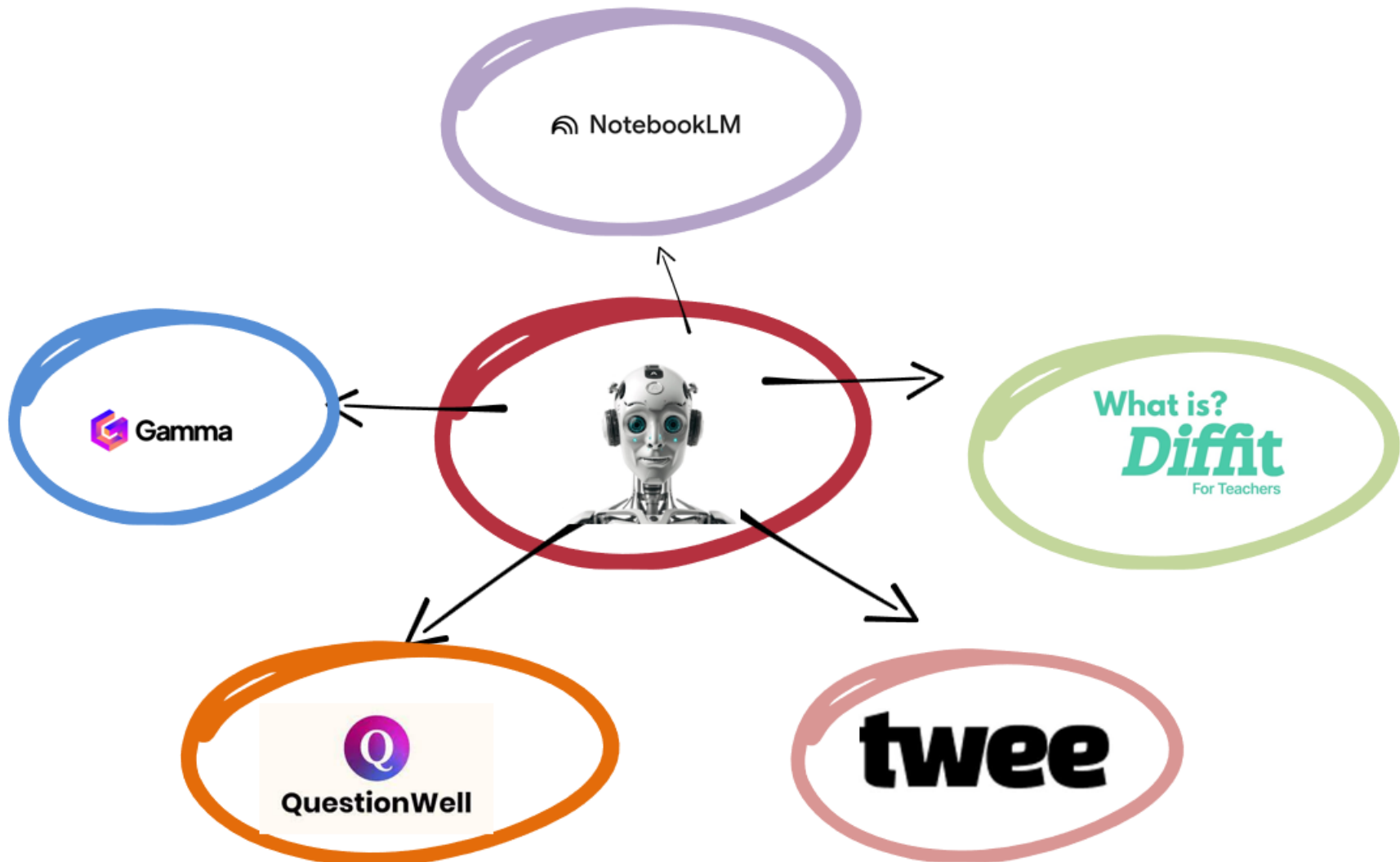
### Diseases related to air pollution

- **Asthma:** Pollutants such as PM2.5 and PM10 dust, nitrogen oxides and ozone may sharp asthma symptoms. Chronic obstructive pulmonary disease
- **(COPD):** Exposure to irritating dusts and gases may lead to chronic inflammation of the respiratory tract.
- **Bronchitis:** Short-term and long-term exposure to pollutants can cause acute or chronic bronchitis.
- **Lung cancer:** Long-term exposure to carcinogens such as benzo(a)pyrene increases the risk of lung cancer.



glow up

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# Q&A

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