21st CENTURY

BREAKTHROUGH IN SCIENCE AND TECHNOLOGIES

TED

Ideas worth spreading

Liliia Bilas
Larysa Pavlichenko
Olena Popivniak

TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV

EDUCATIONAL AND SCIENTIFIC INSTITUTE OF PHILOLOGY

DEPARTMENT OF ENGLISH PHILOLOGY AND INTERCULTURAL COMMUNICATION

21st CENTURY BREAKTHROUGH IN SCIENCE AND TECHNOLOGIES

A manual for Philology students

Kyiv – 2023

УДК 811.111 (73)
ББК 81. 2АНГ-2
Б 61

Reviewers:
A. V. Botsman, Candidate of Philological Sciences, Associate Professor of the Department of English Philology and Intercultural Communication, Educational and Scientific Institute of Philology, Taras Shevchenko National University of Kyiv;
O. M. Kinshchak, Candidate of Philological Sciences, Professor, Head of the Department of Germanic Languages and Translation, Kyiv International University

Recommended by the Board of Academics at the Educational and Scientific Institute of Philology, Taras Shevchenko National University of Kyiv (Protocol № 8 dated 28 March 2023)

Б 61 **21st Century. Breakthrough in Science and Technologies:** A manual for Philology students / Compiled by Bilas L., Pavlichenko L., Popivniak O. K: PC Educational and Scientific Institute of Philology, Taras Shevchenko National University of Kyiv, 2023, 210 p.

Over the years, technologies have revolutionized our world and our daily lives, created amazing tools and resources, putting useful information at our fingertips. This manual provides contemporary, stunning and authentic language input from TedTalks videos and current informative texts from international websites on the latest inventions, innovations and new technologies in various spheres of life. It teaches what language students need to communicate outside the class: the lexically-rich approach shows how vocabulary works and tasks are based on what people really say and write.

The edition is intended for the philology students who study for their Bachelor Degree at the Department of English Philology and Intercultural Communication of the Educational and Scientific Institute of Philology, Taras Shevchenko National University of Kyiv, and contains the materials correlated with the 2nd-4th year syllabi and courses outlines. The manual will enhance students' writing skills for professional, social and personal needs, improve their competence in project work and presentations, develop their creative and critical thinking.

21st Century. Breakthrough in Science and Technologies is aimed at both classroom training and self-study of the philology students and may also be recommended for English tutors, teachers and all those who teach and learn English.

ACKNOWLEDGEMENTS

We would like to acknowledge and give our warmest thanks to **Andriy Botsman**, Candidate of Philological Sciences, Associate Professor of the Department of English Philology and Intercultural Communication, Educational and Scientific Institute of Philology, Taras Shevchenko National University of Kyiv and **Olexander Kinshchak**, Candidate of Philological Sciences, Professor, Head of the Department of Germanic Languages and Translation, Kyiv International University for reviews, critical remarks to the content and recommendations. We express our deep and sincere gratitude to **Alla Belova,** Doctor of Philological Sciences, Professor, Head of the Department of English Philology and Intercultural Communication, Educational and Scientific Institute of Philology, Taras Shevchenko National University of Kyiv, for commenting during development and such practical advice and encouragement during the preparation of the manual.

The authors have used their best endeavours to ensure that URLs for external websites referred to in this manual are correct and active at the time of going to press. However, the authors have no responsibility for the websites and can make no guarantee that sites will remain live or that the content is or will remain appropriate.

CONTENTS

21st CENTURY

BREAKTHROUGH
IN SCIENCE AND TECHNOLOGIES

“This is perhaps the most beautiful time in human history; it is really pregnant with all kinds of creative possibilities made possible by science and technology which now constitute the slave of man – if man is not enslaved by it.”

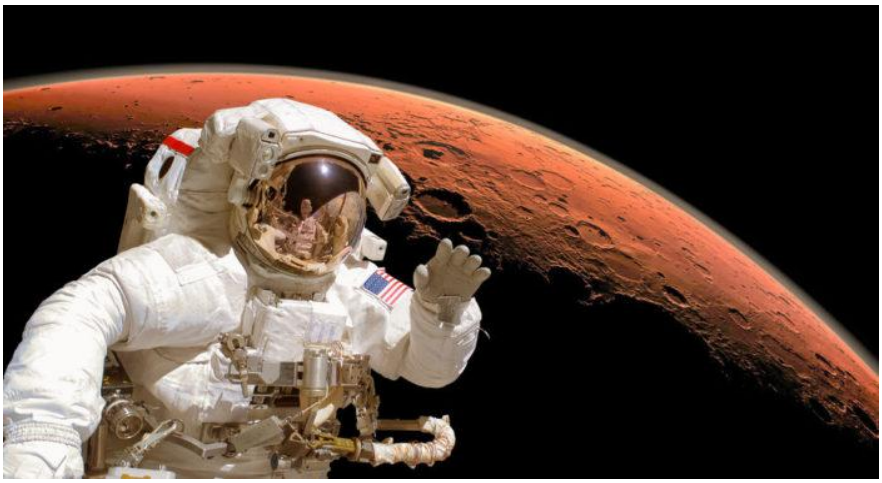
Jonas Salk,
an American virologist and medical researcher (1914-1995)

“Humankind has the science and technology to destroy itself or to provide prosperity for all. But while science offers us these opportunities, science will not make that choice for us. Only the moral power of a world acting as a community can”

Margaret Beckett,
a British politician (born 1943)

UNIT 1

TRANSPORT AND SPACE EXPLORATION



IN THIS UNIT:

1.1. The Mind Behind Tesla, SpaceX, SolarCity

*The video interview with **Elon Musk**.*

1.2. Elon Musk's Starship could change space business forever

The article about space exploration.

1.3. Writing

1.4. Project work and presentations

1.1. VIDEO. THE MIND BEHIND TESLA, SPACE X, SOLARCITY

BEFORE YOU WATCH

1. ***Look at the photo of the man and tell what you know about him and his contribution to science.***

2. ***Read and comment on the following quotations of a world-known contemporary entrepreneur, businessman, inventor and engineer Elon Musk:***

"I always have optimism, but I'm realistic. It was not with the expectation of great success that I started Tesla or SpaceX... It's just that I thought they were important enough to do anyway."

"People should pursue what they're passionate about. That will make them happier than pretty much anything else."

Elon Musk,
a business magnate and investor (born 1971)

3. ***Read the information about Elon Mask and answer the questions:***

1. What do you think are the key environmental concerns?
2. You will hear Elon Musk talk about electric cars. What problem do they solve or what purpose do they have?
3. What do you think are the benefits and drawbacks of electric cars?
4. What could accelerate the advent of electric transport?
5. Is space exploration really worth big investments? Or is it a waste of money? Why or why not?

ELON MUSK

Elon Musk co-founded and leads Tesla, SpaceX, Neuralink and The Boring Company. At Tesla, Elon Musk leads all product design, engineering and global manufacturing of the company's electric vehicles, battery products and solar energy products. At SpaceX, he oversees the development of rockets and spacecraft for missions to Earth orbit and ultimately to other planets. SpaceX is developing Starship — a fully reusable transportation system that will carry crew and cargo to the Moon, Mars and beyond — and Starlink, which will deliver high-speed broadband internet to places where access has been unreliable, expensive or completely unavailable. By pioneering reusable rockets, SpaceX is pursuing the long-term goal of making humans a multi-planet species by creating a self-sustaining city on Mars.

Musk is also the founder of Neuralink, which is developing brain-machine interfaces to connect the human brain to computers, and The Boring Company, which combines fast, affordable tunneling technology with an all-electric public transportation system to try and alleviate soul-crushing urban congestion. Previously, Musk co-founded PayPal, the world's leading internet payment system, and Zip2, one of the first internet maps and directions services.

VOCABULARY

4. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

1. I'll have to stop you there, we'**ve run out of** time.
2. Many governments launched national plans to promote **sustainable energy.**
3. As **fossil fuel** reserves diminish, alternative renewable sources of energy will be needed to sustain economic growth.
4. All that pollution is transport borne: it all comes from **motor vehicles** and the fossil fuel**.**
5. The moratorium implied that no new nuclear **power plant** could be built during the next 10 years.
6. Transportation was transformed by the **advent** of the internal combustion engine.
7. We need to become more **energy efficient** so that we don't generate power just to waste it.
8. The car itself is powered by two sources: one source is from the fuel cell itself and the second is from the car's **battery pack.**
9. The automaker is giving **test drives** of the energy-efficient battery-powered vehicle to policymakers during the auto show.
10. For the first time, GPS navigators were seen as a **mass market product.**

A. has an engine, for example a car or a truck
B. by burning fuel within itself
C. produced using the sun, wind, etc.
D. used to supply electricity in electrical equipment such as laptop computers, mobile devices, cameras etc.
E. intended to be bought by as many people as possible, not just by people with a lot of money or a special interest
F. such as coal or oil, made from decayed material from animals or plants that lived many thousands of years ago
G. a short journey in which you drive a car to decide whether you want to buy it

H. a building where electricity is produced
I. the beginning of an event, the invention of something, or the arrival of a person
J. using little electricity, gas, etc.
K. to finish, use, or sell all of something, so that there is none left

THE MIND BEHIND TESLA, SPACEX, SOLARCITY

WHILE YOU WATCH

https://www.ted.com/talks/elon_musk_the_mind_behind_tesla_spacex_solarcity?language=zh

5. Watch the TED Talk. Tick (√) the areas that Elon Musk mentions:

A. Efficiency of electric cars
B. The network of charging stations
C. Precipitation in the US
D. His commuting route
E. World record
F. Future of the solar energy
G. Risks of running his business
H. His school Physics classes
I. Disposable rockets
J. Ways of saving energy to decrease utility bills

6. Watch the first part of the video (00:00-4:33) and take notes on what you find out about:

- ✓ His motivation to build an electric car
- ✓ Advantages of electric cars
- ✓ Assembly features of electric cars

- ✓ Technical characteristics of the new electric car models

7. Watch the second part of the video (4:33-8:26). What do these numbers refer to?

1.	100,000	
2.	50,000	
3.	30,000	
4.	20 or 30	
5.	half an hour	
6.	9	
7.	10	
8.	160	
9.	170	

8. Watch the third part of the video (8:27-11:41) and answer the questions:

1. What are the benefits of solar panels?
2. How does a solar system lease work?
3. Elon Musk's prediction about the future of the power supply.

9. Watch the fourth part of the talk (11:42: to the end) and complete the notes:

1. It _____. Things almost didn't work out.
2. The goal of SpaceX is to try to advance rocket technology, and in particular to try _____ that I think is vital for humanity to become a _____, which is to have a rapidly and fully reusable.
3. You've somehow _____ the cost of building a rocket by 75 percent.
4. There's a long list of innovations that we've _____ there that are a little difficult to communicate in this talk.
5. That's potentially absolutely _____ technology, and, I guess, _____ the way for your dream to actually take, at some point, to take humanity to Mars at scale.

6. SpaceX, or some combination of companies and governments, needs to make progress in the direction of making life _____, of establishing a base on another planet.
7. We dressed a cowboy as Johnny Cash and bolted the _____ to the rocket.
8. It's _____ at about 40 meters, and it's constantly adjusting the angle, the pitch and yaw of the main engine, and maintaining roll with cold gas thrusters.
9. Through most of our life, we get through life by _____ by analogy, which essentially means copying what other people do with slight variations.
10. Physics is really figuring out how _____ new things that are counterintuitive.

CRITICAL THINKING

AFTER YOU WATCH

10. Elon Musk speaks about sustainable energy and making life multi-planetary. Why was each of the following relevant to the talk?

1. He tells about sustainable energy problems.
2. He compares an internal combustion engine car and an electric car.
3. He talks about the breaking of the world record.
4. He talks about charging stations.
5. He promises the utility bill decrease.

11. Work in pairs. Discuss the questions:

✓What do you think is the most important question to ask about research? Why?

✓Are the figures presented in the talk important in their full context?

✓Does the data explain the conclusions?

✓Can you think of times in your daily life when you are exposed to statistics?

✓What do you think are the most important uses of data and statistics?

✓Do you have to use data or statistics in your studies/research? If so, for what purpose?

✓Do you think you are good at using and understanding data and statistics?

12. Discuss the following quotations:

✓ **"Environmentally friendly cars will soon cease to be an option … they will become a necessity."**

Fujio Cho,
Honorary Chairman of Toyota Motors (born 1937)

✓ **"There is no use in travelling to the Moon and Mars, if the distance between mind and mind remains ever-growing."**

Abhijit Naskar,
a celebrated Neuroscientist, Bestselling Author of 100 books,
World's First Poet (born 1991)

1.2. READING. ELON MUSK'S STARSHIP COULD CHANGE THE SPACE BUSINESS FOREVER

BEFORE YOU READ

1. Work in pairs. Discuss what you know about the following:

1. SpaceX
2. Starship
3. Super Heavy Booster
4. Saturn V
5. Falcon 9
6. Starlink
7. Tesla

2.Match the above-mentioned proper nouns with the pictures:

A.

B.

C.

D.

E.

F.

G.

3.Match the above-mentioned proper nouns with their descriptions:

A. Satellite internet constellation operated by SpaceX.

B. Space Exploration Technologies Corporation, American aerospace company founded by Elon Musk in 2002.

C. American manufacturer of electric automobiles, solar panels, and batteries for cars and home power storage.

D. A partially reusable launch vehicle that can carry cargo and crew into space orbit, produced by SpaceX.

E. A spacecraft designed for travelling between planetary systems.

F. A retired American super heavy-lift launch vehicle developed by NASA under Apollo program for human exploration of the Moon.

G. A first stage or booster stage, forming the lower part of the rocket.

READING

4. ***Skim the article "Elon Musk's Starship Could Change the Space Business Forever". Add some details from the text to the descriptions above.***

5.Scan the article and answer the following questions:

1. What technical characteristics of Starship are mentioned in the article?
2. What is the ultimate goal of SpaceX?
3. Does the SpaceX founder mention in his speech anything about the forthcoming projects of the company? Why?
4. What is mentioned about the cooperation between SpaceX and NASA?
5. What accidents prevented SpaceX from reaching their goal?
6. What metaphor is used in the article referring to Starship? How do you understand it?

ELON MUSK'S STARSHIP COULD CHANGE THE SPACE BUSINESS FOREVER

Edited by: Hardy Graupner

The SpaceX founder has said his groundbreaking megarocket could be **orbital** within months. Some say Starship is the beginning of the end for space firms that fail to see its potential.

SpaceX's Starship rocket is scheduled to make its first orbital test flight in March.

"I feel at this point **highly confident** that we will get to orbit this year," Musk said, referring to the Starship model.

The rocket **was on display** at the Starbase test facility during Musk's speech. Sitting atop its giant booster, called Super Heavy, Starship measures just short of 400 feet (120 meters) tall. This makes it taller than Saturn V, the 363-foot-tall NASA rocket used for the Apollo moon missions in the 1960s and 1970s, currently the tallest operational rocket ever used. Starship is meant to be fully reusable and have the capacity to carry over 100 tons to Mars and the Moon.

"Fully reusable Starship and Super Heavy systems are expected to allow for space-based activities that have not been possible before," SpaceX writes in the Starship user guide.

Starship would be a major step toward SpaceX's goal of making life interplanetary. The rocket's massive payload capacity along with the **reusability factor** could **drastically** change the economics of launching people and things into space.

Musk's speech focused on Starship's technical developments. He **remained vague about** what projects the company might be in store.

"There's going to be some future announcements that I think people will be pretty **fired up** about," he said. "There are a lot of additional customers that will want to use Starship. I don't want to steal their thunder. They're going **to make their own announcements**."

Already last year, the Starship project received a major endorsement after NASA offered SpaceX a $2.9 billion (€2.5 billion) contract to put its

astronauts on the moon. This came after SpaceX became the first private corporation to shoot astronauts into space when in 2020 it ferried NASA astronauts to the International Space Station on Falcon 9, the world's first orbital-class, reusable rocket.

(…) "This is going **to sound totally nuts** but I think we want to try to reach orbit in less than six months," Musk had said at the last Starship update, in 2019.

He was half right: The goal was unrealistic. In the two years that have passed, Starship prototypes have fallen victim to fiery crashes and explosions, but **orbital flight has remained out of reach.** Adding insult to injury, a solar storm over the weekend destroyed dozens of satellites SpaceX had launched just last week, meant to form part of a massive internet communications network called Starlink.

An elevator to space

Musk has earned himself a reputation for setting out overly ambitious timelines, and this could explain why much of the space sector might not yet be expecting the reality of a functional Starship and everything it would bring with it.

"A fully functional Starship would so thoroughly **render all legacy launch systems obsolete** that it may as well be that they had never even existed," Casey Handmer, physicist and founder of the carbon capture **startup** Terraform Industries, who blogs regularly about advances in space travel, told DW in an email.

Starship could "enable a conveyor belt **logistical capacity** to low Earth orbit," Handmer writes in his blog. Those positioned to **exploit** this major shift in capacity will prosper, while all others will fade rapidly into obscurity, he said.

The finance guys seem to agree. "We think of reusable rockets as an elevator to low Earth orbit," Morgan Stanley Equity Analyst Adam Jonas wrote in a note, reaching for another metaphor. "Just as further innovation in elevator construction was required before today's skyscrapers could dot the skyline, so too will opportunities in space **mature** because of access and falling launch costs."

(…) This is big talk about a rocket that has yet to complete an orbital test flight. And if hiccups at Tesla, Musk's electric and self-driving car company, have shown us anything, it's that huge projects can take time. But Musk and his employees aren't eager to wait.

"SpaceX has a team of skilled, motivated, capable engineers and technicians at Boca Chica who work 24 hours a day to create this future," Handmer said. "They are well resourced and they are acting like they intend **to prevail**."

https://www.dw.com/en/elon-musks-starship-could-change-the-space-business-forever/a-60733091

VOCABULARY

6.Explain the meaning of the words and word-combinations in bold.

7.Arrange the words in suitable pairs. Recall the context they are used in:

1. test	A. car
2. payload	B. capacity
3. space-based	C. into space
4. to launch	D. activities
5. reusable	E. storm
6. to reach	F. rocket
7. solar	G. belt
8. internet communications	H. flight
9. conveyor	I. orbit
10.self-driving	J. network

8. Find words or expressions in the article with the following meanings:

1. making new discoveries, using new methods or achieving new results
2. feeling very excited about something or impatient to do it
3. the act of saying that you approve of or support something or someone
4. not clearly expressed, known, described, or decided
5. to transport people and goods in a vehicle, especially regularly and often
6. a device sent up into space to travel around the earth, used for collecting information or communicating by radio, television, etc.

7. not in use anymore, having been replaced by something newer and better or more fashionable
8. to gradually be forgotten after being well-known
9. bragging or boasting talk
10. a problem that delays or interrupts something for a while, but does not usually cause serious difficulties

9. Match the idiomatic expressions from the article with their meanings. Use them in your own situations:

1. the beginning of the end
2. in store
3. to steal someone's thunder
4. to fall victim to something
5. to add insult to injury

A. to fail or suffer because of something
B. to do what someone else was going to do before they do it, especially if this takes success or praise away from them
C. the point where something starts to get gradually worse, until it fails or ends completely
D. said when you feel that someone has made a bad situation worse by doing by doing something else to upset you
E. going to happen soon

10. Insert the prepositions where necessary:

1. The SpaceX founder has said his groundbreaking megarocket could be orbital _____ months.
2. The rocket was _____ display at the Starbase test facility during Musk's speech.
3. Musk remained vague about what projects the company might be _____ store.
4. "There's going to be some future announcements that I think people will be pretty fired _____ about," Musk said.

5. Already last year, the Starship project received a major endorsement after NASA offered SpaceX a $2.9 billion contract to put its astronauts _____ the moon.
6. In the two years that have passed, Starship prototypes have fallen victim _____ fiery crashes and explosions, but orbital flight has remained _____ reach.
7. This is big talk _____ a rocket that has yet to complete an orbital test flight.
8. And if hiccups _____ Tesla have shown us anything, it's that huge projects can take time.

1.3. WRITING

1. A popular LIVE SCIENCE website collects people's attitudes to different modern scientific and technological advancements. Write your opinion for its message board on the following:

- ✓ What modern technological advances made a positive effect on people's lives in Ukraine during the last decade?
- ✓ How have advances in technology affected your studying/working and social life?

2. Write a short critical report to the City Council about your views on public transport (trams, trolleybuses, buses, taxes, car parking, charging/ petrol stations, Metro etc.). What advances would you suggest to make situation better?

1.4. PROJECT WORK & PRESENTATIONS

Topic: Look at the information in the section NEWS CLIPPINGS about the latest innovations in transportation. Search the Internet resources to learn more about them and add 3-5 more things to the list. Which of them are beneficial for people and will continue to do so? Which do you find weird?

Instructions: Representing the topic**,** you may want to consider the following points: inventors and designers of the vehicles; popularity in the world and Ukraine; interesting facts, data and statistics.

Length of presentation – 5 mins. The criteria for evaluating the presentation you can find in Appendix 1.

NEWS CLIPPINGS

A. MOVE ELECTRIC. Walking is all very pleasant and relaxing, but it can be a little slow at times. So what if you're on foot but need to get somewhere in a hurry? So why not turn to electric power for a bit of help? Yes, someone has effectively found a way of adding electric boost to walking. That's thanks to a new product called Moonwalkers, which have been developed by tech start-up Shift Robotics.

B. XPENG X2 EVTOL 'FLYING CAR' COMPLETES FIRST PUBLIC FLIGHT. Chinese electric car brand Xpeng has successfully completed the first public test flight of its X2 electric 'flying car' in Dubai in October 2022. The firm is hoping to take a slice of the Electric Vertical Take-off and Landing (eVTOL) market with its X2 'flying car' which they hope will serve as a flying taxi in the future.

C. THE LIGHT ELECTRIC VEHICLE (LEV) EXPLOSION.




This past year piggybacked off the tails of 2020 when it came to LEVs. The pandemic fueled the rise of e-bikes, e-mopeds, e-scooters and e-skateboards overnight. Closed or restricted public transportation and ride-sharing encouraged consumers to try new options. These transportation solutions have many benefits related to noise, the environment, and

parking. It’s pretty clear the future of transportation will certainly include these types of options moving forward.

D. ELECTRIC CARS MAKE A BREAKTHROUGH. The year 2021 was also quite impressive for the electric vehicle. Overall, electric cars represent 2.5 percent of the American automobile market, reflecting an increase of over 118 percent. Tesla has enjoyed the bulk of these sales in 2021, as it owns two-thirds of the market. But Chevy and Ford as well as several other innovative transportation companies also made big strides. Now that the infrastructure bill has passed and includes electric school buses, expect more of the same. The future of transportation will continue to see double digit growth of EV sales for some time to come.

UNIT 2

MEDICINE AND HEALTHCARE

IN THIS UNIT:

2.1. The next outbreak? We're not ready.

A Ted Talk by ***Bill Gates,*** *an American business magnate and philanthropist.*

2.2. How health equity can prevent the next pandemic.

The article by Gargee Ghosh, the President of Bill & Melinda Gates Foundation.

2.3. Writing.

2.4. Project work and presentations.

2.1. VIDEO. THE NEXT OUTBREAK? WE'RE NOT READY

BEFORE YOU WATCH

1. You are going to watch a Ted Talk by Bill Gates called *THE NEXT OUTBREAK? WE'RE NOT READY.* ***Read the information about the author and the Talk and answer the questions:***

a. What are the characteristics of breakthrough infections?

b. How is COVID-19 mainly transmitted?

c. How do vaccines work?

d. What can we do to protect ourselves from the virus?

e. In your opinion, what countries are most prepared for a pandemic? What makes those countries better prepared?

2. Read and comment on the following quotations:

"Treatment without prevention is simply unsustainable."

"We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don't let yourself be lulled into inaction."

Bill Gates,
an American business magnate and philanthropist (born 1955)

BILL GATES

Bill Gates warned that we weren't ready for a global pandemic in a talk at TED2015. Now he's working to make sure the world is better prepared next time around.

Bill Gates is co-chair of the Bill & Melinda Gates Foundation. In 1975, he founded Microsoft with his childhood friend Paul Allen, and together the pair established the company as a worldwide leader in business and personal software and services. In 2008, he transitioned from his day-to-day role with Microsoft to focus full-time on his foundation's work to expand opportunity around the world.

In Gates's upcoming book How to Prevent the Next Pandemic, he outlines the lessons we must learn from COVID-19, the innovations we need to save lives and the new tools we need to stop pathogens early and equitably. He also shares his conversations with public health leaders including Dr. Anthony Fauci and Dr. Tedros Adhanom Ghebreyesus from the WHO, his view of the vaccines that are stemming the pandemic tide — and shares personal thoughts on what it's been like to become the subject of conspiracy theories.

VOCABULARY

3. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

1. Yet, despite all these hazards with their devastating effects on animals and plants, **microbes** appear to survive, and perhaps even thrive.

2. Changes in living habits were largely responsible for the **eradication** of malaria.
3. Pesticides have had a **devastating** effect on the environment.
4. The infection is highly **contagious,** so don't let anyone else use your towel.
5. Patients were excluded if, prior to the fracture, they were completely dependent and **bedridden** or if they were functionally independent.
6. **Bioterrorism** is related to the military use of biological, chemical, and nuclear weapons.
7. Measles **vaccine** efficacy during an outbreak in a highly vaccinated population: incremental increase in protection with age at vaccination up to 18 months.
8. This may explain the different dynamic of the **outbreak** that is typical for person-to-person transmission.
9. Biological research has often been a precursor to medical **breakthroughs** which benefit patients.
10. She was widely known for her **expertise** as a trial lawyer.

A. an important discovery or event that helps to improve a situation or provide an answer to a problem
B. a substance that is put into the body of a person or animal to protect them from a disease by causing them to produce antibodies (proteins that fight diseases)
C. a very small living thing, especially one that causes disease, that can only be seen with a microscope
D. can be caught by touching someone who has the disease or by touching an infected object, or by an infected person coughing, sneezing, etc.
E. causing a lot of damage or destruction acts of terrorism that use harmful viruses or bacteria as weapons
F. having to stay in bed because of illness or injury
G. the process of getting rid of something completely or of destroying something bad
H. a high level of knowledge or skill

I. a time when something suddenly begins, especially a disease or something else dangerous or unpleasant
J. violent action using living matter, such as bacteria, to harm or kill people for political reasons

4. Complete the definitions. Use one word per space:

1. **catastrophe** is an event that _____ a lot of damage or makes a lot of people suffer.
2. **infectious disease** can _____ from one person to another.
3. **epidemic** is a situation in which a disease _____ very quickly and infects many people.
4. **polio** is a serious infectious _____ that mostly affects children. It destroys muscle and can cause paralysis (lack of movement in your arms and legs).
5. **epidemiology** is the scientific _____ of infectious diseases and their causes.
6. **treatment** is the process of _____ medical care.
7. **diagnostics** is the practice of _____ diagnostic methods.
8. **plasma** is the yellowish liquid that is part of _____.
9. **flu** is a very common infectious _____ that lasts a short time and makes you feel hot or cold, weak, and tired.
10. **pathogen** is something such as bacteria or a _____ that causes disease.

THE NEXT OUTBREAK? WE'RE NOT READY

WHILE YOU WATCH

https://www.ted.com/talks/bill_gates_the_next_outbreak_we_re_not_ready/transcript?referrer=playlist-the_most_popular_talks_of_all&autoplay=true

5. Match the two parts of the sentences to complete what Bill Gates says. Then watch the Ted Talk and check your answers:

1. The failure to prepare could allow the next epidemic
2. And a large epidemic would require us
3. If anything kills over 10 million people in the next few decades,
4. About 10,000 people died,
5. And by the time you're contagious,
6. The first is that there was
7. The World Bank estimates that if we have a worldwide flu epidemic
8. We have advances in biology
9. The source of the virus could be a natural epidemic like Ebola,
10. We need a medical reserve corps

A. it's most likely to be a highly infectious virus rather than a war.
B. to have hundreds of thousands of workers.
C. to be dramatically more devastating than Ebola.
D. and nearly all were in the three West African countries.
E. a lot of heroic work by the health workers.
F. most people are so sick that they're bedridden.
G. or it could be bioterrorism.
H. that should dramatically change the turnaround time to look at a pathogen and be able to make drugs and vaccines that fit for that pathogen.
I. lots of people who've got the training and background who are ready to go, with the expertise.
J. global wealth will go down by over three trillion dollars.

6. Choose the correct option to complete the sentences. Watch the first part of the video (00:00-5:29) and check your answers:

1. I followed it carefully through the case analysis tools we use to track polio ____.

a. abolition b. elimination c. eradication.

2. Now, Médecins Sans Frontières did a great job _____ volunteers.

a. coordinating b. orchestrating c. intergrating

3. The WHO is funded _____ epidemics, but not to do these things I talked about.

a. to monitor b. to control c. to overlook

4. If it had gotten into a lot more _____ areas, the case numbers would have been much larger.

a. urban b. rural c. condensed

5. In fact, let's look at a model of a virus spread through the air, like the Spanish Flu back in _____.

a. 1980 b. 1908 c. 1918

6. We have _____ in biology that should dramatically change the turnaround time to look at a pathogen and be able to make drugs and vaccines that fit for that pathogen.

a. advances b. progress c. breakthrough

7. Watch the second part of the talk (5:29 to the end) and complete the sentences:

1. We have reserves that can _____ us up to large numbers.
2. That's where mothers can give birth safely, kids can get all their _____
3. But, also where we'll see the _____ very early on.
4. We need to do simulations, _____ games, not war games, so that we see where the holes are.
5. There are some big _____, like the Adeno-associated virus, that could work very, very quickly.
6. These investments offer significant benefits beyond just being ready for the _____.
7. The primary _____, those things would reduce global health equity and make the world more just as well as more safe.
8. In fact, if there's one positive thing that can come out of the Ebola epidemic, it's that it can serve as an early warning, a _____, to get ready.

CRITICAL THINKING

AFTER YOU WATCH

8. A talk usually has a main idea supported by other ideas. In a sentence of your own words, what would you say is the main idea of Bill Gates' TED Talk?

9. Work in pairs. Discuss the questions.

- ✓ What are the protection measures for people who are in or have recently visited (past 14 days) areas where COVID-19 is spreading?
- ✓ How do vaccines work? Do they work against viruses and bacteria?
- ✓ Do you trust the COVID 19 vaccines launched on the market? Do you think they will be able to stop this epidemic?
- ✓ Will our life change after Covid 19?

10. Discuss the following quotations:

- ✓ **"Prevention is better than cure."**

proverb

- ✓ **"The current system is broken. We need to move towards an era of disease prevention and personalized medicine."**

Emmanuel Fombu,
a physician, author, speaker and healthcare executive

- ✓ **"The bad news is that our healthcare system does not provide any added values that come along with paying more."**

Kat Lahr,
an award-winning writer, educator, health advocate, and supporter of social change

- ✓ **"Healthcare authorities neglect the role of psychological factors in pandemic related infection even though these factors are important for many reasons."**

Steven Taylor,
an American photographer, director, and creative director (born 1967)

✓ **“Cheerfulness is the best promoter of health and is as friendly to the mind as to the body.”**

Joseph Addison,

an English essayist, poet, and dramatis (born 1672)

2.2. READING. HOW HEALTH EQUITY CAN PREVENT THE NEXT PANDEMIC

BEFORE YOU READ

JOHNS HOPKINS ALLIANCE FOR A HEALTHIER WORLD

1. ***Work in pairs. Look at the title of the article. How can we prevent a pandemic like Covid-19 from happening again?***
2. ***Read the table and data above. What is the difference between health equity and equality? Are both of them important for preventing pandemics?***
3. ***What are health disparities and health equity? Why does it matter?***

High income countries: 3 in 4 people, or
72.86%
have been vaccinated with at least one dose as of Dec 28, 2022.

Low income countries: 1 in 3 people, or
30.09%
have been vaccinated with at least one dose as of Dec 28, 2022.

https://data.undp.org/vaccine-equity/

READING

4. Read the article "How health equity can prevent the next pandemic" which is the review of the newly published book by Bill Gates. Are these sentences true (T) or false (F)?

1. To prevent the next pandemic, we need to focus on the developed countries.
2. Lifesaving tools include vaccines and therapeutics.
3. 2.8 billion people in the developed countries are still waiting for their booster shots.
4. With the idea of health equity in mind, Bill and Melinda set up the company two years ago.
5. Coronavirus is the type of a rotavirus.
6. Despite the access to diagnosis more than 3 mln children died in poor countries.

5. Scan the article and answer the following questions:

1. Why is fairness across the health ecosystem important to prevent the next pandemic?
2. Why is health equity essential for preventing the next pandemic?
3. What does the primary health care system include?
4. What are the symptoms of rotaviruses?
5. What can persuade people to be vaccinated against novel viruses in their clinics?
6. Who donates to the international multilateral organizations keeping the clinics?

HOW HEALTH EQUITY CAN PREVENT THE NEXT PANDEMIC

By Gargee Ghosh
President, Global Policy & Advocacy, Bill & Melinda Gates Foundation

In May, Bill Gates is publishing a new book, *How to Prevent the Next* ***Pandemic***. It's the product of two years of thinking, speaking with experts around the globe, and learning the lessons of COVID-19. How do we stop this pandemic? What must the world do better the next time a novel virus appears? What needs to change? How do we ensure that everyone has **equal access to health care**? Those questions, and their answers, are an extension of the work Bill, Melinda, and everyone at our foundation has done over the past two decades.

One of Bill's proposals, which he talked about in his recent TED Talk, is the creation of a Global Epidemic Response and Mobilization Team— or GERM Team— that would act like an international fire-fighting battalion against fast-spreading viruses. The book contains a few new ideas like this, but, as Bill explains, the rationale underpinning them is quite old. That's what struck me most when I read **an advance copy.**

One argument Bill makes is this: If we want to prevent the next pandemic, we need fairness across the health ecosystem. We need to make decisions with low-income countries in mind, whether we're talking about the labs where drugs and vaccines are developed, the facilities where they're manufactured, or the clinics where they are administered. People in low-income countries deserve the same basic levels of care that people in wealthier ones have— and the same access to lifesaving tools like vaccines and therapeutics. According to the United Nations, 2.8 billion people, mostly in low-income nations, are still waiting for their first COVID-19 vaccine dose. This kind of inequality, Bill argues, can't happen again.

Experts in the development field call this *health equity*, and it's the same idea that led Bill and Melinda to start the foundation over two decades ago. Back then, Bill and Melinda weren't focused on a coronavirus, but *rotavirus*. At the time, rotavirus caused diarrhoea, **dehydration**, and

ultimately death for over 3 million children living in extreme poverty each year. Virtually no kids in wealthy nations died because they had **access to diagnosis** and diarrhoea treatment.

Why is health equity crucial to preventing the next pandemic? Because the systems and tools the world develops to address diseases that already plague lower-income countries are the same tools that will be needed to fight the **novel viruses** of the future. We don't have to prioritize pandemic preparedness over health equity, or vice versa— they're **mutually reinforcing concepts.**

Another area where health equity and pandemic preparedness **overlap** is the primary health care system: The facilities that treat patients, the health care workers who staff those facilities, and the vaccines and medicines on the shelves. When people see that their community clinics are staffed and stocked in normal times, they're more likely to trust the system in extraordinary times—for instance, by agreeing **to be vaccinated against** novel viruses like COVID-19.

How can we continue to keep these clinics **stocked and staffed**? The world has a set of multilateral organizations, such as Gavi, the Vaccine Alliance; the Global Financing Facility; and the Global Fund to Fight AIDS, Tuberculosis and Malaria. They have spent years securing the financing necessary to buy billions of doses of drugs and vaccines and then building **the supply chains** and partnerships and training and equipping community health workers to deliver them to communities in low-income nations. These institutions rely on the **donations** of foundations like ours and the world's wealthiest governments, and if we want to prepare our health systems for the next emergency, wealthy nations need to keep the contributions coming.

While it might be too simplistic to say that achieving health equity alone is the key to stopping the next novel virus from spreading, it's certainly a major part of the solution. If COVID-19 ends up being the last pandemic, it will be because we made the world a much more **equitable** place.

https://www.gatesfoundation.org/ideas/articles/how-health-equity-can-prevent-next-pandemic

VOCABULARY

6. Read the sentences (1-10). The words in bold are used in the article. First guess the meaning of the words, then match them with their definitions (a-j):

1. It is "highly likely" that respiratory **viruses** could spread even more following holiday gatherings.
2. The strength of a nation's **public health infrastructure** can help determine how well it responds to infectious disease threats like the novel coronavirus, as well as its ability to address longer-term chronic health conditions like heart disease, stroke and diabetes.
3. If you have not had a 1st or 2-nd **dose** yet, you're still eligible and can get them anytime.
4. The digital **health services ecosystem** examines the determinants of social health such as physical, mental and spiritual.
5. **Therapeutics** can be used in patients with active disease – to treat the disease itself or its signs and symptoms – in preventive medicine, or as palliative care.
6. The question of his future **plagues** him with doubt.
7. **Multilateral organizations**, particularly the United Nations, are integral in coordinating and mobilizing global support to achieve global health goals.
8. The following questions will guide you as you provide a **rationale** for why your course selections should constitute a concentration in Peace, Conflict, and Social Justice Studies.
9. Businesses began to see a growing middle class that could potentially **underpin** not only economic growth but also political stability.
10. The article presents the strategy and specific criteria constructed by the NGOs to promote **health equity** in society.

A. the state in which everyone has a fair and just opportunity to attain their highest level of health.
B. simple living things that are smaller than bacteria and that can enter your body and make you ill.

C. includes the systems, competencies, frameworks, relationships, and resources that enable public health agencies to perform their core functions and essential services.
D. a quantity of medicine prescribed to be taken at one time.
E. to prop up or support from below; strengthen, as by reinforcing a foundation.
F. a community consisting of patient and doctor, and all satellite figures involved in the medical care or hospital stay process.
G. treatment and care of a patient for the purpose of both preventing and combating disease or alleviating pain or injury.
H. cause continual trouble or distress to.
I. are formed by three or more countries that work together on issues of common interest and of global priority.
J. a set of reasons or a logical basis for a course of action or belief.

7. Explain the meaning of the words and word-combinations in bold from the article.

8. Complete the definitions. Use one word per space:

1. **Alliance** is an arrangement between two or more people, groups, or countries by which they _____ to work together to achieve something.
2. **Lifesaving** is done in order to _____ someone from dying.
3. **Facilities** are something such as a room or piece of equipment that is _____ at a place for people to use.
4. **Clinic** is a place where people go to _____ a particular type of medical treatment or advice.
5. **Emergency** is an unexpected situation _____ danger in which immediate action is necessary.
6. **Contribution** is something that you do that _____ to achieve something or to make it successful.
7. **Health care** is the services that _____ after people's health.
8. **Simplistic** _____ something in a way that makes it seem much simpler than it really is.

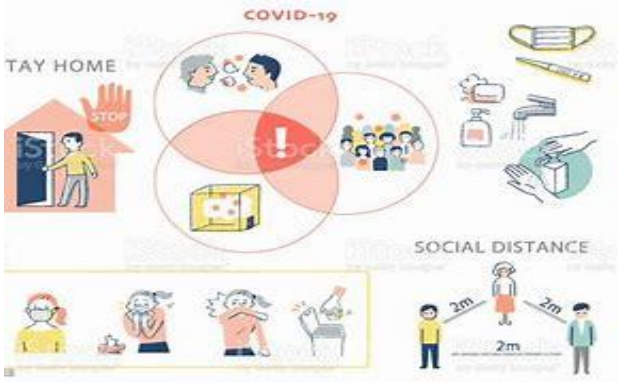
9. **Diarrhoea** is an illness in which you pass solid waste from your body too often and in a _____ form.

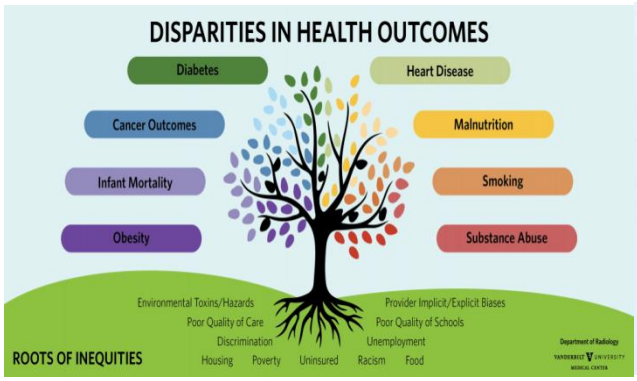
10. **Vaccine** is a substance put into the body, usually by _____, in order to provide protection against a disease.

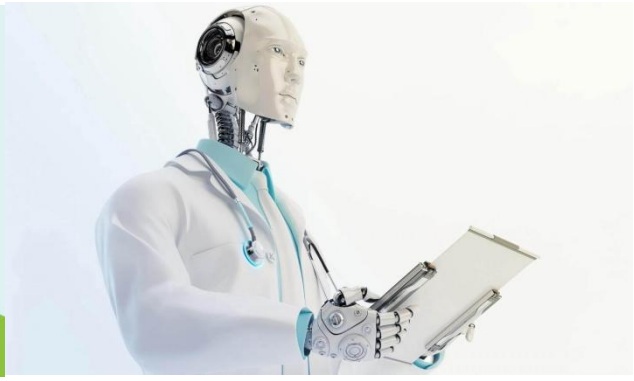
2.3. WRITING

1. Your college magazine has been running a regular column discussing public healthcare topics. The magazine has now asked for contributions from students who wish to give their own opinion. Choose the topic from the list and write your own article of 200-250 words for the magazine:

- ✓ Discuss Measures for Prevention of Communicable Diseases
- ✓ The Use of Vaccination – a Choice for Every One
- ✓ How Can We Achieve Health Equity?
- ✓ Can Computers Displace Doctors?







2.4. PROJECT WORK & PRESENTATIONS

HEALTHCARE TECHNOLOGY TRENDS AND DIGITAL INNOVATIONS IN 2022:

- ✓ Trend 1: Artificial Intelligence (AI) in Healthcare
- ✓ Trend 2: Telemedicine and the Evolution of Remote Care
- ✓ Trend 3: Extended Reality in Healthcare Settings
- ✓ Trend 4: Organ Care Technology & Bioprinting
- ✓ Trend 5: IoT and Wearables in Healthcare
- ✓ Trend 6: Healthcare Privacy and Security in 2022

https://mobidev.biz/blog/technology-trends-healthcare-digital-transformation

Topic: HEALTHCARE TECHNOLOGY TRENDS AND DIGITAL INNOVATIONS IN 2022.

Instructions: Look at the Healthcare Technology Trends and Digital Innovations in 2022. Match the trends with the photos (A-F). Then search the Internet to report about some of them.

Length of presentation – 5 mins. The criteria for evaluating the presentation you can find in Appendix 1.

A

B

C

D

E

F

UNIT 3

ROBOTICS

IN THIS UNIT:

3.1. A robot that flies like a bird.

A Ted Talk by ***Markus Fischer****, innovator, former Head of Corporate Design and Head of Bionic Learning Network in Festo AG & Co. KG, a German technology company.*

3.2. More than 70% of US fears robots taking over our lives, survey finds.

The article by Olivia Solon for the Guardian.

3.3. Writing.

3.4. Project work and presentations.

3.1. VIDEO. A ROBOT THAT FLIES LIKE A BIRD

BEFORE YOU WATCH

1. Discuss in groups the following points and then share your ideas with the class:



1. What is the Robotics domain? What is the main aim of Robotics?
2. What spheres of our life can the applications of Robotics be used in? Use the photos above to help you.
3. If you could have a robot, what tasks would you use it for?
4. Would you like to have a pet robot? What would you want it to look like?
5. What countries do you think make the best robots? Why do you think so?
6. Can you name any Sci-Fi films or books about robots?

2. Read the Laws of Robotics that were developed by Isaac Asimov as a set of ethics for robots and presented in his collection of robot stories "I, Robot". Have you read or heard about this book?

"The Three Laws of Robotics:
1: A robot may not injure a human being or, through inaction, allow a human being to come to harm;
2: A robot must obey the orders given it by human beings except where such orders would conflict with the First Law;
3: A robot must protect its own existence as long as such protection does not conflict with the First or Second Law."

Isaac Asimov,
an American writer specializing in the genre of science fiction, also a professor of biochemistry at Boston University

***3. Comment on the following quotations*:**

✓ **"There are an endless number of things to discover about robotics. A lot of it is just too fantastic for people to believe."**

Daniel H. Wilson,
a New York Times bestselling author,
television host and robotics engineer (born 1978)

✓ **“We’re fascinated with robots because they are reflections of ourselves.”**

Ken Goldberg,
an American artist, writer, inventor, and researcher in the field of robotics and automation (born 1961)

4. You are going to watch a Ted Talk by Markus Fischer called** A ROBOT THAT FLIES LIKE A BIRD**. Read the information about the author and the Talk and answer the questions:

1. What company does Markus Fisher work for and what are his responsibilities?
2. What dream of mankind was implemented by Markus Fisher and his colleagues?
3. When was the model of SmartBird developed?
4. What bird was the creation of SmartBird inspired by?
5. What technical characteristics of the SmartBird are mentioned?

MARKUS FISHER

Markus Fischer led the team at Festo that developed the first ultralight artificial bird capable of flying like a real bird.

One of the oldest dreams of mankind is to fly like a bird. Many, from Leonardo da Vinci to contemporary research teams, tried to crack the "code" for the flight of birds, unsuccessfully. Until in 2011 the engineers of the Bionic Learning Network established by Festo, a German technology company, developed a flight model of an artificial bird that's capable of taking off and rising in the air by means of its flapping wings alone. It's called SmartBird. Markus Fischer is Festo's head of corporate design, where he's responsible for a wide array of initiatives. He established the Bionic Learning Network in 2006.

SmartBird is inspired by the herring gull. The wings not only beat up and down but twist like those of a real bird – and seeing it fly leaves no

doubt: it's a perfect technical imitation of the natural model, just bigger. (Even birds think so.) Its wingspan is almost two meters, while its carbon-fiber structure weighs only 450 grams. Fischer says: "We learned from the birds how to move the wings, but also the need to be very energy efficient."

VOCABULARY

5. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

1. Unlike conventional two-wheeled or four-wheeled (car-like) mobile robots, the omnidirectional mobile mechanism has the superior **agile** capability to move toward any position and to simultaneously attain any desired orientation.
2. The satellite slowly **rotates** as it circles the earth.
3. A small bird **flapped** its wings furiously and flew off.
4. As a **role model** he demonstrated how mind and spirit can combine to overcome difficulties and achieve success.
5. Although observations of flying birds inspired **aerodynamics** and thus modern airplanes, little knowledge has been added to the neurophysiological principles underlying flight in birds.
6. The origins of **pneumatics** trace back to the first century when the Greek mathematician Hero of Alexandria created mechanical systems powered by wind and steam and documented his processes.
7. The **wingspan** of the moth ranges from 10 to 12 millimeters.
8. In cars that are automatics, you don’t have to bother with shifting **gears**.
9. Calculated efficiencies are found to be insufficient for **propulsion** applications that require short periods of acceleration but ion-beam **propulsion** shows some potential for prolonged flights.
10. It can be demonstrated that this 45° angle for the strain gauges is adequate to measure **torsion** in circular sections.

A. to turn or cause something to turn in a circle, especially around fixed point

B. the act of twisting, the force that causes twisting, or the state of being twisted

C. able to move quickly and easily
D. an aspect of physics and engineering that is concerned with using the energy in compressed gas to make something move or work
E. a device, often consisting of connecting sets of wheels with teeth (= points) around the edge, that controls how much power from an engine goes to the moving parts of a machine
F. the distance between the ends of the wings of a bird, insect, or aircraft
G. a person who someone admires and whose behaviour they try to copy
H. a force that pushes something forward; the force produced by a system moving a vehicle or other object
I. the science that studies the movement of gases and the way solid bodies, such as aircraft, move through them
J. to wave something, especially wings when or as if flying

A ROBOT THAT FLIES LIKE A BIRD

WHILE YOU WATCH

https://www.ted.com/talks/markus_fischer_a_robot_that_flies_like_a_bird

6. Watch the TED Talk. Tick (√) the areas that Markus Fisher mentions:

1. His career path
2. The reasons for their decision to create SmartBird
3. Basic requirements for the model
4. Technical characteristics of SmartBird
5. Complexity of its control
6. Energy efficiency
7. His future projects

7. Watch the first part of the video (00:00-01:41) and answer the questions:

1. What were the key requirements for SmartBird?
2. Why was the herring gull chosen as a role model for SmartBird?
3. What specialists worked on the creation of the Bird?
4. What was the main reason for its creation?

8. Watch the second part of the video (02:50: to the end) and complete the sentences with the missing words:

1. So we can now look at the SmartBird. Here is one _____ skin.
2. Its length is one meter and six, the weight is only _____ grams, and a _____ is about two meters.
3. In the middle there is a _____, and also a _____ in it, and we use the gear to transfer the _____ of the motor.
4. Within the motor, we have _____ Hall sensors, so we know exactly where the wing is.
5. So if you go _____, you have the large area of propulsion, and if you go _____, the wings are not that large, and it is easier to get up.
6. With the split wing, we get the lift at the _____, and we get the propulsion at the _____.
7. Aerodynamic efficiency rises up from passive torsion to active torsion, from _____ up to _____.
8. So the overall _____ is about 25 watts at takeoff and 16 to 18 watts in flight.

CRITICAL THINKING

AFTER YOU WATCH

9. ***Discuss the quotation from Wall Street Daily*** **“[Fischer's team] has created robot penguins and jellyfish in the search for more efficient designs for industrial automation. But of all their nature-inspired creation, Smartbird comes the closest of all to the real thing.”** ***Do you agree with their opinion?***

10. Read viewers' comments about the TED talk. Agree or disagree, motivate your choice:

Rock Steady: *Truly remarkable to think how much this could have been improved by now. Markus looked extremely proud*
FLY Disability FREE: *As a Pilot, I think this is a revelation in flight dynamics and is a beautiful inspiration to making flight dreams real. Well done all of you involved in the project!*
zincink: *incredible, da Vinci would be so proud of this team*
MAGICALIFORNIA: *Amazing mechanics! I've always wondered when this would be created. Up until now the only real successful flights have been fixed winged aircraft, and one way flapping toys if you want to count those. This model helps us to understand how birds actually stay in the air. Beautiful design!*
Balkan Beast: *I can imagine in the future, we can make robotic wings, huge ones, that can be attached at the back of a human, and to fly.*
Adrian Metcalf: *The point of this presentation is not only about the robotic bird but to explore new ways of motivation & engineering. These concepts we see in nature can be adapted to fit our needs & help us with what we can possibly achieve in the future.*
Asterlofts: *I can already imagine these robot type birds or insects being popular in a few more years... this video is already 10 years old and in another 10, they will be even more sophisticated.*

3.2. READING. MORE THAN 70% OF US FEARS ROBOTS TAKING OVER OUR LIVES, SURVEY FINDS

BEFORE YOU READ

1. Work in pairs. Discuss the following points and then share your ideas with the class:

1. Look at the photo and describe what you see. What is the role of the robot?
2. Work with the partner and brainstorm the list of general benefits of robots in our life.

3. Compare the points on your lists with the ones mentioned below:

Robots are used in multiple areas, especially where they can alleviate strenuous tasks or complete missions that are dangerous for a human to undertake. Recent advances in robotics and AI are revolutionising business, society and our personal lives.

Apart from being precise and consistent, robots can work in any environment, adding to their flexibility. Robots eliminate dangerous jobs for humans because they are capable of working in hazardous environments. They can handle lifting heavy loads, toxic substances and repetitive tasks. This has helped companies to prevent many accidents, also saving time and money. In the medical field robots are used for intricate surgeries such as prostate cancer surgery. Robots are able to reach and fit where human hands cannot, allowing greater accuracy. Robotic benefits in the medical field can be less invasive procedures and reduce pain for the patient when recovering.

https://business.esa.int/funding/invitation-to-tender/robotics-for-society

4. Now think about the downsides of robots. List and discuss the robotics disadvantages**.** Is there any threat that robots might present to mankind?

READING

2. Skim the article and summarize its general idea.

3. Scan the article and fill in the gaps with the following numbers:

¾	54%	72%	70%	30%	76%

1. More than _____ of Americans express wariness or concern about a world where machines perform many of the tasks done by humans.
2. _____ of Americans are very or somewhat worried about a future where robots and computers are capable of performing many human jobs.
3. _____ of Americans express more worry than enthusiasm for the development of driverless vehicles, with _____ expecting that they would lead to an increase in road fatalities.

4. _____ of respondents said they would not want to apply for jobs that use a computer program to make hiring decisions.
5. _____ of Americans expect that machines doing human jobs will increase inequality between the rich and the poor.

4. Read the article again and mark the statements true (T) or false (F). Justify your answers using the ideas from the article:

1. The majority of Americans celebrate artificial intelligence and robotics as fields that have the power to improve people's lives.
2. The research mentioned in the article surveyed more than 6,000 US adults.
3. Four scenarios of technologies development were presented to the respondents of the survey.
4. People are concerned that automation of jobs will make the situation with economic inequality even worse as human workers will lose their jobs to machines.
5. There's a broad agreement among Americans that driverless cars will be safer than those driven by humans.
6. The idea of using robots for hiring process was opposed by many individuals.
7. One of the points discussed in the survey concerns workforce technologies such as social media, industrial robots and technologies that help customers serve themselves without the assistance of humans.
8. Neither education nor any other social factors influence people's attitudes towards the coming wave of automation technologies.

MORE THAN 70% OF US FEARS ROBOTS TAKING OVER OUR LIVES, SURVEY FINDS

by Olivia Solon

As Silicon Valley heralds progress on self-driving cars and robot carers, much of the rest of the country is worried about machines taking control of human tasks.

Silicon Valley celebrates artificial intelligence and robotics as fields that have the power to improve people's lives, through inventions like driverless cars and robot carers for the elderly.

That message isn't getting through to the rest of the country, where more than 70% of Americans express wariness or concern about a world where machines perform many of the tasks done by humans, according to Pew Research.

The findings have wide-reaching implications for technology companies working in these fields and indicates the need for greater public hand-holding.

"Ordinary Americans are very wary and concerned about the growing trend in automation and place a lot of value in human decision-making," said Aaron Smith, the author of the research, which surveyed more than 4,000 US adults. "They are not incredibly excited about machines taking over those responsibilities."

Pew gauged public perception of automation technologies by presenting respondents with four scenarios, including the development of completely driverless cars; a future in which machines replace many human jobs; the possibility of fully autonomous robot carers; and the possibility that a computer program could evaluate and select job candidates with no human oversight.

According to the findings, 72% of Americans are very or somewhat worried about a future where robots and computers are capable of performing many human jobs – more than double the 33% of people who were enthusiastic about the prospect. Seventy-six per cent are concerned that automation of jobs will exacerbate economic inequality and a similar share (75%) anticipate that the economy will not create many new, better-paying jobs for those human workers who lose their jobs to machines.

One of the most visible examples of automation that's likely to disrupt daily life is driverless vehicles. There's a broad agreement among proponents of the technology that driverless cars will be safer than those driven by humans, who are often distracted, drunk or falling asleep at the wheel.

The American public disagrees.

“People are not buying the safety argument about driverless vehicles,” Smith said. “There’s widespread concern about being on the roads with them, which conflicts with what is consensus in the technology world.”

A slim majority of Americans (54%) express more worry than enthusiasm for the development of driverless vehicles, with 30% expecting that they would lead to an increase in road fatalities. Fifty-six per cent said they would not want to ride in one if given the opportunity, citing a lack of trust in the technology or an unwillingness to cede control to a machine in a potentially life-or-death situation.

Another unexpected finding was the vehement opposition to robots making hiring decisions, despite the fact that such technology is already starting to creep into the hiring process as well as other areas such as assessing individuals for loans or parole from prison. Proponents say that using AI can make these decisions less biased, but the public is not convinced.

Seventy-six per cent of respondents said they would not want to apply for jobs that use such a computer program to make hiring decisions.

“A computer cannot measure the emotional intelligence or intangible assets that many humans have,” said one 22-year-old female respondent. “Not every quality can be quantitatively measured by a computer when hiring someone; there is much more learned by face-to-face interactions.”

Smith said: “It speaks to the general lack of recognition of just how widespread algorithmic decision making is in our lives by the average people in the street.”

The survey also asked people about their attitudes towards existing workforce technologies such as social media, industrial robots and technologies that help customers serve themselves without the assistance of humans. The findings revealed a big split between college educated respondents (typically white collar workers) and those who didn’t attend college (typically blue collar workers).

“White collar workers see tech as something positive that helps them get ahead and has improved their opportunities for career advancement, giving them agency to do their jobs better, make more money and get promotions,” said Smith.

“When we asked the same questions of working class folk, you don’t get the same sense that it’s something that is helpful to them or improves access to career opportunities.”

These social factors play into people’s attitudes towards the coming wave of automation technologies.

“Those folks who are optimistic hope it will take over the dull and boring work we hate and create new categories of work for humans to do,” said Smith, “but the American public does not buy the notion that it will be good for everyone.”

Three-quarters of Americans expect that machines doing human jobs will increase inequality between the rich and the poor.

“They believe that a small number of people do well and everyone else loses their jobs to the robots,” said Smith.

https://www.theguardian.com/technology/2017/oct/04/robots-artificial-intelligence-machines-us-survey

VOCABULARY

5. Find words and expressions in the article that fit the following definitions:

1. something valuable that a company has that is not material, such as a good reputation
2. the world's preeminent hub for technology
3. people who work in offices, doing work that needs mental rather than physical effort
4. people who do work needing strength or physical skill rather than office work
5. a vehicle that uses a combination of sensors, cameras, radar and artificial intelligence to travel between destinations without a human operator
6. majority that only exists by a narrow margin, majority containing only slightly more votes than the minority

6. Match the words with their definitions:

1. gauge A. to make something publicly known, especially by

		celebrating or praising it
2.	oversight	B. help and advice given to someone when they are doing something for the first time
3.	biased	C. to make a judgment about something, usually people's feelings
4.	herald	D. a mistake made because of a failure to notice something
5.	hand-holding	E. to make something that is already bad even worse
6.	exacerbate	F. to imagine or expect that something will happen
7.	anticipate	G. to prevent something, especially a system, process, or event, from continuing as usual or as expected
8.	proponent	H. a person who speaks publicly in support of a particular idea or plan of action
9.	disrupt	I. to allow someone else to have or own something, especially unwillingly or because you are forced to do so
10.	cede	J. showing an unreasonable like or dislike for a person based on personal opinions

7. Arrange the words in suitable pairs. Recall the context they are used in:

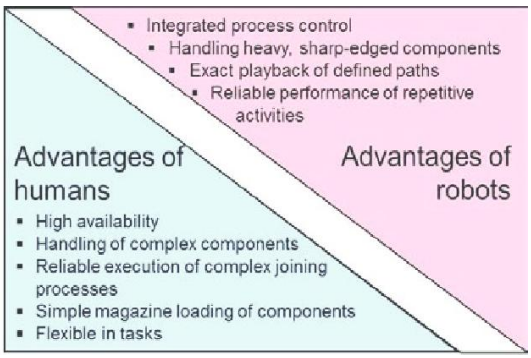
1. artificial	A. interaction
2. public	B. opposition
3. robot	C. majority
4. driverless	D. situation
5. slim	E. carer
6. road	F. hand-holding
7. life-or-death	G. assets
8. vehement	H. intelligence
9. intangible	I. fatalities
10.face-to-face	J. vehicles

8. Insert the prepositions where necessary:

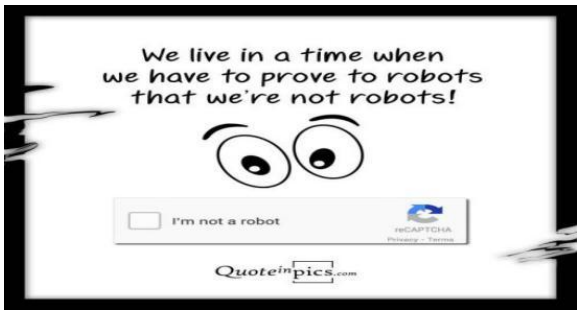
1. The findings have wide-reaching implications _____ technology companies working _____ these fields and indicates the need _____ greater public hand-holding.
2. Ordinary Americans are very wary and concerned _____ the growing trend in automation and place a lot of value _____ human decision-making.
3. They are not incredibly excited _____ machines taking _____ those responsibilities.
4. Fifty-six per cent said they would not want to ride in a driverless car if given the opportunity, citing a lack _____ trust in the technology or an unwillingness to cede control _____ a machine in a potentially life-or-death situation.
5. Another unexpected finding was the vehement opposition _____ robots making hiring decisions, despite the fact that such technology is already starting to creep _____ the hiring process as well as other areas such as assessing individuals for loans or parole from prison.
6. "Those folks who are optimistic hope it will take _____ the dull and boring work we hate and create new categories of work _____ humans to do," said Smith, "but the American public does not buy _____ the notion that it will be good for everyone."

3.3. WRITING

1. You have had a class discussion about the positive and negative implications of various robots in our life. Now you have been asked to write an opinion essay. Discuss both perspectives and give your own opinion. Use specific reasons and examples to support your opinion. Write a composition of 200-250 words.



2.Write a paragraph expressing your understanding of one of the quotations below.



✓ **"Protect the children because they and the robots are the future."**

Adam Carolla,

an American radio personality, comedian, actor and podcaster (born 1964)

✓ **"Sooner or later, the U.S. will face mounting job losses due to advances in automation, artificial intelligence, and robotics."**

Oren Etzioni,

an American entrepreneur, Professor Emeritus of computer science, and founding CEO of the Allen Institute for Artificial Intelligence (born 1964)

✓ **"We're going to become caretakers for the robots. That's what the next generation of work is going to be."**

Gray Scott,

a Futurist, Techno-Philosopher and the world's leading expert in the field of emerging technology

✓ **"The danger of the past was that men became slaves. The danger of the future is that men may become robots."**

Erich Fromm,

German-born American psychoanalyst and social philosopher who explored the interaction between psychology and society (1900-1980)

3.4. PROJECT WORK & PRESENTATIONS

Topic: Look at the information in the section NEWS CLIPPINGS about the latest innovations in robotics. Search the Internet resources to learn more about them and add 3-5 more things to the list. Which of them are beneficial for people and will continue to do so? Which do you find weird?

Instructions: Representing the topic**,** you may want to consider the following points: inventors and designers of the robots; popularity in the world; interesting facts, data and statistics. You may also choose to talk about the evolution of robots.

Length of presentation – 5 mins. The criteria for evaluating the presentation you can find in Appendix 1.

N E W S C L I P P I N G S

1. How robots can help fight fires

Paris' fire brigade used a 1,100-pound "tank-like robot" to help fight the flames at Notre Dame cathedral, said Peter Holley at *The Washington Post*. The robot, called Colossus, entered Notre Dame's main chamber and sprayed the walls with "a motorized water cannon capable of firing more than 660 gallons per minute." Colossus can also be operated via joystick from almost 1,000 feet away, withstand intense temperatures, and even crawl up stairs.

2. Next up for robots: Synthetic muscle

Anyone who has ever smashed their iPhone's screen or depleted a battery knows that devices are destined to deteriorate and eventually die. But what if they could one day heal themselves? That's the vision Chao Wang, a polymer researcher and assistant professor in the chemistry department at the University of California, Riverside has for the future – and he helped invent a super-stretchy, self-healing polymer that could one day make it possible.

3. Spot, the lifelike robot dog, is now for sale. But it doesn't come cheap

Spot, the four-legged yellow robot is finally on the market.

After years of eyeing its progress, watching viral videos showing Spot's hauntingly life-like movements, and finding uses unique to our coronavirus-ravaged world, you can finally have your very own Spot for a mere $74,500.

4. This robot can conduct an orchestra

Robots are invading the symphony hall, said Kevin Ryan at Inc. YuMi, a two-armed robot built by Swiss robotics company ABB, recently conducted a performance of the Lucca Philharmonic Orchestra in Pisa, Italy. The 84-pound bot learns tasks by recording and mimicking them, "without any coding" required. It has wrists, elbows, and shoulders, giving its movements fluidity similar to a human being's. Italian conductor Andrea Colombini taught YuMi the songs for the performance, including "La Donna è Mobile" from Verdi's Rigoletto.

5. Luna: Do we really need a dog-walking robot?

For months, rumors have circulated in the tech world about a humanoid robot — possibly from Apple or Google — featured in a mysterious leaked video. Now, the robot, Luna, has been officially released, and the mystery is solved. Luna is made by a company called SchultzeWorks, for California-based RoboDynamics. Luna, 5'2" tall with a touchscreen face, is a $3,000 "personal robot designed for people to use at home." Luna's adjustable arms could allow it to "carry a tray like a waiter," – or potentially even walk a dog.

https://theweek.com

UNIT 4

FOOD AND HEALTHY LIFE

IN THIS UNIT

4.1. The mindset shift needed to tackle big global challenges.

*A Ted Talk by **Bernhard Kowatsch**, the head of the Innovation Accelerator of the United Nations World Food Programme.*

4.2. Feeding the World. Today and in the future.

The article about American experience of production genetically modified crops as a way of solving food problems in the world.

4.3. Writing.

4.4. Project work and presentations.

4.1. VIDEO. THE MINDSET SHIFT NEEDED TO TACKLE BIG GLOBAL CHALLENGES

BEFORE YOU WATCH

1. In the picture below you see Bernhard Kowatsch, the head of the Innovation Accelerator of the United Nations WFP, which he created in 2015. Using reference sources of information explain the following:

- ✓ what an *Innovation Accelerator* is;
- ✓ the meaning of the acronym WFP;
- ✓ the meaning of the WFP's logo symbols and colours

***2.Read and comment on the following quotations of Bernhard Kowatsch*:**

“Exacerbated by climate change and inflation, the number of people facing acute food insecurity worldwide has more than doubled since 2019 — from 135 million to 345 million.”

“But new technology and innovations, such as Artificial Intelligence, IOT, sensors and others when coupled with the right investments, capacity and partnerships, could help farmers increase their incomes and improve resilience against climate change.”

Bernhard Kowatsch,
Head, Innovation Accelerator, United Nations World Food Programme (WFP)

3. Read the information about Bernhard Kowatsch and answer the questions:

1. What have you learnt about B. Kowatsch’s career path?
2. What is the activity of the WFP Innovation Accelerator led by Bernhard Kowatsch?
3. What are Kowatsch’s professional areas of interest?
4. What’s his personal viewpoint on using innovations and technologies for solving food problems in the world?

BERNHARD KOWATSCH

Bernhard Kowatsch leads the WFP Innovation Accelerator, which sources, nurtures and scales startups and nonprofits that disrupt global hunger. In 2021 alone, it positively impacted the lives of more than eight million people and raised more than 160 million dollars in grant funding. The accelerator has supported more than 100 innovations with funding and runs 18 sustainable development goals accelerator programs for

external partners like the Bill & Melinda Gates Foundation, Humanitarian Grand Challenges and other UN Agencies in different areas.

Kowatsch's interest areas include tech for good, blockchain, artificial intelligence, social entrepreneurship and technologies disrupting global hunger. Prior to starting the accelerator, he cofounded the ShareTheMeal app, which crowdsources funding for WFP and has provided more than 135 million meals for hungry children worldwide. He also built WFP's internal management consulting unit based in Rome and was previously a project leader at the Boston Consulting Group (BCG) for global tech and industrial goods companies. He holds three master's degrees from HEC Paris and Vienna University of Business and Economics.

Social entrepreneur Bernhard Kowatsch shares real-life examples of how a business approach focused on accelerating tech (like a blockchain-supported way to bring food to refugees or a machine that fortifies flour at small mills in Africa) can help make an impact on big, seemingly intractable problems. "Innovation and technology can create so much good in the world, and together we can solve the world's biggest challenges," he says.

VOCABULARY

4. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

1. When you think about innovation and technology, you're most likely thinking about the latest **app** on your smartphone.
2. I believe innovation and technology can help **tackle** some of the world's biggest challenges.
3. Hunger may seem like a remote problem for you, but the effects of it are pretty **drastic.**
4. It makes collaboration among **aid** organizations much easier.
5. There is a number of start-up accelerators for **for-profit ventures.**
6. I started the programme exactly with the goal of **replicating** what Silicon Valley does well.

7. It's a start-up accelerator that supports start-ups and nonprofit innovations globally and helps them scale **to disrupt** global hunger.
8. The individual can shop for the groceries and at the checkout they pay with the **iris scan** or with another authentication method.
9. Critical nutrients are added to **staple foods.**
10. Imagine what the impact could be if you take action today as an individual, as a company, or maybe as a **start-up** founder.

A. radical and extreme
B. a newly established business
C. an application, especially as downloaded by a user to a mobile device
D. make an exact copy of; reproduce
E. interrupt (an event, activity, or process) by causing a disturbance or problem
F. make determined efforts to deal with (a problem or difficult task)
G. food that makes up the dominant part of a population's diet
H. tangible means of assistance (such as money or supplies)
I. an automated method of biometric identification, taking unique patterns within a ring-shaped region surrounding the pupil of each eye
J. a new business activity

THE MINDSET SHIFT NEEDED TO TACKLE BIG GLOBAL CHALLENGES

WHILE YOU WATCH

https://www.ted.com/talks/bernhard_kowatsch_the_mindset_shift_needed_to_tackle_big_global_challenges

5. Watch the video (1:03-04:09) and match the terms used in WFP activity with their meaning:

1	**ShareTheMeal**	A	basic training
2	**blockchain**	B	the digital currency
3	**Building Blocks**	C	the process of adding micronutrients (essential trace elements and vitamins) to food
4	**boot camp**	D	machine which fortifs flour through the micronutrient dosifier
5	**bitcoin**	E	a digital database containing information (such as records of financial transactions) that can be simultaneously used and shared within a large decentralized, publicly accessible network
6	**food fortification**	F	blockchain network for humanitarian assistance
7	**Sanku**	G	a crowdfunding smartphone application to fight global hunger through the UN WFP

***crowdfunding** *is the practice of funding a project or venture by raising money from a large number of people, typically via the internet. Crowdfunding is a form of crowdsourcing and alternative finance.*

6. Watch the video again (00:26-04:09) and complete the sentences with the missing words:

1. Innovation and technology can help _____ some of the world's biggest challenges.
2.Hunger may seem like a _____ problem for you, but the effects of it are pretty _____.
3. Hunger means lack of _____ on a daily basis to live a healthy life.
4. In order to feed people we founded _____ called ShareTheMeal
5. Over 130 million _____ have been shared so far by six million app users across the globe.
6. When you think about _____, you may usually think about Bitcoin or cryptocurrencies.

7. We use blockchain technology so that refugees can go into stores and _____ food.
8. It makes collaboration among _____ much easier.
9. People shop for the groceries and at the checkout they pay with the _____ or with another authentication method.
10. The process of adding critical nutrients to staple foods is called _____.

7. Watch the video (00:42-4:07). Complete the phrases with the correct number:

1	80	130	300	811	2020

1. The number of people in the world who suffer from hunger: _____ million
2. WFP can feed a child for a full day for only: _____ cents
3. Number of meals shared by app users across the globe: _____ million
4. ShareTheMeal was an app of the year by both Apple and Google in: _____ year.
5. Right now, Building Blocks is reaching about: _____ million people
6. Transfers of cash to people who are in urgent need of food make up: $ _____ million.

8. Watch the whole video and take notes on what you find out about:

- ✓ The reason why he founded an app called ShareTheMeal
- ✓ Peculiarities of the use of the blockchain technology
- ✓ Importance of food fortification
- ✓ Features of the social business called Sanku
- ✓ accelerator programs run for other global problems

CRITICAL THINKING

AFTER YOU WATCH

9. In his speech Bernhard Kowatsch expresses his opinion on the following points. What does he mean? Do you agree? Share your thoughts with groupmates:

✓ “But why is it that we think so traditionally about some of the world's biggest challenges?”

✓ “I believe innovation and technology can help tackle some of the world's biggest challenges. The barrier is our own thinking.”

✓ “Hunger may seem like a remote problem for you, but the effects of it are pretty drastic.”

10. Work in pairs. Discuss these questions:

1. Have you or any of your folks or acquaintances suffered from hunger? Tell your stories.
2. What inspires people to make innovations and launch new start-ups? Provide some examples.

FACTS $ FIGURES

***Some things you might not know about the World Food Programme*:**

- The UN World Food Programme is the **2020 Nobel Prize Laureate**;
- WFP is the world's largest humanitarian agency saving lives in emergencies;
- It works in over **120 countries and territories**;
- It assisted more than **128 million people** in 2021;
- Each day it can have up to **5,600 trucks, 30 ships and 100 planes** on the move, delivering food and other assistance;
- connects smallholder farmers to markets in **44 countries;**
- In 2021, **nearly 159,000 hectares of land** was developed and **1,609 hectares of forest** was planted under WFP’s Food Assistance for Assets initiative;

- delivered **4.4 million metric tons** of food in 2021, reaching nearly **68 million women and girls** and more than **60 million men and boys;**

- WFP programmes for the treatment or prevention of malnutrition reached **23.5 million people in 2021**

https://www.wfp.org/stories/12-things-you-didnt-know-about-world-food-programme?utm_source=google&utm_medi

4.2. READING. FEEDING THE WORLD. TODAY AND IN THE FUTURE

BEFORE YOU READ

1. Work in pairs. Discuss what you know about the following:

1. How many countries in the world suffer from hunger nowadays? Can you name the main courses which can lead to food insecurity?
2. How do you understand the following terms: "starvation", "hunger", "hunger hotspots", "famine", "holocaust". Are they the same or different in meaning?
3. What do know about genetically modified foods? Do you find them safe or harmful for consumers?
4. Can you give any suggestions how to feed the nations who are suffering from hunger?

READING

2. Scan the article and answer the following questions:

1. How many people in the world are food insecure and what does it mean?
2. What are FAO projections of food required to meet demand in 2050?
3. Does the U.S.A. belong to the country where people suffer from the lack of food?
4. What makes sufficient contribution to sustainable food supply in the US?
5. What prejudice as to the production and use of GMOs do exist among public?

6. What are the benefits of foods produced with genetically engineered crops?
7. How new technologies and best practices allow farmers and ranchers to provide food for American nation and the world?
8. What does the term “Big Agriculture” refer to and what was the purpose of its creation?
9. What arguments do scientists provide to ensure the public that genetically modified foods are not harmful for both people and environment?

FEEDING THE WORLD. TODAY AND IN THE FUTURE

Feeding A Hungry Nation.

Currently, 1 in 8 people, or 842 million, struggle with hunger every day. Roughly 1 billion people in the world are food insecure, meaning they lack access to a sufficient quantity of affordable, nutritious food. By 2050, it is expected that the world’s population will grow to nearly 9 billion. It means that farmers will need to increase food production by 70-100% to meet global nutrition needs.

We already know that there is relatively little available land on which to cultivate food. The Food and Agriculture Organization of the United Nations (FAO) projections indicate that 80 % of the additional food required to meet demand in 2050 will need to come from land already under cultivation. The result is that our farmers and food producers must produce higher yields using the same (or less) acreage than they use today while relying on fewer natural resources.

We are very fortunate in the United States to have a strong economy, a dedicated workforce, and good, diverse land from which to cultivate crops. In 2016, U.S. consumers spent only 10% of personal disposable income on food. However, there are still nearly 24 million Americans living in food deserts today, without access to affordable nutrition. These food deserts

are not just in one area of the country; they exist throughout the United States.

Humans have an innate desire to access more knowledge on a wide variety of subjects; biotechnology must be included in that. Farmers who utilize these modern agriculture techniques are contributing to our healthy, nutritious, and sustainable food supply. The more we can learn about biotechnology's safety and applications in the real world, the more likely the general public will be to accept it as a major segment of agricultural production.

What's Happened – Misinformation About Food

Genetically Modified Foods

Animal rights and their affiliated groups have far-reaching tentacles. Not only are they attempting to end the use of animals in agriculture, but they are also misinforming the public about one of the most important developments in the history of food production: genetically modified organisms (GMOs).

Foods produced with genetically engineered (GE) crops are as safe and nutritious as organic products. They are sustainable; using fewer resources, like land and water, to produce greater yields. It is disheartening that our best hope to meet the world's growing food demands is maligned by massive amounts of misinformation fed to the general public.

GE Foods and the Ecosystem. When farmers plant genetically modified crops, they can produce more per acre. This is because GE crops have been designed to produce more and to be resistant to pests, weeds, and diseases. GE crops have also been produced to be drought tolerant, requiring less water. With the resistance coded in the genetics of the crops, farmers can use fewer pesticides and herbicides, leaving a lower environmental impact. GE food can be engineered to provide greater nutritional value, so it is healthier to eat than its similar counterparts. And, the shelf life of GMOs can be extended for less waste. All of this increases the efficiency and production capacity of food producers, making it easier to feed the world.

The Results of Improvements in Breeding and Animal Welfare. The math is simple, improved breeding and cultivation leads to better yields

and a positive impact on our food supply. We can also ensure that the animals we raise are maximized to their full potential by giving them proper nutrition in their feed (improved through biotechnology) and breeding them for desired traits. Selective breeding improves animals' ability to convert feed to meat, milk, or fiber more efficiently, making the final product more nutritious. The proper management and attention to the welfare of animals in agriculture allows farmers and ranchers to provide better products to consumers. For example, modern housing systems streamline production while simultaneously improving animal welfare by protecting animals from disease, predation, fighting, and injury.

Combining science, new technologies, and best practices allows farmers and ranchers to continue to provide food for our nation and our world.

Truths about Agriculture. There was a time we celebrated the pioneers who helped make our food supply more sustainable, nutritious, and abundant. Now non-governmental organizations use fear tactics to weaken America's trust in agriculture. In a nutshell, what drives most of the hysteria surrounding the use of technology to improve food production is that we fear what we don't know. Those who oppose advances in agriculture, such as genetically modified foods, fail to realize the advances are not only safe but vital. Below are some truths about GE crops:

TRUTH: ***GMOs pose no true threat to human health***

Thousands of studies, many of these independent, have been conducted in order to evaluate whether genetically modified foods are safe for consumption. The majority of these studies found genetically modified crops pose no true threat to human health.

TRUTH: ***Genetically modified feeds are safe for animals in agriculture***

The largest-ever comprehensive study of GMOs and food, conducted by researchers the University of California-Davis Department of Animal Science, found that genetically modified feed is safe and nutritionally equivalent to non-GM feed. Pouring through data on livestock productivity and health from before and after the introduction of genetically engineered animal feed, researchers saw that over 100 billion animals experienced no real change in health trends over that period.

Dr. Steven Novella, who examines this research, perfectly summarizes the

results of the data collected over several decades on the subject of GMO safety:

"We now have a large set of data, both experimental and observational, showing that genetically modified feed is safe and nutritionally equivalent to non-GMO feed. There does not appear to be any health risk to the animals, and it is even less likely that there could be any health effect on humans who eat food items and products derived from those animals. In order to maintain the position that GMOs are not adequately tested, or that they are harmful or risky, you have to either cherry pick a few outliers of low scientific quality, or you have to simply the science."

TRUTH: ***Genetically modified crops are good for our environment***

Those involved in the anti-GMO movement make the false claim that GE crops are "worse for the environment." In reality, GMOs are good for the environment in many ways:

- GM crops contribute to a 37% decrease in pesticide application due to specific proteins in the genetically engineered crops which repel and often kill insects that come into contact with them.
- GE crops can be grown using a practical technique known as conservation tillage, which allows crop residue to be left in the fields and used the next growing season as mulch, protecting the soil and reducing greenhouse gas emissions.
- GE crops conserve large quantities of water due to drought tolerance built into their genes. This will become especially important in areas of the country which face heavy drought, such as California.
- Scientists are working on GM crops which will better absorb fertilizers and reduce nitrogen runoff**.**
- GE crops are very biodiverse, meaning that they can grow without taking anything away from the ecosystem.

TRUTH: ***The research on GMOs isn't funded by "Big-Ag"***

The term "Big Agriculture" was created by special interest non-governmental organizations (NGO's) to distort the public's view of agriculture. Research is expensive, time-consuming and often occurs due to the support of larger companies. There is nothing wrong with

agricultural companies investing in research. It is good business practice, and the results of research and emerging technologies help both large and small farms produce affordable food. In addition to research studies funded by large organizations, there are thousands of independent, peer-reviewed GMO studies that have found genetically engineered crops and foods are safe.

The World Health Organization, the American Association for the Advancement of Science, and dozens of other distinguished medical and scientific groups worldwide approve of GE-GMO use as well.

TRUTH: ***Farmers care about the environment***

Before the modern age, farming, in large part, was a guessing game. Farmers knew that it was good to put manure in the ground and that if you stayed in one place for too long, the soil could lose its ability to produce, but that's about it. Farming has changed significantly since the dawn of agriculture. Through science and research, we have learned to measure, test, and distribute water and nutrients in the most efficient way possible. The ability to measure moisture, pH, phosphorus, potassium, calcium and magnesium levels tell us exactly what is needed to make crops grow. Farmers also know which crops will grow best where, how to make the environmental impact as low as possible, and how to best retain soil nutrients over time. Today's farmer can control every nuance of their land. Often, this information can be sent directly to one's mobile phone for the sake of convenience.

TRUTH: ***Modern farming practices put animal welfare first***

Farmers and ranchers care about their animals and put their welfare first and foremost. Not only is focusing on animal welfare the right thing to do, but farmers and ranchers rely on their animals to support their families. Animal rights ideologues, who believe that animals should not be utilized by humans in any way, view animals living in close proximity as abuse. In reality, modern farming practices are followed to ensure greater health and well-being of the animals. Animal rights groups demand farmers change how they practice animal husbandry, without caring that doing so has harmful effects on the animals. In cage-free systems, animals are more

exposed to a greater risk of disease, as well as predatory attacks, cannibalism, parasites, and bone breaks.

Farmers and ranchers work to constantly improve, utilizing both the latest techniques in animal husbandry and best practices passed down through generations.

https://protecttheharvest.com/what-you-need-to-know/consumers/

VOCABULARY

3. Find words in the article with the following meanings:

1. an amount produced of an agricultural or industrial product
2. able to be maintained at a certain rate or level
3. the mating and production of offspring by animals
4. farm animals, with the exception of poultry
5. to resist effectively
6. speak about (someone) in a spitefully critical manner
7. an agricultural management approach that aims to minimize the frequency or intensity of tillage operations in an effort to promote certain economic and environmental benefits
8. food that contains substances which help your body to be healthy
9. a covering of decaying leaves thatis spread overthe soil in order to keep water in it or to improve it
10. a branch of agriculture concerned with the production and care of domestic animals

***4. Arrange the words in suitable pairs. Recall the context they are used in*:**

1. animal	A. land
2. conservation	B. modified
3. crop	C. tillage
4. diverse	D. yields
5. drought	E. insecure
6. food	F. productivity
7. genetically	G. residue
8. high	H. husbandry

9. livestock	I. breeding
10. selective	J. tolerant

5. Look through the text again and find synonyms to the following words:

a) inborn …; b) make use of …; c) implementation …; d) plentiful …; e) achievements …; f) crucial …; g) peer …; h) sewage …;
i) misrepresent …; j) discouraging …

6. Insert the proper preposition:

1. Food insecurity means that people lack access _____ a sufficient quantity of affordable food.
2. _____ 2050, it is expected that the world's population will grow to nearly 9 billion.
3. UN projections indicate that 80 % of the additional food required to meet demand in 2050 will need to come from land already _____ cultivation.
4. Nearly 24 million Americans live in food deserts today _____ access to affordable nutrition.
5. The food deserts are not just in one area of the country but they exist _____ the United States.
6. Humans have an innate desire to access more knowledge _____ a wide variety of subjects.
7. Foods produced _____ genetically engineered crops are as safe and nutritious as organic products.
8. GE crops have been designed to be resistant _____ pests, weeds, and diseases.
9. _____ the resistance coded in the genetics of the crops, farmers can use fewer pesticides and herbicides, leaving a lower environmental impact.
10. It is disheartening that our best hope to meet the world's growing food demands is maligned _____ massive amounts of misinformation.
11. They have been collecting the data _____ several decades.
12. Farming has changed significantly _____ the dawn of agriculture.

***7. Refer to the text and find the sentences with the expressions below. Explain their meaning*:**

to meet demand**,** affiliated groups, to be resistant to, to be drought tolerant, the shelf life, in a nutshell, pose a threat, to pour through, cherry pick, in large part, to make impact on, cage-free systems, to be exposed to, to pass down through.

8. These abbreviations are in the text. Decipher them and explain the meaning:

FAO	GMO	GE food	GE-GMO	Big-Ag	NGO

4.3. WRITING

1. You are a member of humanitarian organization in Ukraine which cooperates with WFP. Write a letter of gratitude to its headquarters for delivering food kits and ready-to-eat food rations to the southern and eastern parts of Ukraine where supply chains and markets are no longer functional during russian-Ukrainian war.

2. Search the Internet and find publications of current research and analysis on GMOs. Write a critical article to the magazine *SCIENCE* expressing your fears and risks for human health consuming genetically modified food.

4.4. PROJECT WORK & PRESENTATIONS

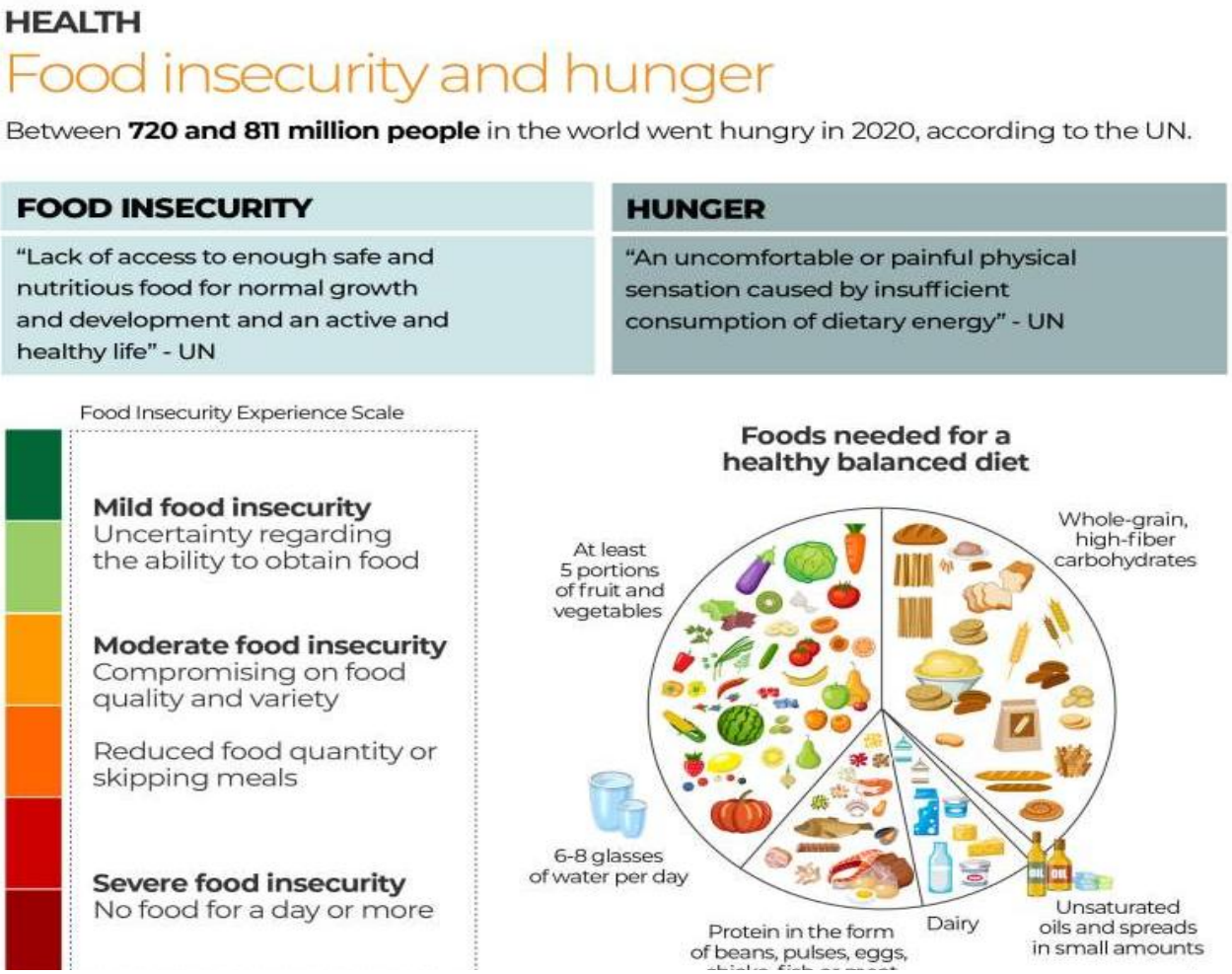
Topics: Chose one of the suggested topics below to make presentation

1.“Advances in Agriculture are Safe and Vital”. Representing the topic, consider the following:

- ✓ the latest technological inventions used in agriculture;
- ✓ samples of effective technologies implemented into practice in Ukraine;
- ✓ convincing evidence in favor of the use of innovative technologies for the benefit of people.

2. You are a participant of the international virtual panel discussion devoted
to the issue of food supply and hunger in the world. Prepare a panel talk on the theme **"Food Insecurity and Healthy Diet"** based on the poster above.

Instructions: Length of presentation – 5 mins. Criteria for evaluating the presentation you can find in Appendix 1



https://www.aljazeera.com/news/2022/2/1/infographic-hunger-and-food-insecurity-in-maps-and-charts

UNIT 5

POWER RESOURCES

IN THIS UNIT:

5.1. High-altitude Wind Energy from Kites!

*A Ted Talk by **Saul Griffith**, an Australian-American inventor, scientist and renewable electricity advocate.*

5.2. What is Green Energy, and what could make it a better option than Fossil Fuels?

The article by CRYSTAL CAPITAL PARTNERS about renewable energy sources and their benefits for environment

5.3. Writing.

5.4. Project work and presentations.

5.1. VIDEO. HIGH-ALTITUDE WIND ENERGY FROM KITES

BEFORE YOU WATCH

1. Discuss in groups the following points and then share your ideas in the class:

1.What do you know about current traditional and alternative power resources?

2. How do you understand the following terms: 'dirty energy', 'green energy', 'renewable energy'?

3.Do you think that alternative energy sources are the future? If 'yes', give your reasons.

4. What do you see in the picture? How can it be related to energy?

***2. You're going to watch a Ted Talk by Saul Griffith called HIGH-ALTITUDE WIND ENERGY FROM KITES. Read and comment on some of his quotations*:**

"If you have to design something, choose things that we need as opposed to frivolous things that we might just want for a month or two for bragging rights."

"The principal and only way to make an heirloom product is to design something that people will need not just this year, but for the next 50 or 100 years."

Saul Griffith,
an Australian Inventor (born 1974)

3. Read the information about the author and answer the questions:

1. How can Saul Griffith be characterized as a scientist and inventor?
2. What was his purpose for establishing the website *Instructables*?
3. What companies is he a co-founder of and what do they deal with?

SAUL GRIFFITH

Inventor Saul Griffith looks for elegant ways to make real things, from low-cost eyeglasses to a kite that tows boats. His latest projects include open-source inventions and elegant new ways to generate power.

Innovator and inventor Saul Griffith has a uniquely open approach to problem solving. Whether he's devising a way to slash the cost of prescription eyeglasses or teaching science through cartoons, Griffith makes things and then shares his ideas with the world.

A proponent of open-source information, he established Instructables, an open website showing how to make an array of incredible objects. He is the co-founder of numerous companies including Squid Labs, Low Cost Eyeglasses, Potenco and Makani Power, where he is President and Chief Scientist. His companies have invented a myriad of new devices and materials, such as a "smart" rope that senses its load, or a machine for making low-cost eyeglass lenses through a process inspired by a water droplet. He is a columnist at "Make magazine" and co-writes "How Toons!" He's fascinated with materials that assemble themselves, and with taking advantage of those properties to make things quickly and cheaply.

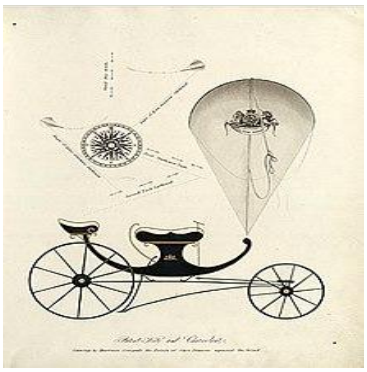
VOCABULARY

4. Some people's names are mentioned by Saul Griffith in his talk. Are they familiar to you?

George Pocock, Hargreaves, Langley, Alexander Graham Bell, Orville and Wilbur Wright, Miles Loyd

5. Match the names of the people with their inventions:

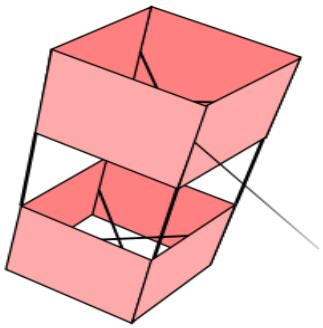
A



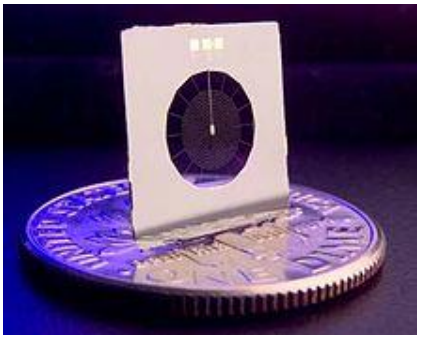
B

C

D



E



F

6. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words with their definitions (letters):

1. At weekend I like to build experimental kite-powered **hydrofoils** capable of more than 30 knots.
2. The Chinese used kites for military **applications,** and even for lifting men.
3. He pioneered the use of kites for towing **buggies** in races against horse carriages across the English countryside.
4. Their experiments with kites led to this **momentous** occasion, where we took off for the first-ever 12-second human flight.
5. But unfortunately, it **relegated** kites once again to be considered children's toys.
6. Miles Loyd wrote this **seminal paper** that was completely ignored in the Journal of Energy.
7. Now they can span up to three hundred feet at the **hub height,** but they can't really go a lot higher, and more height is where the more wind is.
8. You know, the humans generate about 12 trillion watts, or 12 terawatts, from **fossil fuels.**
9. This is a story about the **audacious** plans of young people with these dreams.
10. This is a refrigerator factory, **churning out** airplanes for World War II.

A. a light folding chair on wheels, in which a baby or young child can be pushed along.
B. a large boat that is able to travel quickly above the surface of the water on wing-like structures
C. assign an inferior rank or position to
D. a natural fuel such as coal or gas, formed in the geological past from the remains of living organisms.
E. the action of putting something into operation.
F. an article that initially presented an idea of great importance or influence within a particular discipline
G. of great importance or significance, especially in having a bearing on future events

H. to produce large quantities of soothing very quickly.
I. the distance from the turbine platform to the rotor of an installed wind turbine and indicates how high your turbine stands above the ground
J. showing a willingness to take surprisingly bold risks

HIGH-ALTITUDE WIND ENERGY FROM KITES

WHILE YOU WATCH

https://www.ted.com/talks/saul_griffith_high_altitude_wind_energy_from_kites?language=dz

7. Watch the video (03:56-04:20) and match the terms with their meanings:

1	**Cessna**	A	a prototype strategic airlift flying boat designed and built by the Hughes Aircraft Company. Intended as a transatlantic flight transport for use during World War II, it was not completed in time to be used in the war
2	**Gulfstream**	B	a large, long-range wide-body airliner designed and manufactured by Boeing Commercial Airplanes in the United States
3	**a 747**	C	American Aircraft Company
4	**Spruce Goose**	D	an American aircraft company which designs, develops, manufactures, markets, and services business jet aircraft.

8. Watch the video (00:04-02:59) and check your understanding marking the sentences true or false. Provide some details from the video.

1. The kite is a modern child's plaything created for entertaining.
2. Chinese knew that kites could carry large weights.
3. That was George Pocock who pioneered the use of kites for dragging light things.
4. Many of the great inventors were flying the kite in the pursuit of aviation.
5. Wright brothers were flying kites to develop the control systems that would enable powered human flight.
6. The first-ever human flight lasted for 12 minutes.
7. A free-flying wing can sweep through more sky and generate more power in a unit of time than a fixed-wing turbine.
8. Turbines can now span up to three hundred feet high in the air where the more wind is, and more power.
9. In the next 30 to 40 years, we have to make 10 trillion watts or more of new clean energy.
10. Wind is the second-largest renewable resource after solar.

9. Watch the whole video (00:04-04:43) and take notes on what you find out about:

✓ The history of such child's favorite plaything as Kite *(00:22-00:43)*;
✓ Prominent inventors who were experimenting with kites and what their purpose was to do this *(00:45-01:34)*;
✓ Miles Loyd and the essence of his study *(01:34-02:07)*;
✓ The reason why kites can generate more energy than turbines *(02:07-02:18)*;
✓ The plans that Saul Griffith calls *audacious (02:18-04:43)*.

CRITICAL THINKING

AFTER YOU WATCH

10. In his talk Saul Griffith expresses his opinion about the following points. What does he mean? Do you agree? Share your thoughts and ideas with groupmates:

✓ “We still have an energy crisis, and now we have a climate crisis as well.”

✓ “Wind is the second-largest renewable resource after solar”

✓ “… this is the dawn of the new age of kites”

5.2. READING. WHAT IS GREEN ENERGY, AND WHAT COULD MAKE IT A BETTER OPTION THAN FOSSIL FUELS?

BEFORE YOU READ

1. Work in groups and discuss the following, then share your opinions in the class:

- It is claimed in the headline of the article that the green energy makes it a better option than the fossil fuels. What do you know about this? Can you give any reasons to support this assertion?

READING

2. *Scan the article and answer the following questions:*

1. What gives an optimism in reducing the dependence on coal, oil, and natural gas as the sources of energy?
2. What is “green energy”, and what could make it a better option than fossil fuels?
3. Why investing in “green energy” is gaining more interest nowadays?
4. Are there commitments and future goals to invest significant capital into renewables?
5. Why many investors have doubts that renewables can sufficiently meet the increasing energy demands?
6. Who has been a critical partner for businesses investing in sustainable energy projects?
7. What measures could suggest a constructive market for clean energy in future?

WHAT IS GREEN ENERGY, AND WHAT COULD MAKE IT A BETTER OPTION THAN FOSSIL FUELS?

In the past three decades, research and development in green energy has exploded, yielding hundreds of promising new technologies that can

reduce our dependence on coal, oil, and natural gas. Green energy comes from sustainable sources such as sunlight, wind, rain, tides, plants, algae and geothermal heat. These energy resources are renewable, meaning that they are naturally **replenished.** In contrast, fossil fuels are finite resources that take millions of years to develop and will continue to **diminish** with use.

Renewable energy sources also have a much smaller impact on the environment compared to fossil fuels which produce pollutants such as greenhouse gases as **a by-product**, contributing to climate change. Gaining access to fossil fuels typically requires either mining or drilling deep into the earth, often in ecologically sensitive locations. Green energy can supplement or replace the use of fossil fuels in all major areas of use including electricity, water heating, home appliances, and fuel for motor vehicles.

The U.S. Energy Information Administration (EIA) projects that world energy consumption will grow by nearly 50% between 2018 and 2050. President Joe Biden plans to invest $2 trillion in clean-energy initiatives over the next four years, with a **loftier goal** of making America a **net-zero-emissions** country by 2050. China has now committed to reaching carbon neutrality by 2060, putting the world's biggest market for solar and wind power on the path to **ramp up** installations as it begins its next five-year plan. Bloomberg New Energy Finance's recent report shows that the sector will receive nearly $5.1 trillion worth of investment in new power plants by 2030.

There is still a long path to meet carbon-free targets globally, but decarbonation by 2050 is a global objective. Simply put, net zero carbon is an **equilibrium** achieved when the amount of greenhouse gas emissions that humans create is **offset** by the amount of carbon removed from the atmosphere, producing a balance between **emissions** and decarbonization. Although there is no guarantee that any of these targets can or will be meet, the global commitments to decrease carbon emissions are driving further interest in renewable energy investments as governments **strive** to reduce

their carbon **footprint.** Corporations have announced their ambition to be carbon negative by 2050 by **setting targets** aimed at significantly reducing their absolute emissions and removing or offsetting more carbon than they **emit.**

Renewable energy is the cheapest source of new power generation for more than two-thirds of the world and has no fuel costs. It can reduce the economic **burden** of energy bills by eliminating fuel charges - especially when coupled with energy-efficiency upgrades in our homes and businesses.

When you think of clean energy, you typically think of solar and wind, which have the biggest market share by far. They also have the distinction of being two of the fastest-growing employment sectors in the past decade.

The International Energy Agency (IEA) **projects** that the total of installed wind and solar PV* capacity is on track to overtake natural gas in 2023 and coal in 2024. "I see solar becoming the new king of the world's electricity markets," IEA Executive Director Fatih Birol said in a statement.

Despite the optimism for green energy, however, many investors have reasonable doubts that renewables can sufficiently meet our increasing energy demands. The emerging demand for power for electric vehicles is imposing intense pressure on the energy supply. Besides, many climate scientists expect increases in extreme weather events, which would further test the system's **vulnerabilities,** as the 2021 Texas Power Crisis suggests. Millions of people in America's second-most-populous state were left without power for days. A severe storm paralyzed almost every energy source, from power plants to wind turbines, because their owners had not made the investments needed to produce electricity in **subfreezing temperatures**.

Thus, all power markets face a common challenge: how to prepare for the possibility of extreme events that are statistically unlikely and difficult to predict. Within the competitive Texas power market, there is a strong **incentive** for generators to keep costs down to **recoup** their investments. The rapid **buildout** of wind and solar power, which are now among the cheapest sources of electricity, have pushed prices even lower in recent

years, making it more difficult for gas and coal plants to compete and provide power when renewable energies fail or are insufficient.

Major structural changes in the production of renewable energy are still necessary, including more **regulatory oversight** not just for Texas, but for America and the rest of the world. The ability to adapt and navigate extreme weather events along with the increasing demand for electricity will be critical for the future success of green energy.

Private equity has been a critical partner for businesses investing in sustainable energy projects, both large and small. The industry recognizes the critical role that these investments will play in **mitigating** the growing effects of climate change and moving the economy in a more sustainable direction. In 2019, **Private Equity International** examined how "private equity and infrastructure funds are increasingly focusing on wind, solar, and other renewable **energy assets -** an exciting and rapidly expanding new asset class that has the added advantage of furthering sustainability and green investing goals." Private equity invested more than $11 billion into renewable energy projects in 2020 alone. Some notable investors such as Blackstone, Carlye, Apollo, KKR, EnCap, and Warburg Pincus are leading this trend in responsible investing.

It's clear that the energy transition is a structural change driven by emerging technologies that are causing some older legacy technologies **to become obsolete.** Everyone wants clean energy, but reliability is what really counts in a crisis. As renewably sourced energy captures a larger share of the power grid, **outages** become inevitable. Renewable energy is great, but it may not be able **to compete with** traditional sources.

Texas just became the poster child for the consequences of change that happens too rapidly. The **ramifications** of changing our current electric grid from carbon and nuclear based sources to wind, solar and other more environmentally and politically correct sources are not esoteric; they are real, consequential, and life threatening. The events happening right now in Texas illustrate the importance of a **well-rounded,** multi sourced energy infrastructure that's built out methodically, and intelligently with **multiple redundancies** in anticipation of extreme events. Looking ahead, market uncertainties will undoubtedly continue, but the **long-term technology**,

policy and social trends currently point toward more favorable conditions for accelerating the energy transition. We **are on the cusp of** a massive **disruption** of the energy sector, and decisions made solely by looking at historical sector performance may not **yield actions** that effectively manage transition risks or capture associated opportunities.

Regulatory backing, significant investor interest, competitiveness with traditional power sources, and technological innovations suggest a constructive market for clean energy in coming years. Investors who choose to "go green" could see their holdings grow if the future of renewables can sustainably meet the ever-increasing demand for energy in the U.S. and the world.

*__PV__ (Photovoltaic) *means* ***electricity from the energy of the sun*** *and is derived from the words "photo" with the Greek meaning light and "voltaic" meaning voltage.*

https://cutt.ly/x9a6NML

VOCABULARY

3. Find synonyms to the following in the text:

a) decrease _____
b) stimulus _____
c) the growth, development _____
d) outdated _____
e) destruction, demolition _____
f) soften, moderate _____
g) leave behind, overhaul, catch up with _____
h) abundance, extremity _____
i) supervision, control _____
j) track, print or mark _____

4. Arrange the words in suitable pairs. Recall the context they are used in:

1. energy	A. goal
2. financial	B. resources
3. lofty	C. fuels
4. long-term	D. assets
5. finite	E. charges

6. fossil	F. temperatures
7. fuel	G. energy infrastructure
8. sensitive	H. backing
9. subfreezing	I. location
10. well-rounded	J. technology

5. Find words in the article with the following meanings:

1. an incidental or secondary product made in the manufacture or synthesis of something else
2. the production and discharge of something, especially gas or radiation
3. fill something up again
4. a complex or unwelcome consequence of an action or event
5. a state in which opposing forces or influences are balanced
6. the quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally
7. a period when a power supply or other service is not available
8. regain (money spent) through subsequent profits
9. produce or provide
10. an item of property owned by a person or company, regarded as having value and available to meet debts, commitments, or legacies.

6. Match the phrasal verbs and idiomatic expressions with their meanings. Use them in your own situations.

1. to be on the cusp	A. to take an interest in something
2. to drive interest	B. if someone sets you a task or aim or if you set yourself a task or aim, you need to succeed in doing it
3. to face a challenge	C. to be at the point when something is about to change to something else
4. to set a target	D. to have to deal with a challenging situation
5. to put on the path	E. the incident that starts you in a particular direction or towards a particular goal

7. Insert the prepositions where necessary.

1. Renewable energy sources have a much smaller impact _____ the environment compared _____ fossil fuels.
2. Fossil fuels produce pollutants contributing _____ climate change.
3. It is predicted that world energy consumption will grow _____ nearly 50% between 2018 and 2050.
4. The U.S. President plans to invest $2 trillion _____ clean-energy initiatives _____ the next four years.
5. Investors who choose to "go green" could see their holdings grow along with the demand _____ energy.
6. Corporations have announced their ambition to be carbon negative by setting targets aimed _____ significantly reducing their absolute emissions.
7. Millions of people in Taxis were left _____ power for days.
8. Major structural changes _____ the production of renewable energy are still necessary.
9. Some people are sure that renewable energy may not be able to compete _____ traditional sources.
10. The long-term technologies currently point _____ more favorable conditions for accelerating the energy transition.

5.3. WRITING

1. You watched a video “High-altitude Wind Energy from Kites». Write a letter to Saul Griffith expressing your attitude, thoughts and feelings about kites and their use as a means for generating wind energy.

2.Imagine that you’re a manager of a local solar system manufacturer. Design an advertisement about solar panels which you produce to convince customers about their benefits as an alternative source of energy. You may want to consider the following points: products and services that you provide; types of best solar panels for home use; advantages and prices.

5.4. PROJECT WORK & PRESENTATIONS

1. S&P Global* has identified and summarized the top 10 cleantech trends expected this year in technologies that reduce carbon emissions and confront climate change. This complimentary whitepaper provides a brief glimpse of the data, analysis, and insights across the cleantech spectrum. Read it, summarize, and make report in the class.

https://cutt.ly/U9sqckK

***S&P Global Inc.** *is an American publicly traded corporation headquartered in Manhattan, New York City. Its primary areas of business are financial information and analytics.*

2. Look at the information in the section NEWS CLIPPINGS about some latest technologies in producing "green energy". Search the Internet resources to learn more about them and add 2-3 samples to the list. Why are they beneficial for people use and will they continue to develop?

Instructions: Representing the topic**,** you may want to consider the following points: popularity in the world and Ukraine; interesting facts, data and statistics.
Length of presentation – 5 mins. Criteria for evaluating the presentation you can find in Appendix 1.

N E W S C L I P P I N G S

THE CONVERSATION
Academic rigour, journalistic flair

Catching the waves: it's time for Australia to embrace ocean renewable energy

Australia arguably possesses the world's largest wave energy resource, around 1,800 terawatt hours. Most of this is concentrated in the southern half of the continent, between Geraldton and Brisbane.

Waves aren't the only renewable power source in our oceans. The daily movements of the tides shift vast amounts of water around the Australian coast, and technology for conversion of tidal energy to electricity is more mature than any wave converters.

https://theconversation.com/uk/topics/ocean-energy-11415

Bioenergy Insight

BIOMASS NEWS

Dec 15, 2022

Danone New Zealand commissions biomass boiler for spray drying plant

Danone has announced the commissioning of a biomass boiler at the company's spray drying plant located at Balclutha, in the Otago region of New Zealand's South Island. Combined with the use of 100% renewable electricity at the plant, CO2 emissions are expected to be reduced by 95%, helping underpin Danone's ambition to become a net-zero carbon company by 2050. Danone's...

https://www.bioenergy-news.com/

AN OFFICIAL WEBSITE OF THE EUROPEAN UNION

Using algae for better solar energy performance

In Sweden, LIFE SUNALGAE has inaugurated a pilot facility to mass produce a revolutionary material that improves solar panel efficiency.

Solar energy uptake in Europe is expensive and inefficient, and its uptake has relied chiefly on government regulations and incentive programmes. A solution to boost demand is needed.

The LIFE SUNALGAE team is demonstrating a new and innovative algae material that can enhance the efficiency of silicon-based and thin-film solar panels.

Project coordinator Swedish Algae Factory makes the material, called 'algica', by cultivating diatoms – single-celled photosynthesising algae – and extracting the silica shells for use in different applications.

Their ultimate goal is to become the world-leading producer of advanced materials from algae and a driving force toward a circular and bio-based industry.

https://cinea.ec.europa.eu/news-events/news/using-algae-better-solar-energy-performance-2022-10-19_en

UNIT 6

HOME GADGETS FOR MORE STREAMLINED LIVING

IN THIS UNIT:

6.1. Internet of Things: Are Smart Devices Helping or Harming?

*A Ted Talk by **Rose Barker**, Certified Risk Management Consultant, an expert on identity theft, and Board President of non-profit organization MERIT*

6.2. Smart Home Gadgets to Improve Your Lifestyle.

This article is about modern popular Smart Home Gadgets which transform our lifestyle, making it more convenient and easier.

6.3. Writing.

6.4. Project work and presentations.

6.1. VIDEO. INTERNET OF THINGS: ARE SMART DEVICES HELPING OR HARMING?

BEFORE YOU WATCH

1. Discuss in groups the following points and then share your ideas in the class:

1. Which devices are called “smart devices”?

2. Students nowadays are regular users of smart communication devices. What types of them do you frequently use? Why are they important for you?

3. In the title of the video you can read a question “Are Smart Devices Helping or Harming?”. What’s your opinion?

2. Read and comment on the following quotations:

- ✓ **“All the problems of the world could be settled easily if men were only willing to think. The trouble is that men very often resort to all sorts of devices in order not to think, because thinking is such hard work.”**

Thomas J. Watson,
an American businessman (1874 –1956)

- ✓ **“Mobile devices have given us greater freedom and flexibility than ever before, while social platforms help us collaborate more effectively”.**

Jean-Philippe Courtois,
Executive Vice President and President, Microsoft Global Sales, Marketing and Operations (born 1960)

- ✓ **“I am not the enemy of tech - I sleep at night with my iPhone on my heart, I'm just as addicted to my devices as every other human walking down the street through a red light in traffic while texting”.**

Alexandra C. Pelosi,
an American journalist, documentary filmmaker and writer (born 1970)

3. You are going to watch a Ted Talk by Rose Barker called *INTERNET OF THINGS: ARE SMART DEVICES HELPNG OR HARMING?* ***Read the information about the author and answer the questions:***

1.What’s Rose Barker’s occupation?
2. What kind of activity does she perform?
3. What type of personality is she?

ROSE BARKER

Rose Barker, Certified Risk Management Consultant, is an expert on identity theft. She is both an entrepreneur herself and Board President of MERIT, a non-profit that empowers people to lift themselves out of poverty through financial education and entrepreneurship.

She speaks at businesses and human resource organizations along the West Coast, sharing information on how to protect companies, employees, and their families from the threat of identity theft and data breaches. Rose is a Salem, Oregon native and avidly supports fostering local community.

Though based out of Salem, Rose also loves serving the international community. She has spent several years in Latin America on more than 20 international trips. When she's not helping businesses and employees, you can find Rose gardening, cycling, swimming across the Willamette River, volunteering, and playing with her adorable dog, Foxy.

VOCABULARY

4. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words with their definitions (letters):

1. I **pulled out** my smartphone fridge app and quickly found my grocery list.
2. What if that **hacker** were also a thief and he used your smartphone apps to get into your entire phone.
3. They started sending **spam emails** to his family.
4. This technology is transitioning from being what was an optional luxury feature to being **baseline** default in every device.
5. Hackers can even commit crimes **remotely** from your devices.
6. I'd like **to back up** a couple of steps and say that I am a fairly typical user of technology.
7. I trained individuals and companies on tactics that thieves use to steal identities and **to breach** companies.

8. Identity theft is emotionally draining and it leaves people **feeling vulnerable**.
9. We, as consumers, don't understand is how deep this **rabbit hole** goes.
10. Frankly, I **told a fib** earlier. In fact I don't own a smart fridge app.

A. a datum used as the basis for calculation or for comparison
B. to move backward
C. a violation of a law, duty, or promise
D. to remove or extract an item
E. unsolicited and unwanted junk email sent out in bulk to an indiscriminate recipient list
F. at or from a distance, typically by means of an electronic connection
G. to tell an unimportant lie
H. being in a position where other people can hurt you
I. one who indirectly, and usually illegal, gains access to a computer system
J. a bizarre, confusing, or nonsensical situation, typically one from which it is difficult to extricate oneself.

5. In her TED Talk Rose Barker mentions the following notions. Do you know what sands behind them? If not look through the different reference sources to explain their meaning:

Bluetooth Equifax Gartner Fitbit Paleo diet Roomba Uber

INTERNET OF THINGS: ARE SMART DEVICES HELPNG OR HARMING?

WHILE YOU WATCH

https://www.youtube.com/watch?v=ipdTLJcIkWI&ab_channel=TEDxTalks

6. Match the two parts of the sentences to complete what Rose Barker says. Then watch the Ted Talk and check your answers.

1.What if that hacker were also a thief and used your smartphone fridge app…

2. How many of you here have a login and password …

3. These smart devices technically called *Internet of Things devices* are generally defined …

4. We own many devices which are connected back to a central device like a smartphone or a laptop …

5. If a hacker can gain access to just one of your *Internet of things devices ...*

6. As time passes this technology is transitioning from being what was an optional luxury feature …

7. As a typical user of technology …

8. I trained individuals and companies on tactics that thieves use …

9. Identity theft …

10. It's emotionally draining and it leaves people …

A. for an online account.

B. they can access all of your devices.

C. I run an Instagram account for my dog named Foxy.

D. takes hundreds of hours to clean up.

E. to gain access to your entire phone.

F. to steal identities and to breach companies.

G. that we're going to call the anchored device.

H. feeling vulnerable.

I. to being baseline default in every device and we're forced to buy it and integrate it into our lives.

J. as devices that have network connectivity.

7. Watch the video again (1:19-3:17) and complete the sentences with the missing words.

1. How many of you here have a login and password for an _____?

2. Glad you're here, because this TED talk _____ to you.

3. These smart devices technically called Internet of Things devices or _____ for short.
4. But here's the thing if a hacker can gain access to just one of your IOT devices _____ they can access all of your devices.
5. First they access the anchor device, _____ that and then they've got everything that's hosted on your anchor device.
6. They can even commit crimes _____ from your hacked devices**.**
7. _____ says that that we're on track for 20 billion devices in 2020.
8. This technology is transitioning from being what was an optional luxury feature to being _____ in every device.

8. Watch the video (3:17-4:41) and tell if the statement true (T) or false (F):

1. I believe technology is beneficial.
2. For the last three years I've served as a freelancer.
3. I consulted companies how to boost business solutions.
4. Identity theft is emotionally draining.
5. Data trafficking is one of the top revenues generating crimes in the world internationally.

CRITICAL THINKING

AFTER YOU WATCH

9. A talk usually has the main idea supported by other ideas. In a sentence of your own words, what would you say is the main idea of Rose Barker's TED talk?

10. Read these comments about the TED talk. Agree or disagree:

A.: To some, smart devices, technology, and the internet of things is an exciting world with a promising future. Yet to others, it is scary and invasive. One thing is for sure it is not going away and we need to know how to navigate this growing field to embrace technology and still protect our information, privacy, and our identity.
B.: Great Ted talk! This has been very enlightening and is much needed especially in the age of tech
C.: This is irresponsible as she's either making a lot of it up, or she's believing the stuff she reads on reddit. The idea that "oftentimes people

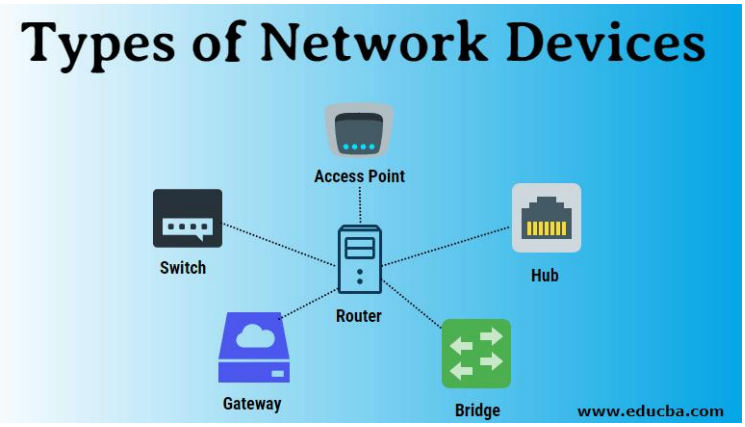
can access the anchor device through the smart home device, and therefore can access all of the devices that are connected to the anchor device" is complete fantasy. This isn't Oceans 11. When she asked people to put their hands up if they owned a smart home device, a more honest talk would have asked them to put their hands up if their anchor device had ever been hacked through their smart home bulb;
D.: Now, I wonder what should we do if we happen to receive notification of encrypt data on government official website. Is it safe to ignore the warning? Or it's just that my computer firewall is being too protective?
E.: She got some of the technical details wrong, but the sentiment is there. For example, using public wifi does not mean that "thieves" can automatically see EVERYTHING you're doing. The people responsible for building the web don't like their data stolen either so there is encryption in place to make your data impossible to read. Modern web browsers are generally pretty good at warning you when a site is insecure. DO NOT IGNORE THE WARNINGS.

6.2. READING. 10 SMART HOME GADGETS TO IMPROVE YOUR LIFESTYLE

BEFORE YOU READ

1. Work in pairs. Discuss what you know about the following:

1. What do you think the term “Smart Home” refers to?
2. What is a *network device*? In the picture you can see some examples of network devices. Can you add some more types to this list? What’s their role in making our home smart?



3. Have you ever tried out any *smart home gadgets* to ease your life and benefit from their amazing features?
4. Are you always on the hunt for new ways to refresh your living space?

READING

2. Scan the article and answer the following questions:

1. Why smart home gadgets are in high demand as technology advances?
2. What Are Smart Home Gadgets and why are they called so?
3. What popular brands and companies are innovating smart home gadgets to make our lives secure and convenient every day?
4. What are the advantages of having smart gadgets at home?
5. Which of the mentioned smart home gadgets in the text have you tried out? Which of them would you like to install at home and why?

10 SMART HOME GADGETS TO IMPROVE YOUR LIFESTYLE

Smart home gadgets are transforming our lifestyle, making it more convenient and easier. No wonder they are in high demand as technology advances. Brands like Amazon and Google are innovating the home, making it smarter with various devices or smart home gadgets. Apart from them, many other companies like Philips Hue, Ring, Eufy, etc., are making headlines with their out-of-the-box smart home gadgets to make our lives secure and convenient every day.

What Are Smart Home Gadgets? They are electronic devices leveraging technology to solve common issues at home and provide greater ease and convenience. These devices connect to the internet, networks, or other devices via wireless protocols like Bluetooth, NFC, Zigbee, Wi-Fi, 5G, LiFi, etc., to operate autonomously and interactively to an extent.

We called these devices smart because they differ from traditional devices and offer more convenience, energy efficiency, and saving time and energy with automation. Using smart home gadgets also increases the market value of your home, as more home buyers and tenants are now looking for homes that have preinstalled smart home gadgets. It also elevates the aesthetics of your house occupying less space and giving modern looks. Many of them use high-end technologies like artificial intelligence and are designed to perform various tasks inside your home.

Most smart home devices can be controlled using your smartphone from anywhere across the world, provided you have connectivity. These devices use an app that you need to install on your phone and give it the power of the internet to connect it to your smart gadget. Here are some of the coolest smart home gadgets for you to check out.

1. Whether you live in an apartment, condo, or house, it's better to protect yourself and your home by using Ring's **video doorbells** to look at a person's activities when they knock or press the doorbell. It's even possible to take pictures and save videos to know who came even when away from your home.

Slim wired video doorbells can leverage excellent performance and convenience. Battery video doorbells would give you flexibility. They are easy to install on different surfaces, and the batteries are easy to recharge. When you install these video doorbells, you can detect the motion of people when they visit your property. You will receive notifications on your connected tablet, PC, or smartphone. It will help you hear, see, and speak to those visitors from anywhere in real time. You can also save the recorded videos and pictures, share them with others, and watch them anytime you want to get superior home security.

2. Robotic Vacuum Cleaner simplifies your life by offering efficient cleaning for your home. They have a path-tracking sensor to set clear routes to clean floors effectively. You can use your smartphone to connect to the cleaner and control it. It will show you the cleaning history to help you track when and where RoboVac has cleaned. Furthermore, the vacuum cleaners are easy to use and don't irritate you with noise.

3. Keyless Entry. Transform your locks and make them smart by using Level Bolt. This smart lock is created for everyone and gives your family and friends greater convenience of entering the home using their voice or phone. It will provide you with smart security in your home without keys and also enhance its aesthetics. Its mechanical operation is available for egress reliably so you never feel stranded. You can see who came, went, and at what time, and send your digital keys to your family and friends quickly in a few steps. The features included in this smart lock are a

mobile app for operation, auto-lock, auto-unlock, activity tracking, remote connectivity, automation, notifications, and voice control.

4. Smart Switch. Don't rely on old-style switch boxes; use Enbrighten's Z-Wave Smart Rocker Light Switch to modernize your house. This smart switch is best for multi-gang configurations and limited-space applications. It has automatic line-load sensor terminals to support easy and fast installation by finding load and line wires and easy dimmer configuration. You can control the switch remotely using voice commands and also opt for manual ON or OFF operation and enable home automation easily with custom scenes, timely alerts, and personalized scheduling. This smart switch works perfectly by itself, or you can integrate it seamlessly into multiple switches.

5. Smart light. Philips Hue provides multiple smart light lamps, bulbs, accessories, and fixtures. It has options to wake you up gently, give you warm welcomes on reaching home, or help you organize your day with the right kinds of lighting. It offers starter kits, bulbs, light strips, lamps, and accessories like a dimmer switch, bridges, and more. It can brighten or dim the light in your room, depending on your preferences. If you are having a party, it can even give you flashing party lights! It is a smart lighting system with smart controls, Hue Bridge, and smart lights. Hue lights are energy-efficient and innovative LED lights that come in different shapes, models, and sizes suitable for your home.

6. Programmable Sprinkler. Sprinkling water with a manual sprinkling container consumes a lot of time. Using RainPoint's programmable water sprinkler is an efficient choice for you. Connecting the sprinkler timer to a Wi-Fi, you can program it easily and schedule water sprinkling using the RainPoint application. The best thing is this device helps you water your plants even when you are out via the app available to download for both iOS and Android devices. In addition, it has two watering modes – mist and irrigation to record water flow while using it, and it also provides scientific settings to preserve water. Hence, you don't have to worry about your beautiful plants drying up while on vacation.

7. The Ring Alarm **Motion Detector** will alert you when sensing motion at your properties. This tiny sensor can mount perfectly to flat walls and

room corners. The device is designed for indoor use and works at temperatures ranging from 32 to 120 degrees Fahrenheit.

8. Smart Thermostat controls room temperature effectively and saves more energy. It helps you elevate your comfort by letting you regulate temperature from anywhere and monitor your system seamlessly. You can easily program it in the application and adjust settings at any time using Quick Schedule. The device can switch itself off once you leave the house, so no energy wastage happens. It has the Savings Finder to find ways for more energy savings and suggest changes in the application based on your schedule. It can even give you reminders when it's time to replace the air filter and keep your system fresh every season.

9. Smart Window Curtains can schedule the automatic opening/closing of the curtains. It involves no hassles to install, thanks to its award-winning mechanical design. It can automate and retrofit your current window curtains, unlike other smart curtains. It will be of great use when you forget to pull the curtains; you can now do it from your smartphone. You can also set its timer for every day of the week.

10. Smart Display. Echo Show 10 is a third-generation HD smart display that comes with Alexa and motion. It comes with a 10.1-inch high-definition screen designed for video calls, shows, recipes, music, and more with premium directional speakers. Echo Show multiplies the entertainment factor by letting you play your favorite music, podcasts, and shows from Spotify, Amazon Music, Netflix, and Prime Video. Relive memories using Alexa and Amazon Photos, and turn the home screen into a big digital frame.

The world is going through a significant technological shift, changing the way we live. So, leverage the power of technology and put it to your convenience while saving time, energy, and effort. Do try out the above smart home gadgets to ease your life and benefit from their amazing features.

https://geekflare.com/smart-home-gadgets/

VOCABULARY

3. Find words in the article with the following meanings:

1. a small mechanical or electronic device or tool, especially a novel one
2. an object or machine that has been invented for a particular purpose
3. used to refer to the immediate usability or functionality of a newly purchased product, typically an electronic device or a piece of software
4. use something to maximum advantage
5. place or fix (equipment or machinery) in position ready for use
6. technology that is at the cutting edge: the highest form of technology available
7. an application, especially as downloaded by a user to a mobile device
8. to discover or identify the presence or existence of somebody
9. to adapt to a new purpose or need: modify
10. a development or improvement

***4. Arrange the words in suitable pairs. Recall the context they are used in*:**

1. out-of-the-box	A. intelligence
2. high-end	B. reliably
3. artificial	C. switch
4. to perform	D. sensor
5. vacuum	E. configuration
6. egress	F. stranded
7. dimmer	G. tasks
8. path-tracking	H. smart home gadget
9. feel	I. cleaner
10. multi-gang	J. technology

5. Insert the proper preposition:

1. Nowadays smart home gadgets are _____ high demand as technology advances.
2. Many companies are making headlines _____ their out-of-the-box smart home gadgets to make our lives secure and convenient.

3. These devices can operate autonomously and interactively _____ an extent.
4. These smart devices offer more convenience, energy efficiency, and saving time and energy _____ automation.
5. Most smart home devices can be controlled using your smartphone _____ anywhere across the world.
6. Echo Show 10 is a third-generation HD smart display that comes _____ Alexa.
7. Level Bolt mechanical operation is available _____ egress reliably.
8. The best thing is this device helps you water your plants even when you are out _____ the app available to download for both iOS and Android devices.
9. You can also opt _____ manual ON or OFF operation and enable home automation easily with personalized scheduling.
10. Leverage the power of technology and put it _____ your convenience.

***6. Refer to the text and find the sentences with the expressions below. Explain their meaning and then use in your own sentences*:**
to be in high demand, to an extent, to feel stranded, to be of great use, to give reminders, to leverage (excellent) performance, to opt for, to turn into, is go through a (significant) technological shift, to put something to one's convenience, to try out something, high-end technology.

6.3. WRITING

1. Write a short essay (200-250 words) on the topic "My house is getting smarter". Mention about new gadgets that you've installed, how they help set up routines and keep things organized.

2. Smart home and IOT are among hottest buzzwords around these days. In most cases we think of Amazon, Alexa or Google Home when someone mentions smart gadgets for a better living. But little we know about the Ukrainian company *DS Electronics* which accelerates towards new international smart home markets. **Write a review article to magazine**

SCIENE AND TECHNOLOGY **headlined "Smart home made in Ukraine — How DS Electronics tools help to save electricity".**

6.4. PROJECT WORK & PRESENTATIONS

Topics: Chose one of the suggested topics to make presentations:

- ✓"How technology, both old and new, has shaped the war in Ukraine"
- ✓"Ukrainian inventions that changed the world"
- ✓"Quirky gadgets you should have in your home ("News Clippings")

Instructions. Representing the topic, consider the following: the latest technological inventions; interesting and amusing evidences and facts; convincing arguments.

Length of presentation – 5 mins. Criteria for evaluating the presentation you can find in Appendix 1.

N E W S C L I P P I N G S

Guirky gadgets you should have in your home

1. SpreadTHAT! self-Heating butter knife

If too-cold butter is making you sad at breakfast time and you don't want to use a butter dish or spreadable butter like normal people, you can drop twenty quid on a self-heating butter knife. This one's clever: it doesn't use batteries or require charging; it claims to transfer the heat from your hands to the blade, warming it up enough to glide through butter like a warm knife through butter.

2. Bruno, the smart bin

Bruno claims to be the world's first smart trash can, and it combines a bin with a smartphone app to remind you when it's time to put the bins out. More usefully it has an integrated vacuum that means you don't need to worry about bending down to brush

dust into a pan: just sweep it in front of Bruno and the pet hair, crumbs, dust and other debris are pulled into the bin and dumped in the bag – useful for households where people have allergies to airborne irritants.

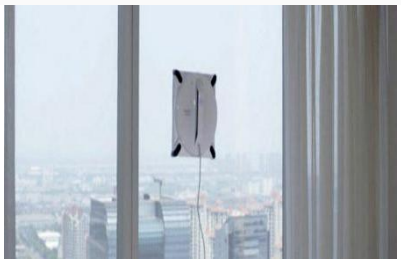
3.Smart Home Intercom System

This smart home technology system allows you to instantly connect with your family members both at home with you and away. It is extremely easy to use even for your older relatives. You can also make intercom calls to let your kids know that the dinner is ready and spare your throat some trouble.

4. Tile Key Finder Tracker

Have you ever wasted precious time because you couldn't find your keys or phone? Well, with the Tile tracker that won't be a problem anymore. This tracker is small enough to attach to your keys and then find them via your phone. This tracker will make it ring even when the phone has been put on silent mode. Seriously, this is one of the best smart home gadgets for forgetful ones.

5.Ecovacs Winbot: A Roomba ForWindows



Now, it is time for a compact robot that is capable of cleaning your windows, shower walls, and even tiled walls. This Roomba for windows is equipped with a high-tech suction fan to stay on the windows and do the most tedious job for you.

UNIT 7

SPORTS

IN THIS UNIT:

7.1. How augmented reality will change sports ... And build empathy.
*A Ted Talk by **Chris Kluwe** on the future of sports.*

7.2. Technologies in Sports: Which Innovations Are Trending?
The article by Michal Wapinski.

7.3. Writing.

7.4. Project work and presentations.

7.1. VIDEO. HOW AUGMENTED REALITY WILL CHANGE SPORTS AND BUILD EMPATHY

BEFORE YOU WATCH

1. You are going to watch a Ted Talk by Chris Kluwe called HOW AUGMENTED REALITY WILL CHANGE SPORTS ... AND BUILD EMPATHY. ***Read the information about the author and the Talk and answer the questions:***

A. How will science and technology change athletics, the limits of the human body and the shape of competition?
B. How is Augmented Reality (AR) different from Virtual Reality (VR)?
C. How can virtual reality be used in sports?
D. What are the challenges faced by virtual reality?
E. What are the Applications and some Examples of Augmented Reality?

F. Can athletes use virtual reality to train?
G. How does VR affect team collaboration?
H. Can viewers at home have an improved experience through VR?
I. How can athlete performance will be improved through VR?
J. How can VR enhance sports participation through gamification?
K. Can augmented reality enhance our sense of empathy?

2. *Read and comment on the following quotations:*

- ✓ **"Sport has the power to change the world. It has the power to inspire. It has the power to unite people in a way that little else does. It speaks to youth in a language they understand. Sport can create hope where once there was only despair. It is more powerful than government in breaking down racial barriers."**

Nelson Mandela,
a South African anti-apartheid activist and politician (1918-2013)

- ✓ **"I do think that a significant portion of the population of developed countries, and eventually all countries, will have Augmented Reality experiences every day, almost like eating three meals a day. It will become that much a part of you."**

Tim Cook,
an American business executive who has been the chief executive officer of Apple Inc. since 2011 (born 1960)

CHRIS KLUWE

As a punter, most recently for the Minnesota Vikings, Chris Kluwe consistently set team records. As an advocate for equality, he proudly and profanely broke the NFL's code of omertà around locker-room politics. He tweets a lot about World of Warcraft.

Chris Kluwe grew up in Southern California among a colony of wild chinchillas and didn't learn how to communicate outside of barking and howling until he was 14 years old. He has played

football in the NFL, once wrestled a bear for a pot of gold, and lies occasionally. He is also the eternal disappointment of his mother, who just can't understand why he hasn't cured cancer yet."

VOCABULARY

3. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

1. **Empathy** is important because it helps us understand how others are feeling so we can respond appropriately to the situation.
2. Hundreds of fans invaded the **pitch** at the end of the game.
3. Climb to the top of the Eiffel Tower if you want **a bird's eye view** of Paris.
4. She was an only child and grew up as **a jock,** playing basketball and baseball.
5. Tennessee football **coach** Josh Heupel is 2-for-2 in showing a lot of emotion during bowl games.
6. He pulled on a battered old crash helmet with a scratched **visor.**
7. Thanks to Tom's achievements, analysts consider him one of the best **quarterbacks** in the NFL's history.
8. Thanks to our creative knowledge and engineering capabilities, we can use our **virtual reality** technology to turn your imagination into reality.
9. **Augmented reality** is, in fact, readily available and being used in a myriad of ways including as Snapchat lenses, in apps that help you find your car in a crowded parking lot, and in variety of shopping apps that let you try on clothes without even leaving home.
10. No amount of marketing **hype** can hide that fact.

A. a flat area of ground for playing particular sports on
B. the ability to understand how someone feels because you can imagine what it is like to be them
C. a piece of clear plastic that is fixed to the front of a helmet (=hard hat) and protects your face
D. a good view of something from a high position

E. a student who plays a lot of sport
F. members of the offensive platoon and mostly line up directly behind the offensive line
G. the technology of putting images or information produced by a computer on top of a real view, image, video etc so that the user can see both at the same time
H. someone who trains a sports player or team
I. the use of a lot of advertisements and other publicity to influence or interest people
J. images and sounds that are produced by a computer and connected equipment to make the user feel as if they are in real three-dimensional space

4. Complete the sentences using the correct form of the word in brackets:

1. Once we have that experience with GoPro and Google Glass, how do we make it more _____? (IMMERSE)
2. They ended up _____ a Super Bowl that year. (WIN)
3. It was more _____. (ENTERTAIN)
4. Coaches hate losing games. (LOSE)
5. You also have information from helmet sensors and accelerometers, technology that ___ ____ ___ on right now. (WORK)
6. Crowd goes wild, and the fans are with him every step of the way, _____ from every perspective. (WATCH)
7. Augmented reality will be a part of sports, because it's too _____ not to. (PROFIT)
8. What is this technology worth to a gay Ugandan or Russian trying to show the world what it's like _____ under persecution? (LIVE)
9. it's like to get tackled on the football field from the perspective of the _____. (TACKLE)
10. What is it like to be a _____ athlete on the field? (PROFESSION)

HOW AUGMENTED REALITY WILL CHANGE SPORTS ... AND BUILD EMPATHY

WHILE YOU WATCH

https://www.ted.com/talks/chris_kluwe_how_augmented_reality_will_change_sports_and_build_empathy

5. Watch the TED Talk. Use collaborative listening and answer the questions in pairs:

1. What applications of Google Glass?
2. Where can Oculus Rift be used?
3. Why is fans' experience compared with that of the man on a roller coaster?
4. What example demonstrates the difference between augmented reality and virtual reality?
5. How is augmented reality used in sports?
6. Can augmented reality foster more empathy?

6. Watch the first part (00:00-2:52) of the video again and choose the correct option to complete the sentences:

1. And what is the _____ of an unladen swallow?
2. When most people think about _____, they think about "Minority Report" and Tom Cruise waving his hands in the air.
3. And it will happen because we have the _____ to make it happen.
4. What you may not be _____ with is that Google Glass is a device that will allow you to see what I see.
5. I have to create a _____ that you then fill in with your imagination.

6. You can get a sense of what it's like to have a 250-pound man sprinting at you trying to _____ you with every ounce of his being.
7. The NFL thinks _____ technology is what happens when a submarine surfaces.

7. Watch the second part (2:52-5:06) of the talk again. Then find and correct six errors in the text:

We get to augmented reality when referees and managers and owners look at this information streaming in that people do not want to see, and they say, "How do we use this to make our sportsmen better? How do we use this to win games?" Because teams always use technology to win games. They like winning. It earns them money.

So, a brief history of technology in the NFL. In 1965, the Baltimore Colts wore a wristband on their quarterback to allow him to call plays quicker. They ended up winning a Super Goal that year.

8. Watch the third part of the talk (5:06 to the end). Answer the questions:

1. Why did more people watch NFL games in 1994?
2. Chris says: “Augmented reality is not just an enhanced playbook.” What does he mean by that?
3. What would be the simplest augmented reality set up in the sport game?
4. How can augmented reality be helpful for the players on the pitch?
5. Why will the augmented reality make tons of people watch games? What arguments did Chris use to persuade the listeners?

CRITICAL THINKING

AFTER YOU WATCH

9. A talk usually has a main idea supported by other ideas. In a sentence of your own words, what would you say is the main idea of Chris Kluwe’s TED talk?

10. Read these comments about the TED talk. Agree or disagree:

DIEGO: Very interesting video! It's amazing what's possible now with tech! Although have my concerns about it in the sport I love (football), it would be very cool!

BANNON: Film, video, and digital media haven't made us more empathic toward each other, I doubt AR will do much more than any other form of technology.
ARNOLD: If both teams had equal access to this technology and to all the information needed to completely read the game, wouldn't that destroy the game? I think it would be like telling your opponent the next punch you are planning to make in a boxing fight. If your opponent acts rationally, he is going to block your punch. And so on. = boring?
WILLIAM: If this technology was introduced and used in the NFL it would be a much less exiting game, defences would immediately recognize a play, offenses wouldn't stand a chance.
KALUPZ: This sounds exciting, but then again ..... our creativity will completely die if we can just recreate any feeling that currently requires imagination. It sounds so dystopic, but we really are turning into robots.
GEORGE: OK you are not being brutaly honest. Experiencing things from someone else perspective just by raw audio and video is not enough to create an emotion. Virtual reality by its own is not enough to bring the absolute emersive experience. By just watching is not enough to be in someone else's shoe. Let's not fool ourselves, this technology on its own is not enough to give better kind of people and build a better world.

11. ***Discuss the following quotations:***

- ✓ **"Augmented reality, and even just the iPad-touch-screen technology, it was, you know, it still is extremely underused by entertainment."**

Justine Bateman,
an American writer, director and producer (born 1966)

- ✓ **"When we get to this [AR] world, a lot of the things we think about today as physical objects, like a TV, will be $1 apps in an AR app store"**

Mark Zukerberg,
an American business magnate, internet entrepreneur, and philanthropist (born 1984)

✓ **"Think about how many of the things you use don't actually need to be physical. You want to play a board game? You snap your fingers, and here's the board game. You want to watch TV? You don't need a physical hardware TV, you buy a one-dollar app 'TV' and put it on the wall."**

Mark Zukerberg,
an American business magnate, internet entrepreneur, and philanthropist (born 1984)

7.2. READING. TECHNOLOGIES IN SPORTS: WHICH INNOVATIONS ARE TRENDING?

BEFORE YOU READ

COVID-19 pandemic has changed the perspective of many sports clubs on their everyday operations. Sponsors became more demanding, fans no longer attended the games, Match Days still were crucial in fan engagement, but the communication had to become fully digital. All these unexpected changes made the sports clubs look for new ways to reshape revenue models, create original monetisation opportunities and use innovative methods to build modern relationships with their fans. What technologies will have the biggest impact on the technologies in sports industry then?

https://www.tisagroup.ch/new-technologies-in-sports/

1. Read the information above. How has COVID-19 pandemic changed the life of sports clubs?
2. Work in pairs. Look at the title of the article. How can new technological advancements shape sports?

READING

3. Read the article TECHNOLOGIES IN SPORTS: WHICH INNOVATIONS ARE TRENDING? ***Technologies in sports industry are constantly developing. What are the trending technologies in the sports industry?***

4. Scan the article and answer the following questions:

1. What technologies will have the biggest impact on the sports industry?
2. What are the most important technologies in sports right now? How are they used in the sports industry?
3. Which technologies are the most used in football clubs? How can they affect fan engagement?

5. Read the article again. Match the numbers of paragraphs (1-9) with the photos (A-I):

A

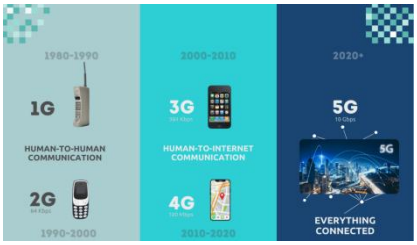
B

C

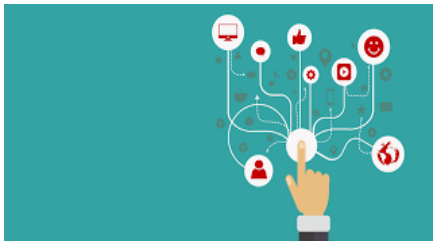
D

E

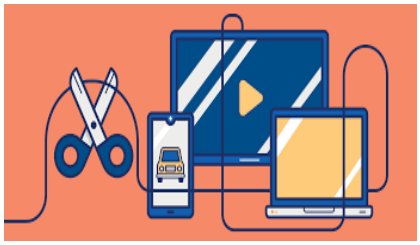
F



G



H



I

TECHNOLOGIES IN SPORTS: WHICH INNOVATIONS ARE TRENDING?

By Michal Wapinski

1. 5G TECHNOLOGY. 5G technology has already begun to have a strong impact on the way we watch and play sports. All the data and use cases show that it will keep becoming more influential in the next months, especially when it comes to personalising content. 5G technology modernises the way we're broadcasting and streaming sports events. It improves the in-stadium connectivity, enhances daily fan engagement and

brings tremendous change to the performance analysis and remote coaching.

2. FAN ENGAGEMENT TOOLS. Now, a must for sports clubs to stay in the game with attracting and engaging fans in era of the new technologies. To implement it efficiently, there's no other way but to use innovative fan engagement tools based on the best digital solutions. Graphical tools that help you in being consistent with your brand identity. Social media management tools that let you post content on all your channels simultaneously. That's the basis of any well-functioning sports club that aims to be the best on the market. For that reason, TISA has created UMPIRE and BRISK, two tools that will allow you to bring your sports brand to another level in terms of (digital) content creation and publishing.

3. IN-STADIUM IMPROVEMENTS. In many countries, football federations decided either to close the stadiums completely or to keep them open only for a limited number of people. In-stadium improvements will start trending only once we manage to handle the COVID-19 pandemic. It's worth knowing what in-stadium improvements will be there waiting for the fans of the best clubs in the world. First of all, thanks to 5G technology, there will appear a possibility to guarantee better connectivity with the internet to the fans and collect more precise data about their behaviour. Another thing that slowly gains popularity is making the Match Day a premium experience. It means that those who decide to go to the stadiums may expect to have premium possibilities such as ordering food and products to the seating places through sports clubs' mobile applications.

4. AR, VR, MR – WHICH REALITY DO YOU LIKE THE MOST. You put on the "glasses", and you're immediately entering an entirely different reality. A few decades go, completely out of our imagination. Now, the technology that slowly conquers the market and becomes available at a lower cost. **Virtual Reality (VR)** is an environment that uses cameras, sensors, joysticks or suits to make you become a part of an alternative world. **Augmented Reality (AR)** stands for technology that allows you to see additional things or characters in the real world. It's the combination of

computer-based data with our reality. The most famous example of such a solution is the Pokemon Go app. ***Mixed Reality (MR)*** has one essential difference in comparison to Augmented Reality. The virtual objects and characters can interact with the real ones making the two worlds cooperate. In terms of sports, VR, AR and MR may be used both to engage fans and to improve your athletes' performance. ***For the fans that can't attend the games,*** Virtual Reality may constitute a substitution of the in-stadium experience. ***For those people that want to be more than usual fans,*** Augmented Reality (or Mixed Reality) will give sports clubs a chance to share valuable statistics and insights in an extraordinarily innovative manner. Finally, when it comes to the sports clubs performance, VR, AR and MR technologies might significantly impact the tactical training of the players. Why? Because it will allow them to see different situations on the pitch from the real-live positions. ***For coaches,*** it will strongly facilitate the process of sharing knowledge with their players.

5. BLOCKCHAIN ⇒ TOKENISATION. Blockchain is a specific type of database which stores information in blocks that are chained together. It might bring various benefits to the sports industry starting from enhancing fan experience, through providing new monetisation opportunities, up to creating entirely new markets for exclusive services trading. We currently see a massive boom in blockchain when it comes to implementing Fan Tokens in sports clubs. There are two approaches to the implementation of tokens. The differentiation is between Utility Tokens and Security Tokens. The former is based on providing your community with products or services that can be exchanged for tokens. The latter stands for the possibility to generate profit by buying and selling them.

6. OTT (OVER-THE-TOP). Over-the-top (OTT) viewing is one of the truly disrupting and innovative technologies in content distribution amongst leading global sports organisations. This technology is predominantly based on the Internet connection to provide fans with highly appealing videos (and other TV derivatives). It significantly contributes to the development of fan engagement.

7. ARTIFICIAL INTELLIGENCE (AI). Artificial Intelligence (AI) in sports is the derivative of the modern possibility to gather precise and

extended data about the players' performance. In terms of technologies in the sports industry, experts indicate that AI will have the biggest impact on bettering the teams' results and scouting more valuable players worldwide. That's the easiest way to describe the power of algorithms and artificial intelligence in bettering our decision-making process. The use of artificial intelligence should make predicting sports competitions' outcomes more reliable, which will contribute to the better allocation of resources.

8. SINGLE SIGN-ON (SSO). SSO forms one of the instruments for identity and data management. Thanks to it, all the applications and systems connected within one sports organisation might "collect and process data to one place". SSO is the tool that you need to collect precise information that can later be analysed by your algorithms (AI) or by your most experienced specialists. SSO might also contribute to the lower costs of data maintenance. Moreover, if implemented with the visualisation tools, it might make data become easy-to-understand even for non-analytical people.

9. GAMIFICATION – "GEN Z" ENGAGEMENT. It's challenging to create a communication strategy that will appeal to Generation Z. Young people are used to having many entertainment options and prefer to keep trying new things than becoming devoted to one. Moreover, companies that fight for Gen Z attention constantly offer them more and more complex possibilities. That's why any type of entertainment which not only lets young people enjoy the show, but also makes them participate in it, is a game-changer for "winning" them. One of the trending technologies that allow sports clubs and federations to do it are fantasy leagues and Esports competitions. Those brands that understand how to use the concept of gamification to engage young people will be the most interesting for them. Gen Z's dream is to become leaders, not followers. The more your brand will be associated with it, the greater your chance of bringing young people to your club.

https://www.tisagroup.ch/new-technologies-in-sports/

VOCABULARY

6. ***Match the words with their definitions:***

1. streaming
2. consistent
3. connectivity
4. substitution
5. facilitate
6. blockchain
7. predominant
8. disrupt
9. appealing
10. algorithm

A. containing statements or ideas that are similar or that have the sameaim

B. a technology for getting sound or video to your computer through the internet as a continuous stream so that you can hear the sound or see the video before all the information has been received by your computer

C. the action of replacing someone or something with someone or something else

D. the ability of computers and other types of electronic equipment to connect successfully with other computers or programs

E. a public record of transactions made in bitcoin or another cryptocurrency in chronological order

F. to make it possible or easier for something to happen

G. to interrupt something and prevent it from continuing by creating a problem

H. the most common or greatest in number or amount

I. a set of rules for solving problems or doing calculations, especially rule that a computer uses

J. attractive and interesting.

7. Explain the meaning of the words and word-combinations underlined in the article.

8. Look at the expressions in bold and discuss what each one means:

1. Consumers get savvier every year, and it's not always easy to grab their attention. That's a big reason why the web is moving toward increasing levels of **personalized content**.
2. Although coaching drivers face-to-face is the primary method used by many organizations, **remote coaching** can be a good alternative for fleets looking to keep their employees safe and productive – particularly during this period of change.
3. Developing a **brand identity** requires more than creating a logo.
4. **Artificial intelligence** (AI) might be the most important technology we ever develop.
5. Effective **data management** is a crucial piece of deploying the IT systems that run business applications and provide analytical information to help drive operational decision-making and strategic planning by corporate executives, business managers and other end users.
6. **Data visualization tools** play a very drastic role in the Software Testing world.
7. As the newest immersive technology, **mixed reality** might still be in testing phases for many organisations, but the current use cases give an idea of what might be possible in the not-too-distant future.
8. Many of the elements of the **communication strategy** have their own How-to Guide in this collection and should be reviewed during the development of the communication strategy.
9. Scarcity is fundamental to the point of economics as a whole: discovering and applying the mechanisms used for **allocating scarce resources.**
10. **Implementation** of gender justice throughout society remains sporadic.
11. A compelling **gamification** experience taps into a participant's emotions and demonstrates, easily, the best activities an audience can complete that make an impact on mutually shared goals.
12. **Distribution** channels are part of the downstream process, answering the question "How do we get our product to the consumer?"

7.3. WRITING

1. You have had a class discussion on the following topic: Universities should give the same amount of money to their students' sports activities as they give to their university libraries. Now your teacher has asked you to write a composition, giving your opinion. Do you agree or disagree with the following statement? Use specific reasons and examples to support your opinion. Write a composition of 200-250 words.

7.4. PROJECT WORK & PRESENTATIONS

Topic: Look at the DEBATE TOPICS ABOUT SPORTS. Search the Internet to report about some of them.

Instructions: Length of presentation – 5 mins. The criteria for evaluating the presentation you can find in Appendix 1.

DEBATE TOPICS ABOUT SPORTS

- ✓ It is generally believed that some people are born with certain talents, for instance for sport or music, and others are not. However, it is sometimes claimed that any child can be taught to become a good sports person or musician. Discuss both these views and give your own opinion
- ✓ Nowadays young people are admiring media and sports stars, even though they do not set a good example. Do you think this is a positive or negative development?

- ✓ When a new town is planned, it is more important to Public Park and sports facilities than shopping centres for people to spend their time in. To what extent do you agree or disagree?
- ✓ Most schools are planning to replace sports and exercise with more academic sessions. How will this change affect children's lives in your opinion?
- ✓ Some people say that team sports are more beneficial than individual sports. What are the benefits of playing in a team? How can it help in later life?
- ✓ Some people think that sports contribute to peace building internationally. Do you agree or disagree?

UNIT 8

COMMUNICATION

IN THIS UNIT:

8.1. The future of digital communication and privacy.

*A Ted Talk by **Will Cathcart**, the Head of WhatsApp, and **Chris Anderson**, the Head of TED.*

8.2. Future mobile phones: What's coming our way?

The article by Catherine Hiley.

8.3. Writing.

8.4. Project work and presentations.

8.1. VIDEO. THE FUTURE OF DIGITAL COMMUNICATION AND PRIVACY

BEFORE YOU WATCH

1. Read and comment on the following quotations:

- ✓ **"Communication – the human connection – is the key to personal and career success."**

Paul J. Meyer,
a founder of Success Motivation Institute, pioneered the personal development and self improvement industry (1928-2009)

- ✓ **"Every act of communication is a miracle of translation."**

Ken Liu,
an American author of science fiction and fantasy (born 1976)

- ✓ **“A lot of problems in the world would be solved if we talked to each other instead of about each other.”**

Nickey Gumbel,
an English Anglican priest and author in the evangelical and charismatic tradition (born 1955)

- ✓ **“Although we live in an information technology age, we often find ourselves in failure to communicate situations. “**

Johnny Tan,
Experiential Keynote Speaker, Career Coach & Mentor, Multi-Award Winning & Bestselling Author, Talk Show Host

2.You are going to watch a Ted Talk by Will Cathcart and Chris Anderson called *THE FUTURE OF DIGITAL COMMUNICATION AND PRIVACY.* ***Read the information about the authors and the Talk and answer the questions:***

1. What are the most popular instant messengers in Ukraine?
2. Do you have WhatsApp, Viber and Telegram on your phone?
3. What do you like about WhatsApp?
4. Are there any features on WhatsApp that you would like to see added or improved upon in future versions of the software?
5. Do your friends and family members use WhatsApp? How often do they use it, and for what purposes?
6. What do you think is the most important feature of instant messengers?
7. Why do people use WhatsApp instead of other messaging apps?
8. WhatsApp has end-to-end encryption. What does this mean?
9. What’s the most annoying thing about WhatsApp?
10. What is the best feature about WhatsApp?
11. How much does WhatsApp cost?
12. Do you use WhatsApp to contact family members or friends? Why or why not?
13. What are some other things people do with WhatsApp besides texting each other?
14. What is your favourite feature of WhatsApp?
15. What makes WhatsApp different from other social media apps?

THE FUTURE OF DIGITAL COMMUNICATION AND PRIVACY

People send 100 billion WhatsApp messages every day, and they're all encrypted to protect them from potentially curious entities like companies, governments and even WhatsApp itself. With our increased reliance on digital communication tools during the COVID-19 pandemic, our fundamental right to privacy is more important than ever, says Will Cathcart, head of WhatsApp. He describes the tech and protocols the company built to prevent encryption services from being misused to spread disinformation or commit crimes while still safeguarding privacy.

WILL CATHCART

HEAD OF WHATSAPP

Will Cathcart is the head of WhatsApp, the world's largest private messaging service, where he oversees development of the digital technologies that connect the world.

His team is at the center of the debate between technologists, governments and human rights activists on whether everyone, including you, will have the ability to communicate privately and securely online. He joined Facebook in 2010 and worked on a number of the company's product efforts. In 2018, he became the vice president of the Facebook App, where he oversaw development and strategy. Before joining Facebook, Cathcart worked at Google and was responsible for product development of anti-spam technologies for Google's products, including Gmail. He graduated from Colgate University with a bachelor's degree in mathematical economics.

CHRIS ANDERSON

HEAD OF TED

After a long career in journalism and publishing, Chris Anderson became the curator of the TED Conference in 2002 and has developed it as a platform for identifying and disseminating ideas worth spreading.

Chris was born in a remote village in Pakistan in 1957. After boarding school in Bath, England, he went on to Oxford University, graduating in 1978 with a degree in philosophy, politics and economics. Back in the UK in 1984, Chris became an editor at one of the UK's early computer magazines and founded Future Publishing. In 1994, Chris moved to the United States where he built Imagine Media publisher of Business 2.0 magazine. This allowed Chris to create a private nonprofit organization, the Sapling Foundation, with the hope of finding new ways to tackle tough global issues through media, technology, entrepreneurship and, most of all, ideas. In 2001, the foundation acquired the TED Conference, then an annual meeting of luminaries in the fields of Technology, Entertainment and Design held in Monterey, California, and Chris left Future to work full time on TED. The TED stage has become a place for thinkers and doers from all fields to share their ideas and their work, capturing imaginations, sparking conversation and encouraging discovery along the way.

VOCABULARY

3. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

1. The company's **encryption** software allows secure credit card transactions over the internet.
2. This experiment aims to discover experimentally whether this is true and whether people can also decode **scrambled** messages if the first and last letters are also scrambled.
3. **Messaging** first became popular with teens, but it's now a practical business tool.
4. Use the app **to chat** and send photos free from anywhere in the world.
5. The proverbs amounted to a **repository** of wisdom.
6. All outgoing calls will be **digitally** recorded.
7. Problems can occur when a company does not know a **hacker** has broken into its system.
8. Each **transaction** at the foreign exchange counter seems to take forever.
9. When she's in a bad mood she's **obnoxious** to everyone.

10. She thought that her Instagram **account** had been hacked.
11. She said that she'd had to make a **trade-off** between her job and her family.
12. a conference where startup companies can **hook up** with investors
13. She wondered how it would be to touch him and **recoiled** at the thought.
14. She is **predominantly** a dancer, but she also sings.
15. The tennis championship is **broadcast** live to several different countries.
16. I'll **forward** his email to you if you're interested.
17. **Cryptocurrencies** such as bitcoin
18. How will the rise in interest rates affect our **bottom line**?

A. changed radio or phone signal so that it can only be understood using a special device
B. the process of changing electronic information or signals into a secret code (= system of letters, numbers, or symbols) that people cannot understand or use without special equipment
C. to take part in a discussion that involves sending messages over the internet, by smartphone, etc.
D. the process of sending someone a short message using a mobile phone or computer
E. in a way that records or stores information as a series of the numbers 1 and 0, to show that a signal is present or absent
F. a place where things are stored and can be found
G. an occasion when someone buys or sells something, or when money is exchanged or the activity of buying or selling something
H. someone who gets into other people's computer systems without permission in order to find out information or to do something illegal
I. an arrangement to use a social media website or internet service by a particular person who gives their name and some personal details
J. very unpleasant or rude
K. to meet or begin to work with another person or organization

L. to refuse to accept an idea or principle, feeling strong dislike or disapproval

M. the final line in the accounts of a company or organization, stating the total profit or mloss that has been made

N. a situation in which you balance two opposing situations or qualities

O. mostly or mainly

P. to send out a programme on television or radio

Q. to send a letter, etc., especially from someone's old address to their new address, or to send a letter, email, etc. that you have received to someone else

R. a digital currency produced by a public network, rather than any government, that uses cryptography to make sure payments are sent and received safely.

4. Complete the definitions. Use one word per space.

1. **privacy** is the _____ to do things without other people watching you or knowing what you are doing

2. **to transmit** is to send out an electronic _____ such as a radio or television signal

3. **imagery** is pictures, photographs, or objects that _____ an idea

4. **texting** is the process of sending and receing written _____ using a mobile phone

5. to **capture** is to put information or pictures into a form that can be used by a _____

6. **emotive** is causing strong _____

7. **upend** is to turn something upside _____

8. **revenue** is _____ from business activities or taxes.

THE FUTURE OF DIGITAL COMMUNICATION AND PRIVACY

WHILE YOU WATCH

https://www.ted.com/talks/will_cathcart_the_future_of_digital_communication_and_privacy

5.Watch the Ted Talk. Number the five topics (1-6) in the order they are discussed:

1. minimizing the risks while giving the security
2. how encrypted communication has really led to something positive
3. privacy and the risk balancing in the spread of misinformation
4. how Coronavirus changed behaviour
5. about the relationship of Facebook and Whatsapp
6. the current status and involvement of Whatsapp in Facebook's cryptocurrency Libre Project.

6. Find five errors in the summary of the first part of the talk. Then watch the first part of the video (00:00-4:39) and check your answers:

We've seen in the last few years that people turn to Whatsapp less than they had before. People do not trust that they can have a deeply sensitive private conversation when they can't be sitting face-to-face with the same level of security and privacy they would have had in the real world because of end-to-end encryption.You send a message to someone and know that they are not the only one who will get it. Anyone can listen to your conversation.

7. Watch the second part of the talk (4:39-9:20) and complete the sentences:

1. People use Whatsapp not just to talk to their loved ones, but to _____ business.
2. You use it to communicate with _____, small businesses, in particular, to order food, to order clothes, to book services.
3. Can you adjust the balance so that you can kind of _____ the risks while still giving the security?
4. It's new to us as a society to have _____ conversations.
5. We actually expanded the limit, so you can call it to _____ people now.
6. And we've seen a lot of governments and health agencies use it to get information out to people, so help lines in over _____ countries and agencies.
7. We've heard stories of governments in both _____ and _____ where Whatsapp is possible.
8. Court systems are using Whatsapp to communicate about cases because you don't want to bring everyone into a _____.

8. Watch the third part of the talk (9:20 to the end). Are the sentences True (T) ot False (F)?

1. So, for example, a little over a year ago we changed Whatsapp, so that you can't forward a message to more than three people at once.
2. With the new feature, after forwarding the message many times, you can only forward it to one person at a time.
3. Whatsapp joined Facebook more than five years ago.
4. Whatsapp used to charge users 10 dollars to use the service.
5. Will’s prefers to chat in social network than to speak face-to-face.
6. Digital world is the same, we should not change the rules.

9. Can you work out the meaning of the words used in the talk? Which of them are used as metaphors?

end-to-end encryption

adjust the balance

to combat bad abuse
to fight crime
solve crimes
to give up the security and privacy
expanded the limit
balance privacy and the risk
launch a feature
messages are going around
a healthy relationship
to charge users
generate revenue

CRITICAL THINKING

AFTER YOU WATCH

10. A talk usually has a main idea supported by other ideas. In a sentence of your own words, what would you say is the main idea of by Will Cathcart's and Chris Anderson's TED talk?

11. Read these comments about the TED talk. Agree or disagree, motivate your choice:

AB BBB: *Come on end to end encryption is encrypting the message once it leaves the device, but nothing is said about authentication of the recipient, the key used to encrypt the message is known by each endpoint and therefore defeats the purpose of the private communication. the device sending and receiving is not protected and when you type or read the message, the information are left in clear on a non secured device. This means the NSA/CIA/consort has the mean to freely access the information without needing any consent and the only privacy you have is toward an non erudite spy or your neighbour who is not interested in your conversation. Authenticating the recipient is not even done.*
JEREMY GREER: *Is this an advertisement?*
PAUL JANSEN: *Why even care...privacy seems to be a concept from the past...just behave somewhat sane and you'll be fine...*

KEVIN RANDAL RULACH: *You guys should charge for Whatsapp business. Maybe a one time 2 dollars or each time you download it to the phone. Fair and square deal. Then users feel more bonded and it will seem professional. Normal Whatsapp keep it free.*

12. Discuss the following quotations:

- ✓ **"The truth is we will be forever haunted by traceable communications manifested in the digital world."**

Germany Kent,

an American print and broadcast journalist, television personality, former beauty queen, actress, businesswoman, producer, philanthropist (born 1975)

- ✓ **"I'm still not sure why they call it social media. It robs us of genuine social interaction because we're forced to communicate through a device. "**

Germany Kent,

an American print and broadcast journalist, television personality, former beauty queen, actress, businesswoman, producer, philanthropist (born 1975)

- ✓ **"Digital communication seems to relieve people of their conscience, enabling them to feel more comfortable behaving unethically."**

Nancy Jo Sales,

a New York Times bestselling author and journalist at Vanity Fair, New York magazine, and Harper's Bazaar (born 1964)

8.2. READING. FUTURE MOBILE PHONES: WHAT'S COMING OUR WAY?

BEFORE YOU READ

The mobile phones of the future are expected to be more closely embedded in our day-to-day lives than ever before. Some futurologists and industry experts predict that in years to come, mobile phones will become remote controls for our whole lives, while others forecast that in the future mobile phones will literally run our lives for us.

And with the Nothing Phone launching this year, the future of smartphones might be a lot closer than you think. One thing's for certain: the technology involved in mobile phones and mobile networks has developed so rapidly over the last few years, it's going to be an exciting ride.

https://www.uswitch.com/mobiles/guides/future-of-mobile-phones/

1. Read the information above and answer the questions:

1. What, do you think, smartphones of the future will look like? Will smartphones still be popular in fifty years?
2. What is the biggest benefit to and the biggest danger that comes from owning a smartphone?
3. Aside from making calls, what do you use your smartphone for?
4. What is the most interesting app you have ever used on a smartphone?
5. Do you think smartphones will get bigger or smaller in future?
6. What do you think smartphones will be able to do in ten years' time?

READING

2. Read the article FUTURE MOBILE PHONES: WHAT'S COMING OUR WAY? ***Are these sentences True (T) or False (F)? Justify your answers.***

1. Front-facing camera will be located on the edge of the phone.
2. We will have to charge our phones for at least day and night with fast wireless charging.
3. As the technology becomes more reliable, prices for foldable phones will grow.
4. We should not expect flexible smartphone very soon.
5. Some schools use texts to inform parents that their children skip classes.
6. Eco-friendly phones are not in demand.

3. Scan the article and answer the following questions:

1. Why is a front selfie camera location a disadvantage?
2. Why will the wireless charging time reduce?
3. What is the biggest drawback of oldable phones?
4. How are smartphones used in education?

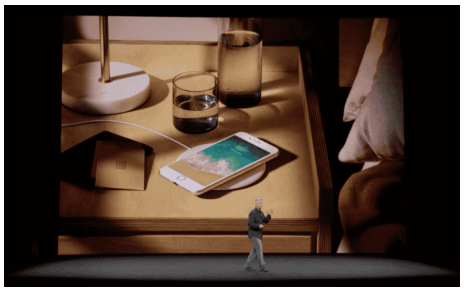
5. What features make smartphones eco-friendly?

FUTURE MOBILE PHONES: WHAT'S COMING OUR WAY?

By Catherine Hiley

Future phones: what's in store for us? Concept phones are a great way of getting a glimpse at how phones of the future may develop. Here is a list of some of the things we might be able to expect from the phones of the future.

Under-display cameras. Whether it's a notch, a hole-punch, a teardrop or even a shark-fin, front-facing cameras are still taking up space on our smartphone screens. Most of us have gotten used to them by now, but that hasn't stopped phone brands from trying their best to give us a fully unblemished, 100% screen. There have been some attempts to put a selfie camera under the phone screen, but they haven't been seamless so far - there are still glitches and disturbances on the display. But eventually, we're confident that phone makers will be able to completely hide the front-facing camera, which would give us a completely clean display that reaches every edge of the phone. This would be a welcome upgrade for people who like to stream TV shows and films on their travels.

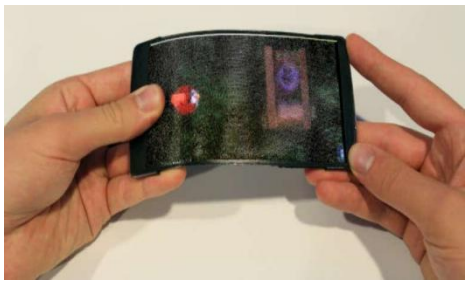


Zero ports and wireless charging. While wireless charging has been around for a good few years now, it's still not practical enough for most people to rely on day in, day out. But with wireless charging speeds increasing dramatically each year, it's becoming ever-more likely that they'll push out charging cables in the next several years. Rather than having to leave our phones plugged in for hours at a time to get a full charge, fast wireless charging will allow us to simply put our phone down for 15 or so minutes, get all the charge we need, and be on our merry way.

And as a result, with wireless technology fully taking over the smartphone, there wouldn't be any more need for ports, which can get dirty, damaged

and stop working. And with wired headphones falling out of favour more and more each year, you can expect a lack of any ports on your smartphone in several years' time.

Foldables everywhere. We've had a few years of foldable phones now, thanks to Samsung's Galaxy Fold and Galaxy Flip series and other designs from the likes of Huawei and Motorola. But for reasons that are probably quite obvious, their price and inconsistent quality have put a lot of people off so far. But as the technology becomes more reliable, and as prices eventually go down due to competition, foldable phones will likely start to appear a lot more enticing for customers. Expect that infamous seam in the middle of the screen to slowly vanish over the years. Expect more practical designs that suit your needs better. And expect fewer bulky designs that hardly fit into your pocket.



Holographic displays. From Star Wars to Ironman, holograms have long been a regular feature in sci-fi and futuristic fantasy films. But new prototypes being developed have shown that the technology isn't as far-fetched as you'd think. Especially if the Holoflex prototype showcased by researchers from Queen's University in Canada is anything to go by. As the name suggests, the HoloFlex is both holographic and flexible, allowing users to bend the handset to view the 3D display from different angles and interact with the images on screen. Touted as the world's first holographic, flexible smartphone, the HoloFlex is still in development and won't be available any time soon.

Educational tools. By tracking the rate of growth and how mobile phone statistics have changed over time, some experts believe that mobiles will change the way we learn and teach. With more than one-in-three school children owning a mobile phone, a future where camera and voice recorder phones are both learning and teaching

tools is highly possible. We have already seen some education authorities using texts to alert parents to the truancy and even to notify pupils of classroom changes. Harnessing the multi-functional nature of mobile phones as both learning and teaching aids could be increasingly commonplace, especially as high quality camera phones become more widely and cheaply available. It's been suggested that in the future mobile phones will be used to take photos and make notes on field trips, in order to create a more active and informal approach to learning.

Eco-friendly and refurbished smartphones. Companies are always looking to make their products more environmentally friendly, and phone makers are no exception, with researchers looking into sustainable materials and cleaner energy charging. With eco-friendly phones like the Ecophone rising in popularity, and phone manufacturers taking steps to reach Net Zero status by 2050, there's a much bigger focus on environmentalism in smartphones now.

Another type of phone that's surging in popularity of late is, simply, refurbished ones. No longer are they untrustworthy and poor quality, there are now many companies out there dedicated to selling great refurbished phones in a near-perfect condition. Refurbished phones are much less impactful on the environment, because no new emissions need to be created in order for it to hit the shelves.

https://www.uswitch.com/mobiles/guides/future-of-mobile-phones/

VOCABULARY

4. Find words in the article with the following meanings:

1. violence or trouble
2. to send or receive sound or video directly over the internet as a continuous flow
3. to become connected to a piece of electrical equipment or to the main electricity supply
4. related to images in which objects look as if they are solid and real, not flat

5. following the level of an interest rate, share price, etc.
6. not harmful to the environment, or trying to help the environment
7. an amount of something, especially a gas that harms the environment, that is sent out into the air.

5. Explain the meaning of the underlined words and word-combinations in the article. Use dictionaries if necessary.

6. Insert the proper preposition:

1. That hasn't stopped phone brands _____ trying their best to give us a fully unblemished, 100% screen.
2. It's not practical enough for most people to rely _____day in, day out.
3. Wireless charging speeds will push _____ charging cables in the next several years.
4. Wireless technology is fully taking _____ the smartphone.
5. Wired headphones falling _____ of favour more and more each year.
6. HoloFlex allows users to bend the handset to view the 3D display_____ different angles and interact with the images on screen.
7. Education authorities use texts to alert parents _____ the truancy and even to notify pupils _____ classroom changes.
8. Researchers look _____ There's a much bigger focus _____ environmentalism in smartphones now.
9. Refurbished phones are surging _____ popularity.

8.3. WRITING

1. You have had a class discussion on the following quotations:

- ✓ **“Text messaging is just the most recent focus of people's anxiety; what people are really worried about is a new generation gaining control of what they see as their language”.**
- ✓ **“Sending a message on a mobile phone is not the most natural of ways to communicate. The keypad isn't linguistically sensible.”**
- ✓ **“The main effect of the internet on language has been to increase the expressive richness of language, providing the language with a**

new set of communicative dimensions that haven't existed in the past."

David Crystal,
a writer, editor, lecturer, and broadcaster (born 1941)

- ✓ **"Verbal communication cannot be lost because of a lack of skill. The ability to listen and learn is key to mastering the art of communication. If you dont use your verbal skills and networking, it will disappear rapidly. Use technology wisely."**

Rick Pitino,
an American college basketball coach
who is the head coach for Iona College (born 1952)

- ✓ **"In a few years, men will be able to communicate more effectively through a machine than face to face. That is a rather startling thing to say, but it is our conclusion."**

J. C. R. Licklider,
an American psychologist and computer scientist (1915-1990)

- ✓ **"The new information technology... Internet and e-mail... have practically eliminated the physical costs of communications."**

Peter Drucker,
an Austrian-American management consultant, educator, and author (1909-2005)

Now you have been asked to write a composition, giving your opinion. Do you agree or disagree with the following statements? Use specific reasons and examples to support your opinion. Write a composition of 200-250 words.

8.4. PROJECT WORK & PRESENTATIONS

Topic: Look at the DEBATE TOPICS ABOUT COMMUNICATION. Search the Internet to report about some of them.

Instructions: Length of presentation – 5 mins. The criteria for evaluating the presentation you can find in Appendix 1.

DEBATE TOPICS ABOUT COMMUNICATION

- ✓ How have technological advances affected communication/ how we receive news/ the medical field/ education?
- ✓ Has the development of the internet and social media caused a change in the way we communicate (quality, quantity, style etc.)? Are we losing the art of conversation?
- ✓ How do you think face-to-face communication differs from communication using computers?
- ✓ How does an instant messaging system help communication?
- ✓ What are the key features of instant messaging?
- ✓ What are three challenges of using instant messages or text messages at the University?
- ✓ Do you think using cell phones too much is bad for our physical or mental health? Why?

UNIT 9

ONLINE EDUCATION

IN THIS UNIT:

9.1. Why e-learning is killing education.

*A Ted Talk by **Aaron Barth**, Ph.D. in Philosophy, a thought-leader and an innovator working at the convergence of science, smart design and technology to change behavior and transform organizations.*

9.2. The future of online learning: the long-term trends accelerated by Covid-19.

The article by Richard Doughty for the Guardian.

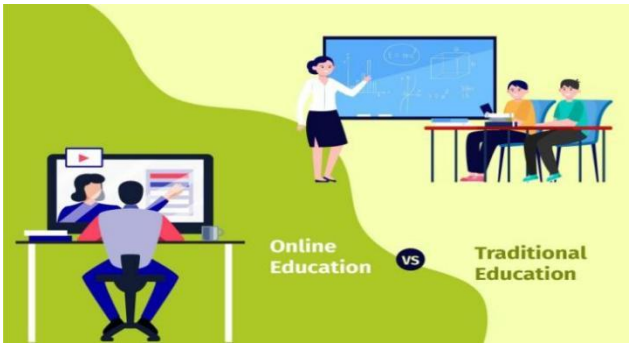
9.3. Writing.

9.4. Project work and presentations.

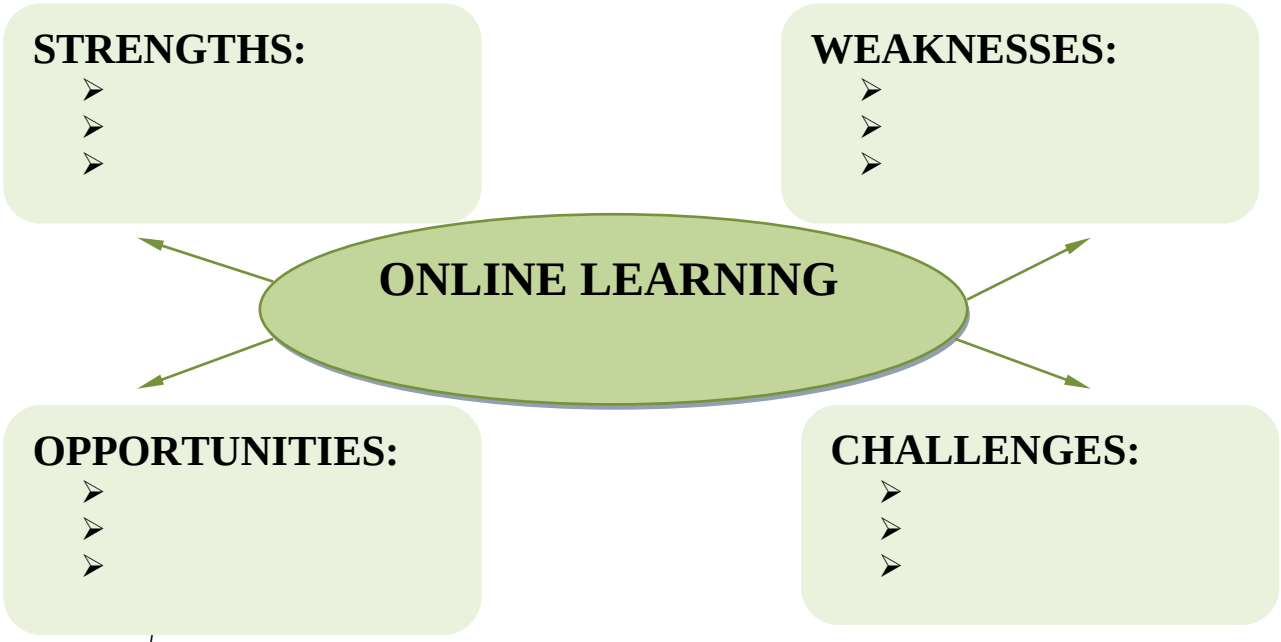
9.1. VIDEO. WHY E-LEARNING IS KILLING EDUCATION

BEFORE YOU WATCH

1. We all have the experience of both online and offline education. What do you think are the advantages of each of these forms? Brainstorm their benefits and discuss with your partner similar and different points in your lists.



2. ***Work with your partner and complete the mind map about online learning – its strong and weak points, opportunities and challenges:***



3. Tick (√) the characteristics of a successful online student. Justify your choice:

Self-directed	Computer-literate	Able to stay on task
Creative	Gregarious	Open-minded
Motivated	Independent	Frustrated

4. You are going to watch a Ted Talk by Aaron Barth called *WHY E-LEARNING IS KILLING EDUCATION*. ***Read the information about the author and the Talk and answer the questions:***

1. What have you learnt about Dr. Aaron Barth's career path?
2. What issues come within the scope of his interests and the tasks of the company he is the president of?
3. What is his personal viewpoint on education and e-learning in particular?

AARON BARTH

Education at scale doesn't have to suck. If you ditch conventional e-learning's clicky gimmicks, and focus instead on science-backed design principles and powerful human stories, your training will shift from tedious to

transformative. Dr. Aaron Barth, thought-leader and president of Dialectic, gives progressive leaders the confidence they need to tackle their hardest people problems using scientific methods. Rooted in education, Dr. Barth founded Dialectic after completing his Ph.D. in Philosophy at Western University, keen on fusing theory with application. Dialectic uses the power of science to accelerate employee learning, transform organizations, improve employee and customer engagement and mitigate unconscious bias. Dr. Barth and his team of gifted scientists and designers have implemented interactive learning experiences for 50+ Canadian companies, uncovering workplace barriers and mobilizing impactful strategies. They work in two areas: workplace culture and learning and development. For both, their goal is to help their clients create behaviour change at scale.

VOCABULARY

5. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

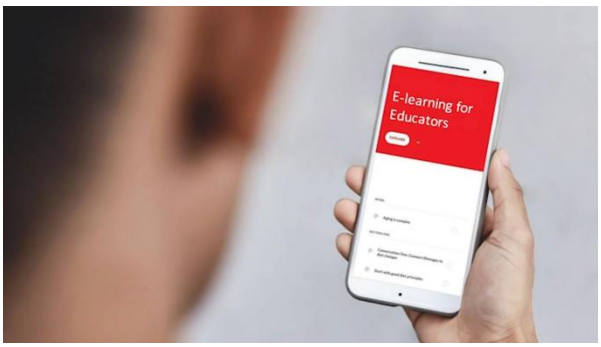
1. What discussion? You weren't talking to me, you were **talking at** me!
2. However, into that learning cycle, we need **to inject** a clear analysis of the problems that learning cycle is intended to tackle.
3. That last **bullet point** is worth noting in particular.
4. The communication abstraction provides **scalable** content-based messaging and manages system heterogeneity and dynamism.
5. This apparent **discrepancy** actually makes sense under the view that both experiments capture opposite sides of children's understanding of indirect requests.
6. They claim that the fall in unemployment is based on **fraudulent** manipulation of statistics.
7. Removing **unconscious bias** in the recruitment process is an important way of improving workforce diversity.
8. She thought she was on a fast track to a good job as a medical assistant when she passed the entrance exam **with flying colors**.
9. The company isn't just **crushing** the commercial realm, it is also innovating corporate culture.

10. You can open a folder and choose files for upload, or you can **drag and drop** them directly into the upload area.

A. to be extremely successful, to achieve something that is difficult, to excel
B. move something on a computer screen from one area to another using the mouse
C. to introduce something new that is necessary or helpful to a situation or process
D. an unfair belief about a group of people that you are not aware of and that affects your behavior and decisions
E. an item in a list that has a large dot in front of it to signify its importance
F. used to describe a business or system that is able to grow or to be made larger
G. to speak to someone without listening to that person or allowing them to speak
H. made with the intention of tricking someone, especially illegally
I. to perform extremely well in a particular situation, competition, etc.
J. a difference between two things that should be the same

WHY E-LEARNING IS KILLING EDUCATION

WHILE YOU WATCH



https://www.ted.com/talks/dr_aaron_barth_why_e_learning_is_killing_education

6. Watch the TED Talk. Use collaborative listening and answer the questions in pairs:

1. What did Aaron Barth rely on when he started his teaching carrer and why does he consider it wrong?
2. According to Barth's viewpoint, what is the only thing that matters in education?
3. What is considered by the speaker as the primary basis for education and the way people actually learn something? What reasons does he provide to support his opinion?
4. What real story is mentioned by Aaron Barth? Why is it relevant?
5. What activities does he consider inappropriate for e-learning?

7. Watch the first part (00:00-04:11) of the video again and complete the sentences:

1. My intuitions were really, really bad. They were based on my experience in the _____ of education.
2. That's what I did – I _____ people, kind of like right now.
3. Years later when I was working as an education consultant, I was asked to design some _____ and I hadn't done that before.
4. And it looks something like this – a virtual instructor in front of a virtual whiteboard delivering virtual _____.
5. I'm pretty sure when we thought of using _____ in education this isn't what we had in mind.
6. Our earliest instincts around education are actually based on _____.
7. The spread of disease and climate crisis are global problems, which require _____, and e-learning should be making a contribution to them, but it isn't.
8. We know that scenario- or story-based learning is more engaging than click then _____ e-learning.

8. Watch the second part of the talk (04:11-05:45). Are the sentences True (T) or False (F)? Justify your answers.

1. Steven and his 10-year-old granddaughter Rose are going to the bank to open up her first bank account.
2. When they get to the bank and start filling out the paperwork, things start to go wrong.

3. A bank employee is extremely polite with them.
4. The bank employee thinks that the insurance that they've provided is fraudulent.
5. In fact, the man and his granddaughter are native Canadians and their id is actually their official government issued status card.

9. Match the two parts of the sentences to complete what Aaron Barth says. Then watch the Ted Talk (05:45 to the end) and check your answers.

1. Let's imagine that sometime prior to the incident the bank employee …
2. They crush the drag and drop activities, and after 12 tries …
3. We know that 20 minutes after a traditional classroom style experience…
4. If the e-learning experience was a simulation of the story …
5. When we compare this story-based approach to a clicky module, …
6. You can't keep cutting and pasting content …
7. It means giving up the avatars, giving up the drag and drops, giving up the quizzes but …
8. If we can get back to telling these human stories again, …

A. into an e-learning module.
B. you've already forgotten sixty percent of the content.
C. we'd be exposing the students to the nuances of unconscious bias and therefore improving their collaboration skills.
D. we can get back to empowering people.
E. it's no contest which one is more likely to change our behavior.
F. they are perfect on the quiz.
G. passed with flying colors their e-learning module on unconscious bias.
H. it'll be worth it.

CRITICAL THINKING

AFTER YOU WATCH

10. A talk usually has the main idea supported by other ideas. In a sentence of your own words, what would you say is the main idea of Aaron Barth's TED talk? Do you agree with his point of view?

11. Read viewers' comments about the TED talk. Agree or disagree, motivate your choice.

Love Life: *I had a great chemistry teacher who would open his lectures up with stories and history around what we were going to learn in chemistry! It made me so excited to then learn all of the formulas etc. I was doing something that others before me had to figure out and apply to the real world. I had a math teacher who did the same. These are two subjects we don't usually think of as an opportunity for that. If you take out time from the lesson to give it historical context (I do this with my music students all the time) you will have the most passionate and interested students. They'll never forget what they learned!*
Klaw: *I'm an e-Learning developer and my approach to it is to tell a story. The problem I find resides with the clients that just want to pour their PowerPoint contents into a e-Learning format and don't care if there's a better way to do it. Things are changing though, some are listening to what we advise.*
Daniel Woldegiorgis: *While I do agree with your statement that telling stories is a valuable instrument in teaching, you're making a vast generalization that would ultimately deter rather than support the education of students. To see this, simply imagine every concept ever thought being delivered as a story. Not only will this take too long, but can actually deter some students.*
Defeating Diabetes: *I love stories. They are an important part of introducing and emotionally driving home a point. But, they do not always provide the depth of information needed for some (many) topics. As with most things, a balance is usually best.*
Peter Ho: *A person learns how to drive a car not thru stories, but thru constant repetition. A physician learns their profession not thru stories, but thru hard and multi-year studies and then work. Stories make education fun and entertaining, but when you have dozens if not hundreds of stories squeezed in several weeks of your learning program - you hardly remember much…*

9.2. READING. THE FUTURE OF ONLINE LEARNING: THE LONG-TERM TRENDS ACCELERATED BY COVID-19

BEFORE YOU READ

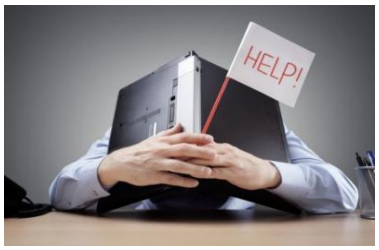
1. Work in groups and discuss the following, then share your opinions with the class:

1. What are the synonyms to 'online learning'?
2. What are the major concerns about moving to online education?
3. Look at the photos below. What issues of online education do they demonstrate?

A.

B.

C.



D.

E.

F.

4. How do you see the future of education? Do you agree that online learning is 'a long-term trend'?

READING

2. Skim the article and summarize its general idea.

3. Scan the article. What do the following acronyms and initialisms stand for? KMI, AI, HIVE, COVID ***What is mentioned about them in the article?***

4. Read the article again and answer the following questions:

1. What does the author mean saying *'the "online genie" is out of the bottle and won't go back in'*?

2. What technologies are currently being developed by KMI to make online learning more effective?
3. What technology is mentioned in the article as the one that can bring personalisation to online learning?
4. Are traditional didactic methods appropriate for online learning? What new approaches can they be substituted with?
5. What has been done at Coventry University to ensure their postgrad students receive all intended learning outcomes from the course?

THE FUTURE OF ONLINE LEARNING: THE LONG-TERM TRENDS ACCELERATED BY COVID-19

By Richard Doughty

With the technology now available, it's clear that simply broadcasting pre-recorded lectures is no longer an option for forward-thinking universities.

For Prof John Domingue, director of the Open University's pioneering research and development lab, the Knowledge Media Institute (KMI), the "online genie" is out of the bottle and won't go back in.

"It's slightly galling to see some universities trying to replicate online almost exactly what they delivered face-to-face before Covid. Standing before a camera and broadcasting is not online teaching. You need to do things differently," he says.

So what can universities undertake to make online learning more than just a heavy focus on streaming and recording technology? Domingue points to artificial intelligence (AI) and the concept of an online library for educators based on a Google search engine dedicated to education, and a Netflix-style recommendation tool that tracks down content to suit a lecturer's own field, based on previous searches.

KMI is currently developing a personalised AI assistant or chatbot, an AI career coach and other tools that can analyse essays for marking and set up quizzes on revision topics.

Personalisation is also key to giving students and lecturers a better online experience. In 2017, Oxford's Saïd Business School installed the first immersive virtual classroom of its kind in the UK: a bank of 27 HD screens able to simultaneously support up to 84 students from across the globe, called the Oxford Hub for International Virtual Education (or HIVE). An in-room camera follows lecturers moving around the room, who can respond – as in real life – to visual cues from and talk directly to individual students.

While such technology could be prohibitively expensive for many institutions, Duncan Peberdy, a consultant specialising in tech-enabled learning spaces and former adviser at the educational IT body, Jisc, says a much cheaper alternative in the form of a 3-4m wide screen offering a different dynamic based on simplified specifications has been developed by ViewSonic. "We are now in talks with two UK universities to jointly develop it on their campuses," he says.

Meanwhile on UK campuses, many universities are striving to make the online experience more than just a lecturer broadcasting in front of a camera.

"We didn't want that approach so we 'shifted' academics who were simply recurating their material with PowerPoint slides and brought in new hardware and specialists to assist them," says Guy Daly, deputy vice-chancellor (education and students) at Coventry University.

"We realised our academics either needed the skills or support to deliver online learning in a very engaging way in a now very different world. Since March, we've repurposed 2,500 course modules at under- and postgraduate level for delivery in the first term of this academic year."

Coventry has moved virtually all its student assessments and exams online. "We also used to talk about the death of the traditional lecture and bringing in more student activity-based learning as opposed to traditional didactic methods, but we've accelerated that journey due to Covid," says Daly.

Wholesale and now permanent changes have gone hand in hand with the launches of Coventry's first online postgraduate certificate in education and the first online nursing degree in England.

Many taught postgrad students, particularly those using labs, have been among students hardest hit, according to Prof Danielle George, associate dean for teaching and learning at the University of Manchester. “They only have one year to ensure they receive all their intended learning outcomes from their course. So we’ve invested in software to enable them to do prep work at home so they will then need less time in the lab itself,” she says.

“We have also helped them with time management, which is absolutely key [during short courses]. Covid took away their daily structure of going from room to room on campus so we’ve timetabled asynchronous activities – their lecturer will, say, be available ‘live’ at 9am to deliver a lecture and then answer questions, or they can choose to watch a recorded version later in their own time.

“My best advice to postgrads is to get involved in anything to do with induction – we’ve invested a lot more energy, time and passion in this area than we’ve done before and put on numerous practical online sessions,” says George.

https://www.theguardian.com/education/2021/feb/16/the-future-of-online-learning-the-long-term-trends-accelerated-by-covid-19

5. Find words and expressions in the article that fit the following definitions:

1. to make or do something again in exactly the same way
2. to do or begin to do something, especially something that will take a long time or be difficult
3. the use of computer programs that have some of the qualities of the human mind, such as the ability to understand language, recognize pictures, and learn from experience
4. a computer program designed to have a conversation with a human being, especially over the internet
5. a short, informal test
6. seeming to surround the audience, player, etc. so that they feel completely involved in something
7. to find a new use for an idea, product, or building

8. the process of testing, and making a judgment about, someone's knowledge, ability, skills, etc., or the judgment that is made
9. a student who has already received one degree and is studying at a university for a more advanced degree
10. a period during which a new member of an organization or a new member of staff learns about the organization and has basic training

6. Arrange the words in suitable pairs. Recall the context they are used in:

1. pioneering	A. classroom
2. artificial	B. research
3. search	C. outcomes
4. virtual	D. engine
5. prohibitively	E. year
6. academic	F. expensive
7. didactic	G. methods
8. learning	H. Intelligence

7. Look through the text again and find synonyms to the following words:
1. annoying, irritating –
2. together, cooperatively –
3. try hard, endeavour –
4. scholar, professor –
5. extensive, large-scale –

8. Match the phrasal verbs and idiomatic expressions with their meanings. Use them in your own situations:
1. the genie is out of the bottle
2. track down something
3. set up
4. go hand in hand with smth
5. hard hit

A. closely related to it and happens at the same time as it or as a result of it

B. to arrange for an event or activity to happen
C. said to mean that something has been done or created which has made a great and permanent change in people's lives, especially a change which people regret
D. badly affected; profoundly stricken; affected in an especially negative way
E. to search for someone or something, often when it is difficult to find that person or thing

9. Insert the prepositions where necessary:

1. The "online genie" is _____ the bottle and won't go back _____.
2. So what can universities undertake to make online learning more than just a heavy focus _____ streaming and recording technology?
3. He points to a Netflix-style recommendation tool that tracks _____ content to suit a lecturer's own field, based _____ previous searches.
4. KMI is currently developing a personalised AI assistant or chatbot, an AI career coach and other tools that can analyse _____ essays for marking and set _____ quizzes on revision topics.
5. "We also used _____ talk about the death of the traditional lecture and bringing in more student activity-based learning as opposed _____ traditional didactic methods, but we've accelerated that journey due _____ Covid," says Daly.
6. Covid took _____ their daily structure of going from room to room _____ campus so we've timetabled asynchronous activities …

9.3. WRITING

1. You have had a class discussion about online learning – its present and future, strong and weak points, opportunities and challenges. Now choose the topic from the list and write an article for your blog:

- ✓ Online learning: opportunities and challenges
- ✓ Online learning: advantages and disadvantages
- ✓ Synchronous and asynchronous distance education: pros and cons
- ✓ The future of online learning

✓ What impacts my perception of distance learning during the educational process

1. Write a paragraph expressing your understanding of one of the quotations below.

✓ **"Online learning can be a lifeline to those who have obstacles, such as geographical distances or physical disabilities."**

Paul Levinson,
an American author, singer-songwriter, and professor of communications and media studies at Fordham University in New York City (born 1947)

✓ **"If we teach today's students as we taught yesterday's, we rob them of tomorrow."**

John Dewey,
an American philosopher, psychologist and educator (1859-1952)

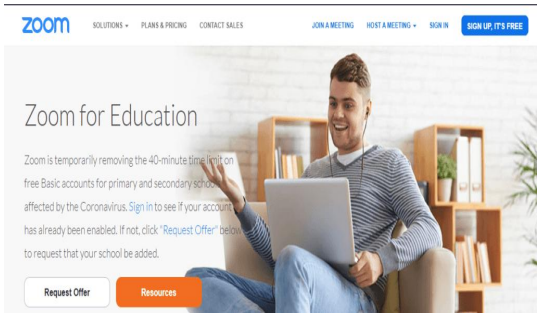
✓ **"Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is the most important."**

Bill Gates,
an American business magnate and philanthropist, a co-founder of Microsoft (born 1955)

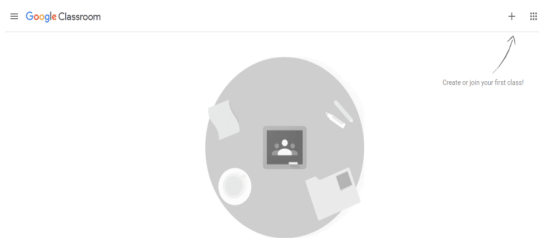
9.4. PROJECT WORK & PRESENTATIONS

Topic: Online education has experienced an excellent transformation with the advent of e-learning web apps. Read about some of them below.
Share your experience of using any other apps. Search the Internet to learn more about them.

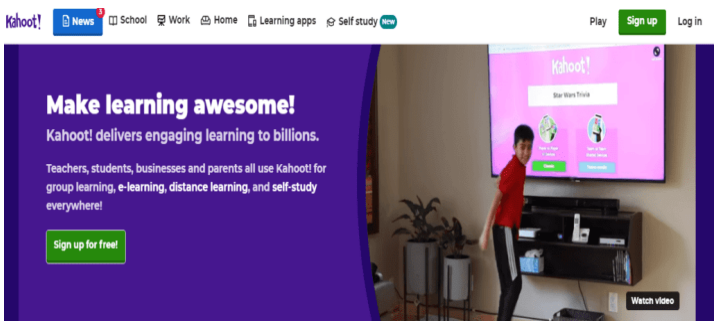
Instructions: Representing the e-learning web apps, you may not only tell how they work, facilitate learning and some of their features, but demonstrate it as well.
Length of presentation –5 mins. Criteria for evaluating the presentation you can find in Appendix 1.



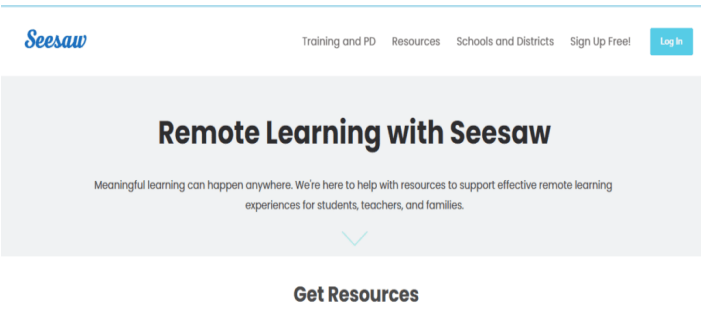
Zoom, one of the best cloud video conferencing web apps that assist you in sharing schedules, tutoring lessons, communicating with multiple students, and so on. You can boost students' participation during remote learning with amazing features like one-click content sharing, digital whiteboarding, etc.



Google Classroom is a powerful and easy to use web app for seamlessly organizing the daily activities of students. Furthermore, this tool allows you to take online classes, distribute course materials, assign assessments, track students' progress, send feedback, etc from anywhere at any time.



Kahoot is a game-based learning app to improve students' engagement in the virtual classroom. With more than 50% of US educators using this platform, it is possible to create quizzes, host live games, and more. All these activities will be depending on the lesson concepts, therefore, you can make students master each of the lessons via games and fun tasks.



As one of the popular online learning web apps, **Seesaw** offers a bulk of resources to you for building a successful digital learning environment. It allows you to showcase the students' strengths, areas for improvement, students' learning progress, etc to their parents from the virtual classroom.

Socrative, one of the efficient e-learning web app platforms to improve the engagement of the students. It allows you to launch a mini-quiz, raise poll questions, assign quick assessment tasks and so on. It is a cloud-based student response system to instantly examine students' understanding levels while remote learning.

https://colorwhistle.com/top-e-learning-web-apps/

UNIT 10

LANGUAGE AND TECHNOLOGY

IN THIS UNIT:

10.1. The giant leaps in language technology – and who's left behind.

*A Ted Talk by **Kalika Bali**, a computational linguist, a Principal Researcher at Microsoft Research India.*

10.2. How the Internet changed the way we write – and what to do about it.

The article by Emmy Favilla for the Guardian.

10.3. Writing.

10.4. Project work and presentations.

10.1. VIDEO. THE GIANT LEAPS IN LANGUAGE TECHNOLOGY – AND WHO'S LEFT BEHIND

BEFORE YOU WATCH

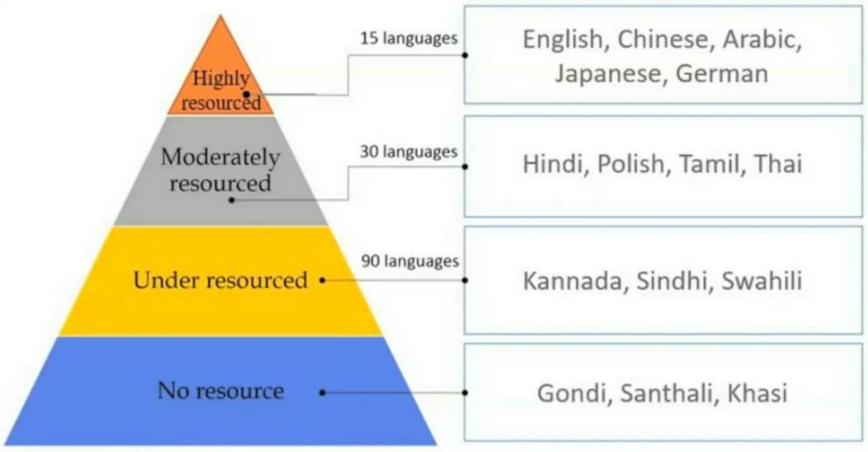
1. Match the terms with their meaning:

1. natural language processing (NLP)	**A.** a biologically-inspired programming paradigm which enables a computer to learn from observational data; it attempts to mimic the human brain through a combination of data inputs, weights, and bias
2. deep neural networks	B. the process of automatically translating content

	from one language to another without any human input
3. digital divide	C. refers to both the electronic devices and the computerized and internet technologies used by them
4. machine translation	D. a branch of artificial intelligence that helps computers understand, interpret and manipulate human language
5. digital tools	E. the problem of some members of society not having the opportunity or knowledge to use computers and the internet than others have

2. Discuss in groups the following points and then share your ideas in class:

1. Do you know how natural language processing (NLP) works?
2. Have you ever used any translation app or a virtual assistant? Which one? Share your experience. What languages have you applied translation apps for?
3. Study the pyramid graph of the resource distribution across languages in the world. Comment on it. What is meant by a 'highly-resourced' or 'low-resourced' language?



3. You are going to watch a Ted Talk by Kalika Bali called *THE GIANT LEAPS IN LANGUAGE TECHNOLOGY – AND WHO'S LEFT BEHIND.* ***Read the information about the author and the Talk and answer the questions:***

1. What is Kalika Bali’ s occupation?
2. What kind of activity does she perform?
3. What does the speaker compare technology to? Explain why.
4. What does the expression ‘digital landscape’ mean?
5. Kalika Bali has a firm conviction that ‘technology can empower only if it takes into account the socio-cultural context in which it is to be used.’ What do you think she means saying this?

KALIKA BALI

Thousands of languages thrive across the globe, yet modern speech technology – with all of its benefits – supports just over a hundred. Computational linguist Kalika Bali dreams of a day when technology acts as a bridge instead of a barrier, working passionately to build new and inclusive systems for the millions who speak low-resource languages. In this perspective-shifting talk, she outlines what happens when a language is omitted from the digital landscape – and what can be gained when communities keep pace with the future.

Kalika Bali works broadly in the area of speech and language technology, especially in the use of linguistic models for building technology that offers a more natural human-computer interactions, and technology for low-resource languages. She has been working in the field of Speech and Natural Language Processing for over two decades and believes that local language technology especially with speech interfaces, can help millions of people gain entry into a world that is till now almost inaccessible to them.

VOCABULARY

4. Read the sentences from 1-10. Guess the meaning of the words in bold from TED Talk, then match the words and their definitions (letters):

1. A graduate of law, he had spent his life in **academia**.

2. Local history becomes global history or, as the new **buzzword** would have it, 'glo-cal' history.
3. He presented data **to underpin** his argument.
4. Do **bilinguals** activate phonological representations in one or both of their languages when naming words?
5. They **bypassed** the committee and went straight to senior management.
6. We must **bridge the gap** between employees and management.
7. However, in the latter case grammatical analysis of the type proposed here is useful in providing a **robust** analysis of the best path.
8. There is a trend towards **citizen journalism**, with new channels and newspapers encouraging people to send in their videos.
9. With this form of editing you can **distort** the shape of an object or a piece of text.
10. Linguistically, these contrasts are encoded in the styles of speech **deployed** by these two performers.

A. a person who speaks two languages equally well
B. to change something from its original, natural, or intended meaning, condition, or shape, especially in a negative way
C. to use something or someone, especially in an effective way
D. the part of society, especially universities, that is connected with studying and thinking, or the activity or job of studying
E. a word or expression from a particular subject area that has become fashionable by being used a lot, especially on television and in the newspapers
F. to avoid something by going around it; to ignore a rule or official authority
G. strong and unlikely to break or fail
H. to make the difference or division between two things smaller or less severe
I. to give support, strength, or a basic structure to something
J. the activity of recording or writing about news stories when this is done by ordinary people rather than by trained reporters

THE GIANT LEAPS IN LANGUAGE TECHNOLOGY – AND WHO'S LEFT BEHIND

WHILE YOU WATCH

https://www.ted.com/talks/kalika_bali_the_giant_leaps_in_language_technology_and_who_s_left_behind

5. Try to guess if the statements are true (T) or false (F). Then watch the Ted Talk and check your answers:

1. NLP is the part of computer science engineering that makes machines only process natural language.
2. The creation of a speech recognition system requires a huge amount of natural language data.
3. A speech recognition system is not able to transcribe speech into text better than a human does.
4. More than 60 % of the world languages are considered to be resource-poor languages as there's no technology built for their processing.
5. The platform called Karya was created and used for providing digital microtasks to the underserved communities in India.
6. When the speaker and her team were collecting some data from Hindi-speaking farmers in Central India something went wrong and the recording was distorted. The reason for it was that the speakers didn't pronounce the words distinctly.
7. According to Kalika Bali, the power of technology is the main point that helps her succeed in her projects.

6. Watch the first part (00:00-04:48) of the video again and complete the sentences:

1. As a researcher at Microsoft Research Labs India I work in the field of _____ technology and _____ technology.
2. Natural language processing, artificial intelligence, speech technology, these are very big words, they are _____ right now.
3. When you are interacting with a bot trying to book your train tickets or flight tickets, when you are speaking to a voice-based _____ in your phone, it's natural language processing that underpins the entire technology that makes that work.
4. If you want a speech system to converse with you in Gujarati, the first thing you require is a lot of _____ of Gujarati people speaking to each other in their own language.
5. In 2017, Microsoft came up with a speech recognition system which was able to transcribe speech into text better than a human did. And this system was trained on _____ transcribed words.
6. In 2018, an English-Chinese machine translation system was able to translate from English to Chinese as well as any human bilingual could. And this was trained on _____ bilingual sentence pairs.
7. What this means is that resource-rich languages have technologies built for them, so researchers and technologists get attracted towards them. They build more _____ for them.

7. Watch the second part of the video (4:48-11:15) and answer the questions:

1. What is the main aim of Project Ellora in Microsoft?
2. What have you learned about the Gondi language?
3. What are the three valuable life lessons given by the people of Amale, a small village in India?

8. Watch the third part of the video (11:15 to the end) and take notes on what you find out about:

- ✓ the failures Kalika Bali and her team experienced while collecting language data in Central India
- ✓ the modified 4-D design thinking methodology applied by the speaker
- ✓ the story of two Aborigine Australian women

CRITICAL THINKING

AFTER YOU WATCH

9. A talk usually has the main idea supported by other ideas. In a sentence of your own words, what would you say is the main idea of Kalika Bali's TED talk?

10. Read viewers' comments about the TED talk. Agree or disagree, motivate your choice.

ck**:** *This talk is not really about the leaps in new technology in natural language processing (NLP), but the *applications* of current NLP technology to the less-resourced languages and under-served communities.*
Puja Wahi**:** *This was great to learn about. I'm sceptical that many languages will survive into the future. Most of us will end up using English as the default language. It is sad because other languages have a lot of beauty and depth of feeling to offer. But just like we've moved away from our indeginious clothes and the whole world dresses the same, we'll move away from languages too. Globalization and the internet will make us a homogenous global race.*
Brajeswar Das**:** *why focus so much on dying languages. Let these languages die and let them adapt to the mainstream languages .why focus on dividing languages further?*
Midas**:** *cant wait when AI will create new normal language for humans, without exceptions or weird grammar rules.*

10.2. READING. HOW THE INTERNET CHANGED THE WAY WE WRITE – AND WHAT TO DO ABOUT IT

BEFORE YOU READ

1. Work in pairs and discuss the following, then share your opinions in class:

1. It is claimed in the headline of the article that the Internet has changed the way we write. Do you agree with this statement? How has your personal style of writing changed?

2. Do you agree that the language we use online reflects everyday speech? In what way?
3. Do you stick to correct grammar and punctuation while texting? Why/ Why not?
4. How often do you use emojis? Which of these is your go-to and why?

5. Do you use abbreviations and acronyms while texting? Which are the most common?
6. Can you decipher the following? Use an online dictionary to help you.

ASAP	**FTW**	**TGIF**
BTW	**LOL**	**TIA**
CYT	**OMG**	**TMI**
IRL	**PIN**	**TTYL**

READING

2. Scan the article to find the names of punctuation marks mentioned in it; put them down.

3. Read the article. Are these sentences True (T) or False (F)?

1. English used online is less formal and less expressive.
2. Prominent linguist David Crystal, the author of Internet Linguistics, mentioned that about sixty per cent of the language we use while texting is standard English, or at least some local dialect.
3. The way we communicate depends on context and the medium with which we are communicating.
4. It is possible to find an article without punctuation or capital letters in the New York Times or some other serious newspaper or magazine.
5. One of the rules set by the author and her team of copy editors states that emojis should be put outside end punctuation not inside.
6. Ignoring the rules of grammar and punctuation we are putting clarity at stake.
7. The author of the article supports the prescriptive approach to language.

HOW THE INTERNET CHANGED THE WAY WE WRITE – AND WHAT TO DO ABOUT IT

By Emmy Favilla

The usual evolution of English has been accelerated online, leading to a less formal – but arguably more expressive – language than the one we use IRL. So use those emojis wisely …

English has always evolved – that's what it means to be a living language – and now the internet plays a pivotal role in driving this evolution. It's where we talk most freely and naturally, and where we generally pay little heed to whether or not our grammar is "correct".

Should we be concerned that, as a consequence, English is deteriorating? Is it changing at such a fast pace that older generations can't keep up? Not quite. At a talk in 2013, linguist David Crystal, author of Internet Linguistics, said: "The vast majority of English is exactly the same today as it was 20 years ago." And his collected data indicated that even e-communication isn't wildly different: "Ninety per cent or so of the language you use in a text is standard English, or at least your local dialect."

It's why we can still read an 18th-century transcript of a speech George Washington gave to his troops and understand it in its entirety, and why grandparents don't need a translator when sending an email to their grandchildren.

However, the way we communicate – the punctuation (or lack thereof), the syntax, the abbreviations we use – is dependent on context and the medium with which we are communicating. We don't need to reconcile the casual way we talk in a text or on social media with, say, the way we string together sentences in a piece of journalism, because they're different animals.

On Twitter, emojis and new-fangled uses of punctuation, for instance, open doors to more nuanced casual expression. For example, the ~quirky tilde pair~ or full. stops. in. between. words. for. emphasis. While you are unlikely to find a breezy caption written in all lowercase and without

punctuation in the New York Times, you may well find one in a humorous post published on BuzzFeed.

As the author of the BuzzFeed Style Guide, I crafted a set of guidelines that were flexible and applicable to hard news stories as well as the more lighthearted posts our platform publishes, such as comical lists and takes on celebrity goings-on, as well as to our social media posts. For instance, I decided, along with my team of copy editors, to include a rule that we should put emojis outside end punctuation not inside, because the consensus was that it simply looks cleaner to end a sentence as you normally would and then use an emoji. Our style guide also has comprehensive sections on how to write appropriately about serious topics, such as sexual assault and suicide.

Language shifts and proliferates due to chance and external factors, such as the influence the internet has on slang and commonplace abbreviations. (I believe that "due to" and "because of" can be used interchangeably, because it's the way we use those phrases in speech; using one rather than the other has no impact on clarity.) So while some of Strunk and White's famous grammar and usage rules – for example, avoiding the passive voice, never ending a sentence with a preposition – are no longer valuable, it doesn't mean we're putting clarity at stake. Sure, there's no need to hyphenate a modifying phrase that includes an adverb – as in, for example, "a successfully executed plan" – because adverbs by definition modify the words they precede, but putting a hyphen after "successfully" would be no cause for alarm. It's still a perfectly understandable expression.

Writers and editors, after consulting their house style guide, should rely on their own judgment when faced with a grammar conundrum. Prescriptivism has the potential to make a piece of writing seem dated or stodgy. That doesn't mean we need to pepper our prose with emojis or every slang word of the moment. It means that by observing the way we're using words and applying those observations methodically, we increase our chances of connecting with our readers – prepositions at the end of sentences and all. Descriptivism FTW!

https://www.theguardian.com/technology/booksblog/2017/dec/07/internet-online-news-social-media-changes-language

VOCABULARY

4. Find words and expressions in the article that fit the following definitions:

1. a digital image that is added to a message in electronic communication in order to express a particular idea or feeling
2. something different
3. unusual in an attractive and interesting way
4. a short piece of text under a picture in a book or article that describes the picture or explains what the people in it are doing or saying
5. to make objects, especially in a skilled way
6. affecting or relating to a person or thing
7. happening often or often seen or experienced and so not considered to be special
8. the belief that there are correct and wrong ways to use language and that books about language should give rules to follow, rather than describing how language is really used
9. to add to something in many places
10. the belief that books about language should describe how language is really used, rather than giving rules to follow saying what is correct and not correct

5. Arrange the words in suitable pairs. Recall the context they are used in:

1. pivotal	A. animal
2. string together	B. little heed
3. different	C. pace
4. pay	D. at stake
5. at a fast	E. role
6. casual	F. sentences
7. put smth	G. expression

6. Match the words with their definitions:

1. evolve A. to become worse

2. pivotal	B. recently made for the first time, but not always an improvement on what existed before
3. heed	C. to increase a lot and suddenly in number
4. deteriorate	D. to develop gradually, or to cause something or someone to develop gradually
5. reconcile	E. a problem that is difficult to deal with
6. new-fangled	F. central and important
7. goings-on	G. boring, serious, and formal
8. proliferate	H. to find a way in which two situations or beliefs that are opposed to each other can agree and exist together
9. conundrum	I. strange, unusual, humorous, or unsuitable events or activities
10. stodgy	J. attention or notice

7. Insert the proper preposition:

1. Is the language changing _____ such a fast pace that older generations can't keep_____?
2. We can still read an 18th-century transcript of a speech George Washington gave to his troops and understand it _____ its entirety.
3. We don't need to reconcile the casual way we talk in a text or _____ social media with, say, the way we string _____ sentences in a piece of journalism, because they're different animals.
4. On Twitter, emojis and new-fangled uses of punctuation, _____ instance, open doors _____ more nuanced casual expression.
5. Language shifts and proliferates due _____ chance and external factors, such as the influence the internet has _____ slang and commonplace abbreviations.

6. I believe that “due to” and “because of” can be used interchangeably, because it’s the way we use those phrases _____ speech; using one rather than the other has no impact _____ clarity.
7. Writers and editors, after consulting their house style guide, should rely _____ their own judgment when faced _____ a grammar conundrum.
8. That doesn’t mean we need to pepper our prose _____ emojis or every slang word _____ the moment.

10.3. WRITING

1. You are going to write a post for your blog about the specifics of the language (both Ukrainian and English) you use while communicating on social media. Mention the following aspects: grammar, vocabulary (abbreviations/ acronyms, slang), spelling, punctuation, emojis.

2. Write a paragraph expressing your understanding of one of the quotations by David Crystal (born 1941), a British linguist, academic, and prolific author best known for his works on linguistics and the English language:

- ✓ “A linguist can’t help but be impressed by the Internet. It is an extraordinary diverse medium, holding a mirror up to many sides of our linguistic nature. The World Wide Web, in particular, offers a home to virtually all the styles which have so far developed in the written language – newspapers, scientific reports, bulletins, novels, poems, prayers – you name it, you’ll find a page on it. Indeed, it is introducing us to styles of written expression which none of us have ever seen before. It has often been said, the Internet is a social revolution – yes, indeed, but it seems to me that it is also a linguistic revolution.”
- ✓ “Ever since the arrival of printing - thought to be the invention of the devil because it would put false opinions into people's minds - people have been arguing that new technology would have disastrous consequences for language.”
- ✓ “Language changes and moves in a different direction evolving all the time. Where a lot of people see deterioration, I see expressive development.”

✓ “Language itself changes slowly but the internet has speeded up the process of those changes so you notice them more quickly.”

✓ “Texting has added a new dimension to language use, but its long-term impact is negligible. It is not a disaster.”

✓ “Research shows that those kids who text frequently are more likely to be the most literate and the best spellers, because you have to know how to manipulate language.”

✓ “Although many texters enjoy breaking linguistic rules, they also know they need to be understood.”

10.4. PROJECT WORK & PRESENTATIONS

Topic: You may have used Natural Language Processing a lot of times till now but never realized what it was. Read about some of the most popular applications of NLP below. Share your experience of using these or any other apps.

Instructions: Search the Internet resources to learn about other applications of NLP.
Length of presentation – 5 mins. Criteria for evaluating the presentation you can find in Appendix 1.

1. Chatbots are a form of artificial intelligence that are programmed to interact with humans in such a way that they sound like humans themselves. Depending on the complexity of the chatbots, they can either just respond to specific keywords or they can even hold full conversations that make it tough to distinguish them from humans. Chatbots are created using Natural Language Processing and Machine Learning, which means that they understand the complexities of the English language and find the actual meaning of the sentence and they also learn from their conversations with humans and become better with time. Chatbots work in two simple steps. First, they identify the meaning

of the question asked and collect all the data from the user that may be required to answer the question. Then they answer the question appropriately.

2. Voice Assistants

These days voice assistants are all the rage! Whether its Siri, Alexa, or Google Assistant, almost everyone uses one of these to make calls, place reminders, schedule meetings, set alarms, surf the internet, etc. These voice assistants have made life much easier. But how do they work? They use a complex combination of speech recognition, natural language understanding, and natural language processing to understand what humans are saying and then act on it. The long term goal of voice assistants is to become a bridge between humans and the internet and provide all manner of services based on just voice interaction. However, they are still a little far from that goal seeing as Siri still can't understand what you are saying sometimes!

3. Language Translator

Want to translate a text from English to Hindi but don't know Hindi? Well, Google Translate is the tool for you! While it's not exactly 100% accurate, it is still a great tool to convert text from one language to another. Google Translate and other translation tools as well as use Sequence to sequence modeling that is a technique in Natural Language Processing. It allows the algorithm to convert a sequence of words from one language to another which is translation. Earlier, language translators used Statistical machine translation (SMT) which meant they analyzed millions of documents that were already translated from one language to another (English to Hindi in this case) and then looked for the common patterns and basic vocabulary of the language. However, this method was not that accurate as compared to Sequence to sequence modeling.

https://www.geeksforgeeks.org/top-7-applications-of-natural-language-processing/

SUPPLEMENTARY READING

1. Which of the following inventions do you like most of all? Why? What attracted your attention?
2. Characterize each of these inventions using from 1 to 3 adjectives (e.g.: *extraordinary, astonishing, unbelievable*…). Why did you choose such attributes?
3. Pick out the innovation you like the best and explain the reason.
4. Choose one fact you are interested in most of all. Find more information to develop each topic. Prepare a short presentation (up to 100-150 words), look for some video content (a picture, a photo, etc.). Present it in class.

UNIT 1
TOP TRANSPORTATION TRENDS & INNOVATIONS IN 2022

1. Autonomous Vehicles

Transport vehicles account for significant pollution and traffic congestion, especially in big cities. One solution to these issues is the adoption of autonomous vehicles and systems. Self-driving cars use sensors, LIDAR, and automated safety features to navigate roads. They deploy camera technology to read road signs and see in high resolution. AI algorithms recognize objects on roads, guiding the vehicles on how to perceive their environment. Autonomous vehicles increase road safety and reduce harmful emissions. Another major transportation trend includes the commercialization of delivery drones, which are useful to transport medical supplies, food packets, and more, directly to even remote locations. Robotic or drone deliveries also assist the elderly and enable rapid emergency response. Further, driverless trucks bring greater efficiency to the trucking market and directly address driver shortage challenges.

2. Green Energy

Green energy in transport includes all transport modes, alternative fuels, and technologies that reduce the negative impact on the environment. Eco-

friendly vessels have precedence over conventional vessels because of reduced emissions of greenhouse gases. Ships are incorporated with energy-efficient propulsion systems and a streamlined hull design to reduce friction during navigation. Further, alternative fuels such as hydrogen, liquefied gas, synthetic fuels, and more, are used in marine and aerial transport to reduce harmful emissions and pollution. Moreover, electric vehicles transport goods in a sustainable mode without requiring any fuel. Trains also provide a green alternative by carrying huge volumes of goods over long distances, thereby reducing the number of vehicles on the road.

3. Electric Transportation

Large-scale electrification is a major trend in the transportation industry. Electric vehicles (EVs) emit fewer greenhouse gases (GHGs) and air pollutants as compared to petrol or diesel cars. As EVs require electricity to recharge batteries, they eliminate dependence on conventional fossil fuels. Moreover, EVs offer better performance due to electric motor efficiency with less noise production. With the increased adoption of electric cars, startups work on improving the charging infrastructure. Vehicle-to-grid (V2G), fast-charging, mobile charging, new battery innovations, and many more such solutions facilitate wider acceptance of EVs in everyday commute and delivery operations. Air transport also witnesses an increase in electrification via electric vertical take-off and landing (eVTOL) aircraft, electric air taxis, and drones. Startups are working towards reducing the negative impact of air travel on the environment.

4. Artificial Intelligence

Artificial intelligence makes transportation more efficient by predicting delays in traffic flows. AI algorithms enable object detection and recognition for the navigation of autonomous vehicles. Machine learning is utilized in driver behavior analysis to determine driver drowsiness and improve road safety. AI-powered route optimization speeds up the delivery of goods. It digitally matches the demand and supply of stocks, thus automating freight operations. It also reduces traffic congestion and accidents. In the shipping industry, AI improves navigation safety and

facilitates autonomous vessels. Additionally, it ensures the safety of commodities via real-time tracking and theft detection.

5. Internet of Things

The Internet of things (IoT) makes the transportation industry smarter. IoT, along with embedded sensors, gathers vehicular data to track the condition or performance of transport vehicles. IoT devices in traffic congestion systems predict and redirect vehicles to alternate faster routes, speeding up the delivery. This reduces congestion resulting in less energy consumption. Moreover, the use of IoT in vehicles allows monitoring of fuel levels, driver safety, vehicular health, and more. Connected cars impose speed limits depending upon the nature of the traffic, which assists in preventing accidents. This ensures a smooth flow of transport vehicles and improved road safety.

https://www.startus-insights.com/innovators-guide/transportation-trends-innovation/

UNIT 2

TOP HEALTHCARE INDUSTRY TRENDS IN 2022

1. Artificial Intelligence. AI is replacing conventional labor-intensive and time-consuming processes in healthcare with rapid, remotely accessible, and real-time solutions for diagnosis, treatment, and disease prevention. HealthTech startups develop software platforms, application programming interfaces (APIs), and other digital products to extend the benefits of AI. Some of the applications of artificial intelligence in healthcare include clinical workflow management, advanced surgery assistance, and medical diagnostics.

2. Internet of Medical Things. IoMT is instrumental for the development of products that need less or no human interaction to provide healthcare services. Connected medical devices, equipment, and infrastructure enable multiple applications like automatic disinfection, smart diagnosis, and remote patient management to name a few. Cognitive IoMT (CIoMT) is a recent subtrend that integrates sensory information, automatic processing, and communication through networks for real-time diagnosis, monitoring, tracking, and disease control.

3. Telemedicine. The COVID-19 pandemic accelerated the adoption of telemedicine by many governments, healthcare systems, clinicians, and patients. To tackle the pandemic, governments issued telemedicine guidelines to decongest healthcare facilities. Telemedicine minimizes the load on facilities and reduces the use of personal protective equipment (PPE) as medical practitioners reach their patients via telecommunication. HealthTech startups are working on telehealth services that facilitate public health mitigation strategies by increasing social distancing. Telemedicine also aids to assist elderly people remotely, reduces bed space, and conserves clinical supplies.

4. Big Data & Analytics. Digitization is transforming medical data collection, storage, diagnostic techniques, treatment planning, surgical workflows, remote patient monitoring, and consultations. The volume of health and medical data is expected to increase exponentially in the coming years. MedTech startups leverage big data and analytics to analyze the unstructured and huge volumes of medical data. It improves the patient-based services, detects diseases earlier, and generates new insights into disease mechanisms. Moreover, big data solutions monitor the quality of processes at healthcare institutions, as well as enable better treatment methods.

5. Immersive Technology

The use of immersive technologies, such as AR/VR and MR, is on the rise in the healthcare sector. Applications for VR in healthcare vary from rehabilitation therapy and exposure therapy anxiety disorders to aiding in cognitive and physical rehabilitation. AR/VR also plays an important role in medical education. Immersive technologies also find applications in surgery, for instance for the perioperative projection of patient information, holographic images, and scans.

https://www.startus-insights.com/innovators-guide/top-10-healthcare-industry-trends-innovations-in-2021/

UNIT 3

TOP ROBOTICS INNOVATION TRENDS FOR 2023

1. Autonomous Mobile Robots

Workers are exposed to hazardous situations such as toxic chemicals, tight spaces, or heavy machinery in production environments. To mitigate this, startups and scaleups utilize AMRs to automate various industrial processes. They combine sensors, AI, and computer vision to understand immediate surroundings and navigate independently. For example, warehouse AMRs feature scanners to detect stock levels and automate material handling, preventing inventory depletion. AMRs also move sub-assemblies and parts over long distances inside factories to speed up operations and save workers from pushing heavy carts. Additionally, they find applications in cleaning shop floors and hospitals through autonomous disinfection. AMRs also find use in the hospitality industry for housekeeping as well as delivering food and goods in hotels and restaurants. Last mile delivery (LMD) robots see a rapid deployment for contactless and quick deliveries.

2. Intelligent Robotics

The integration of AI into robotics allows robots to utilize real-time information and optimize tasks. For this, startups use computer vision, reinforcement learning, machine learning, dynamics modeling, and more. Additionally, large datasets and real-time data train the robots to improve their accuracy and performance. This, in turn, enables them to quickly recognize objects and better perceive the environment to navigate autonomously. The implementation of AI-based robots in manufacturing automates repetitive tasks from part picking and placing to 3D printing and quality inspection. Robots used in retail stores and hotels also leverage natural language processing (NLP) to boost customer interactions.

the use of chemical disinfectants and prevents hospital-acquired infections.

3. Cobots

Cobots or collaborative robots feature advanced sensors and software that ensure safe behavior around people, unlike conventional industrial robots. They primarily take the form of end-of-arm tooling (EOAT) to automate assembly tasks such as part welding and screw drilling. Such robots lift heavy materials like metals, plastic, and other substances that pose a risk to human workers. Moreover, cobots augment already existing manufacturing lines to aid workers and hence require minimal production

downtime for integration. This accelerates their adoption across industries to improve worker safety and throughput. Further, advances in 5G and high-performance computing (HPC) will enhance person-robot partnerships.

4. Robotics as a Service

Developing and maintaining robots is a costly and time-consuming process. Many companies, especially small businesses, are unable to integrate robotics into their operations due to these constraints. On the other hand, RaaS provides a subscription-based business model to leverage robotics. This approach allows companies to hire robots on-demand, allowing easy scaling as per changing market conditions. Moreover, cloud-based robotics enables service providers to quickly update existing configurations, improving performance based on real-time data.

5. Robotics Cybersecurity

The integration of IoT and the growing need for connectivity in robotics make them easy targets for cyber attacks. Moreover, the application of robotics across defense, manufacturing, healthcare, and space industries necessitates the protection of robotic solutions from unauthorized access. Robotic cybersecurity solutions safeguard endpoints and connectivity stacks to avoid data leaks and asset downtimes. For this, startups deploy continuous network and device monitoring using AI or machine learning. Such solutions allow businesses to monitor device activities in real-time and promptly flag security threats, preventing downtime and financial loss.

https://www.startus-insights.com/innovators-guide/robotics-trends-innovation/

UNIT 4

TOP FOOD TECHNOLOGY TRENDS IN 2022

1. Alternative Proteins

Consumers are shifting towards **alternative protein sources** due to both health and environmental concerns, making it one of the most prominent food technology trends. Cultured meat, lab-grown food, plant-based nutrition, edible insects, and mycoprotein are the primary alternative protein sources. Not only are they nutrient-rich, but they also minimize resource use from farm to fork, unlike protein from livestock. They reduce

the overall costs as alternative protein sources demand only marginal dietary requirements and health monitoring. Advancements in 3D printing, fermentation, and molecular biology enable startups to develop sustainable alternative protein production solutions. This aids food companies to offset the ethical concerns and carbon footprint of industrial meat production.

2. Nutraceuticals

There is an increasing concern about the impact of food habits on health and a growing need for essential nutrients for a healthy lifestyle. With the COVID-19 pandemic, consumers are focusing more on eating healthy, making **nutraceuticals a top trend** in the food industry. This is a critical element in driving the demand for nutraceuticals. These include nutritional supplements, functional foods, medicinal food, and gut microbiomes enhancement foods such as prebiotics, probiotics, and postbiotics. Scientific research on nutraceuticals suggests that various nutraceuticals provide health benefits against disorders related to oxidative stress such as allergy, Alzheimer's, diabetes, and immune diseases.

3. eCommerce

eCommerce has been in the spotlight in the food & beverages industry for a while now. But, the COVID-19 situation further pushed innovations in **food supply chains**. Food brands utilize digital platforms to offer on-demand online delivery services and reach customers through direct-to-customer (D2C) distribution models. Also, the safety concerns during the pandemic are promoting the growth of ghost kitchens or cloud kitchens that offer only food takeout and deliveries. Along with D2C, brands are focussing on omnichannel distribution to improve customer experience and improve sales. Moreover, food & beverage eCommerce allows food manufacturers to reach their customers better as well as ensure availability.

4. Food Safety & Transparency

As customers now are more thoughtful about the quality of food products they buy, food safety is a significant concern. With smart labels and standalone food grading devices available to customers, it is easy for them to make knowledgeable decisions before choosing food items. Also, advancements in blockchain and real-time food monitoring using Internet of Things (IoT) devices enable food brands to provide end-to-end

traceability. Startups are furthering **food safety and transparency** by developing cost-effective and scalable monitoring solutions. This increases the trust between food producers and consumers, positively impacting brand credibility and sales.

5. Personalized Nutrition

The rise in nutrition awareness among consumers is driving the demand for personalized nutrition solutions. These are not only limited to nutrigenomics-based diets but also include personal preferences such as sugar- and gluten-free diet, vegan diet, and clean label food products. Innovations in 3D printing and the adoption of robotics in food assembly lines allow food manufacturers to provide nutrition personalization at scale. Also, at-home blood- and urine-based testing kits enable consumers to determine food habits that best suit their genetic profiles. Furthermore, various tracking devices allow users to track diet and health conditions to streamline their diet. This allows consumers to dictate their dietary preferences, thereby improving customer convenience and sales.

https://www.startus-insights.com/innovators-guide/top-10-food-technology-trends-innovations-in-2021/

UNIT 5
TOP ENERGY INDUSTRY TRENDS IN 2022

1. Renewable Energy

Shifting to renewable energy helps preserve the environment as it produces minimal to zero harmful emissions. The basic principle of using renewables is to extract it from a constant source in the environment, like the sun, the wind, or geothermal sources. The next important factor is to convert the source into productive electricity or fuels. The range of technologies that cater to the different aspects of generating power or heat from renewables forms one of the biggest energy industry trends. This includes reducing costs for the manufacturing of renewables infrastructure and generating power with higher rates of efficiency.

2. Internet of Energy

Traditionally, electric power systems use a central architecture during construction that brings a new set of challenges to the industry. IoE

addresses several of these challenges and offers greater efficiency and optimal design for building energy systems. IoE implements intelligent distributed control through energy transactions between its users. This new energy generation paradigm develops a smart grid and improves coordination and optimization in the macro-energy system.

3. Energy Storage

Today's technologies provide a sufficient level of generation, however, they lack cost-effective energy storage solutions. Energy storage enables stable pricing by proactively managing demand from consumers. By having the opportunity to purchase energy for future use, consumers potentially stock it up during ideal conditions. This accumulated energy later helps in reducing the grid loads during peak times, while prosumers earn more as buying energy becomes expensive.

4. Blockchain

Blockchain technology intends to unite all energy stakeholders under a single decentralized network. Electricity producers, distribution network operators, metering operators, providers of financial services, and traders potentially benefit from utilizing smart contracts. These contracts ensure that all energy-related transactions pass through a secure and immutable network, thus eliminating potential losses. Blockchain also holds the potential for achieving some degree of equality between energy producers and consumers by making electricity affordable for more people.

5. Energy as a Service

Some visions of the energy system in the future mainly revolve around DERs that are monitored by a combination of AI and IoT. Together with blockchain and a growing number of energy prosumers, these components comprise energy-as-a-service solutions. EaaS allows for the transition from selling electricity to selling services such as consumption management, optimization of production, and tracking consumption. The presence of local energy sources and storage options accelerate energy efficiency across the grid while providing access to more people.

https://www.startus-insights.com/innovators-guide/top-10-energy-industry-trends-innovations-in-2021/

UNIT 6

SMART HOME TECHNOLOGY GADGETS THAT WILL LEAVE YOU SPELLBOUND

1. Robot vacuum cleaners

Floor cleaning and vacuuming are easier with a range of Deebot from Ecovacs, a pioneer in the field of engineering robotic vacuum cleaners. D77, the latest Deebot is a 3-dimensional home cleaning solution that has smart technology to detect and navigate obstacles. It has the capability to automatically empty its dust bin. It has different modes for cleaning all types of flooring. Even when you are not at home, you can pre-set it to clean your floors with its intelligent time scheduling feature. This smart device will ease your cleaning woes.

2. Clocky robotic alarm

Have you felt the need for an alarm that can outsmart and wake you instantaneously? Clocky will make you run around the room before you can turn it off. This smart alarm clock runs away and hides as it continues to beep until you get off your bed. You can no longer snooze and go back to bed. Clocky will ensure you never oversleep again.

3. Wireless LED light bulbs

Lighting at home has become convenient with the intelligent Philips Hue LED Lighting System. You can say goodbye to the conventional on/off wall switch and experience the new-age smart lighting system that can be controlled through your smartphone. The lighting system is controlled with the help of a mobile app through a Wi-Fi bridge. You can turn the lights on or off remotely, or schedule them to turn on or off with your phone or tablet. The high-quality energy saving LED lights are ideally suited for home and office environments.

4. Bediator

Bediator uses an intelligent room heating technology that provides the ideal room temperature during bitter winter season. Unlike traditional radiators, Bediator is energy efficient and can help you save on your bills. It is a stylish radiator that turns into a bed with just a flip. Once you push the button on the side, it flips and slides onto the floor. The LED display provides information such as date and the current room temperature.

5. Smart Faucet

This environment friendly faucet saves up to 15,000 gallons per unit per year. You can save water with this innovative technology and help conserve water sources. It also conserves energy with its intelligent design. By conserving water and energy, you can leave behind a reduced carbon footprint. Smart Faucet is hygienic and contamination free, as there is no need to touch the faucet valves. It is well-suited for children, the elderly, and the disabled. It is an inexpensive means to conserve water and preserve our environment.

https://www.lifehack.org/articles/technology/20-smart-home-technology-gadgets-that-will-leave-you-spellbound.html

UNIT 7

TOP INNOVATIVE SPORTS TECHNOLOGY WHICH ARE TRANSFORMING SPORTS IN 2022

Latest sports technology: Flying drones and camera movements

From those cute little reel cameras to big flash DSLR's, it's been a long journey. Whenever we watch any sport, we usually witness different types of camera shots. The most amazing one is when the camera flys and shows the view of the whole stadium or even a close shot of your favourite sportsperson. It is all because of flying drones and spider cams that are operated by TV broadcasters that offers amazing shots on our TV. They have a 360-degree viewing angle and are used to record photos from close to the ground to the skyline.

Latest sports technology: Snicko or Edge detector

You must have heard commentators talk about snicko meters, well they are used in cricket and are quite useful actually. Realtime Snicko (from BBG Sports) or UltraEdge (from Hawk-Eye innovations) use sound waves to determine if the ball has contacted the bat before being captured by the opposition team. It measures sound waves with a sensitive stump microphone coupled to an oscilloscope. The sounds are then processed for background noise, coordinated with video streams, and played back in slow motion for the third umpire to assess a judgment.

VAR – Video Assistant Referee

Before this, goal-line technology was introduced in football, which helped determine if the ball crossed the goal line or not. It was only used when the referee couldn't rule a goal and to take a third opinion.

Then later, VAR was first used in a friendly game between France and Italy, and after a promising experiment, a pitch-side monitor was used in the FIFA Club World Cup. The A-league was the first professional division to adopt VAR, with the MLS, Bundesliga, and Serie A succeeding the suit. VAR was first seen in an FA cup game in England, and La Liga got on board for the 2018-19 season, with the Premier League and even Champions League from the 2019/20 season onwards started using it for what FIFA refers to as "game-changing decisions," such as goal validity, penalty kicks, red cards, and offsides.

Latest sports technology: Fan engagement

A fully engaged fan experience is the finest in sports, and everyone has begun to use a number of techniques to boost the passion and excitement of their most ardent supporters. There is no other way to apply it effectively but to deploy creative fan interaction methods that rely on the greatest technological platforms. TISA has developed UMPIRE and BRISK, 2 tools that will help you take your sports brand to the next level in relation to content generation and distribution. Forums, fantasy leagues, and global fan organizations are just a few instances of online fan participation.

Latest sports technology: Blockchain and NFT's

NFT's are Non-fungible tokens, that are collected by sports fans. Sports NFT is a distinct and non-interchangeable records entity preserved on a digital ledger (blockchain). A blockchain is a form of database in which data is kept in segments that are linked together. It might assist the sports business in a variety of ways, from improving audience engagement to giving new revenue options to developing totally new marketplaces for unique commodities trading. When it comes to introducing Fan Tokens in sport organisations, blockchain is now seeing a major rise. FC Barcelona, AS Roma, Juventus F.C., Atlético Madrid, and Paris Saint-Germain are just a handful of the prominent global clubs that have already elected to use tokens in their community.

https://www.kreedon.com/innovative-sports-technology/?amp

UNIT 8
TOP TELECOM INDUSTRY TRENDS IN 2022

1. Internet of Things

IoT devices and sensors influence almost all industries of the technology economy. It improves people's quality of life, allows businesses to increase their profits, and improves management. IoT is also beneficial for governments looking to decrease their information technology (IT)-related expenses. Interconnection between devices, sensors, infrastructure, and computing elements further enables new ways for management. For example, decentralized operations, condition-based monitoring, and predictive maintenance ensure efficient communications between various IoT devices. In this way, IoT automates production processes and **allows the implementation of Industry 4.0 concepts in the telecom sector**.

2. Connectivity Technologies

Connectivity technologies are constantly evolving and include both wired and wireless communications. The development of communications technology is critical in today's IT environment, with increasing data volumes, IoT devices, and people using the internet. Further, users increasingly share high-quality digital data, such as videos, photos, and music. All of these factors, along with the **increasing use of satellite communications**, contribute to the emerging telecom trends with innovation in connectivity technologies.

3. 5G Network & Technology

5G technology is the next big upgrade for telecommunication networks and devices. It provides a much higher speed, than previous cellular broadband network standards, and, most importantly, has much lower latency. Latency is very important for cloud gaming as well as VR content streaming. Massive machine-type communications (mMTC) that 5G networks provide enable the creation of high-density IoT networks, from IIoT to smart homes. Such widespread applications **make 5G one of the most important upcoming technology trends** for the telecommunication sector.

4. Artificial Intelligence

Artificial intelligence (AI) and machine learning (ML) are other big telecom trends impacting the industry. Digital transformation requires the extraction of meaningful information from data, gathered by IoT sensors and devices. At the same time, the expansion and complication of the internet create the need for high speeds and low latencies, prompting new solutions for internet connection management. To this end, **startups develop AI solutions that resolve numerous problems** related to network performance.

5. High Resolution Content

The penetration of smartphones and reliable internet leads to increased consumption of high-quality, and often heavy-to-transfer, content. The growth in high-resolution content, in turn, drives improvements in the quality of traditional information media such as videos, pictures, and music. Novel telecommunications help businesses adapt to new types of information media, such as virtual, augmented, and mixed reality-(VR/AR/MR) and cloud-based gaming. These new types of content require not only high-speed transmission but also low latency, prompting startups to develop high-capacity telecommunication networks.

https://www.startus-insights.com/innovators-guide/top-10-telecom-industry-trends-innovations-in-2021/

UNIT 9
TOP WAYS ARTIFICIAL INTELLIGENCE IS USED IN EDUCATION

1.Task Automation

AI has been used in different industries to automate tasks, and it will come in handy the same way in the education sector. Professors and teachers usually have to manage the classroom environment alongside numerous organizational and administrative tasks. According to a report in research paper writing services, teachers don’t just teach. They also spend time grading tests, evaluating homework, filing the necessary paperwork, making a progress report, organizing resources and materials for lectures, managing teaching materials, etc. It’s a lot of work involved. In the end,

they spend a lot of time on non-teaching tasks, and it overwhelms them. Artificial Intelligence will automate these tasks to have more time to do their primary work of teaching without being bothered with administrative tasks.

2.Personalized learning

AI can ensure that educational software is personalized for individuals. There are already adaptive learning software, games, and programs for students. This use of AI is probably one of its most significant in education as learning is more comfortable and smoother and cut across personal knowledge. This system emphasizes each student's needs, highlighting specific topics students are weak in and repeating subjects they haven't mastered. This will create custom-tailored education through AI. Teachers will only be there to offer support and help when students need it.

3.Universal access

Educational classrooms can become globally available to all students through AI tools, even those that have hearing or visual impairment or speak different languages. With a PowerPoint plugin such as Presentation Translator, students have real-time subtitles for everything the teacher says. This opens up new possibilities for students who need to learn at different levels, who want to learn a subject unavailable in their school, or are sick and absent from schools. AI can break down the silos between traditional grade levels and schools.

4.Smart content creation

AI can help teachers create smart content that makes teaching and learning more comfortable for them and the students, respectively. According to Paul Barry, lab report writer at assignment writing service, AI can help teachers create different content types.

- Digital lessons

AI can help generate bite-sized learning, study guides, digital textbooks, all within the framework of digital learning.

- Information visualization

Simulation, visualization, and web-based study environments are different ways to perceive information that AI can power.

- Learning content updates

Learning content can be generated and updated regularly with AI. This ensures that information is up-to-date.

5.Teaching the teacher

One thing that is important in education is for the teacher to not rely on their old, residual knowledge. There are more facts that they need to know and teach the students as well. Not to mention the fact that they study and teach within a limited scope and there are many other things that they can still learn.

With AI, teachers have comprehensive information available to them at their fingertips. This allows them to keep themselves educated in things that they didn't know or improve on their past knowledge. With this, they will be better-rounded and have a more in-depth and broader knowledge base to sea with the 21st-century students.

https://trainingmag.com/top-7-ways-artificial-intelligence-is-used-in-education/

UNIT 10

TECHNOLOGY IN LANGUAGE TEACHING AND LEARNING

How technology-driven language teaching supports teachers ?

1. Creates a better learning environment

In a technology-driven learning environment, flexible classroom spaces where connected devices, audiovisual tools, and purposeful furniture are integrated facilitate positive engagement of students and the mix of independent, small-group, and whole-class learning that is now viewed as essential to student success (EdTech staff, 2018).

2. Increases the possibility of a much wider range of language teaching methods

Compared with traditional language teaching methods that could make students passive and bored, modern language teaching strategies primarily utilize multimedia, communicative language teaching approaches, various available resources, and educational games giving students opportunities to meaningfully increase their exposure to the target language and thus make their own knowledge.

3. Connects the classroom with the real world

Technology in the classroom such as videos, images, and software solutions empower teachers to incorporate the larger real world into the classroom. Turning the theories into practical experiences motivates students to practice and be deeply immersed in language learning.

How technology in language learning supports students?

1. Wider exposure to the target language and culture

Technology increases the students' opportunity for authentic interaction with native speakers and other language learners at various levels within or outside the classroom. Practice leads to perfection and technology-rich language learning makes it possible.

2. Higher motivation and attention

Transforming from passive recipients to active learners, students might feel very excited about language learning and are motivated to practice more, using devices with which they can practice a language through features such as voice recognition and interactive multimedia exercises, etc.

3. Flexible learning

Much more freedom is given to students within the classroom to decide how they approach the language and choose when and where to learn outside the classroom. Self-decision making and individual responsibility-taking stimulate more profound and enriching linguistic immersion.

How software solutions improve efficiency and effectiveness in core language skills? Pronunciation and speaking skills. Learning how to pronounce foreign words and sentences is a key starting point of language learning. Displaying video clips for students could provide detailed guidelines that show how to move their tongue and jaw in the right way to produce a certain sound. Speech recognition technology will help students correctly pronounce common words and phrases and they will receive targeted feedback and scoring to get the sounds just right. Apart from allowing the individual practice, software solutions can group students in pairs for spoken interaction and make communication more productive. Hence, teachers can manage language class more effectively and allow students to invest more time into speaking and active learning.

Listening skills

Teachers can launch a wide range of graded listening resources specifically designed for L2 learners to improve listening skills. A number of available websites and authentic listening materials such as TED talks and news broadcasts could be utilized based on what students already learned and their interests. Every learner can have a truly personalized experience even if they are learning the same topic.

Reading skills

Reading comprehension requires the mastery of fundamentals, language, and higher-level thinking skills. Teachers could select available materials, from those for vocabulary building to those for test preparation, so as to improve students' reading comprehension step by step. Software solutions keep track of students' progress which improves their awareness of their weaknesses and strengths and, thus, provides tailored reading texts for boosting specific skills.

Writing skills

Language learning software could function to brainstorm and visualize students' ideas, organize their information sequentially, and more. Spell-checking tools automatically check everything students type, making it easy to spot and fix errors quickly. Blogs enable students to create more expressive personal writing or to peer review when revising shared drafts of written work. All available software solutions can be effectively employed to progress students' writing skills.

https://sanako.com/technology-in-language-teaching-and-learning

GLOSSARY

UNIT 1

advent *n* the fact of an event happening, an invention being made, or a person arriving

announcement *n* a public or official statement that gives people information about something

battery pack *n* a type of battery used to supply electricity in electrical equipment such as laptop computers, mobile devices, cameras etc

be in store *exp* going to happen soon

be on display *exp* the words, pictures, etc. shown on a computer screen; the process of showing words, pictures, etc. on a computer screen

beyond/out of (sb's) reach (also beyond/out of the reach of sb) *exp* that someone is not able to get or buy

big talk *exp AE slang* bragging or boasting talk

booster *n* an extra engine on a spacecraft that gives it enough power to leave the Earth's atmosphere

capacity *n* the amount of something that can be put in a container, or the number of people that a place has room for

carbon capture *exp* a way of collecting the carbon produced when fuel is burned, so that it is not released into the air

confident *adj* feeling sure about your own ability to do things and be successful

drastically *adv* in an extreme way that has a sudden, serious or violent effect on something

elevator *n* a device like a box that moves up and down, carrying people or goods from one floor of a building to another or taking people up and down underground in a mine

endorsement *n* the act of saying that you approve of or support something or someone

energy efficient *exp* energy efficient

exploit *v* to use or develop something for profit or progress in business

fall victim to something *idiom* to fail or suffer because of something

fire smth up *phr v* to start a machine or computer program

fossil fuel *n* fuels, such as gas, coal, and oil, that were formed underground from plant and animal remains millions of years ago

groundbreaking *adj* making new discoveries, using new methods, or achieving new results

launch *v* to send a missile, space vehicle, satellite, or other object into the air or into space; to travel into the air or into space

legacy *n* something that is a part of your history or that remains from an earlier time

logistics *n* the practical arrangements that are necessary in order to organize something successfully, especially something involving a lot of people or equipment

mature *v* to start behaving like an adult and become more sensible as you get older

motor vehicle *n* a road vehicle that has an engine, for example a car or a truck

obsolete *adj* no longer used because of being replaced by something newer and more effective

orbital *adj* relating to the orbit (= curved path) of an object in space

payload *n* the amount of goods or people that a vehicle, such as a truck or aircraft, can carry

power plant *n* a machine that produces power, especially electricity, for buildings and ships

prevail *v* to exist at a particular time or in a particular situation

satellite *n* a device sent up into space to travel around the earth, used for collecting information or communicating by radio, television, etc.

self-driving *adj* (of a vehicle) that has the technology to drive itself without a person in control

sound nuts *exp* to sound silly, stupid, or strange

space *n* the empty area outside Earth's atmosphere, where the planets and the stars are

start-up *n* a small business that has just been started

steal someone's thunder *idiom* to do what someone else was going to do before they do it, especially if this takes success or praise away from them

sustainable energy *exp* energy that is produced using the sun, wind, etc., or from crops, rather than using fuels such as oil or coal which cannot be replaced
test drive *n* an occasion when you drive a vehicle that you are thinking of buying so that you can see how well it works and if you like it
usability *n* the usability of something is how easy it is to use
vague *adj* not clear in a person's mind

UNIT 2

bedridden *adj* unable to get out of bed because you are too weak or ill
bioterrorism *n* the crime of using biological or chemical weapons for political aimsthe crime of using biological or chemical weapons for political aims
clinic *n* a place where people go to receive a particular type of medical treatment or advice
contagious *adj* a contagious disease spreads from one person to another through touch or through the air
dehydration *n* a dangerous lack of water in the body resulting from not drinking enough or by sweating, vomiting, or having diarrhoea
devastating *adj* causing a lot of harm or damage
diagnostics *n* the practice of using diagnostic methods
diarrhoea *n* an illness in which you pass solid waste from your body too often and in a liquid form
dose *n* an amount of a drug that has been measured so that you can take it
epidemiology *n* the scientific study of infectious diseases and their causes
equitable *adj* fair and reasonable because everyone is treated in the same way
equity *n* a fair and reasonable way of behaving towards people, so that everyone is treated in the same way
eradicate *v* to get rid of something completely, especially something bad
flu *n* a very common infectious disease that lasts a short time and makes you feel hot or cold, weak, and tired
health care *n* the services that look after people's health

infectious *adj* an infectious disease is one that can spread from one person to another
lifesaving *adj* done in order to prevent someone from dying
microbe *n* a microorganism
novel *adj* new and original, not like anything seen before
outbreak *n* a time when something suddenly begins, especially a disease or something else dangerous or unpleasant
pandemic *n* a disease that exists in almost all of an area or in almost all of group of people, animals or plants
pathogen *n* any small organism, such as a virus or a bacterium that can cause disease
plague *n* a serious disease that kills many people, often used to refer to bubonic plague, a very infectious disease caused by bacteria spread mainly by fleas (= small insects that bite) on rats or other animals, that causes swelling, fever, and usually death in humans
plasma *n* the pale yellow liquid that forms 55% of human blood and contains the blood cells
polio *n* a serious infectious disease that can cause permanent paralysis (= being unable to move the body)
treatment
vaccinate (against) *v* to give someone a vaccine, usually by injection, to prevent them from getting a disease
vaccine *n* a substance that is put into the body of a person or animal to protect them from a disease by causing them to produce antibodies (=proteins that fight diseases)

UNIT 3

aerodynamic *adj* relating to or using aerodynamics
aerodynamics *n* the science that studies the movement of gases and the way solid bodies, such as aircraft, move through them
agile *adj* able to move quickly and easily
anticipate *v* to imagine or expect that something will happen

biased *adj* showing an unreasonable like or dislike for a person based on personal opinions

blue-collar *n* workers do work needing strength or physical skill rather than office work.

buy *v* (informal) to believe that something is true

cede *v* to allow someone else to have or own something, especially unwillingly or because you are forced to do so

creep into *ph v* to gradually start to be noticeable; to gradually start to affect or change something

disrupt *v* to prevent something, especially a system, process, or event, from continuing as usual or as expected

driverless car (sometimes called an *autonomous car* or *a self-driving car*) – a vehicle that uses a combination of sensors, cameras, radar and artificial intelligence (AI) to travel between destinations without a human operator

efficiency *n* the good use of time and energy in a way that does not waste any

exacerbate *v* to make something that is already bad even worse

fatality *n* a death caused by an accident or by violence, or someone who has died in either of these ways

flap *v* to wave something, especially wings when or as if flying

gauge (v) - to calculate an amount, especially by using a measuring device; to make a judgment about something, usually people's feelings

gear *n* a device, often consisting of connecting sets of wheels with teeth (= points) around the edge, that controls how much power from an engine goes to the moving parts of a machine

hand-holding *n* help and advice given to someone when they are doing something for the first time

herald *v* to be a sign that something important, and often good, is starting to happen, or to make something publicly known, especially by celebrating or praising it

intangible asset *n* something valuable that a company has that is not material, such as a good reputation

life-or-death (situation) a very important and serious

oversight *n* a mistake made because of a failure to notice something

play into *v* to help support (something, such as an idea)
pneumatic *adj* operated by air pressure
pneumatics *n* an aspect of physics and engineering that is concerned with using the energy in compressed gas to make something move or work
proponent *n* a person who speaks publicly in support of a particular idea or plan of action
propulsion *n* a force that pushes something forward; the force produced by a system for moving a vehicle or other object
role model *n* a person who someone admires and whose behaviour they try to copy
rotate *v* to turn or cause something to turn in a circle, especially around a fixed point
Silicon Valley the world's preeminent hub for technology
slim majority majority that only exists by a narrow margin, majority containing only slightly more votes than the minority
take over *ph v* to start doing a job or being responsible for something that another person did or had responsibility for before
torsion *n* the act of twisting; the force that causes twisting, or the state of being twisted
vehement *adj* expressing strong feelings, or shown by strong feelings or great energy or force
wariness *n* the state or quality of being wary (= not completely trusting or certain)
wary a*dj* not completely trusting or certain about something or someone
white-collar workers relating to people who work in offices, doing work that needs mental rather than physical effort
wingspan *n* the distance between the ends of the wings of a bird, insect, or aircraft

UNIT 4

abundant *adj* existing or available in large quantities; plentiful
advances (pl) *n* a development or improvement

aid organizations *n* an organization set up to provide help and raise money for those in need
animal husbandry *n* a branch of agriculture concerned with the production and care of domestic animals
app *n* an application, especially as downloaded by a user to a mobile device
application *n* the action of putting something into operation
bitcoin *n* the digital currency
boot camp *n* basic training
breeding *n* the mating and production of offspring by animals
blockchain *n* a digital database containing information (such as records of financial transactions) that can be simultaneously used and shared within a large decentralized, publicly accessible network
counterpart *n* a person or thing that corresponds to or has the same function as another person or thing in a different place or situation
conservation tillage *n* an agricultural management approach that aims to minimize the frequency or intensity of tillage operations in an effort to promote certain economic and environmental benefits
disheartening *adj* causing someone to lose determination or confidence; discouraging or dispiriting
disrupt *v* interrupt (an event, activity, or process) by causing a disturbance or problem
distort *v* pull or twist out of shape
drastic *adj* radical and extreme
food fortification *n* the process of adding micronutrients (essential trace elements and vitamins) to food
for-profit venture *n* a business enterprise established, maintained, or conducted for the purpose of making a profit
innate *adj* inborn; natural
iris scan *n* an automated method of biometric identification, taking unique patterns within a ring-shaped region surrounding the pupil of each eye
livestock *n* farm animals, with the exception of poultry
malign *v* speak about (someone) in a spitefully critical manner

mulch *n* a covering of decaying leaves that is spread over the soil in order to keep water in it or to improve it
nutritious food *n* food that contains substances which help your body to be healthy
predation *n* the action of attacking or plundering
repel *v* to resist effectively
replicate *v* make an exact copy of; reproduce
runoff *n* the draining away of water (or substances carried in it) from the surface of an area of land, a building or structure, etc.
staple foods *n* food that makes up the dominant part of a population's diet
start-up *n* a newly established business
sustainable *adj* able to be maintained at a certain rate or level
tackle *v* make determined efforts to deal with (a problem or difficult task)
utilize *v* make practical and effective use of something
vital *adj* absolutely necessary; essential
yield *n* an amount produced of an agricultural or industrial product

UNIT 5

assets *(pl) n* an item of property owned by a person or company, regarded as having value and available to meet debts, commitments, or legacies.
audacious *adj* showing a willingness to take surprisingly bold risks
become obsolete *exp* no longer used or needed, usually because something newer and better has replaced it
buggy *n* a light folding chair on wheels, in which a baby or young child can be pushed along
buildout *n* the growth, development, or expansion of something
by-product *n* an incidental or secondary product made in the manufacture or synthesis of something else
churn out *ph verb* to produce large quantities of something very quickly
compete with *ph verb* be able to rival another or others
drive interest *exp* to take an interest in something
equilibrium *n* a state in which opposing forces or influences are balanced
equity n the value of the shares issued by a company

face a challenge *collocation* to have to deal with a challenging situation
footprint *n* the area occupied or affected by something
fossil fuel *n* a natural fuel such as coal or gas, formed in the geological past from the remains of living organisms
equilibrium *n* a state in which opposing forces or influences are balanced
hub height *n* the distance from the turbine platform to the rotor of an installed wind turbine and indicates how high your turbine stands above the ground
hydrofoil *n* a large boat that is able to travel quickly above the surface of the water on wing-like structures
incentive *n* a thing that motivates or encourages someone to do something
lofty (goal) *adj* a goal that reaches for something big, of a high standard, and often requires great or even overwhelming efforts to accomplish
mitigating *adj* having the effect of making something bad less severe, serious, or painful
momentous *adj* of great importance or significance, especially in having a bearing on future events
offset *v* counteract (something) by having an equal and opposite force or effect
on the cusp *idiom* to be at the point when something is about to change to something else
outage *n* a period when a power supply or other service is not available
proponent *n* a person who advocates a theory, proposal, or course of action
put on the path *exp* the incident that starts you in a particular direction or towards a particular goal
ramp up *phrasal v* increase the level or amount of something sharply
recoup *v* regain (money spent) through subsequent profits
relegate *v* to assign an inferior rank or position to
ramification *n* a complex or unwelcome consequence of an action or event
replenish *v* fill something up again
seminal paper *n* an article that initially presented an idea of great importance or influence within a particular discipline

set a target *collocation* if someone sets you a task or aim or if you set yourself a task or aim, you need to succeed in doing it
subfreezing *adj* colder than the freezing point of water
well-rounded *adj* fully or broadly developed
vulnerability *n* the quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally

UNIT 6

advances (pl) *n* a development or improvement
back up *ph v* to provide support for someone or something
baseline *n* a datum used as the basis for calculation or for comparison
breach *v* a violation of a law, duty, or promise
detect *v* discover or identify the presence or existence of
dimmer *n* a device for varying the brightness of an electric light
egress *n* the action of going out of or leaving a place
feel stranded *collocation* stuck somewhere with no way of getting anywhere else
gadget *n* a small mechanical or electronic device or tool, especially a novel one
gearbox *n* a set of gears with its casing, especially in a motor vehicle; the transmission
hacker *n* one who indirectly, and usually illegal, gains access to a computer system
hassle *n* irritating inconvenience
high-end (technology) *adj* technology that is at the cutting edge: the highest form of technology available
leverage v use something to maximum advantage
out-of-the-box *adj* used to refer to the immediate usability or functionality of a newly purchased product, typically an electronic device or a piece of software
pull out *v* to remove or extract an item
rabbit hole *n* a bizarre, confusing, or nonsensical situation, typically one from which it is difficult to extricate oneself

retrofit *v* to adapt to a new purpose or need: modify
seamlessly *adv* smoothly and continuously, with no apparent gaps or spaces between one part and the next
spam emails *n* unsolicited and unwanted junk email sent out in bulk to an indiscriminate recipient list
tell a fib *exp* to tell an unimportant lie

UNIT 7

algorithm *n* a set of rules for solving roblems or doing calculations, especially rules that a computer uses
allocate *v* to officially give something to someone, or to decide that something can be used for a specific purpose
appealing *adj* attractive and interesting
augmented reality *exp* the technology of putting images or information produced by a computer on top of a real view, image, video etc so that the user can see both at the same time
bird's eye view *exp* a good view of something from a high position
blockchain *n* a public record of transactions made in bitcoin or another cryptocurrency in chronological order
coach *n* someone who teaches a special skill, especially one connected with performing such as singing or acting
communication strategy *exp* a written plan that allows you and your team to effectively accomplish specific objectives by determining key aspects of communication
connectivity *n* the ability of computers and other types of electronic equipment to connect successfully with other computers or programs
conquer *v* to gain control of a situation or emotion by making a great physical or mental effort
derivative *n* something that has developed or been obtained from something else
disrupt *v* to interrupt something and prevent it from continuing by creating a problem

distribution **n** the process of giving something such as food, clothes, or money to a group of people, especially so that each person gets an equal share

empathy *n* the ability to understand how someone feels because you can imagine what it is like to be them

extend *v* to continue for a particular distance or in a particular direction

facilitate *v* to make it possible or easier for something to happen

gamification *n* the process of adding game-like elements to activities and areas that are not games, in order to encourage people to take part and increase success or profits

handle *v* to take action in order to deal with a difficult situation

hype n the use of a lot of advertisements and other publicity to influence or interest people

implement *v* to make something such as an idea, plan, system, or law start to work and be used

insight *n* a chance to understand something or learn more about it

jock *n* a student who plays a lot of sport. This word often shows that you do not like people like this, and it is used especially by other students who do not take part in sport.

pitch *n* a flat area of ground for playing particular sports on.

predominant *adj* the most common or greatest in number or amount

profit *n* money that you make by selling something or from your business, especially the money that remains after you have paid all your business costs. Your total profit before you pay tax is called gross profit, and the amount that remains after you have paid tax on this is called net profit

quarterback *n* an important player in the sport of American football who gives instructions to other players

savvy *adj* knowing a lot about something and able to make good judgments about it

streaming *n* a technology for getting sound or video to your computer through the internet as a continuous stream so that you can hear the sound or see the video before all the information has been received by your computer

substitution *n* the action of replacing someone or something with someone or something else

virtual reality *n* images and sounds that are produced by a computer and connected equipment to make the user feel as if they are in real three-dimensional space

visor *n* a piece of clear plastic that is fixed to the front of a helmet (=hard hat) and protects your face

UNIT 8

account *n* an arrangement you have with a company or internet provider to use a service they provide

adjust *v* change something slightly in order to make it better, more accurate, or more effective

angle *n* the shape that is made where two straight lines join or cross each other. Angles are measured in degrees. An angle that measures 90 degrees is a right angle; if it is less than 90 degrees, it is an acute angle, and if it is more than 90 degrees, it is an obtuse angle.

bottom line *exp* the most basic fact or issue in a situation

broadcast *v* to send out messages or programmes to be received by radios or televisions

capture *v* to express what someone or something is really like in a way that people can clearly recognize

charge *v* to put electricity into a piece of electrical equipment such as a battery

chat *v* to exchange messages with someone using a computer so that you are able to see each other's messages immediately, especially on the internet

cryptocurrency *n* a peer-to-peer digital currency that is validated by cryptography

digitally *adv* relating to or using computers or the internet

emotive *adj* causing strong feelings

encryption *n* the action or process of putting information or data into code so that people who do not have permission cannot read it

enticing *adj* something that is enticing is so good or attractive that you want to have it or do it very much

environmentalism *n* actions or beliefs based on the desire to protect the environment

far-fetched *adj* difficult to believe because it is very unlikely

forward *v* to send a letter, parcel, email etc that has been sent to your address to someone else at another address

hacker *n* someone who uses a computer to connect to other people's computers secretly and often illegally, so that they can find or change information

harness *v* to get control of something in order to use it for a particular purpose

hook up *phr v* to connect two pieces of electrical or electronic equipment together, or to connect a piece of equipment to a computer or power supply

imagery *n* pictures, photographs, or objects that represent an idea

messaging *n* the process of sending and receiving electronic messages by computer or mobile phone

obnoxious *adj* very rude, offensive, or unpleasant

port *n* a part of a computer that you fit a cable into so that you can connect another piece of equipment to it

predominantly *adv* mainly, or mostly

privacy *n* the freedom to do things without other people watching you or knowing what you are doing

recoil *v* to move quickly back from someone or something frightening or unpleasant

refurbish *v* to improve a room or a building by cleaning and painting it, adding new furniture or equipment etc.

repository *n* a place where large quantities of things are stored or kept safe

revenue *n* income from business activities or taxes

scramble *v* to change the form of a radio message so that only someone with special equipment can understand it

showcase *v* to show someone or something in a way that attracts attention and emphasizes their good qualities.

sustainable *adj* capable of continuing for a long time at the same level
texting *n* the process of sending and receiving written messages using a mobile phone
trade-off *n* an agreement to do something if someone else does something
transaction *n* the action or process of buying or selling something
transmit *v* to send out an electronic signal such as a radio or television signal
truancy *n* the act or habit of staying away from school without permission
upend v to deliberately make a player on the opposing team fall during a football match
upgrade *v* to make a computer or other machine more powerful or effective
wireless *adj* wireless technology, systems, or equipment such as mobile phones does not use wires, but communicates using electronic signals

UNIT 9

assessment *v* the process of testing, and making a judgment about, someone's knowledge, ability, skills, etc., or the judgment that is made
bullet point *n* an item in a list that has a large dot in front of it to signify its importance
chatbot *n* a computer program designed to have a conversation with a human being, especially over the internet
crush *v (informal)* to perform extremely well in a particular situation, competition, etc.
discrepancy *n* a difference between two things that should be the same
ditch *v* to get rid of something or someone that is no longer wanted
drag and drop *exp* move something on a computer screen from one area to another using the mouse
fraudulent *adj* made with the intention of tricking someone, especially illegally
fuse *v* to join together physically, or to join things together physically
galling *adj* annoying

gimmick *n* something that is not serious or of real value that is used to attract people's attention or interest temporarily, especially to make them buy something

go hand in hand with smth *idiom* closely related to it and happens at the same time as it or as a result of it

hard hit *exp* badly affected; profoundly stricken; affected in an especially negative way

immersive *adj* seeming to surround the audience, player, etc. so that they feel completely involved in something

induction *n (mainly UK)* a period during which a new member of an organization or a new member of staff learns about the organization and has basic training

inject *v* to introduce something new that is necessary or helpful to a situation or process

jointly *adv* in a way that belongs to or is shared between two or more people

learning outcomes *exp* measurable statements that articulate at the beginning what students should know, be able to do, or value as a result of taking a course or completing a program

mitigate *v* to make something less harmful, unpleasant, or bad

pass with flying colors *idiom* to be extremely successful, to achieve something that is difficult, to excel

prohibitively *adv* in a way that is too expensive or too much

replicate *v* to make or do something again in exactly the same way

repurpose *v* to find a new use for an idea, product, or building

scalable *adj* used to describe a business or system that is able to grow or to be made larger**;** able to be made larger in size

set smth up *phr v* to arrange for an event or activity to happen

strive *v* to try very hard to do something or to make something happen, especially for a long time or against difficulties

suck *v* be bad *(mainly US slang)*. If someone or something sucks, that person or thing is bad or unpleasant

tackle *v* to try to deal with something or someone

talk at someone *v* to speak to someone without listening to that person or allowing them to speak
the genie is out of the bottle *exp* said to mean that something has been done or created which has made a great and permanent change in people's lives, especially a change which people regret
track down smth *phr v* to search for someone or something, often when it is difficult to find that person or thing
unconscious bias *exp* an unfair belief about a group of people that you are not aware of and that affects your behavior and decisions
undertake *v* to do or begin to do something, especially something that will take a long time or be difficult
wholesale *adj* extensive

UNIT 10

academia *n* the part of society, especially universities, that is connected with studying and thinking, or the activity or job of studying
applicable *adj* affecting or relating to a person or thing
at stake *idiom* in danger of being lost
bilingual *n* a person who speaks two languages equally well
breezy *adj* happy, confident, and enthusiastic
bridge the gap *exp* to make the difference or division between two things smaller or less severe
buzzword *n* a word or expression from a particular subject area that has become fashionable by being used a lot, especially on television and in the newspapers
bypass *v* to avoid something by going around it; to ignore a rule or official authority
caption *n* a short piece of text under a picture in a book or article that describes the picture or explains what the people in it are doing or saying
citizen journalism *n* the activity of recording or writing about news stories when this is done by ordinary people rather than by trained reporters
conundrum *n* a problem that is difficult to deal with

craft *v* to make objects, especially in a skilled way
deploy *v* to use something or someone, especially in an effective way
descriptivism *n* the belief that books about language should describe how language is really used, rather than giving rules to follow saying what is correct and not correct
deteriorate *v* to become worse
different animal *n* something different
digital divide *exp* the problem of some members of society not having the opportunity or knowledge to use computers and the internet than others have
distort *v* to change something from its original, natural, or intended meaning, condition, or shape, especially in a negative way
emoji *n* a digital image that is added to a message in electronic communication in order to express a particular idea or feeling
evolve *v* to develop gradually, or to cause something or someone to develop gradually
FTW *abbr for* for the win (used especially to express approval or support)
goings-on *n* strange, unusual, humorous, or unsuitable events or activities
heed *n* attention or notice
in its entirety *exp* with all parts included
IRL *abbr for* in real life (used in email, on social media, etc.)
keep pace with smb/smth *exp* to manage to do things at the same time or speed as someone else, or as quickly as necessary
literate *adj* able to read and write
lowercase *n* If letters are in lowercase, they are written as a, b, c, etc. not A, B, C, etc.
new-fangled *adj* recently made for the first time, but not always an improvement on what existed before
pivotal *adj* central and important
prescriptivism *n* the belief that there are correct and wrong ways to use language and that books about language should give rules to follow, rather than describing how language is really used
proliferate *v* to increase a lot and suddenly in number
quirky *adj* unusual in an attractive and interesting way

reconcile *v* to find a way in which two situations or beliefs that are opposed to each other can agree and exist together
robust *adj* strong and unlikely to break or fail
stodgy *adj* boring, serious, and formal
string smth together *phr v* If you string words or sentences together, you manage to say something that other people can understand
thrive *v* to grow, to develop, or to be successful
tilde *n* (used when writing some languages) a ~ mark made above a letter, especially n, to show that the letter has a special sound
underpin *v* to give support, strength, or a basic structure to something

REFERENCES

Video

https://www.ted.com/talks/elon_musk_the_mind_behind_tesla_spacex_solarcity?language=zh

https://www.ted.com/talks/bill_gates_the_next_outbreak_we_re_not_ready/transcript?referrer=playlist-the_most_popular_talks_of_all&autoplay=true

https://www.ted.com/talks/markus_fischer_a_robot_that_flies_like_a_bird

https://www.ted.com/talks/bernhard_kowatsch_the_mindset_shift_needed_to_tackle_big_global_challenges

https://www.ted.com/talks/saul_griffith_high_altitude_wind_energy_from_kites?language=dz

https://www.youtube.com/watch?v=ipdTLJcIkWI&ab_channel=TEDxTalks

https://www.ted.com/talks/chris_kluwe_how_augmented_reality_will_change_sports_and_build_empathy

https://www.ted.com/talks/will_cathcart_the_future_of_digital_communication_and_privacy

https://www.ted.com/talks/dr_aaron_barth_why_e_learning_is_killing_education

https://www.ted.com/talks/kalika_bali_the_giant_leaps_in_language_technology_and_who_s_left_behind

Texts

https://www.dw.com/en/elon-musks-starship-could-change-the-space-business-forever/a-60733091

https://www.gatesfoundation.org/ideas/articles/how-health-equity-can-prevent-next-pandemic

https://www.theguardian.com/technology/2017/oct/04/robots-artificial-intelligence-machines-us-survey

https://protecttheharvest.com/what-you-need-to-know/consumers/

https://cutt.ly/x9a6NML

https://geekflare.com/smart-home-gadgets/

https://www.tisagroup.ch/new-technologies-in-sports/

https://www.uswitch.com/mobiles/guides/future-of-mobile-phones/

https://www.theguardian.com/education/2021/feb/16/the-future-of-online-learning-the-long-term-trends-accelerated-by-covid-19

https://www.theguardian.com/technology/booksblog/2017/dec/07/internet-online-news-social-media-changes-language

Other recourses

https://data.undp.org/vaccine-equity/

https://mobidev.biz/blog/technology-trends-healthcare-digital-transformation

https://business.esa.int/funding/invitation-to-tender/robotics-for-society

https://theweek.com

https://www.wfp.org/stories/12-things-you-didnt-know-about-world-food-programme?utm_source=google&utm_medi

https://www.aljazeera.com/news/2022/2/1/infographic-hunger-and-food-insecurity-in-maps-and-charts

https://cutt.ly/U9sqckK

https://theconversation.com/uk/topics/ocean-energy-11415

https://www.bioenergy-news.com/

https://cinea.ec.europa.eu/news-events/news/using-algae-better-solar-energy-performance-2022-10-19_en

https://www.tisagroup.ch/new-technologies-in-sports/

https://www.uswitch.com/mobiles/guides/future-of-mobile-phones/

https://colorwhistle.com/top-e-learning-web-apps/

https://www.geeksforgeeks.org/top-7-applications-of-natural-language-processing/

Supplementary reading

https://www.startus-insights.com/innovators-guide/transportation-trends-innovation/

https://www.startus-insights.com/innovators-guide/top-10-healthcare-industry-trends-innovations-in-2021/

https://www.startus-insights.com/innovators-guide/robotics-trends-innovation/

https://www.startus-insights.com/innovators-guide/top-10-food-technology-trends-innovations-in-2021/

https://www.startus-insights.com/innovators-guide/top-10-energy-industry-trends-innovations-in-2021/

https://www.lifehack.org/articles/technology/20-smart-home-technology-gadgets-that-will-leave-you-spellbound.html

https://www.kreedon.com/innovative-sports-technology/?amp

https://www.startus-insights.com/innovators-guide/top-10-telecom-industry-trends-innovations-in-2021/

https://trainingmag.com/top-7-ways-artificial-intelligence-is-used-in-education/

https://sanako.com/technology-in-language-teaching-and-learning

Dictionaries

https://dictionary.cambridge.org

https://www.oxfordlearnersdictionaries.com

https://www.merriam-webster.com

https://www.macmillandictionary.com

https://www.collinsdictionary.com

Appendix 1

PRESENTATION CRITERIA

#	Criteria	Points
1	The presentation is clearly structured in (one of) the following organizational patterns: Descriptive Cause/effect or problem-solution Comparison/contrast Opinion / argumentative	2
2	Google Slides is used to create the presentation	1
3	The presentation begins with an engaging **hook/opening statement** that captures the audience's attention, and they end with a memorable conclusion.	2
4	The presentation slides contain consistent and visible font sizes and color schemes.	2
5	Text is used sparingly on the presentation slides.	2
6	Relevant, quality visual aids, such as images and /or graphs are used to support the ideas in the presentation.	2
7	The presenter provides clear, concise, engaging explanations on the topic.	3
8	The presenter supports their main ideas with examples and /or direct explanations.	3
9	The presenter has done research from a minimum of 2 reliable English sources. The presenter provides a reference list of all resources used to gather information.	2

10	It is evident that the presenter has practiced the presentation ahead of time. (This will be shown through the timing – 15 minutes (max.), as well as an awareness of the basic organization of the slides and appropriate transitions, and the ability to pronounce key words correctly.) The presenter should practice words which are difficult to pronounce – pronunciation and grammar during the presentation should not interfere with the audience's ability to understand the content of the presentation.	1
		Total Points: 20

Appendix 2

USEFUL PHRASES FOR PRESENTATIONS

INTRODUCING THE TOPIC

What I am going to talk about today is…
I want to make a short presentation about…
I'd like to give you a brief breakdown of…

EXPLANATION OF GOALS

The purpose of this presentation is…
My objective today is…

STRUCTURE

My talk/presentation is divided into "x" parts.
I'll start with…/First, I will talk about…/I'll begin with…
…then I will look at…
…next…
and finally…

STARTING POINT

Let me start with some general information on…
Let me begin by explaining why/how…
I'd like to give you some background information about…
Before I start, does anyone know…
As you are all aware…
I think everybody has heard about…, but hardly anyone knows a lot about it.

END OF A SECTION

That's all I have to say about…
We've looked at…
So much for…

INTERIM CONCLUSION

To sum up…
Let's summarize briefly what we have looked at.
Here is a quick recap of the main points of this section.
I'd like to recap the main points.

Well, that's about it for this part. We've covered…

TRANSITION

I'd now like to move on to the next part…

This leads me to my next point, which is…

Turning our attention now to…

Let's now turn to…

EXAMPLES

For example, …

A good example of this is…

As an illustration, …

To give you an example, …

To illustrate this point…

DETAILS

I'd like to expand on this aspect/problem/point.

Let me elaborate further on…

LINKS

As I said at the beginning, …

This relates to what I was saying earlier…

Let me go back to what I said earlier about…

This ties in with…

REFERENCE TO THE STARTING POINT

To return to the original question, we can…

Just to round the talk off, I want to go back to the beginning when I…

I hope that my presentation today will help with what I said at the beginning…

GRAPHS AND IMAGES

I'd like to illustrate this point by showing you…

Let the pictures speak for themselves.

I think the graph perfectly shows how/that…

If you look at this table/bar chart/flow chart/line chart/graph, you can see that…

EMPHASIS

It should be emphasized that…

I would like to draw your attention to this point…

Another significant point is that…
The significance of this is…
This is important because…
We have to remember that…

PARAPHRASE

In other words, …
To put it more simply, …
What I mean to say is…
So, what I'm saying is….
To put it in another way….

QUESTIONS DURING THE PRESENTATION

Does anyone have any questions or comments?
I am happy to answer your questions now.
Please feel free to interrupt me if you have questions.
If you have any questions, please don't hesitate to ask.
Please stop me if you have any questions.
Do you have any questions before I move on?
If there are no further questions at this point, I'd like to…

QUESTIONS AT THE END OF A PRESENTATION

There will be time for questions at the end of the presentation.
I'll gladly answer any of your questions at the end.
I'd be grateful if you could ask your questions after the presentation.

INQUIRIES

Does this answer your question?
Did I make myself clear?
I hope this explains the situation for you.

UNKNOWN ANSWER

That's an interesting question. I don't actually know off the top of my head, but I'll try to get back to you later with an answer.
I'm afraid I'm unable to answer that at the moment. Perhaps, I can get back to you later.
Good question. I really don't know! What do you think?
That's a very good question. However, I don't have any figures on that, so I can't give you an accurate answer.

Unfortunately, I’m not the best person to answer that.

SUMMARY AND CONCLUSION

I’d like to conclude by…

In conclusion, let me sum up my main points.

Weighing the pros and cons, I come to the conclusion that…

That brings me to the end of my presentation. Thank you for listening/your attention.

Well, that’s it from me. Thanks very much.

That brings me to the end of my presentation. Thanks for your attention.