SCHOOLS COMPETITION

SMART CITY

RESOURCE BOOKLET

Young Enterprise
Member of JA Worldwide

THAMES FREEPORT
GLOBAL OPPORTUNITY. SHARED FUTURE.

CONTENTS

What is this all about?

Thames Freeport is a major regeneration project bringing new industries, technologies and jobs to the area. It covers the London Boroughs of Barking and Dagenham, Havering and Thurrock in South Essex. Thames Freeport is investing in these areas to support future industries and create more opportunities for employment. The Thames Freeport is expected to attract £4.5 billion of new investment and create 21,000 skilled jobs.

A key part of this work is engaging with the local community to understand their vision for the future. Young people play an important role in shaping this vision, and Thames Freeport is keen to hear their ideas.

This school competition gives students the chance to explore local challenges and propose innovative technology and AI-based solutions for the future of their area. Entries will be judged by a panel of Thames Freeport judges, using the criteria included later in this pack.

The competition is open to students from schools across the local areas of Barking and Dagenham, Havering and Thurrock, offering them the opportunity to share their ideas, develop valuable skills, and contribute to the future of their communities.

Overview of the competition

As a teacher and facilitator of these activities, it is important to prompt and support the students, so they have the best chance of not just producing great work but winning the competition. Students are welcome to enter the competition either on their own or as part of a group of up to five people. This means they can take part individually or work together with friends to share ideas and create something amazing as a team.

The students will be developing key skills such as communication, teamwork, innovation, creativity and problem solving, alongside the tangible objectives as they are working on this project. We want to encourage and highlight when the students are practising these skills.

This document also contains:

- A resource list
- Information on the key skills
- An overview of 3 activities to support you
- Information on the competition planning & creating

Please read through this document prior to introducing the activities, as there is a small amount of preparation work to be done. The information on the competition also gives some tips to generate ideas, which would potentially need prior reading and some familiarisation.

Before you introduce the activities, there is a PowerPoint Presentation called Smart City Schools Competition - Introduction Slides - Final 2025 at the end of this document that shows an overview of the competition. This is so the students can see what the end product will be before they start.

Thank you for taking your time to facilitate what we hope will be a successful and enjoyable experience for your students!

This competition comes after a successful pilot in a few local schools last year.

How do we get involved?

This pack has been produced with Young Enterprise – a leading UK charity that supports young people to discover, develop and celebrate their skills and potential. It includes everything you need to prepare your students to enter this competition. We have provided:

- An assembly plan to introduce the challenge (with accompanying PowerPoint as above)
- Suggested activities to get your students thinking about local issues and future technologies (with accompanying PowerPoint)
- Ideas on how to support your students to develop and create their entry
- Judging criteria to outline what judges are looking for in the best entries
- Guidance on the submission process
- Guidance on the use of technology and AI in this project

Judging criteria explained

The judges will be looking for many things to assess which students or groups of students will win the competition. This can all be found in the judges' criteria. They will be looking at students who have demonstrated the key skills – communication, teamwork, etc.

Content knowledge

- Local issue: How much does the entry know about their local issue? E.g. why it might exist, who it might affect and existing solutions.
- Solution: What is their solution? How does their solution address the problem?
- Challenges: What challenges might the entry face? Have they explained how they might overcome challenges?
- Digital & AI innovation: How well have they used AI and technology to support their initiative?

Skills

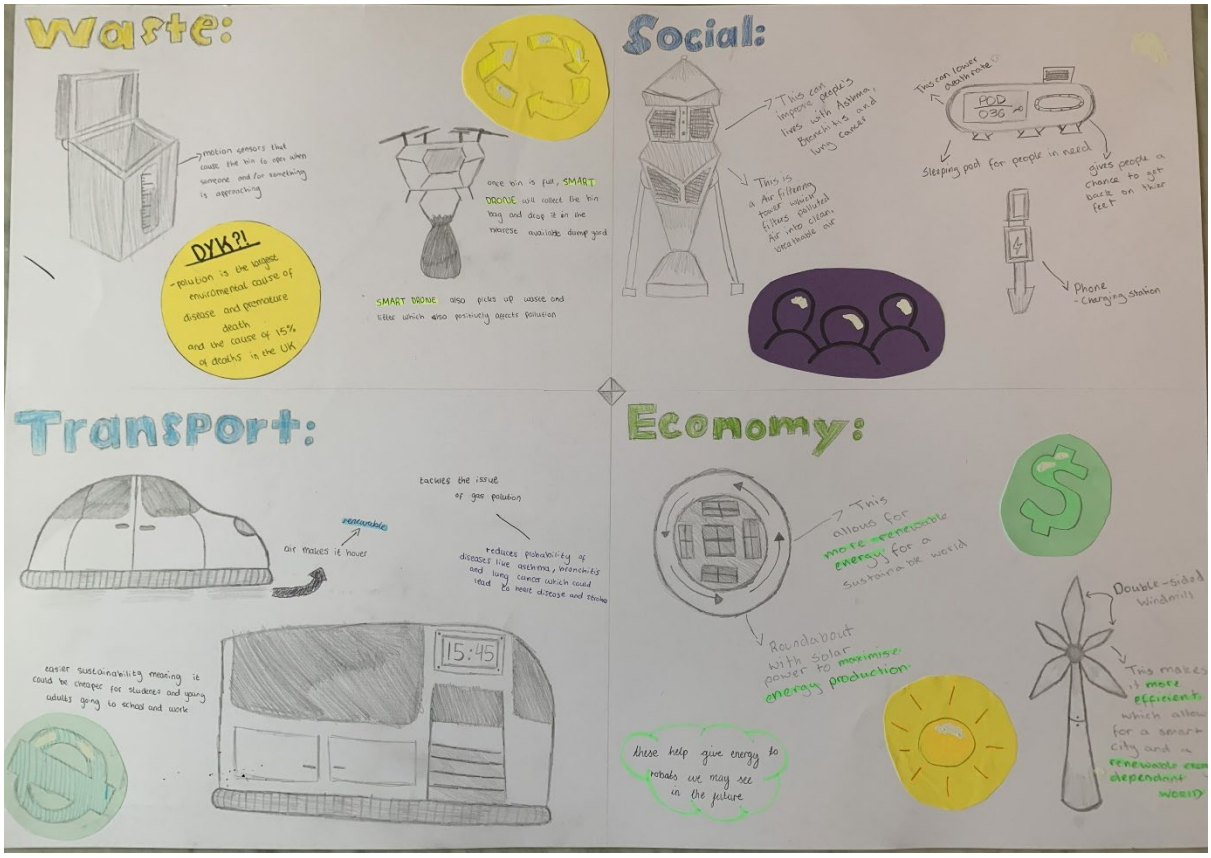
- Communication: How have the student(s) communicated their ideas across?
- The issue: Have they explained the problem clearly?
- The solution: Have they explained the solution?
- Presentation: Is the presentation professional and presentable?
- Problem Solving: What problem-solving have they shown?
- Have they evaluated ideas?
- Have they reasoned?
- Is the solution presented clearly?
- Innovation & Creativity: How did the students(s) generate ideas for their innovation? How is the idea(s) creative and unique?

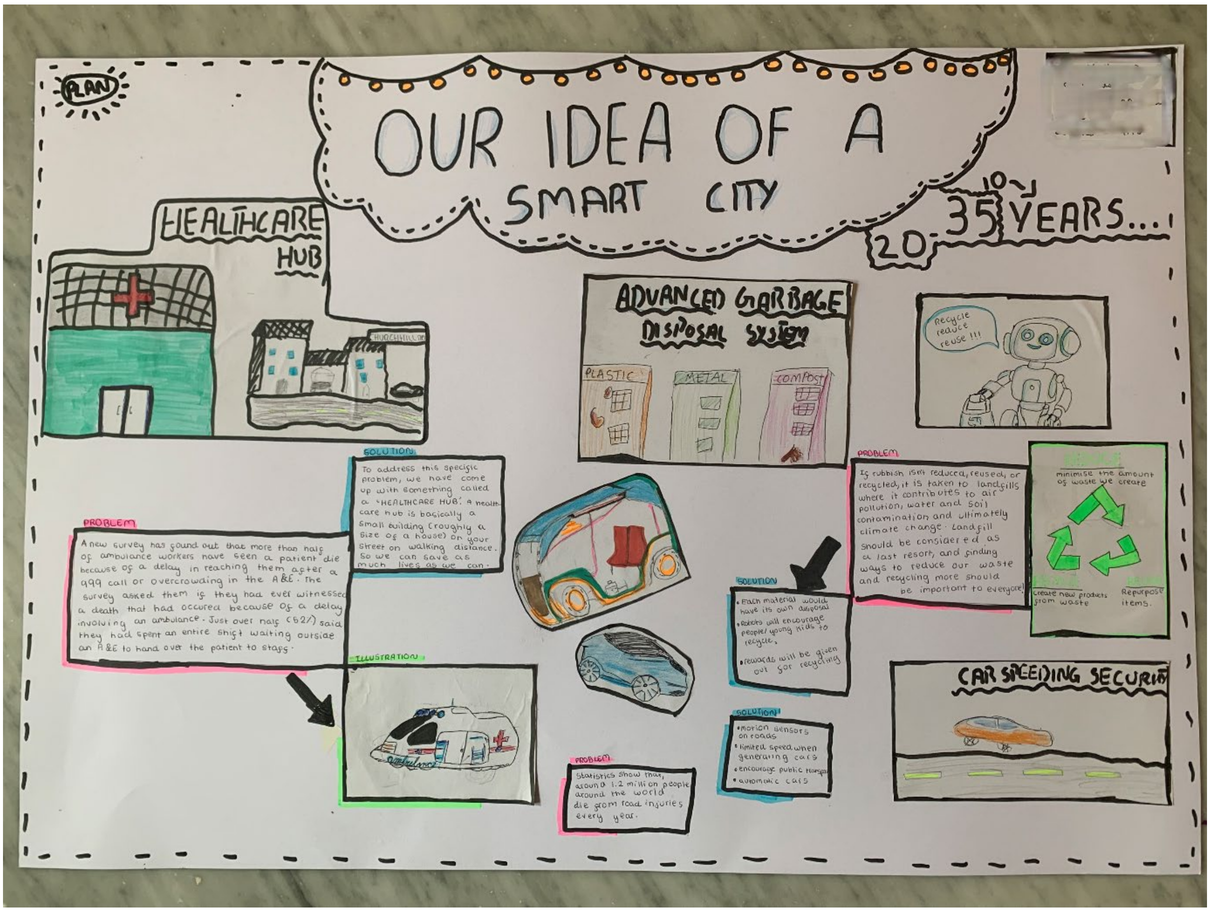
Examples and why they were successful

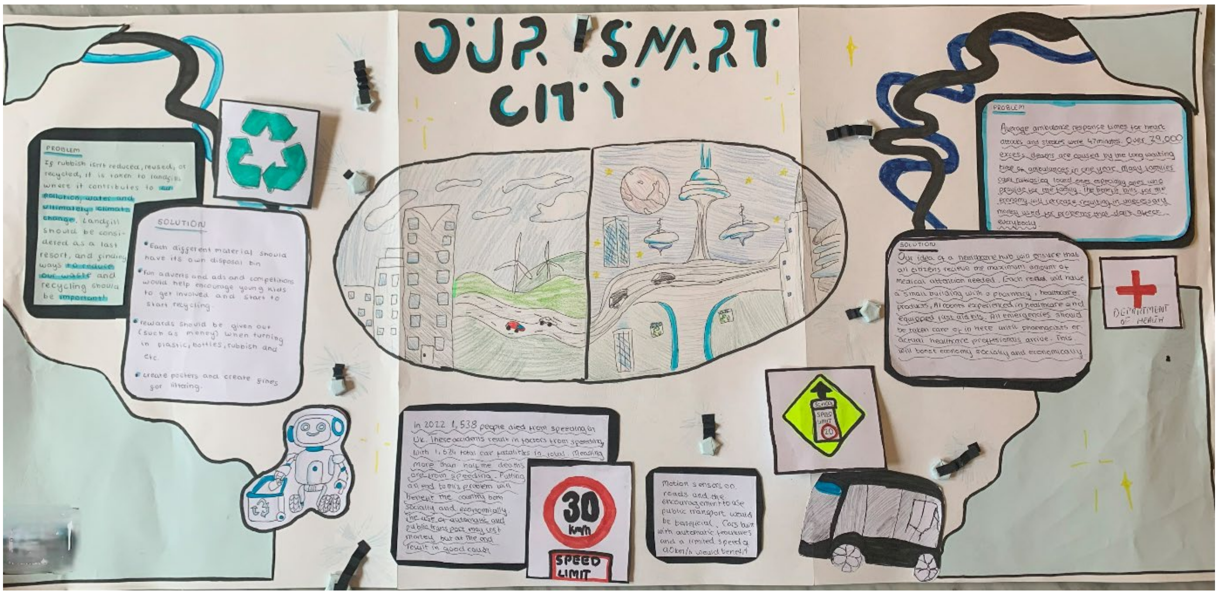
Below are some examples from last year that were successful.

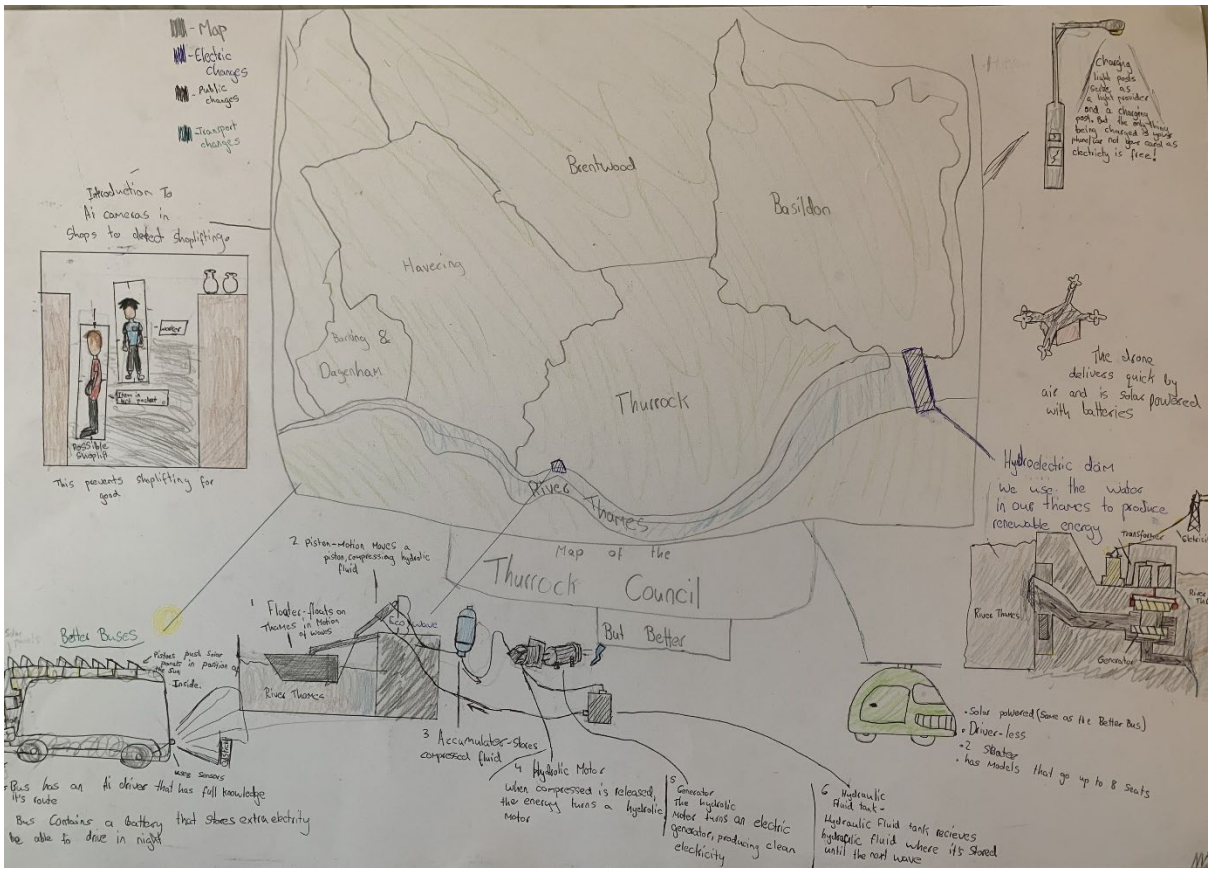
The judges particularly liked how the winning group explored the problem and explained how the solution applied to that issue. They focused on developing a couple of solutions in more detail rather than spreading their effort out across many issues.

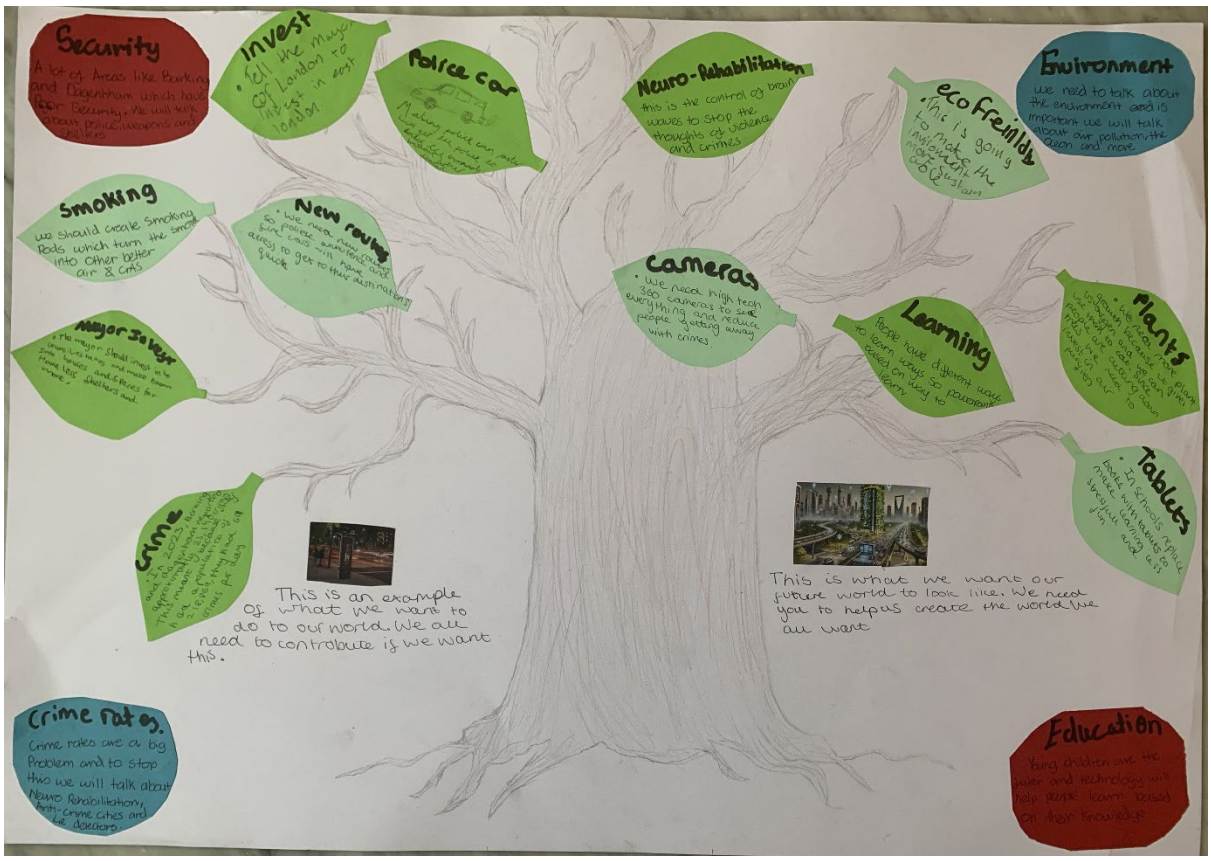
These examples show an identified issue and then a solution using smart city technology or AI innovation.




PLAN
OUR IDEA OF A SMART CITY
10-20-35 YEARS...
HEALTHCARE HUB
ADVANCED GARBAGE DISPOSAL SYSTEM
PLASTIC
METAL
COMPOST
recycle reduce reuse !!!
PROBLEM
SOLUTION
ILLUSTRATION
CAR SPEEDING SECURITY


OUR SMART CITY
PROBLEM
SOLUTION
30 km
SPEED LIMIT
DEPARTMENT OF HEALTH


Map
Electric chargers
Public chargers
Transport chargers
Introduction To AI cameras in Shops to detect shoplifting
This prevents shoplifting for good.
Bus has an AI driver that has full knowledge of its route
Bus Contains a battery that stores extra electrity to be able to drive in night
Better Buses
Inside.
Wave sensors
Brentwood
Basildon
Havering
Barking & Dagenham
Thurrock
River Thames
Map of the Thurrock Council
But Better
1 Floater-floats on Thames in Motion of waves
2 Piston-motion moves a piston, compressing hydraulic fluid
River Thames
3 Accumulator-Stores compressed fluid
4 Hydraulic Motor When compressed is released, the energy turns a hydraulic motor
5 Generator The hydraulic Motor turns an electric generator, producing clean electricity
6 Hydraulic Fluid tank- Hydraulic Fluid tank recieves hydraulic fluid where it's stored until the next wave
Changing light posts Guide as a light provider and a charging post. But the electricity being charged is regular mains for not your cared as electricity is free!
The drone delivers quick by air and is solar powered with batteries
Hydroelectric dam We use the water in our thames to produce renewable energy
Transformer
River Thames
Generator
- Solar powered (Same as the Better Bus)
- Driver-less
-2 Seater
- has models that go up to 8 seats


Security
A lot of Areas like Barking and Dagenham which have poor Security. We will talk about police weapons and cameras
Invest
Tell the Mayor of London to invest in east London
Police car
Neuro-Rehabilitation
this is the control of brain waves to stop the thoughts of violence and crimes
Environment
we need to talk about the environment and is important we will talk about air pollution, the ozone and more
eco Freindly
This is going to make a difference the environment
Smoking
we should create Smoking Rods which turn the smoke into other better air & gas
New routes
Cameras
We need high tech 360 cameras to see everything and reduce people getting away with crimes
Learning
People have different ways to learn ways so powerpoint based on way to learn
Plants
Mayor Is Vest
Crime
This is an example of what we want to do to our world. We all need to contribute is we want this.
This is what we want our future world to look like. We need you to help us create the world we all want
Tablets
Crime Rates
Crime rates are a big Problem and to stop this we will talk about Neuro Rehabilitation, Anti-Crime cites and the Police
Education
Bring children out the water and technology will help people learn based on their knowledge

Submission information

All entries can be submitted from **1st October 2025 to 1st February 2026** through the competition web page at Thames Freeport - Smart City School Competition 2025. (www.thamesfreeport.com/smart-city-schools-competition)

If any students are unable to access a device to enter, please can you help them take a photo of their design and submit their entry? If you have any questions, please email enquiries@thamesfreeport.com

Prizes

Every member of the team that wins the competition will receive a special prize in recognition of their achievement.

Each winning team member will be rewarded for their creativity and hard work. The winners will be formally celebrated at a dedicated awards ceremony, where their achievements will be recognised and prizes presented.

Stay tuned for full details coming soon!

Resources list

Activity 1:

- Bingo cards – printed & cut (one doc per pair/group)
- PowerPoint on screen

Activity 2:

- Scenario matching – printed & cut (one doc per group)
- PowerPoint on screen

Activity 3:

- Pictures – printed (one or two per group to start with)
- Have spares for groups who might finish early

After activities:

- A4 paper for students to plan on
- Judging criteria printed to show the students (one per group)
- A3 paper for the students to present their solutions

Key Skills Information

Some of the key skills the students will be developing are listed below. These are things to bear in mind when the students are taking part in all the activities. Although we are not looking for explicit examples of the skills, we want to recognise when the students have practised them by mentioning which elements of the skills they have practised.

Communication

- Students are listening and communicating their ideas to the rest of the group
- Students are responding to each other's suggestions in kind and thoughtful ways
- Students' ideas are represented in their presentations/projects/posters

Teamwork

- Students are listening to each other
- Every student in the group is taking part
- Students are sharing ideas, which are being respected by the other members of their group

Problem solving

- Students have found a problem and are discussing ways to solve it
- Students are finding the most appropriate solutions through talking and reasoning with their team members

Innovation & creativity

- Students have created an interesting and resourceful solution
- They have considered AI, technology and digital advancements to make their innovation creative

ACTIVITY 1 – Directions

Outcome: Students can name some local issues and understand how they impact people.

Local issue bingo! (15-20 minutes)

Students working in pairs or groups

- Explain to students that you will be handing out a bingo card for each group, and you (the teacher) will be giving them definitions. When you think you have the answer, you put your hand up and shout out what the word is. Then, I will ask you some questions about your local problem
- Hand out a bingo card with local issues to each group of students and keep one for yourself as a teacher…..E.g. pollution/rubbish/lack of medical support/homelessness/youth crime, etc
- Describe one of the issues to the class without saying the name of it
- Direct students to discuss in their groups about what the local issue could be
- Tell them to raise their hand or shout out their answer when they think they know
- Explain to the students that they will get one point for answering each question correctly
- Ask each group to tell you:
    - Who does this impact?
    - Why does it affect them?
    - What is missing/not working properly to make this problem exist?
- Use the holding slide with the questions
- If they get stuck, another group has an opportunity to put their hand up and answer for a point
- Say to students that this is a great chance to show your communication skills, which is one of the skills that the judges wanted you to develop
- This activity means you have to listen to each other and offer your own ideas to support your own learning as well as others in your team and class.

ACTIVITY 2 – Directions

Outcome: Students can suggest appropriate solutions to a selection of local issues.

Scenario matchmaking! (15 minutes)

- Ask the students to get into pairs or groups and hand out a selection of local issues
- Ask the students to match the local issues with the appropriate solutions
    - These solutions will be quite vague so that they could match with more than one issue
    - It will also give the students a chance to elaborate and to think creatively for themselves
- Reiterate to the students that this is a chance for them to work and think creatively and as a team
- Tell students that working creatively is about finding new ways to solve problems and express ideas. It isn't just about 'being creative'. It is looking at things differently and offering new ideas to something
- Then ask them to explain why they have matched them with each other
- To extend, ask students to elaborate on each solution and add:
    - What can you add to the example given?
    - How might this help?
    - Who might this help?
    - Why will it help?
- Use the holding slide with these questions
- Can they think of any more solutions?

This will enable innovative ideas to start coming up

- Share with the class!

ACTIVITY 3 – Directions

Outcome: Students can name some ways technology and AI could improve their local area

Describe the solution (15 minutes)

- Students to work in groups

Highlight that this activity will be a really good chance to work with the other students in their team collaboratively, which shows effective teamwork.

- Give each group pictures of different AI innovations, each on a separate page
- Ask them to discuss in groups and write notes around the image about how this specific innovation can help a local area
- There might be multiple answers as the images are not focused on one specific issue/problem
- Ask the students to also think about possible negative impacts from these solutions and how they might prevent these. They will need to think carefully when they create their own
- The idea is to get the students thinking about the different possible solutions an innovation could provide and why

Highlight to students that working innovatively means you are being curious, looking for problems and thinking differently. It also means you are working together to try to improve on something

- Use the questions on the activity page to support the students
- You could present the questions in front of the class or around the room for everyone to see

These questions will help the students to understand how a solution will help tackle a problem, rather than just having a creative innovation. This will really encourage problem-solving conversations – highlight this to the students!

Creating your competition entry

Outcome: Students to identify a local issue and create a solution.

Planning (1 hour) & **Presentation (1 hour)** – these are just suggestions. It depends on how long you have. Ideally, the planning will take just as long as the students will be discussing, sharing and working out what to do.

Once the activities have been completed, it is time to introduce the competition properly.

The teacher is to explain to the students that they will work in groups to design and create a project/presentation/poster.

On their project, the students are going to:

- Identify a problem in the local area
- They will explain what the problem is and who is affected by it
- They will talk about why the problem might exist
- Identify what a solution might be
- Incorporate future technology or tech, including AI innovations that can support the solution
- They can think of more than one issue and solution, but we want to encourage detail and content rather than the number of ideas

Explain to the students that your work will be judged. The judges will have some criteria to use when they are judging, so they have clear elements to look out for.

Show the students the judges' criteria and talk through each of the points. These should support you in knowing what you need to include to be in with a chance of winning. Give each group one or 2 copies of the criteria to keep and refer to.

The teacher will then show examples of last year's winners on the PowerPoint again. Teacher to highlight that the students who did well and won explained the problem really clearly and offered a creative and appropriate solution.

Tips for choosing a problem

- Think about what issues or problems you see
- E.g. rubbish, waste, homelessness, fights
- Think about what issues you hear about
- Knife crime, pollution, speeding
- Now think about what problems people face regularly
- Things not working properly, buses/trains cancellations
- Think about different people being affected by different things
- Young people & social media
- Elderly & access
- Children & safety
- Parents/carers & getting to work on time/picking up children/food shopping

Techniques for generating ideas to find the problem

The 7 whys

- This technique goes beyond the surface & encourages deeper thinking
- After a student has offered an idea for what they think a local problem could be, someone in the group is to ask why?
- The team continue asking 'why' 7 times, so they have to keep answering

E.g. I think we should think about pollution

- Why? It is really bad for the environment
- Why? Because there is a lot of rubbish and waste on the streets
- Why? Because maybe there aren't enough bins or recycling options
- Why? Maybe there is not enough money to buy or make more
- Why? Because maybe people don't know the problem is so bad or it isn't prioritised
- Why? Because there are lots of other problems, and people don't speak up about how bad it has got
- Why? Maybe people don't have time

Blue sky thinking helps students to think about problems and then choose one that they relate to.

- The idea is that no idea is too big as the ideas will later be refined. It encourages creativity and imagination
- By thinking of solutions first, students can work backwards to identify a social problem
- E.g. we could build a giant air purifying tower that sucks in the smog/we could create an electric underground transport system, so all the vehicles are below the surface
- From this, students then work backwards to see what the issue is
- The air purifying tower would be used to help solve air pollution
- The underground transport system would help with reducing vehicle emissions
- Refer to Blue Sky Thinking in the section above
- Students can also use this technique to really delve into coming up with their solutions
- E.g. I think we should put solar panels on every single wall and roof in the area
- From this, students can discuss what it will actually look like and refine it down
- How realistic is this?
- Where could we put the solar panels?
- How would this work?

Mind maps - This technique encourages thinking about all problem aspects

- Start with a main problem in the middle of a piece of paper
- One branch can be around cause
- E.g. the reason there is a lack of police in the area is because of funding, not enough resources and not enough people wanting to stay in the police force
- One branch for effects/consequences
- E.g. crime rates increase, and people feel unsafe etc.
- One branch for who is affected
- E.g. young people, elderly, women etc.
- One branch for possible solutions
- E.g. hiring and training more officers, better resources, technology support etc.
- One branch for how these solutions might work
- E.g. technology support like drones or CCTV, AI monitors etc.

Tips for choosing a **solution**

- From the problems you've thought about, think about what might help
- Think about who would benefit from what
- Think about how you can use technology & AI to support your solution
- Consider why the problem may exist to think about how you can solve it

Giving advice

- Pretend the issue was affecting a friend. What advice would you give to them?
- Students are to work in partners
- One brings a local problem that is affecting them, whilst the other gives advice as to how they should deal with it

Flow chart

- This is to build step by step on each stage as the students are developing their solution
- Students write the problem at the top
- E.g. high unemployment in the area
- Then they draw an arrow which looks at the first step they need to address
- E.g. use AI to identify gaps of skills by screening and can also see who is affected
- Then another arrow from that for the next step in development
- E.g. develop training programmes
- Continue this process until the students feel they have reached a suitable solution

Students at this point, should be writing down their ideas and thoughts. This can be done on an A4 piece of paper or straight onto their A3 poster paper. It depends on how long the students have. The teacher is to walk around the classroom and is able to offer prompts if students need it.

AI in Young Enterprise: A Guide for Parents, Teachers, Volunteers and Mentors

What is Generative AI and why does it matter?

Generative AI (Gen AI) tools like ChatGPT, Copilot and Gemini can create text from simple prompts. Think of them as very clever writing assistants that have read millions of documents and can produce human-like responses. Such apps can also create images, sound and video based on the instructions given to them.

Young Enterprise doesn't ban these tools because they're becoming part of everyday work life, and we believe that if used the right way, they can support the learning and development of young people. Instead, we want students to be empowered to use them responsibly and effectively. The key principle: **students must understand and be able to defend any AI-assisted work they submit, as well as reference it clearly**. This is in-line with the Joint Council for Qualifications guidance on using AI in assessments.

Your role in supervision

As adults supporting Young Enterprise teams, you play a crucial role in helping students use AI tools appropriately. Here's what you can do:

1. Ask young people to share how they are using AI. Frame this as coaching, not policing. Tell them to keep their conversations about the business separate from any personal queries. Look at how students are using AI and provide feedback on better ways to prompt and verify information. This helps them develop critical thinking skills they'll need throughout life.

2. Ensure transparency. Students must be able to explain every decision they make for their business. If they can't defend why they chose a particular marketing strategy or financial projection, they shouldn't use it - even if an AI suggested it.

3. Protect privacy and safety - Never let students input:

- Personal information (names, addresses, phone numbers)
- Confidential financial data
- Any identifying or sensitive information about customers or team members

4. **Support students to stay on the right side of copyright law.** Ensure students don't share materials owned by others with the Gen AI app.[1]

5. **If you are familiar with Gen AI, show students how to use privacy modes where available**, since most AI tools store conversations and may use them for training. For example, 'Temporary Chats' in ChatGPT don't appear in the history, don't use or update ChatGPT's memory, and are not used to train the model.

Common pitfalls to watch for

The 'copy-paste trap': A student presents polished text they don't understand.	**Your response**: Ask them to explain it in their own words. If they can't, they need to either research until they understand it or find a simpler approach.
Fabricated facts: AI tools can 'hallucinate' - making up convincing-sounding information.	**What to do**: Teach students to verify important facts through other sources. If an AI mentions a statistic or regulation, they should find the original source.
Over-reliance: Students asking AI for every tiny decision.	**Better approach**: Use AI for brainstorming and initial ideas, then have team discussions to evaluate and adapt suggestions.

Practical supervision checklist

When reviewing student work, ask:

- Can you explain this decision in your own words?
- Where did this information come from originally?
- What other options did you consider?
- How do you know this fact is accurate?
- Why is this the best choice for YOUR specific entry?

[1] Please note that guidance can change, but this page from a UK law firm answers questions about topics such as copyright:

https://www.moore-law.co.uk/ownership-issues-in-ai-generated-content-who-owns-the-copyright/

Good vs poor AI use: Examples

Poor	Better
'Write our business plan'	'We're making eco-friendly phone cases for UK teenagers. What are three ways we could explain our environmental impact to customers?'
Copying an AI's market analysis without checking.	Using AI to identify potential market research sources, then verifying each one exists and reading them personally.
'What should our profit margin be?'	'Our costs are £X per unit. What factors should we consider when setting our selling price?' Then discussing as a team what makes sense for their situation.

Teaching responsible use

- Help students understand that AI is like any tool - useful when used properly, problematic when misused. Just as they wouldn't drive a car into a lake because the satnav said so, they shouldn't blindly follow AI suggestions. Encourage students to:
- Start with their own ideas, then use AI to expand them.
- Always verify important information through multiple sources.
- Keep conversations going - ask follow-up questions to whichever app they are using.
- Document which parts of their project used AI assistance with references, dates, prompts used, screenshots, etc.
- Carefully consider whether Gen AI is the right tool to use for the task, especially due to the environmental impact.[2]
- Quick safety rules

No personal data - Ever. No exceptions.

Check the facts - Especially dates, laws and statistics.

Understand everything - If they can't explain it, don't use it.

Credit appropriately - Be transparent about AI assistance.

Team decides - AI suggests, humans choose.

The bottom line

[2] This article from the UN Environment Programme provides more details: AI has an environmental problem. Here's what the world can do about that.

Gen AI can help students explore more ideas and work more efficiently, but it's not a shortcut. Your role is to ensure they're developing real understanding, not just producing impressive-looking documents they don't comprehend.

Remember: The goal isn't to create the perfect solutions - it's to help young people learn to think critically, make decisions, and defend their choices. AI should support that learning, not replace it.

When used thoughtfully with proper supervision, AI tools can enhance creativity and productivity while teaching vital digital literacy skills students will need in their future careers.

ACTIVITY 1 – Print out – Bingo Cards

LOCAL ISSUE BINGO

Pollution	Waste	Lack of medical support
Theft	Transport cancellations/delays	Youth crime
Violence	Disability access	Homelessness

Under funding of schools	Theft	Lack of police
Waste	Lack of extracurricular programs for young people	Traffic congestion
Lack of medical support	Poor road conditions	Youth crime

Poor road conditions	Traffic congestion	Housing shortage
Crime	Lack of police	Unemployment
Under funding of schools	Social isolation for elderly or vulnerable groups	Lack of extracurricular programs for young people

Housing shortage	Crime	Violence
Traffic congestion	Lack of police	Homelessness
Poor road conditions	Pollution	Social isolation for elderly or vulnerable groups

ACTIVITY 1 Descriptions

These are just the definitions. Feel free to add your own descriptions/put into a sentence.

Pollution – damage caused to water, air etc. by harmful substances or waste (Cambridge English Dictionary). Making an environment unsuitable or unsafe for use by introducing man-made waste (Merriam-Webster)

Waste – material that is no longer needed and are thrown away. Unwanted substances (Oxford Learner's Dictionaries). Can also refer to the careless or unnecessary use of resources (Collins English Dictionary)

Lack of medical support – when services are unavailable (e.g. no clinics, delay in ambulances, essential medicines or staff), populations face access barriers – long distances or long wait times or coverage is insufficient (WHO)

Theft – taking someone else's property dishonestly, with the intention of never returning it (Legal Choices Dictionary). The act or crime of stealing (Britannica Dictionary)

Transport cancellations/delays – changes to the schedule which causes disruption. It might be due to faults or staffing issues

Youth crime – from the ages 10-17, a child is considered this. They can be arrested and taken to court if they commit something illegal (gov.uk)

Violence – actions that are intended or likely to hurt people or cause damage (Cambridge Dictionary). Can injure, abuse, damage, or destroy (Merriam-Webster)

Disability access – Accessibility means that people can do what they need to do in a similar amount of time and effort as someone that does not have a disability. It means that people are empowered, can be independent. If they do not have this, they will be frustrated by something that is poorly designed or implemented (gov.uk)

Homelessness – either lack a secure place in which you are entitled to live or not reasonably be able to stay (crisis)

Under funding of schools – when they lack sufficient financial resources to meet the basic educational needs of their students. These schools often struggle to provide adequate facilities, updated learning materials, qualified teachers, and extracurricular programs, significantly impacting students' academic performance and future opportunities (The Sociology Dictionary)

Lack of police – not enough police offer around to make people feel safe. A lack of these important people means there is more crime in the area

Lack of extracurricular programs for young people –fall in access to these activities and the disproportionate impact on low-income students is likely to have a knock-on effect on social mobility into the workplace (The Sutton Trust)

Traffic congestion – when vehicles moving along roads, or the number of aircraft, trains, or ships moving is too blocked or crowded (Cambridge Dictionary)

Poor road conditions – Road defects, such as potholes and faded road markings, streetlights and traffic signals that are damaged or not working properly, debris on the carriageway, flooding, missing or damaged manhole covers, roadworks and repair equipment, such as mobile cranes (TFL Gov.)

Housing shortage – a deficiency or lack in the number of houses needed to accommodate the population of an area (Collins Dictionary)

Crime – a deliberate act that causes physical or psychological harm, damage to or loss of property, and is against the law. There are lots of different types and nearly everyone will experience a crime at some point in their lives. It affects people from all backgrounds, locations and ages (Police UK)

Unemployment - someone is considered unemployed if they are without work, available to start work, and actively seeking employment (ILO)

Social isolation for elderly or vulnerable groups – the lack of social contacts and having few people to interact with regularly (National Institute of Aging)

ACTIVITY 2 – Print out – Scenario matchmaking

All fictional scenarios

Problem 1

Barking is an area that is growing fast. This means more people. More people bring more rubbish and waste. Lately, bins are overflowing, there's rubbish in the parks, and some people are even dumping waste in the Thames.

This is causing the rivers to become polluted; piles of waste are being left on the streets and there is not enough recycling or public awareness.

Problem 2

Mr Masoon is 85 years old and lives by himself. His children and family live far away and he doesn't get many people coming to visit him. He used to go to the local community gatherings but now it's too hard for him to get around so he stays at home.

He finds it difficult going to the shops or even leaving the house for a walk. This is causing him to feel lonely and both his mental and physical health is starting to suffer.

Problem 3

Yellowpark Secondary School has lots of students, but it doesn't get enough funding. There are not enough resources for every student, and the computers & tablets are old and don't often work.

The school can't afford extra-curricular activities anymore like drama, art or music. Both the teachers and the students are trying their best but are starting to feel fed up.

Problem 4

Grays has many roads, but they are full of cracks and potholes. Buses and cars often have to move slowly or swerve out the way because the roads are so damaged. Sometimes, streets flood after heavy rain, making it hard for people to get around especially to school or work.

Cyclists and pedestrians are at risk because the pavements are broken or missing in some areas. The problem is that there enough money to repair all the roads, so it keeps getting worse.

Problem 5

In Havering, the streets are always crowded with cars, buses, and motorcycles. During rush hour, it can take students and workers ages to get to school or the office.

Buses are often delayed and people get frustrated sitting in traffic. Also, air pollution increases because of the number of vehicles.

Problem 6

In Tilbury, many young people and adults are looking for jobs but can't seem to find any work. Some lost their jobs when local businesses closed, and others finished school but can't get hired.

Without a steady income, families struggle to pay for rent, food, and other needs. There is more theft, crime rates have increased and a rise in poor mental health in the area.

Problem 7

In Thurrock, there are only a few police officers for the whole borough. Because they are so busy, it can take a long time for them to respond when people need help.

Some areas don't see police patrols very often, which makes residents feel unsafe. Small crimes like vandalism and theft happen more often, and people worry about walking alone at night.

Problem 8

In Dagenham, many public buildings and parks do not have ramps, lifts, or clear pathways. People who use wheelchairs or have mobility challenges, find it hard to enter certain places or use public transport.

Some pavements are uneven, and there are few signs or signals to help people with vision or hearing difficulties. This means some community members miss out on events, services, and opportunities.

Solution 1

Use drones/robots for mapping and planning tools to scan the area

Solution 2

AI-powered crime prediction and monitoring systems with alarms/radars

Solution 3

Technology that is a screening for a job matching and skills training platform along with scanning

Solution 4

AI based smart system. Smart traffic lights/AI routing/GPS systems/air pollution sensors

Solution 5

Digital road monitoring and repair planning system – flood prediction/smart road inspections

Solution 6

Virtual lessons & resources and AI/smart planning resources

Solution 7

Smart monitoring to sort waste into recycling & rubbish

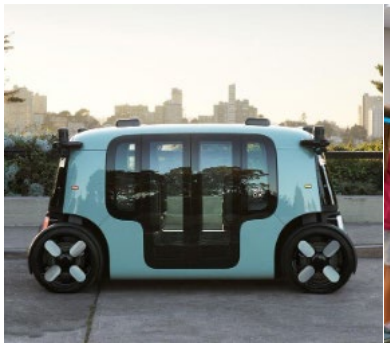
Solution 8

Social connection matching, virtual companions & AI health and safety monitoring

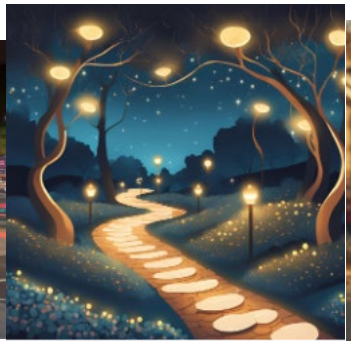
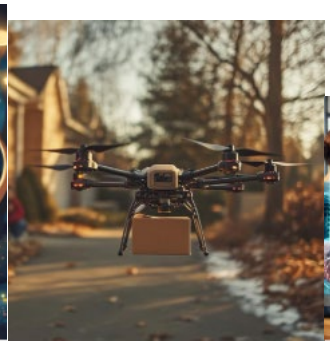
ACTIVITY 3 – Print out – Picture description

PICTURE DESCRIPTION

These images are on the PowerPoint to be printed. Each group can have one or two to start with.






Questions:

- How does that innovation help?
- What problem is it fixing?
- Who is it helping?
- How is it helping those people?
- What are the different benefits from having that innovation?
- What are some of the problems this innovation might cause?
- What could you offer as a solution for those?

Assembly Script

Slide 1

Welcome to the Smart City Schools - 'Your Freeport, Your Future Competition'! this is an exciting opportunity to get involved in a competition against other students in your area and neighbouring boroughs. Young Enterprise works with hundreds of schools across the UK and thousands of young people like you. It is a national charity that motivates young people to succeed in the changing world of work by equipping them with the work skills, knowledge and confidence they need.

They've teamed up with a government designed group of businesses who have come together in supporting local areas, also known as Thames Freeport. We will look at who they are in a little bit more detail shortly.

Slide 2

Show the students the competition poster to get them excited. Run through the main information but say that you will be going through each part in a lot more detail. Show them the

Slide 3

Show the short animation which is linked to Youtube – if you would like the downloadable version email enquiries@thamesfreeport.com

Slide 4

This is what it will look like. Over the next few weeks, we will be taking part in the competition from Thames Freeport and Young Enterprise.

You will be asked to come up with an innovative solution to your chosen local issue and present it for a chance to win an exciting prize.

We will explain the competition here and then you will go into your classes to work on your submissions in teams.

The judges will pick the top 3 entries per school and they will be judged against other entries from the borough. The deadline for submissions is 1st February 2026

It will become clear soon as to what this will look like!

Slide 5

Let's start by understanding who has set this competition up.

So, what is Thames Freeport? Thames Freeport is also known as a Free Trade Zone. It is designed by governments to boost economic growth. This means that in certain areas where Thames Freeport work – like your local area, there is much more opportunity for people to get work & see changes where they live.

Thames Freeport has funding to invest in Barking and Dagenham, Havering and Thurrock to develop future jobs and industry. They are expected to draw £4.5 billion of new investment and create 21,000 skilled jobs! They do this by engaging people who live locally to understand their vision for the future of the area. It focuses on providing opportunities for job development and it works to attract & create new jobs

Slide 6

Show where TF work. It is a large part of London and Essex so there are many people who are and will be affected by their work. It is also exciting for you as it means that not every borough is taking part in this competition!

You might recognise some of these places on the map.

Slide 7

And they want your help!

Slide 8

They are working on a new plan for the local area. This will include investment into jobs, homes, skills and technology. Thames Freeport want to engage and involve young people in the work they are doing in the area.

They also want to give young people like you, an opportunity to develop key skills in communication, teamwork, creativity, innovation and problem solving. The pilot was successful last year, so this year they are developing it to run over a much wider scale.

Explain that the competition will be judged by external Thames Freeport judges who will be following some criteria which we will look at shortly. Remember, it is a competition between lots of other students in the area! This is your chance to shine and to show us that you are a capable winner. Because yes, there will be a winner. There will be a prize and it could be you!

We will look at this in more detail shortly but the judges will be looking for you to explain a problem in detail, design and create a solution and include the impact that your innovation will have on the local community.

Slide 9

Explain to students that they need to start by thinking about some of the problems that need improving in an area.

Slide 10

Show slide with images of examples. Ask students if they know of any local issues in their area. Talk to the person next to you for 1 minutes. Take a few examples from the students to share with everyone else.

Slide 11

Ask the students what they could do about some of the issues they have identified. Ask students for hands up and volunteers to offer their suggestions.

Slide 12

Explain that for the next few weeks, you will be solving problems that need addressing in your community and exploring things that could be done to help or improve the area where you live. Then explain it is a competition between the other people in your area. Explain that the competition will be judged by external judges who will be following some criteria – you will find out more about this later on.

Talk through the different objectives on the slide as this will outline a structure and progression for the students to see.

Slide 13

You will be getting into groups in your classes, and you will be working as a team, communicating your ideas, being creative, innovative and will be problem solving to find a local issue & the most appropriate solution. Your teachers will be noting those students who have developed these skills.

The solutions you come up with should make the issue better and help people living in the local areas. You will be thinking about what technology and digital advancements you can think of to support your solutions. Think about future cities – what will they look like and what will make things better?

Slide 14

Explain some of the key skills that could be developed by taking part.

Slide 15

In order to have a chance of winning you have to identify a local issue and create a solution, you will need to make sure you include these things:

- Explain the problem/issue in detail
- Say why you think the problem might exist
- Design and create a solution
- Explain why the solution might work
- Address why the solution might not work & give an alternative
- The impact that your innovation will have on the local community

Tell the students that last year there was a trial programme and the winners from Harris Academy Riverside were chosen not just because of their creative innovation, but for really explaining the problem that existed in their local area. They focused a lot on these then offered solutions with clear explanations.

Slides 17-20

Show previous examples.

Slide 17

Explain that the reason this example was the winning entry, was because they clearly explained the problem and some solutions. Slide 18 is a closer look

Slide 19

Can you see how clear and professional they look! The students clearly worked really hard on making sure to communicate their ideas on the posters.

Slide 22

Explain that the judges will have a criteria to use in order to choose which of the groups should win. You will get a chance to have a proper look at this when you are in your classrooms. You will also be able to use this to see what to include and to make sure you haven't forgotten anything important!

Slide 23

So, now that we have gone through everything, it is almost time for you to get started! Does anyone have any questions? If there is time, take questions. If there isn't, say to the students to save their questions for when they are all back in the classrooms.

SO, who's excited?! I can't hear you Year xxx, who is excited?! You will now go into your classes, get into teams and then start with the first activity. We can't wait to see what amazing ideas you come up with and are so looking forward to seeing your final projects! Remember there is a prize for the winning team! GOOD LUCK and ENJOY!

Smart City Schools Competition

Smart City Schools Competition

Young Enterprise
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YOUR FREEPORT, YOUR FUTURE

CATEGORIES

Primary:

9 – 11 years old

Secondary:

11 – 14 years old

THEMES

Local problems and the impact

Creative solutions using digital & AI technology

Using problem solving skills

Innovation and teamwork

PRIZES

Exciting prizes to be announced!

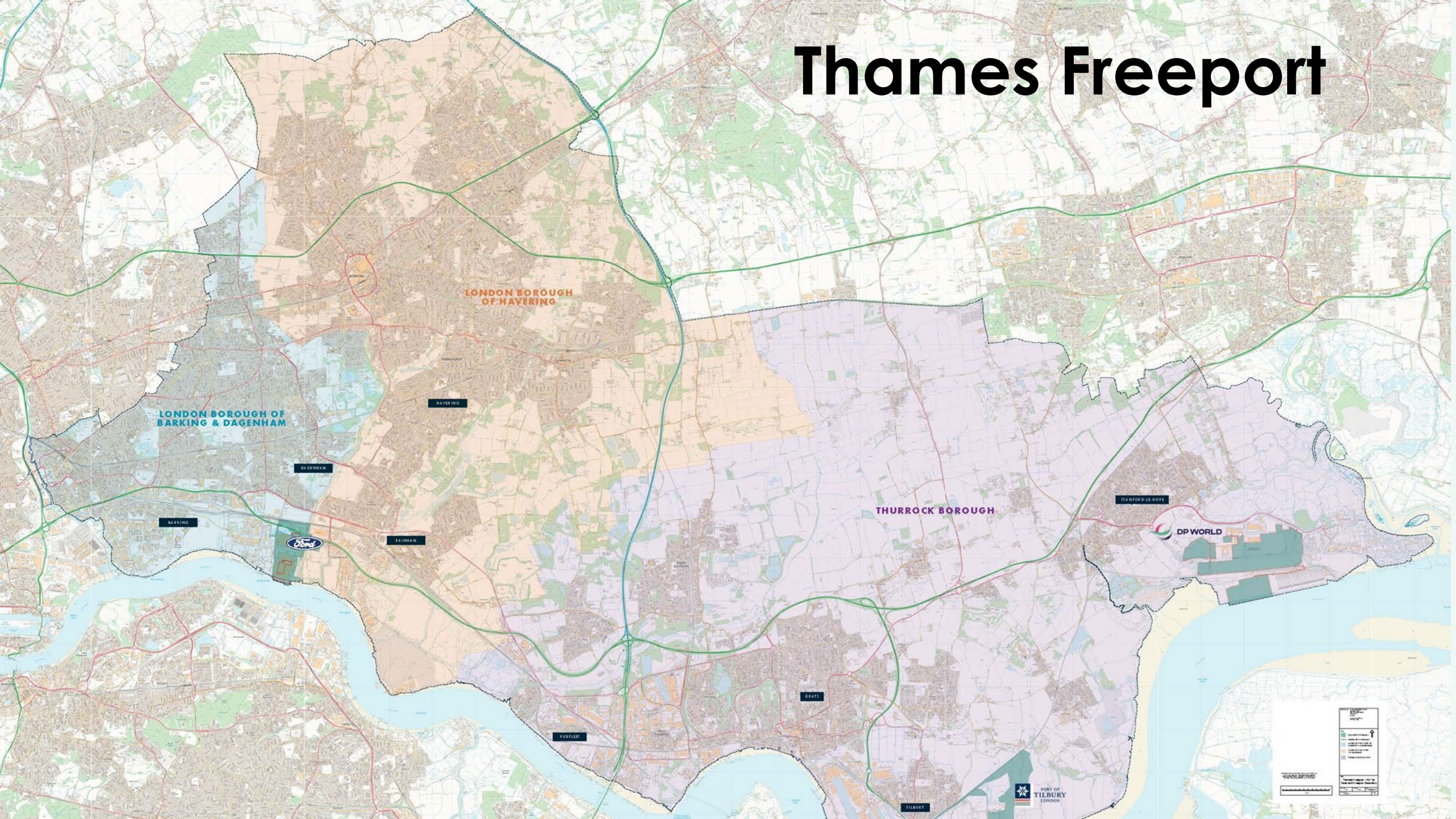
IMPORTANT DATES

Submission by:
1st of February 2026

WHO ARE THAMES FREEPORT

- Thames Freeport works in Barking & Dagenham, Havering and Thurrock to bring new and exciting businesses and ideas that help the area grow.
- It also works with local people to create training and job opportunities for the future.

Thames Freeport



AND THEY WANT YOUR HELP!

WHERE DO YOU COME IN?

- Thames Freeport want to bring in the views of young people into their work.
- Thames Freeport are working on a big plan for the area technology and want to engage you!
- Thames Freeport want young people to also develop their own key skills like innovation & problem solving.

WHERE DO YOU START?

In order to improve an area, it is important to identify what needs attention.

What are some of the problems that exist in the area?

WHAT DO YOU THINK ARE SOME LOCAL ISSUES IN YOUR AREA

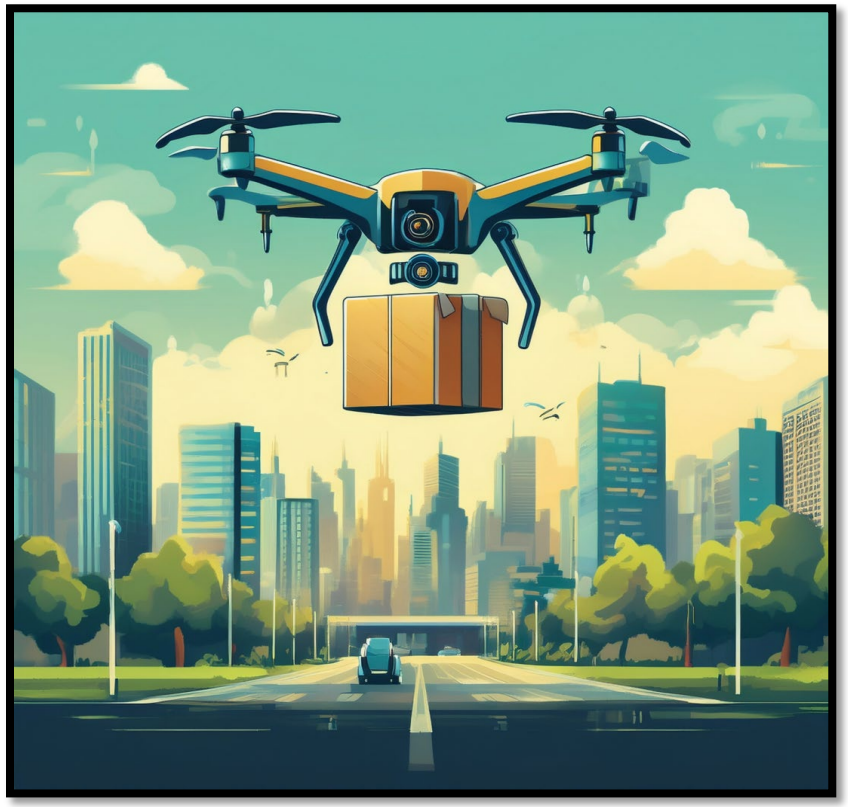
NO RUBBISH

NO TRANSPORT

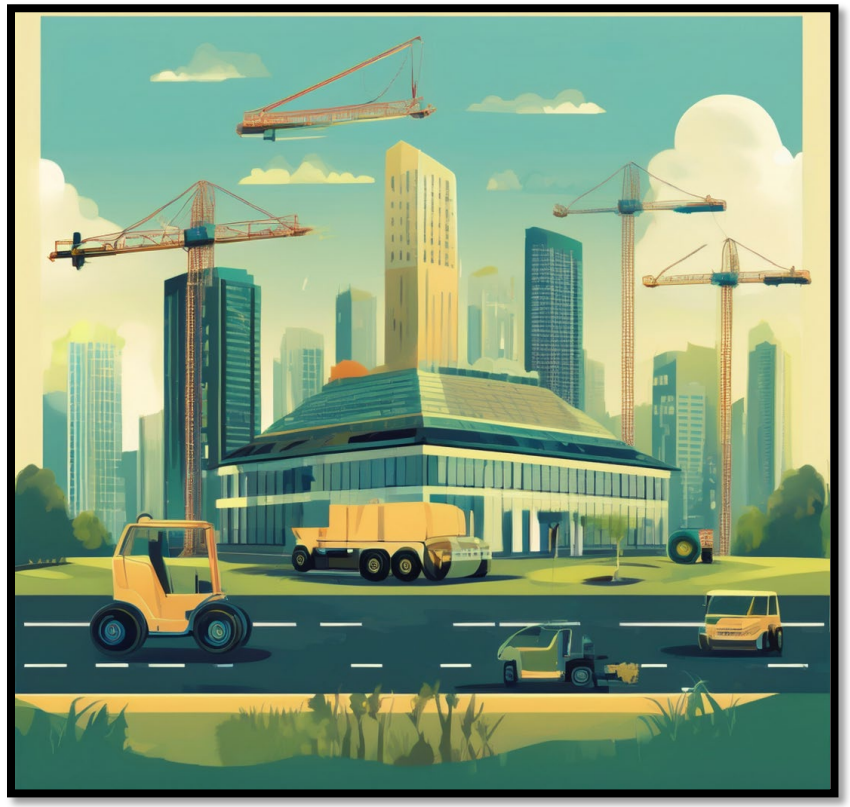
NO COMMUNITY CENTRE

EXAMPLES

WHAT CAN YOU DO ABOUT THEM?



AUTOMATED DELIVERY SERVICES



DEVELOPMENT & CONSTRUCTION

EXAMPLES

YOUR CHALLENGE: DESIGN HOW YOUR LOCAL AREA WOULD LOOK IN 2035

- Think about the problems and challenges in your area.
- What could be different?
- What could be better?
- How would that benefit the community?

You can be creative with how you present your ideas.

Your entry could be:

- *An annotated poster*
- *A drawing of a design*
- *A model*
- *An animation*

WHAT WILL YOU ACHIEVE?

You will be able to:

- Identify some local issues and understand how they impact people.
- Suggest appropriate solutions to a selection of local issues.
- Highlight some ways technology and AI could improve their local area.
- Identify a local issue and create a solution for the competition.

WHAT WILL YOU DO?

TEAMWORK

PROBLEM SOLVING

CREATIVITY & INNOVATION

COMMUNICATION

WHAT DO YOU NEED TO INCLUDE?

You will need to:

- Explain the **problem**/issue in detail
- Say **why** you think the problem might exist
- **Create a solution** using technology or **Artificial Intelligence**
- Explain **why the solution might work**
- Address why the solution might not work
- The **impact** that your innovation will have on the local community
- Create a **design** of your solution

PREVIOUS WINNER'S DESIGNS

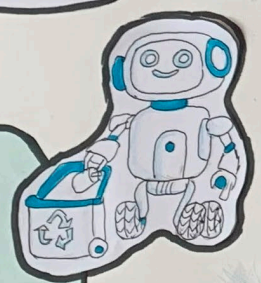
OUR SMART CITY

PROBLEM

If rubbish isn't reduced, reused, or recycled, it is taken to landfills where it contributes to air pollution, water and ultimately climate change. Landfill should be considered as a last resort, and finding ways to reduce our waste and recycling should be important!

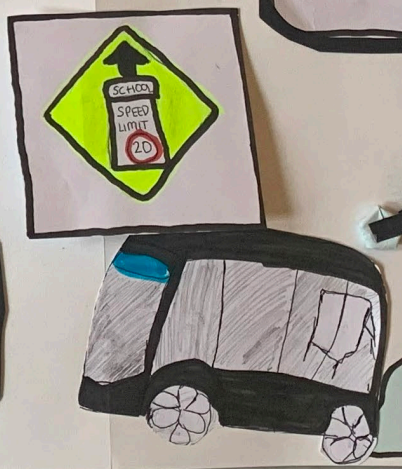
SOLUTION

- Each different material should have its own disposal bin
- Fun adverts and ads and competitions would help encourage young kids to get involved and start to start recycling.
- rewards should be given out (such as money) when turning in plastic, bottles, rubbish and etc.
- create posters and create fines for littering.



In 2022 1,538 people died from speeding in UK. These accidents result in factors from speeding with 1,624 total car fatalities in total. Meaning more than half the deaths are from speeding. Putting an end to this problem will benefit the country both socially and economically. The use of automatic and public transport may cost money but at the end result in good calls.

Motion sensors on roads and the encouragement to use public transport would be beneficial. Cars built with automatic features and a limited speed of 90km/h would benefit

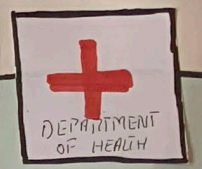


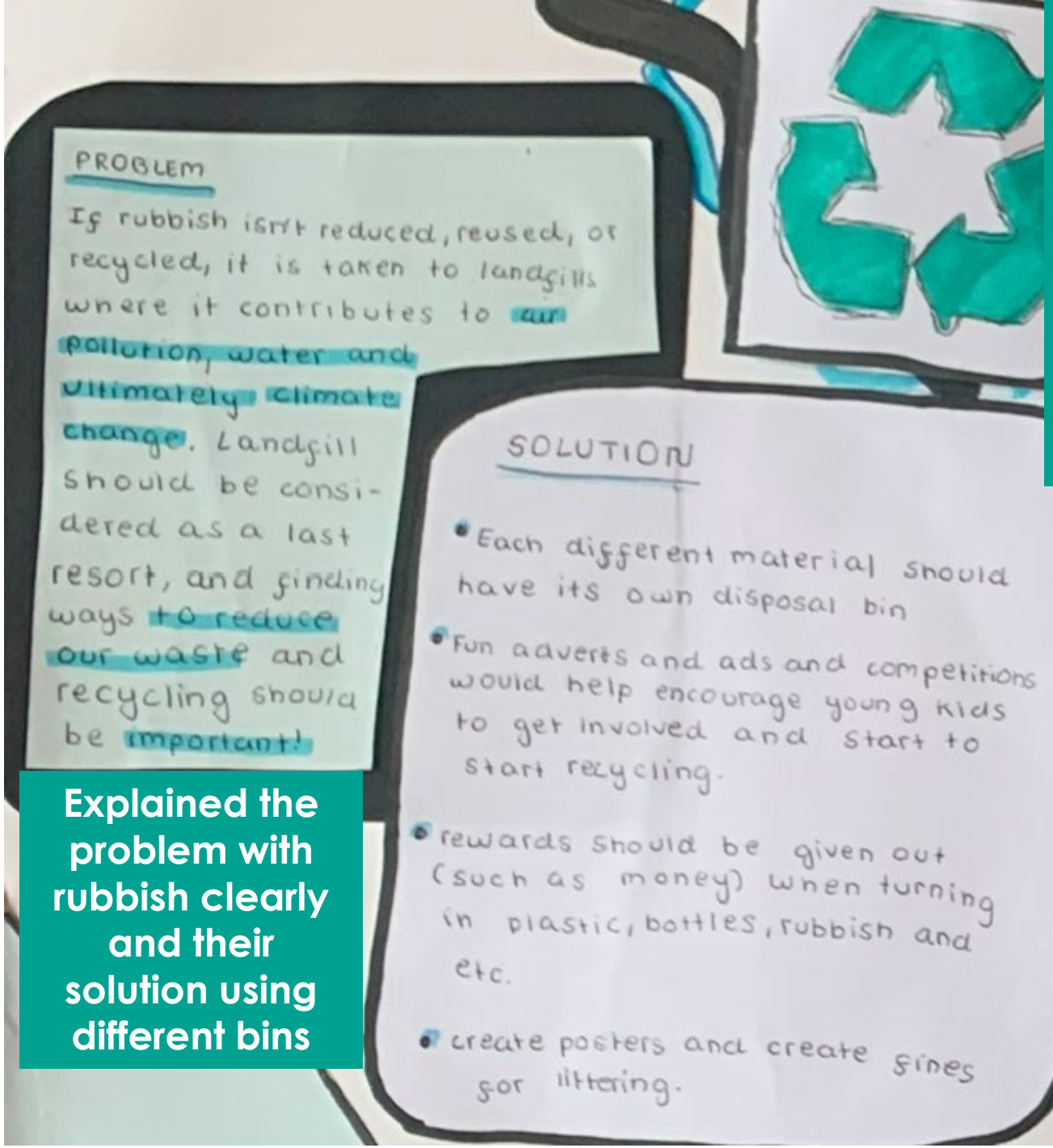
PROBLEM

Average ambulance response times for heart attacks and strokes were 47minutes. Over 29,000 excess deaths are caused by the long waiting time of ambulances in one year. Many families cant risk losing loved ones especially ones who provide for the family. The benefit bills for the economy will increase resulting in unnecessary money used for problems that don't affect everybody.

SOLUTION

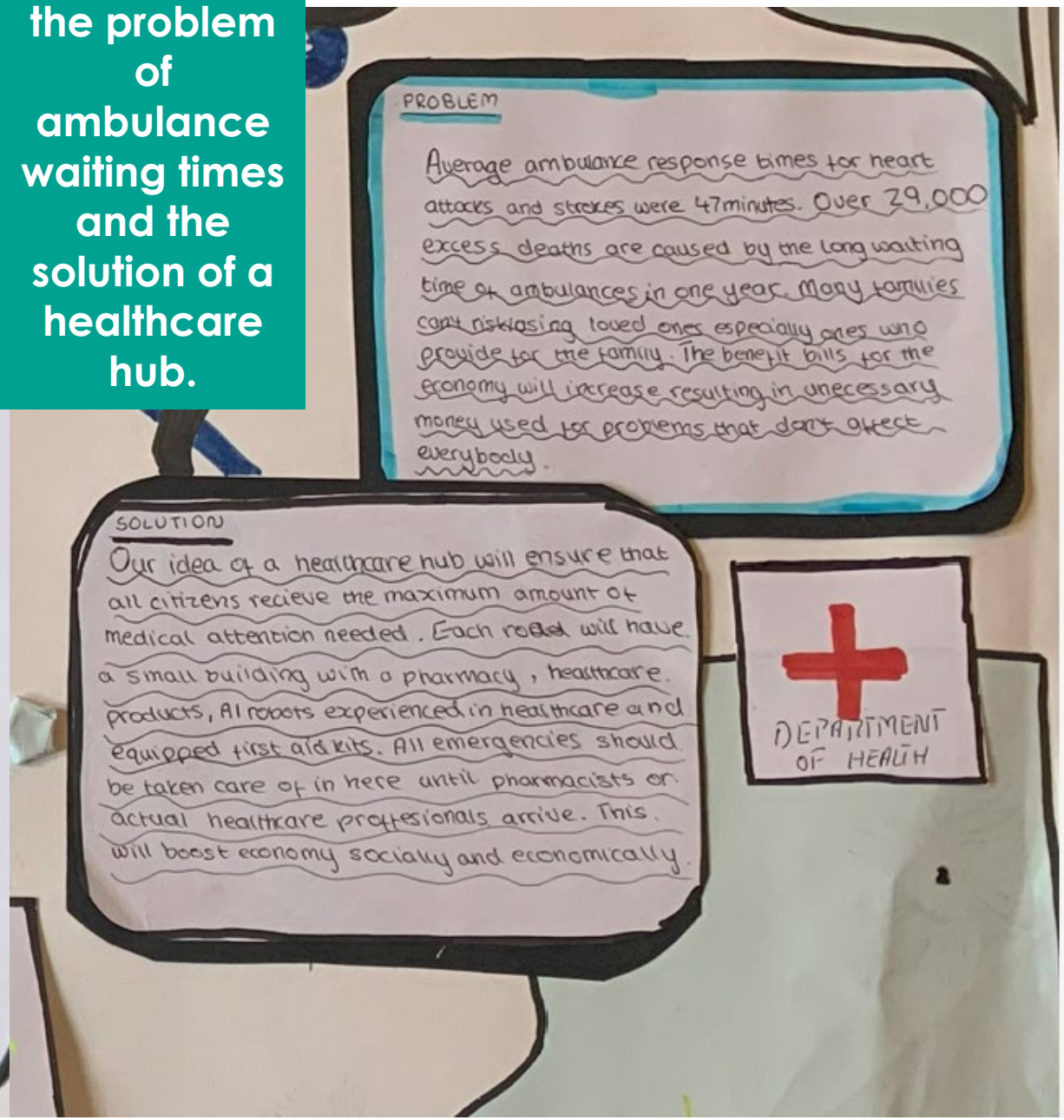
Our idea of a healthcare hub will ensure that all citizens recieve the maximum amount of medical attention needed. Each road will have a small building with a pharmacy, healthcare products, AI robots experienced in healthcare and equipped first aid kits. All emergencies should be taken care of in here until pharmacists or actual healthcare professionals arrive. This will boost economy socially and economically.





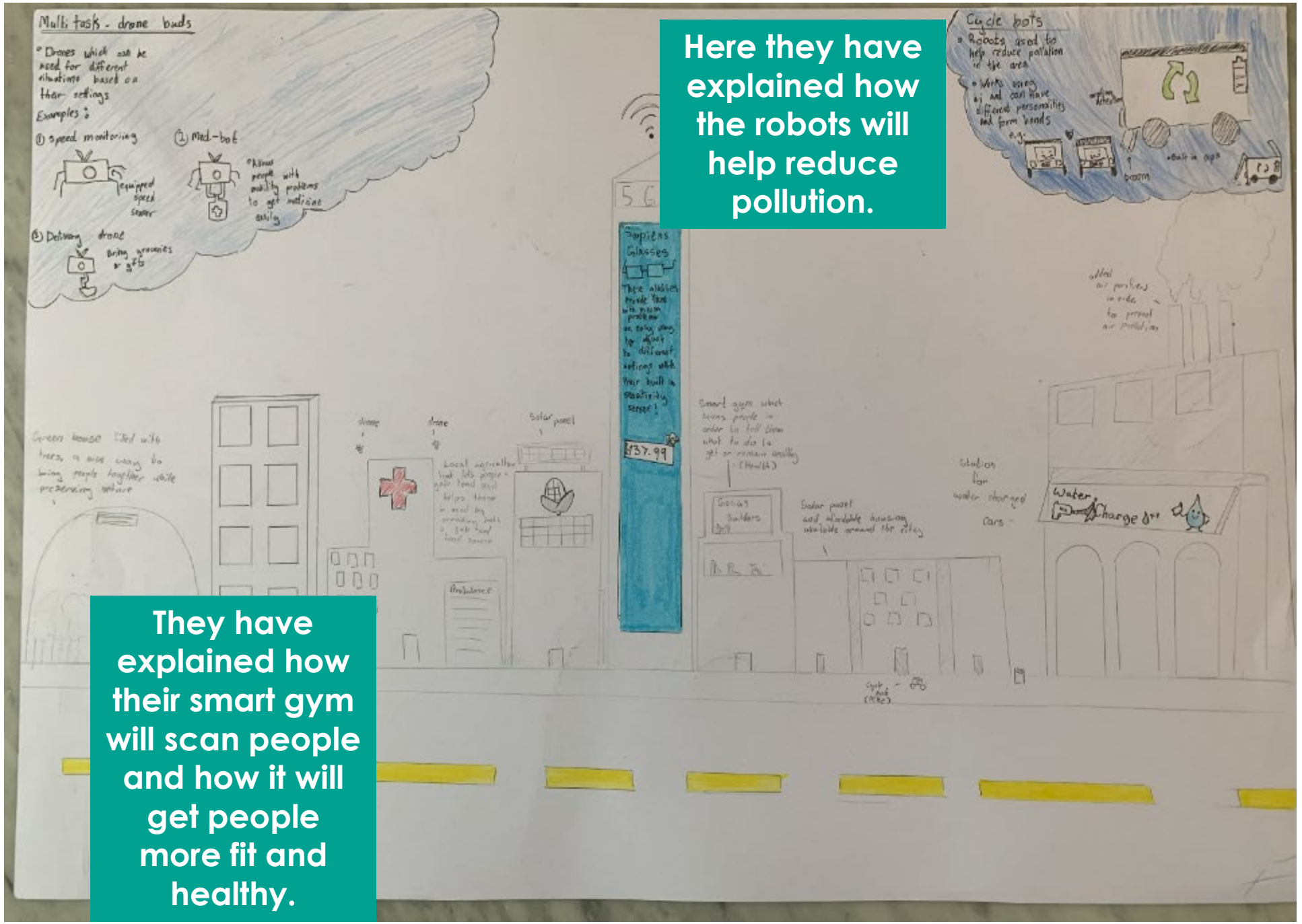
Explained the problem with rubbish clearly and their solution using different bins

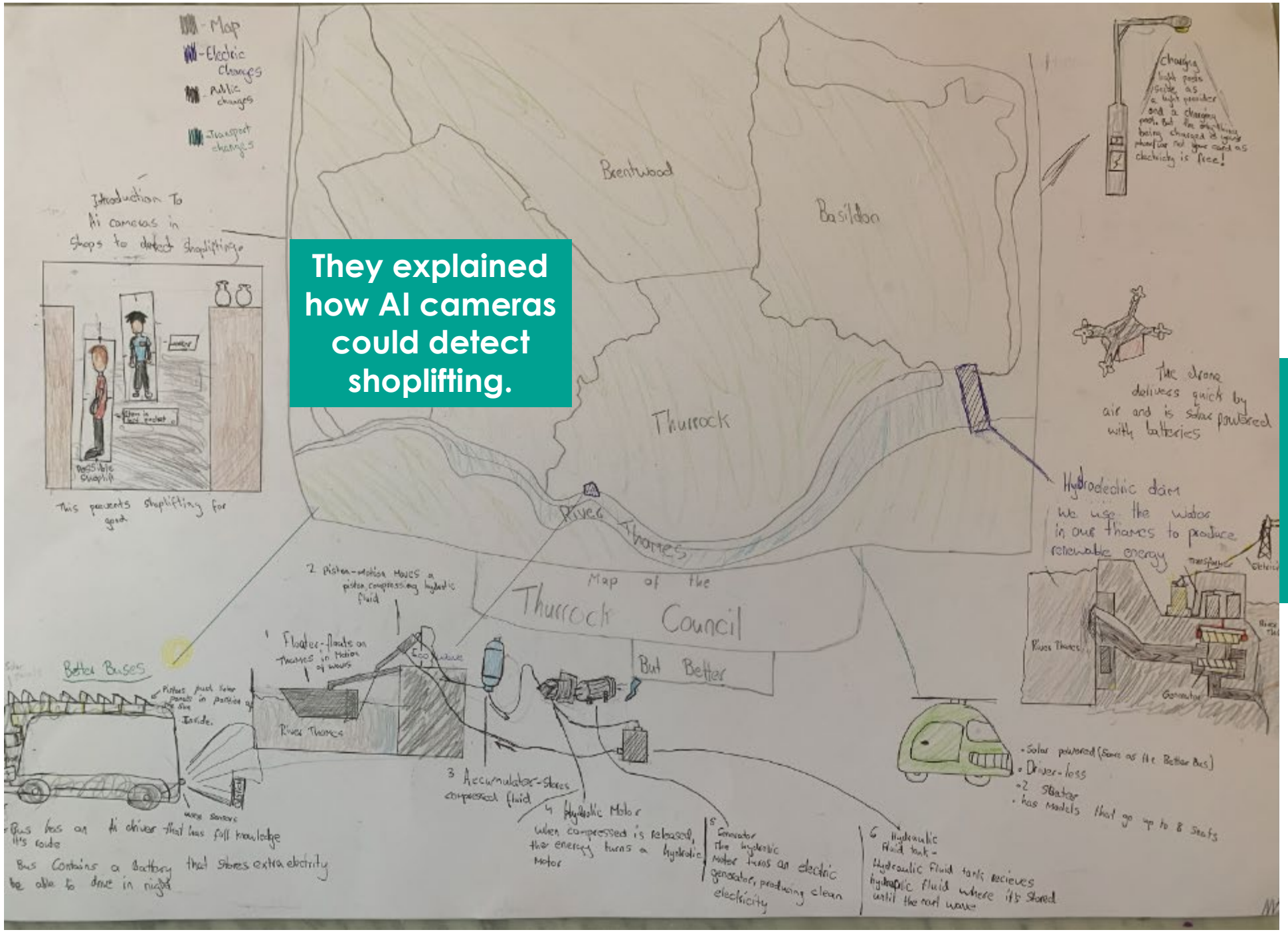
They explained the problem of ambulance waiting times and the solution of a healthcare hub.



They have explained the problem of pollution.

Here they have explained how the smart drone will help pick up waste.


Multi task - drone buds
Drones which can be used for different situations based on their settings
Examples:
1) speed monitoring
equipped speed sensor
2) Med-bot
Helping people with mobility problems to get medicine easily
3) Delivery drone
bring groceries or gifts
Here they have explained how the robots will help reduce pollution.
Cycle bots
Robots used to help reduce pollution in the area
Works using AI and can have different personality and form bonds
e.g.
boom
built in app
Sapiens Glasses
£37.99
Green house
drone
drone
Solar panel
Local agriculture
Ambulance
Smart gym which scans people in order to tell them what to do to get or remain healthy
(Health)
Solar panel and affordable housing available around the city
Station for water charged cars
Water
Charge
They have explained how their smart gym will scan people and how it will get people more fit and healthy.



They explained how AI cameras could detect shoplifting.

They explain that drones can help with clean air.

HOW WILL THE JUDGES DECIDE?

Content Knowledge they want to see:

- Understanding of local issue's
- Challenges you might face
- What is your solution

Skills they will be looking for:

- Strong communication in your entry
- The issue explained
- The solution explained
- Neat presentation of your entry
- Problem solving
- Innovation & Creativity

The judges will:

- Make sure you will have a positive experience
- Be specific about what they like
- Refer to the criteria when judging
- Recognise your hard work

WHAT HAPPENS NOW?

GOOD LUCK! AND ENJOY!

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Activity 1

It’s bingo time!

ACTIVITY ONE: IT'S BINGO TIME!

Pollution	Waste	Lack of medical support
Theft	Transport cancellations/delays	Youth crime
Violence	Disability access	Homelessness

Under funding of schools	Theft	Lack of police
Waste	Lack of extracurricular programs for young people	Traffic congestion
Lack of medical support	Poor road conditions	Youth crime

Who does this affect?

Why does it affect them?

What is missing/not working properly to make this problem exist?

Under funding of schools	Theft	Lack of police
~~Waste~~	Lack of extracurricular programs for young people	Traffic congestion
Lack of medical support	Poor road conditions	Youth crime

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Activity 2

Matching fun!

ACTIVITY TWO: SCENARIO MATCHMAKING

Questions for bonus points:

1. Which solution matches each problem
2. What can you add to the example given?
3. How might this help?
4. Who might this help?
5. Why will it help?

BONUS POINT!

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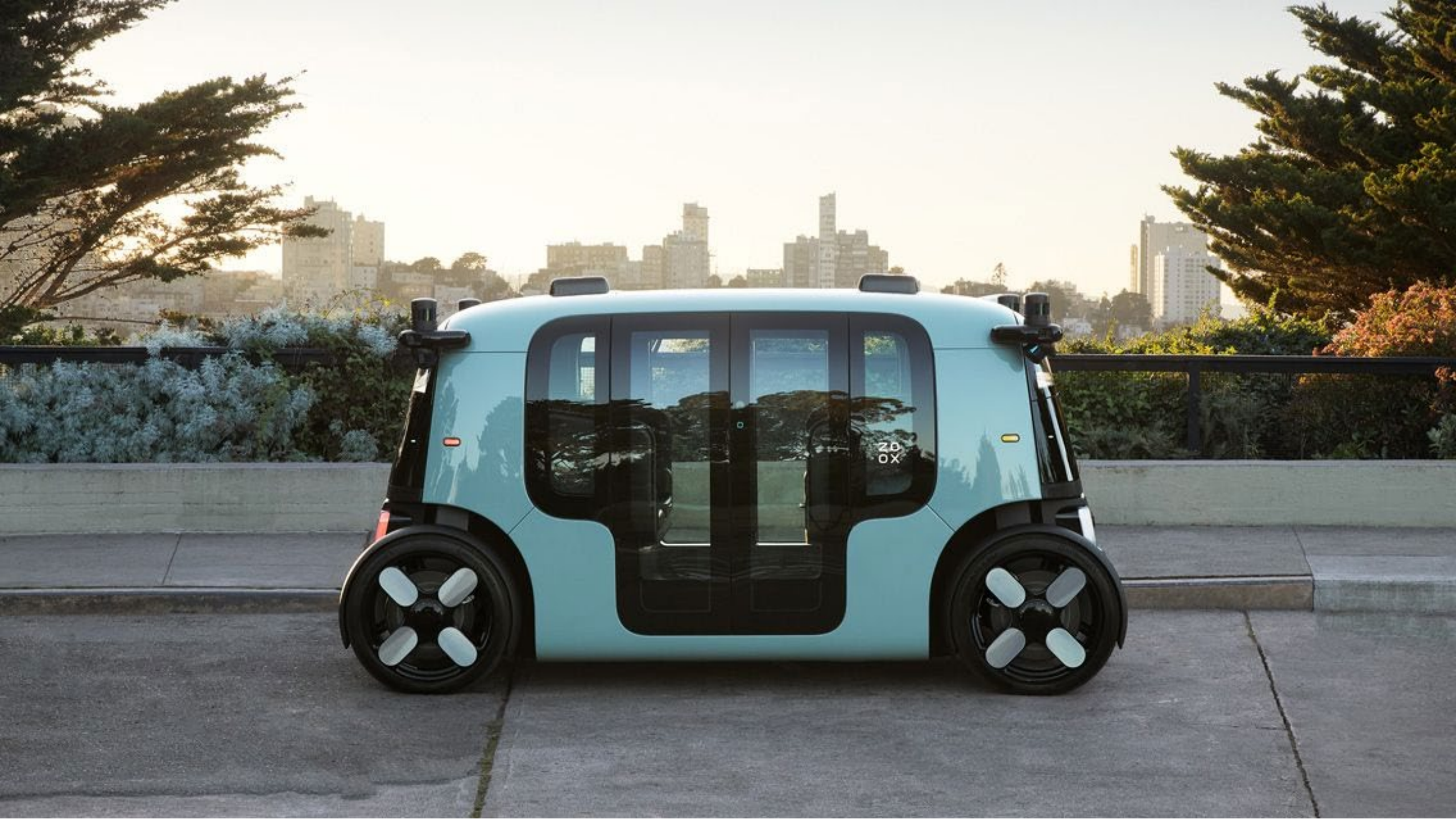
Activity 3

Describe the solution


ZOOX


ELEPHANT & CASTLE
Hello London
Max is here to help
Touch me!
EMERGENCY


AUGMENTED REALITY

Smart City Schools Competition

Judge's Criteria

Content knowledge they want to see:

- Understanding of local issues
- Challenges you might face
- Digital & AI innovation
- A solution!

Skills they will be looking for:

- Strong communication in your entry
- The issue explained
- The solution explained
- Neat presentation of your entry
- Problem solving
- Innovation & Creativity

The judges will:

- Make sure you will have a positive experience
- Be specific about what they like
- Refer to the criteria when judging
- Recognise your hard work