

Challenge Preparation Activities 2017

Years 5 and 6

The Case of the Vanishing Blueprints

The Brothers L.I.F.T. and the Elevator Escapade

Breaking News

Project Assist

Teams should organise a time to meet regularly.

Teams will be able to do much of this preparation with little assistance.

Teachers may choose to use some of the activities in the classroom.

There will be practice workshops on the day of The Challenge.

We advise that not everything in this handbook will be in The Challenge.

Have fun with these activities!



THE G.A.T.E.WAYS CHALLENGE

Years 5 and 6

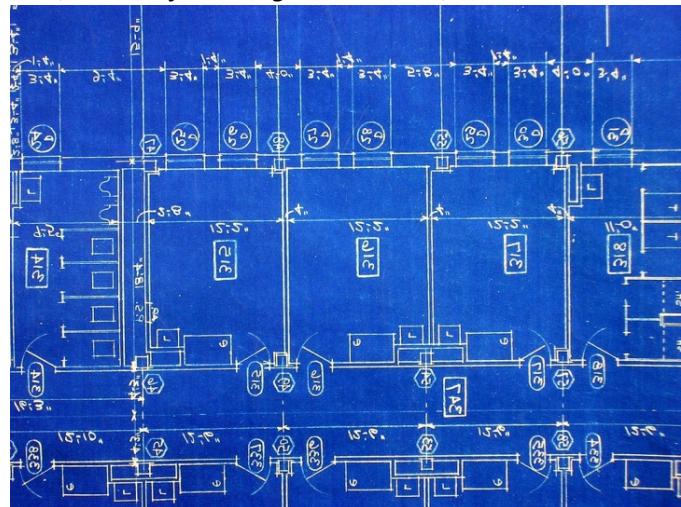
CHALLENGE NO.1

THE CASE OF THE VANISHING BLUEPRINTS

When top secret blueprints for a prototype time machine go missing from the government's new top secret research facility STARTECHLabs in broad daylight, authorities are baffled – how did the thief get past so many state of the art security features? Fearing that the blueprints might fall into the wrong hands, and realising the potential for disaster that unrestricted time travel could cause, authorities call in the GIA (G.A.T.E.WAYS Intelligence Agency) to solve the mystery. Specialised in solving crimes of an 'unusual' and sensitive nature, the GIA's team of experts get quickly to work.

On the day of the break-in a group of stage magicians, in town for a magic convention, tour the public area of the labs. The next day, a rumour circulates at the convention that one of the magicians is planning a new magic trick that will somehow defy time itself. Surely this could be no coincidence?

Suspecting that magic may be involved, the team compile a short list of magician suspects and their most famous tricks. Could one of the stage magicians have planned and orchestrated this mysterious break-in? As members of the GIA team it's up to you to solve this mystery and find the missing blueprints.



Preparation Activities

In order to solve this baffling mystery you are going to need to enter the investigation very well prepared. It will be a test of your ability to think logically and apply knowledge from one area to another. The activities below should help you in this preparation.

Activity One: Stage Magic

Adult assistance necessary: None

Preparation Time: Nil

Activity Time: 30 minutes

Materials: Computer and access to the internet for further research

In order to prepare yourself to outsmart a master magician (or two) you will need to become familiar with some of the typical methods employed by magicians in order to 'trick' people into believing in the magic.

Your first job is to research 3 different ways magicians can deceive their audiences – one example is sleight of hand. Make a list of the three techniques that you researched and write brief descriptions of how they work and try to find one example of a magic trick that uses each of the techniques.

Here are some websites that might be a good place to start.

<https://www.nature.com/nrn/journal/v9/n11/full/nrn2473.html>

<http://www.secrets-explained.com/basic-techniques>

THE G.A.T.E.WAYS CHALLENGE

Years 5 and 6

Activity 2: Security Measures

Adult assistance necessary: None

Preparation Time: Nil

Activity Time: 30 minutes

Materials: Computer and access to the internet for further research

Now it's time to find out more about the security measures that our thief/thieves needed to get past in order to steal the blueprints.

Security measures are steps taken as a precaution against theft, espionage or sabotage in a protected facility. What we are talking about here is physical security, which is often overlooked in favour of more technical threats such as hacking, malware, and cyberespionage. However, breaches of physical security can be carried out with little or no technical knowledge on the part of a thief. Physical security has three important components:



- **Deterrence methods** – Used to make it difficult to get in. These can be both physical and psychological barriers to entry eg. Physical barriers such as fences
- **Intrusion detection** – Used to tell when someone has gotten past the deterrence methods eg. Alarms
- **Access Control** – Used to limit access to authorised personnel only eg. Biometric scanners

Start off by making a list of security measures that you can think of on your own. Write them in the appropriate place in the table below.

Type	Examples
Deterrence	
Intrusion Detection	
Access Control	

Now that you have a list, try to find out a little bit about how they might work or be used.

Below are some websites that you may find helpful to find even more examples.

https://en.wikipedia.org/wiki/Physical_security

<http://science.howstuffworks.com/biometrics.htm>

Remember, some of these security measures will have been used at STARTECHLabs. While you are learning about them, it won't hurt to spend some time thinking about how you might get past them also.

THE G.A.T.E.WAYS CHALLENGE

Years 5 and 6

Activity 3: Science Concepts

Adult assistance necessary: None

Preparation Time: Nil

Activity Time: 60 minutes

Materials: Computer and access to the internet for further research

In this section, we are going to find out about some scientific principles that might help us during the course of our investigations. Listed below are the science concepts that we will be learning about. Since there is so much to learn about these topics, I have also broken them into the particular sub-topics that you will need to know about and listed some questions that you will need to be able to answer about them to give your research some focus. Once you can answer these questions you will know enough about the science required to complete the challenge.



Below are some good websites to check out with kid friendly explanations to help you along.

<http://science.howstuffworks.com/>

<http://www.sciencekids.co.nz/>

<http://www.explainthatstuff.com/>

<http://www.bbc.co.uk/bitesize/ks2/science/>

<http://www.funscience.in/index.php>

THE G.A.T.E.WAYS CHALLENGE

Years 5 and 6

Science Topic	Sub-Topic	Questions
Buoyancy	Archimedes' Principle Floating	What is buoyancy? Why do things float?
Momentum	Conservation of Momentum Newton's Cradle	What is momentum and what does it mean for it to be conserved? How does a Newton's Cradle work?
Static Electricity	Attraction/Repulsion Charging by friction Charge Separation	Which sorts of electrical charge attract each other? Which ones repel? How does a plastic rod get charged by rubbing it? How can a charged object attract or repel an uncharged object?
Air Pressure	Air as matter Air Pressure/Bernoulli's Principle	What is matter? How can you tell if air is matter? What is air pressure? What happens to the air pressure when the air is moving fast?
Change of State	Melting/Freezing Heating/Cooling	What does melting mean? What does freezing mean? How do you get a material to melt? How do you get it to freeze? Can you reverse this process?
Magnets	Poles Magnetic Attraction	What are the two ends of a magnet called? What materials are attracted to magnets?
Pendulums	Energy changes in a pendulum Coupled Pendulums	What is a pendulum? What piece of playground equipment is also a pendulum? What is a coupled pendulum? Why does a change in one pendulum affect the other?
Refraction	Visible/Invisible Partial Reflection/Refraction Refractive Index	How do we see things? What things are invisible? What does transparent mean? What is refraction? Is glass 100% transparent? What happens to light when two materials have the same refractive index?

THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

Challenge No 2

The Ferry Packing Problem

Method Explanation Sheet

When packing a ferry with vehicles of different lengths, the vehicles line up and are directed to a line to board by the ferry attendants. The vehicles must board and park in straight lines to prevent a traffic jam at the other end of the journey. There are three ways to pack the vehicles –the **Best-Fit Method**, the **Best-Fit Decreasing Method** and the **Full-Bin Method**.

Best-Fit Method

- Vehicles board **in the order they arrived at the ferry**.
- If a vehicle does not fit in the line being filled, it is sent to the next one, and the first line is shut off to further vehicles boarding.
- In this method boarding is quick, but may mean space is wasted.

Best-Fit Decreasing Method

- Vehicles board **from the largest vehicle to the smallest**
- Once the next vehicle will not fit in a line it is sent to the next line. The first is then shut off to further traffic.
- It is time-consuming to line the vehicles up, and may annoy drivers who arrive early to board, but once they are lined up, the method does allow for vehicles to be packed quickly and with little wasted space once boarding begins.

Full-Bin Method

- Vehicles are packed **so that as few lines as possible are wasted**.
- No lines are shut off to further traffic until they are either totally full, or everyone has boarded.
- This means more vehicles can board to sail, but it may mean they do not board the ferry in the order that they arrived thus annoying drivers, and lines may have to be shuffled before cars board.

PACK YOUR OWN FERRIES: Each team member should complete all of the following activities.

THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

The Ferry Packing Problem

Activity 1A Instructions - Best Fit Method

Adult assistance necessary: Possibly
Preparation Time: 10 minutes
Activity Time: 15 minutes
Materials: Method explanation sheet, instructions, ferry grids and vehicle cut outs, question sheets, pencils, scissors.

- Print a copy of the Grid and Vehicle Cut-outs page.
- Circle 'Best Fit Method'.
- Cut out the vehicles.
- By referring to the key and the list below that shows the order the vehicles arrived in, pack them onto the ferry using the Best Fit Method (hint: use the order from The List!).
- Start packing from the arrow and move to the right when you need a new lane.
- When all the vehicles are on board, trace around the vehicles and number them in the order they boarded the ferry.
- Answer the questions on the question page about the Best Fit Method.

The List

Truck, car, car + caravan, unicycle, motorbike, car, car + caravan, motorbike, unicycle, motorbike, truck, truck, car, car + caravan, motorbike, car + caravan, truck, car, unicycle.



THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

The Ferry Packing Problem

Activity 1B Instructions - Best Fit Decreasing Method

Adult assistance necessary: Yes
Preparation Time: 10 minutes
Activity Time: 15 minutes
Materials: Method explanation sheet, instructions, ferry grids and vehicle cut outs, question sheets, pencils, scissors.

- Print a copy of the Grid and Vehicle Cut-outs page.
- Circle ‘Best Fit Decreasing Method’.
- Cut out the vehicles.
- By referring to the key and the list below that shows the order that the vehicles arrived in, pack them onto the ferry using the Best Fit Decreasing Method (hint: start by lining them up from largest vehicles to smallest vehicles!).
- Start packing from the arrow and move to the right when you need a new lane.
- When all the vehicles are on board, trace around the vehicles and number them in the order they boarded the ferry.
- Answer the questions on the question page about the Best Fit Method.

The List

Truck, car, car + caravan, unicycle, motorbike, car, car + caravan, motorbike, unicycle, motorbike, truck, truck, car, car + caravan, motorbike, car + caravan, truck, car, unicycle.



THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

The Ferry Packing Problem

Activity 1C Instructions - Full Bin Method

Adult assistance necessary: Yes
Preparation Time: 10 minutes
Activity Time: 15 minutes
Materials: Method explanation sheet, instructions, ferry grids and vehicle cut outs, question sheets, pencils, scissors.

- Print a copy of the Grid and Vehicle Cut-outs page.
- Circle 'Best Fit Method'.
- Cut out the vehicles.
- By referring to the key and the list below that shows the order that the vehicles arrived in, pack them onto the ferry using the Full Bin Method (hint: fill each line as full as you can!).
- Start packing from the arrow and move to the right when you need a new lane.
- When all the vehicles are on board, trace around the vehicles and number them in the order they boarded the ferry.
- Answer the questions on the question page about the Best Fit Method.

The List

Truck, car, car + caravan, unicycle, motorbike, car, car + caravan, motorbike, unicycle, motorbike, truck, truck, car, car + caravan, motorbike, car + caravan, truck, car, unicycle.



THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

The Ferry Packing Problem

Activity 1 Question Sheet - The Ferry Packing Problem

Best Fit Method

How many full lines have been used? _____

How many single spaces have been wasted? _____

How many full lines have not been used? _____

Best Fit Decreasing Method

How many full lines have been used? _____

How many single spaces have been wasted? _____

How many full lines have not been used? _____

Full Bin Method

How many full lines have been used? _____

How many single spaces have been wasted? _____

How many full lines have not been used? _____

Compare!

Which method is best to use when you want to save space? _____

Which method is best to use when you want to save time? _____

Which method is best to use overall? Why? _____

THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

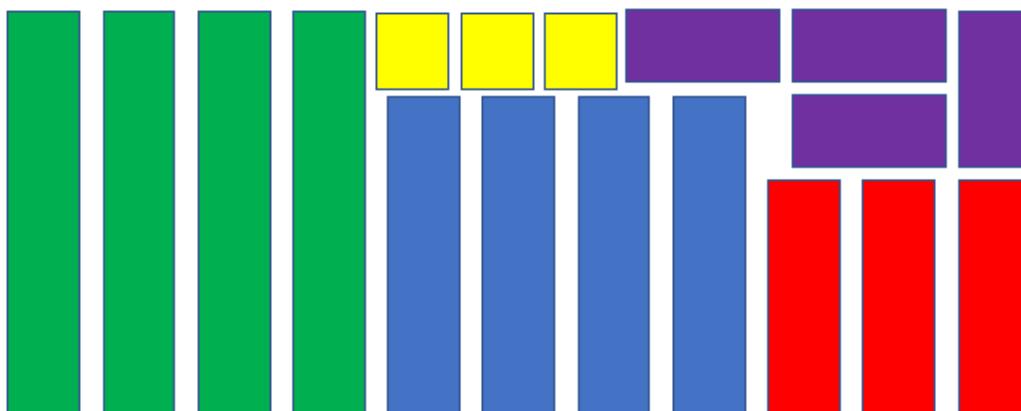
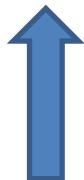
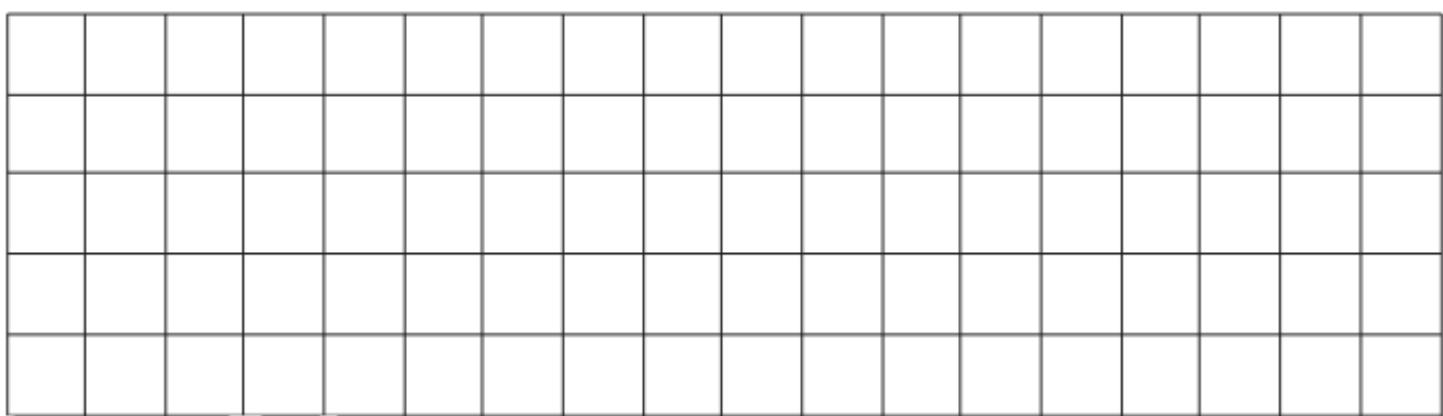
Activity 1: Grid and Vehicle Cut Outs

Best Fit Method

Best Fit Decreasing Method

Full Bin Method

Print three copies. On each copy, circle which method you used to pack the ferry.



Key
Length 1 = 1 Square
Car + Caravan = Length 5
Truck = Length 4
Car = Length 3
Motorbike = Length 2
Unicycle = Length 1

THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

The Knapsack Problem

Activity 2 Instructions – Value Density

Adult assistance necessary: None
Preparation Time: 10 minutes
Activity Time: 15 minutes
Materials: Instructions, question sheet, pencils.

In the Knapsack Problem, you go one step further than the Ferry Packing Problem. In the Ferry Packing problem, you only had to consider one fact about each object (how much floor space each vehicle took up). In this scenario, each team member has a knapsack (backpack) in which to pack items you need for a hike—there are two factors to think about when considering how to pack.

- The first is the object's **weight**.
- The second is its importance, which is given a number to show its **value**. The higher the number, the higher the importance.

You wouldn't want to go hiking with a knapsack that was too heavy—but you also wouldn't want to go without the essentials. There are some important objects (more than one of each) that must go with you but these can be spread across the four identical knapsacks. Your job is to pack them so that each person is carrying items of equal value. The easiest way to work this out is to assign each object a 'value density' by using an algorithm and filling in a table.

Here is the algorithm:

$$\text{Value Density} = \text{Value} \div \text{Weight}$$

Example: A hat has a weight of .5 kgs. It has a value of 2. $2 \div .5 = 4$, so each hat's value density is 4.

Here is the Value Density Table. Calculate and fill in the value density of each item.

Object	Value	Weight	Value Density
Sunscreen	2	1kg	
Jacket	1	2kg	
Sleeping Bag	4	2kg	
Food	3	4kg	
Water	5	5kg	
First Aid Kit	6	1.2kg	

THE BROTHERS L.I.F.T. AND THE ELEVATOR ESCAPADE

The Knapsack Problem

Activity 2 – Packing Knapsacks

Now you know the value density of each item. Next, you need to pack the knapsacks.

You have four knapsacks to pack. You have the following items:

1 x Sunscreen Bottle, 4 x Jackets, 4 x Sleeping Bags, 4 x Food Packs, 4 x Water Bottles, 1 x First Aid Kit

Everything must be packed (nothing can be left behind).

Every knapsack must have a value density of six when you add up the value of its contents.

There is more than one correct answer!

Record two different ways you could pack the knapsacks:

Knapsack 1	Knapsack 2	Knapsack 3	Knapsack 4
Total Value Density:	Total Value Density:	Total Value Density:	Total Value Density:

Knapsack 1	Knapsack 2	Knapsack 3	Knapsack 4
Total Value Density:	Total Value Density:	Total Value Density:	Total Value Density:

DISCUSS WITH YOUR TEAM:

Did you all have the same answers? _____

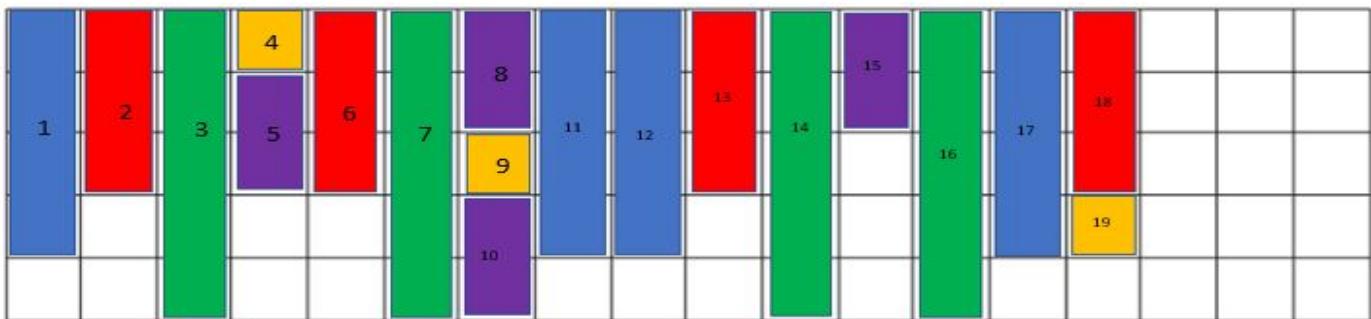
Why do you think this is? _____

THE BROTHERS L.I.F.T.

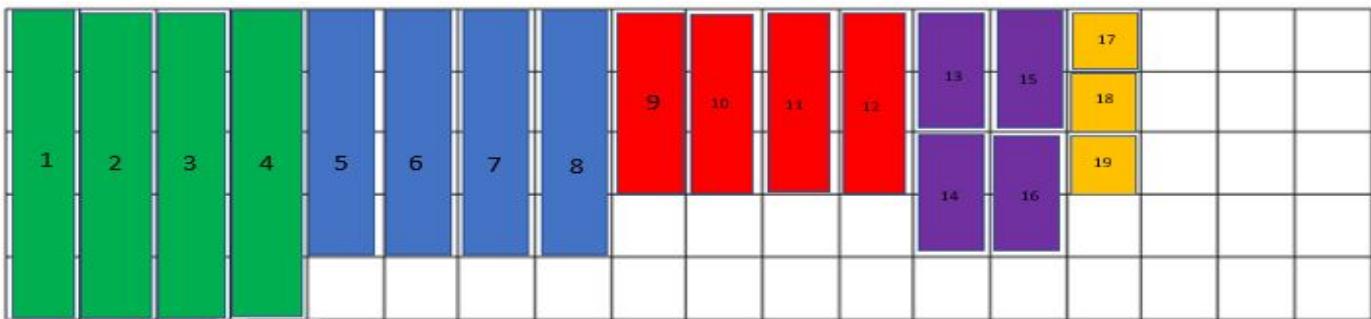
AND THE ELEVATOR ESCAPADE

Answer Sheet

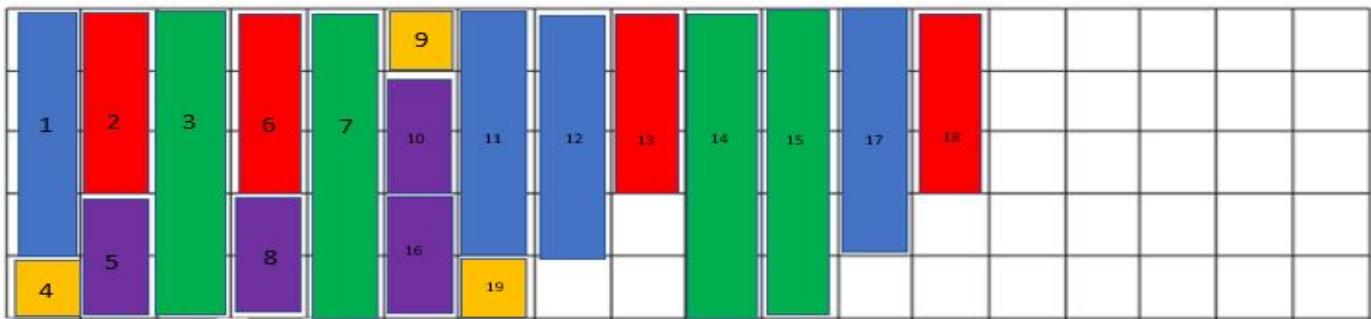
The Ferry Packing Problem - Activity 1A - Best Fit Method



The Ferry Packing Problem - Activity 1B - Best Fit Decreasing Method



The Ferry Packing Problem - Activity 1C - Full Bin Method



The Knapsack Problem - Activity 2A - Value Density Table

Object	Value	Weight	Value Density
Sunscreen	2	1kg	2
Jacket	1	2kg	.5
Sleeping Bag	4	2kg	2
Food Packs	3	4kg	.75
Water	5	5kg	1
First Aid Kit	6	1.2kg	5

The Knapsack Problem – Activity 2B – Packing Knapsacks

This is one possible answer – there are more than one! As long as each knapsack has a total value density of six, and the total value density of the four knapsacks is 24 when you add them together, you are right!

Knapsack One: First Aid Kit + 2 Jackets

Knapsack Two: Sunscreen + 2 Sleeping Bags

Knapsack Three: 2 Sleeping Bags + 2 Water Bottles

Knapsack Four: 2 Water Bottles + 4 Food packs +2 jackets

Challenge No:3

BREAKING NEWS

The G.A.T.E.WAYS Awards for Excellence in Radio Journalism are up for grabs and your news team is hoping to win the trophy for **Best Radio News Bulletin**. There can only be one winner, so the bulletin you prepare will have to be **smooth, clear, accurate and timed to the second!** To win, your team will have to quickly turn a collection of news articles you've not previously seen into a **two-minute radio news bulletin** – and when we say two minutes, we mean **exactly 120 seconds**. At the same time, your bulletin will need to satisfy the expectations of your radio station's specific audience. **The pressure is going to be on, so you'd better prepare well.**

Activity 1: News as a Choice

Adult assistance necessary: Possibly, to help set up recordings and to use appropriate parental discretion with regard to any potentially upsetting news items.

Preparation time: 10 minutes to record bulletins

Activity time: 35 minutes

Materials: 2 radios, 2 recording devices (e.g. smart phones), pens and paper

STEP 1. Record two simultaneous news bulletins

Use smart phones or other recording devices to simultaneously record the **7 AM news on a weekday** on both:

- Radio National
- and your local Triple M
- (unless you're in Canberra, in which case you should record Hit 104.7)

(*IMPORTANT Some commercial radio stations, like Triple M and Hit 104.7, run their news bulletins much later than you'd expect – sometimes even 10 or 15 minutes after the hour – so keep listening until you know you've recorded the bulletin.*)

STEP 2. Compare the two bulletins

List the first four items in each bulletin in their exact order.

If the commercial station had fewer than four stories, just list whatever they covered. Don't worry about the weather, traffic updates or sports stories – we just want to compare the first four news items.

Now consider the following questions:

- Even though these bulletins were broadcast at the same time, in the same city, have the two broadcasters chosen different stories?
- Have they presented similar stories but in a different order?
- Have they chosen to report similar stories, but in different ways?
- Have they used different language styles to communicate the news? (e.g. a formal or casual style, factual or emotional language, 'bigger' or 'smaller' words, etc?)

STEP 3. Understanding demographics

What you may have now realised by now is that ‘the news’ varies depending on the audience the broadcaster is targeting. Rather than trying to please every potential listener, radio stations target a specific demographic (or section of the population).

That means they try to provide content that those particular people are interested in – right down the news. So from all the potential stories available at any one time, a station’s news editors are looking for those that most interest their demographic.

Here are the demographics for the radio stations we’re focussing on in Breaking News.

Triple M targets:

- men
- aged 25-54
- who want local news
- delivered in a more casual, conversational style

Radio National targets:

- both men and women
- aged 40 and over
- who like serious, ‘heavy’ news (e.g. politics, major international stories, etc.)
- about world and national events
- delivered in a formal style

Hit 104.7 in Canberra targets:

- women
- aged 18 to 39
- who prefer light news
- that’s extremely local
- delivered in a casual style

STEP 4. Selecting the right news

From what you’ve now learned about demographics, try sorting the following 17 news items into the correct news bulletins. The Answer Sheet that follows shows exactly what each station broadcast at 7AM on the actual day.

1. Police aren’t getting anywhere fast after a man was shot in the leg in Sydney last night, as the man is refusing to co-operate
2. US President Donald Trump sacks FBI Director James Comey
3. Expect unusual levels of smoke in the air over Sydney for the next few days due to hazard reduction burns in the Blue Mountains
4. Opposition leader Bill Shorten says Labor will support plans to raise the Medicare levy, but only for top income earners
5. The Australian Medical Association supports an increase to Medicare levies
6. Black Hawk helicopters have woken up people in Melbourne this morning as part of a surprise anti-terrorist exercise
7. An Australian member of ISIS, currently in jail in Turkey, will be returned to Australia within months to face charges here
8. Charity organisation Oxfam supports Labor’s idea that multi-national companies must be taxed properly
9. Canberra apartment owners will be paying higher rates come July due to changes in stamp duty laws
10. An Australian businesswoman has launched legal action against a matchmaking site that didn’t get her a date despite their \$5000 fee
11. A man and possibly three women are on the run after a random stabbing in Sydney’s Bankstown
12. Two nasty crashes have left one man dead and two others in hospital in Melbourne this morning
13. The ACT government has reformed liquor legislation so some traders can now operate outside of normal trading hours for up to 6 special events a year
14. One of Queensland’s top police officers has apologised saying crime in the state is out of control
15. The family of an accused Australian drug smuggler has arrived in Colombia along with a 60 Minutes crew
16. The Queensland government’s new ‘towie’ hotline has received 180 calls in less than a week, dobbed in tow truck scammers
17. Police are continuing to investigate an assault at a Canberra night club last month

Fill in the news items here

Use what you know about the demographics of each radio station to fill in the news items for all of the radio stations below.

Radio National

- 1.
- 2.
- 3.
- 4.

Triple M – Melbourne

[n.b. the broadcaster only ran two news items in this bulletin]

- 1.
- 2.

Triple M – Sydney

- 1.
- 2.
- 3.
- 4.

Triple M – Brisbane

- 1.
- 2.
- 3.
- 4.

Hit 104.7 – Canberra

- 1.
- 2.
- 3.
- 4.

Answer Sheet

Radio National

1. US President Donald Trump sacks FBI Director James Comey
2. Opposition leader Bill Shorten says Labor will support plans to raise the Medicare levy, but only for top income earners
3. The Australian Medical Association supports an increase to Medicare levies
4. Charity organisation Oxfam supports Labor's idea that multi-national companies must be taxed properly

Triple M – Melbourne

[n.b. the broadcaster only ran two news items in this bulletin]

1. Black Hawk helicopters have woken up people in Melbourne this morning as part of a surprise anti-terrorist exercise
2. Two nasty crashes have left one man dead and two others in hospital in Melbourne this morning

Triple M – Sydney

1. An Australian member of ISIS, currently in jail in Turkey, will be returned to Australia within months to face charges here
2. Police aren't getting anywhere fast after a man was shot in the leg in Sydney last night, as the man is refusing to co-operate
3. A man and possibly three women are on the run after a random stabbing in Sydney's Bankstown

4. Expect unusual levels of smoke in the air over Sydney for the next few day due to hazard reduction burns in the Blue Mountains

Triple M – Brisbane

1. One of Queensland's top police officers has apologised saying crime in the state is out of control
2. The family of an accused Australian drug smuggler has arrived in Colombia along with a 60 Minutes crew
3. Opposition leader Bill Shorten says Labor will support plans to raise the Medicare levy, but only for top income earners
4. The Queensland government's new 'towie' hotline has received 180 calls in less than a week, dobbing in tow truck scammers

Hit 104.7 – Canberra

1. The ACT government has reformed liquor legislations so some traders can now operate outside of normal trading hours for up to 6 special events a year
2. Police are continuing to investigate an assault at a Canberra night club last month
3. Canberra apartment owners will be paying higher rates come July due to change in stamp duty laws
4. An Australian businesswoman has launched legal action against a matchmaking site that didn't get her a date despite their \$5000 fee

How did you go? Did you notice how 'local' stories ranked very highly on all commercial stations, whereas stories of a 'national' interest were placed ahead of local stories in the Radio National bulletin? Did you notice a difference between the use of 'heavy' and 'light' stories?

Keep in mind that arranging a news bulletin is not an exact science – different news editor may choose different stories on a given day, or arrange them into a different order. But the choices are always guided by the demographic.

One last thing, please do not erase your recordings, you may want to refer back to them later.

BREAKING NEWS

Activity 2: Making the News

Adult assistance necessary: None

Preparation time: Nil

Activity time: 20 minutes

Materials: a newspaper or access to an online newspaper, some sort of timing device like a smart phone, pens and paper

STEP 1. Write four 30-second radio scripts

Either print out four articles from any online newspaper(s), or just grab a paper newspaper and select four interesting articles – one per team member.

Select an article each and rewrite it as 30-second news scripts for **Radio National** (making sure you keep their ‘demographics’ in mind).

STEP 2. Practise reading ‘to time’

Spend a couple of minutes practising reading your script aloud until you’re starting to sound smooth and confident.

Then use a timer (e.g. on your smart phone) to practise reading each story and stopping at 30 seconds. Try not to speed up or slow down to finish on time. Just stay calm and make sure you’ve finished when the 30 seconds expire. The idea with this exercise is to get a feeling for how many words it takes to create a 30-second script.

STEP 3. Change the style

Now rewrite all four stories so that they suit your local **Triple M** station (or **Hit 104.7** if you’re in Canberra). That means they’ll need to written in a more casual, conversational style.

STEP 4. Create a full bulletin

Take all four of your **Radio National** scripts and read them one at a time as a two-minute bulletin, making sure everyone reads a story. The aim is to finish in exactly two minutes without rushing or slowing down.

HINT: Make sure you start and end the bulletin the way Radio National would with:

‘Good morning, [the first reader’s full name] with ABC News.’

and end with:

‘ABC news.’

BREAKING NEWS

Activity 3: Marking-up your Scripts

Adult assistance necessary: None
Preparation time: Nil
Activity time: 15 minutes
Materials: the scripts you've previously written and pens

This activity is about making your spoken-word scripts easier to read aloud by 'marking them up'. When you mark up a radio script, you indicate which words should be emphasised, where to pause (or take a breath), and what sorts of inflections to use, especially at the ends of sentences. The result of this is a smoother, more natural read that communicates more effectively.

Here's what a marked up news script for Radio National, might look like (there is also a legend below):

Researchers at the Australian National University have grown a revolutionary "brain-on-a-chip" / that could ultimately help patients recover from diseases such as Parkinson's and Alzheimer's.

Brain cells have been successfully grown on a semiconductor / encouraging lead researcher, Dr Vini Gautam / to believe it may be possible to one day repair damaged brains using neuro-prosthetics.

It's hoped the technique will aid recovery from accidents, strokes / and neurological diseases.

Legend

/ = pause (and take a breath if you need to)

= emphasise

(UNDERLINED)

→ = up, down or flat inflection

Have a go at reading the script yourself, following the mark-ups.

And if you'd like to hear Michael Wagner read it, go to the link below:

michaelwagner.com.au/WP/breaking-news/

STEP 1. Mark up your own scripts

Take the 30-second scripts you previously created and mark them up, indicating any words to emphasise, where pauses should be taken, and the ideal inflections for the ends of sentences.

STEP 2. Practise reading your marked-up scripts

Practise reading your own marked up scripts, **then practise reading everyone else's.**

That's all the preparation you need.

You're now ready to

- select and arrange news items for a demographic
 - write 30-second radio scripts
- apply the kind of language your audience prefers
 - and read your scripts with confidence

You're ready for all the pressure and excitement of
the G.A.T.E.WAYS



Challenge.

See you at the news desk!

Challenge No. 4



PROJECT ASSIST

with
Robyne Bowering

Welcome to the final set of preparation activities for the 2017 G.A.T.E.WAYS Challenge. The focus of 'Project Assist' is for you to take on the role of a team of designers and wow the judges at G.A.T.E.WAYS and UDIG (the Universal Design and Innovation Group) with your ingenious solutions for improving a currently available product, so that it more user friendly.

As you work through each of the preparation activities focus on the following:

- Who are the intended users and how does the design of the 'product' meet their needs?
- How can you work collaboratively to share and constructively critique each other's contributions?
- How can you efficiently and effectively present your team's design to someone who hasn't heard you discuss your ideas.
- How can you create a new product or modify an existing product or part of another product and use it in a design challenge.

Preparation Activity 1: The Role of the Designer

Successful designers understand and address the needs of the users for whom they are designing and ensure that their products:

- are ergonomic (can be used safely, easily and efficiently)
- are durable (able to function for a long time with normal use),
- are aesthetically pleasing (they look good and are pleasant to use) and
- include the principles of universal design (designed to be used by the widest range of people regardless of their age, size, handedness, ability or disability).

Step 1

- As a team walk around your school and take note of the different seating options that exist (from the benches outside, to the chairs in the Prep, Grade 5 and 6 rooms, library and ICT room, to the chairs in the staff room, principal's Office and the visitor chairs outside the General Office).
- Discuss what the seats have in common with each other and why.
- Discuss how they differ from one another and what might be the purpose of the difference.

Adult assistance required: Not essential, but could be helpful if a team needs guidance when giving and receiving constructive feedback to each other.

Preparation time required: None

Activity time: ~25 mins

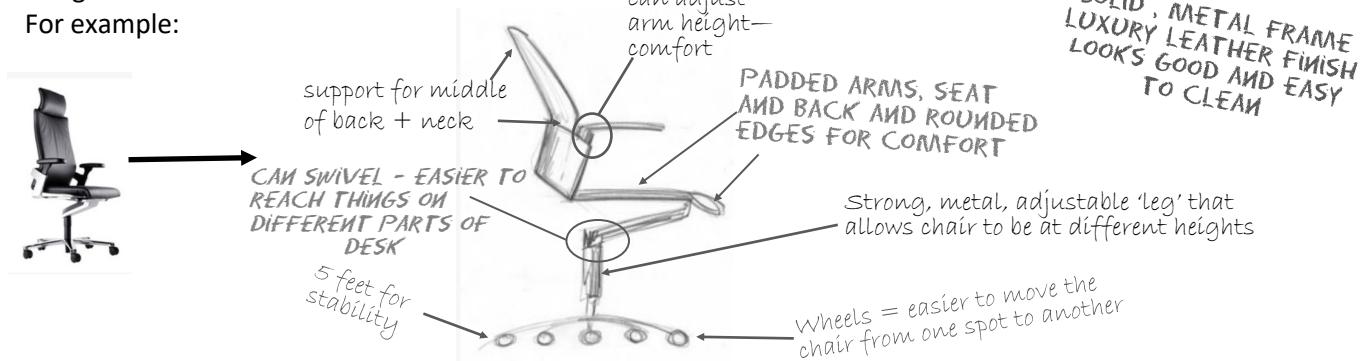
Materials need: Access to a range of chairs/seating options and pencils and paper.



Step 2

- Work in pairs to make a very quick sketch of one of the seating options and then annotate (point form is fine) the design features that highlight, where applicable, how the seat is ergonomic, durable, aesthetic and universally designed.

For example:



Step 3

- Look at each pair's sketches and annotations.
- Provide constructive, oral feedback to each other. Remember that HOW (being kind) you give and receive feedback is AS important as the type of feedback you give and receive.

Preparation Activity 2: Evaluating Play Spaces

Adult assistance required: No
Preparation time required: None
Activity time: ~25 mins
Materials need: Pen and a copy of the 'Features of a Play Space' table

Step 1:

- Visit at least two different play spaces in your school (e.g. playgrounds, netball/basketball area, hard outdoor surface, gym, rebound wall, cricket nets)
- Discuss the types of users who use each space and what design features encourage them to use that space.

Step 2:

Discuss the types of design features that have been used for each play space and record them in the table below

Play Space		
Design Features		
Ergonomics The space has been designed/arranged with some or all of the following features in mind: <ul style="list-style-type: none">• Safety e.g. smooth surfaces, rounded edges, the use of soft fall materials, safety nets are installed• Efficiency e.g. the same area can be used by multiple types of users, different users can play in the area at the same time without colliding into each other• Ease of use e.g. lines for games have been pre-marked, goals are permanently positioned		
Durability Design features have been used to ensure that the play space will be: <ul style="list-style-type: none">• Long-lasting e.g. choice and/or treatment of materials (i.e. painted) to ensure that the play spaces are rust-proof/rot-proof/water-proof• Hard-wearing e.g. surfaces are made up of materials that can withstand constant, heavy play		

Play Space Design Features		
<p>Aesthetics</p> <p>Which of the following features make the play space appealing?</p> <ul style="list-style-type: none"> • The use of colour? • The range of activities available? • Its location? • Its size? • The provision of shelter? <p>Have any other design features been included to make the space appealing?</p>		
<p>Principles of Universal Design</p> <p>Does the play space allow a wide range of people to use it? If so what design features have been included to make it accessible/useable by individuals with:</p> <ul style="list-style-type: none"> • Different heights, • Different handedness (left/right), • Different abilities (e.g. strong, co-ordinated, vision impaired, on crutches)? 		

Preparation Activity 3: Design a Universal Play Space Feature

A playground with lots of different things to do can be a great place to spend time with your friends. Unfortunately, many playgrounds don't provide much in the way of 'all abilities' equipment, meaning that some children, for example those in a wheelchair or who are vision-impaired, are unable to join in with all the fun.

Step 1:

Use the internet to have a brief look at some the equipment that is currently available to include in an 'all-ability playground'

Adult assistance required: No

Preparation time required: None

Activity time: ~35 mins

Materials need: Access to the internet to research ideas for some 'All Abilities' play equipment.

Recommended sites:

<http://www.playscapecreations.com.au/inclusiveplay-all-abilities/>

<https://www.playlsi.com/en/playground-planning-tools/plan-your-playground/accessibility>

Step 2:

- Work in pairs to consider an addition to one of your school's playgrounds that would allow a child in a wheel chair OR a child with vision impairment to play alongside their friends.
- Use the 'Design Process' guide below to help you with your planning.
- Each pair should draw a quick sketch of their design and annotate it so that the key design features are highlighted.

Step 3:

- Look at each other's designs and give constructive feedback.
- Choose your team's best design and improve it. You could add a new feature, incorporate a component of the other pair's design, remove a component or include more detail to your annotations.

