

Energy Inventions

Overview



Art of learning

THEME
23



OVERVIEW OF THEME 23

GOALS	Imagine and describe the future through drawings and models. Students explore, design and create technological inventions based on their own ideas. Explore different energy sources and investigate how natural resources can be used in a sustainable way. Try out different ideas in recycled materials and carry out a design process. Describe, tell and argue orally, in an oral presentation. Practise passing and receiving the ball.
SUMMARY	This theme is a continuation of Theme 22. The students receive an assignment from the Researcher/Inventor to present energy inventions in a real arena outside the school in the last session. The students make a sketch, then a model of the invention, before working on presenting the model. They receive feedback on the model and presentation, improve these and finally the students present their models.

GENERAL GUIDANCE ON THEME 23: It is important that the arena for the presentation this time is outside the school grounds. Therefore, find a suitable audience and a suitable arena outside the school. Ideas for arenas: science centre, municipal hall, public library, etc. Feel free to think big, many people such as politicians, councillors and energy companies are interested in children's ideas for inventions that can be useful for the future. Feel free to ask an external person to say something to the students afterwards, as a thank you for their input. Feel free to contact the media, who can make a case about the presentation. Prepare a celebration for the students after the presentation: bubbly soda in a glass and candy canapés, or something else pleasant that the students will appreciate.

THEME 23	DAY 1	DAY 2	TEACHER LED DAY 3-4	DAY 5	DAY 6
Content Summary	<p>Trigger: The Inventor quest is given!</p> <p>Warm-up: 'Yes, and'.</p> <p>Main activity: Drawing sketches of the invention.</p> <p>Reflection: The bond between us – with a ribbon ball.</p>	<p>Warm-up: 'Yes, and' and 'No, and'.</p> <p>Main activity: Building an energy invention model.</p> <p>Reflection: The bond between us – with a ribbon ball.</p>	<p>Warm-up: 'Yes, but' which is really a no, and 'yes, but' which is really a yes.</p> <p>Main activity: See suggestions for activities.</p> <p>Reflection: The bond between us – with a ribbon ball.</p>	<p>Warm-up: 'Yes, and...' and 'Yes, but' with an object.</p> <p>Main activity: Rehearsal of the presentation and audience feedback.</p> <p>Reflection: The bond between us – with a ribbon ball.</p>	<p>Warm-up: 'Yes, and' where everything has gone well.</p> <p>Main activity: Presentation of inventions to a real audience outside the school.</p> <p>Reflection: The bond between us – with a ribbon ball.</p>
Space	Open room/workshop room.	Open room/workshop room.	Open room/workshop room.	Open space/viewing layout.	Outside the school: science centre, municipal/town/civic hall, public library etc.

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THEME 23	DAY 1	DAY 2	TEACHER LED DAY 3-4	DAY 5	DAY 6
Materials	<p>Postal package/box with Inventor's equipment:</p> <ul style="list-style-type: none"> • glasses, inventor badges and coats • good drawing paper in A3 and pencils/colours • reusable materials to build the inventions: lots of sorted material in wood, plastic, metal, and so on, preferably electronic devices and cables from a recycling station or similar, old shoes, figurines, toys, etc. that can be taken apart and used in new ways. Can also use milk cartons and other rubbish that students are not normally allowed to use. Remains of unused material from AoL. • Memory stick with a) a video of the Researcher and b) a PowerPoint describing the mission. If not all the reusable material fits in the box, the rest can be labelled as "invisible until session 2". • Ball of gift ribbon (2 pcs if large group). Not included in the box. 	<p>Postal package/box with Inventors equipment from Session 1:</p> <ul style="list-style-type: none"> • Copious amounts of recycled material (lots of sorted material in wood, plastic, metal, and so on, preferably electronic devices and cables from a recycling station or similar, old shoes, figurines, toys, etc.) that can be taken apart and used in new ways. Can also use milk cartons and other rubbish that students are not normally allowed to use. Remains of unused material from AoL. <p>Tools:</p> <ul style="list-style-type: none"> • Pliers, scissors, glue, tape, steel wire, adhesive compound. • Ball of gift ribbon (2 pcs if large group). 	<ul style="list-style-type: none"> • Same as session 2. • Ball of gift ribbon (2 pcs if large group). 	<ul style="list-style-type: none"> • A selection of objects (can be inventor material or things from around the room). • Footprint posters with: 'I liked', 'I noticed', 'Even better if'. • Ball of gift ribbon (2 pcs if large group) 	<ul style="list-style-type: none"> • The students' models and whatever else they need to present. • Any food and drink to be used for the celebration, see below. • Ball of gift ribbon (2 pcs if large group)
Preparations in advance	<ul style="list-style-type: none"> • Record movie clips. • Fill the box with materials. Pack together as a postal parcel and make a parcel label. • Edit the PowerPoint presentation (use view mode to see all the layers!) to suit the group and situation. Put the presentation on a memory stick and stick it to the postal package. • Wrap the gift ribbon around a soft ball, so the ribbon comes off easily and is easier to receive. Test-throw the ball to know the technique with the band works. (Need 2 balls for a large group). 	<ul style="list-style-type: none"> • Find reusable material to be used, and sort small things into boxes etc., so it is easy to find what is needed. 		<p>Print out, or make, footprint posters.</p>	<ul style="list-style-type: none"> • Find a suitable audience and a suitable arena outside the school. • Feel free to think big, many people such as politicians, councillors, energy companies are interested in children's ideas for inventions that may be useful for the future. Feel free to ask an external person to say something to the students afterwards, thanking them for their input. • Feel free to contact the media, who can make a case about the project and the presentation. • Prepare a celebration for the students after the presentation: bubbly soda in a glass and candy canapés, or something else pleasant that the students will appreciate.

Energy Inventions

Session 1

TIME

90 min.
including
break



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TRIGGER: THE INVENTOR MISSION IS GIVEN!

This will happen:	The class receives a huge parcel. The inventor mission from the Researcher!
Materials needed:	A huge parcel with Inventor's equipment arrives (it contains glasses, a sign and possibly Inventor's white coats, quality A3 drawing paper, pencils/coloured pencils, recycled materials), a memory stick with a) a video of the Researcher and b) a PowerPoint describing the Inventor's mission. If it is not possible to include all the recycled materials in the box, the remainder of the materials can be included in Session 2 (but try to keep this fact secret from the students). For Session 2 gather lots of recycled material (to include wood, plastic, metal, etc. Preferably this should be from electronic devices and cables (from a recycling station or similar), old shoes, figurines, toys etc that can be taken apart and repurposed. Also include milk cartons and other materials which students would not normally be allowed to use. Include any other materials or resources left over from other AoL themes.
Preparations in advance:	Record film clips, fill the parcel and edit the PowerPoint to fit the class and its context. Seal the parcel and make a postage label for the class.
Preparations in the space:	
The space looks like this:	Classroom/Open space

GUIDANCE:

A huge parcel addressed to the class has arrived. On top of the box is a memory stick and a label which says, 'Look at this first'.

On the memory stick there is a) a video of the Researcher from Theme 2, who is asking for help from the class and b) A PowerPoint describing the mission.

In the parcel there is Inventor's equipment (glasses, a sign, white coats, A3 drawing paper, pencils, coloured pencils, and lots of recycled materials – these can be supplemented with extra materials from Session 2).

- Ask the students to listen to the video, look at the parcel and decide whether they want to carry out the mission.
- Do the inventor warm-up (see warm-up).

WARM UP: INVENTOR TRICK #1 “YES AND”

This will happen:	Create inventor stories to practise working in groups.
Materials needed:	
Preparations in advance:	
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

The students are divided into groups – they will remain in these groups throughout this theme. In their groups, students create a story about an imaginary invention, where they each say one sentence. After the first suggestion, all further sentences must begin with “Yes, and...” The “Yes” should be an excited YES! And what follows in the sentence should build on the previous idea. The students do what happens by miming together in pairs.

Demonstrate the warm-up, for example:

Person 1: I think we should invent a climbing egg.

Person 2: YES! And the climbing egg can have a helmet!

Person 1: YES! And the climbing egg can be attached to very steep walls...

Each group has a few minutes to try this out. Then they change the person who starts and they create a new invention story. Remind the students that this is just an exercise, that the ideas don't have to become something real, and that it's just as good if it turns out to be really and completely impossible to do.

Reflection. Ask why they think they did this? Explain that to collaborate successfully it is important to listen to the other peoples' ideas, say YES let's try that and build on them. This is what real Inventors do, and it's one of the strategies real Inventors use.

Energy Inventions

Session 1

TIME

90 min.
including
break



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MAIN ACTIVITY: DRAWING SKETCHES OF THEIR INVENTION

This will happen:	The students draw sketches of their invention.
Materials needed:	Large sheets of quality drawing paper A3 (one piece for each student) plus pencils and coloured pencils/markers. PowerPoint with the mission.
Preparations in advance:	Review the PowerPoint presentation and fill in the blanks.
Preparations in the space:	
The space looks like this:	Workshop room/classroom.

GUIDANCE:

- Watch the PowerPoint presentation together and discuss how best the mission can be solved.
- Divide the students into groups (they will remain in these groups throughout this theme). Dress up in the Inventor's clothes.
- Main task: Draw a sketch of the invention (see task description in PowerPoint). The students can either make one drawing of an invention each, or a group one – they need to decide on this.
- If necessary, remind them of the focus of the mission.

REFLECTION: 'THE BOND BETWEEN US'

This will happen:	The class works in a circle throwing a roll/ball of gift ribbon so that everyone is involved, and they reflect on teamwork.
Materials needed:	A roll/ball of gift ribbon and a soft ball.
Preparations in advance:	Wrap the gift ribbon around a soft ball. The gift ribbon should come off easily and be easy to catch. Practise throwing the ball to ensure that the gift ribbon comes off easily.
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

Everyone sits (or stands) in a tight circle (if the class is large then divide them into two smaller groups with an adult in each). It is important that it is a circle, and that the distance across the circle is not too big. The tempo of the exercise should be calm.

1. Everyone closes their eyes and is given a question to think about from today's session. When they are ready with their answer, they should open their eyes and look at the adult.
2. The adult repeats the question, takes out the ribbon ball, and begins by answering the question themselves. They hold the end of the gift ribbon firmly, make eye contact with a student and then throw the ribbon ball to them.
3. This student repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student, and throws the ribbon ball to them.
4. The process is repeated – everyone in the circle needs to repeat the steps and a group web will result.
5. Reflection: Whilst the web is still held by everyone in the group, ask them what has been created between them? What does this 'bond between us' tell them (Community, what they achieve when they collaborate – see what emerges). Finish the session with a positive reflection about the 'bond between us'.

Question for Session 1: Think about their inventor group and find one thing they appreciated/enjoyed in their group work today.

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Session 2

TIME

90 min.
including
break



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WARM-UP: INVENTOR TRICK #2: “YES, AND” AND “NO, AND”

This will happen:	Create inventor stories to practise working in groups.
Materials needed:	
Preparations in advance:	
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

In their invention groups, the students should create an invention story, where they each say one sentence and work in a fixed order. After the first suggestion, all further sentences must begin with “Yes, and...” Yes should be excited YES! And what comes next should build on the idea from the previous sentence.

Next demonstrate what happens if the partner says “No, and” instead (as below):

Person 1: The first thing we have to do to make the invention is to collect lots of wires.

Person 2: No, at least, it's not the first thing we have to do!

Person 3: No, and we don't really need more than 1 wire either...

Ask: How does it feel to be person 1 who comes up with the story idea and all they hear is NO? How will they move forward?

Each group first tries once each with “No, and...” Everyone has a go at being Person 1. Then they change to “YES, and...” and again each student takes a turn at starting a story. Challenge students to find new/ different invention ideas (for example big, small, inventions in space, inventions on the ground).

Reflection: How was it different with “No, and” and “Yes, and”? Why do they think the Inventor wanted them to do “No, and” and “Yes, and” like this?

REFLECTION: ‘THE BOND BETWEEN US’

This will happen:	The class works in a circle throwing a roll/ball of gift ribbon so that everyone is involved, and they reflect on teamwork.
Materials needed:	A roll/ball of gift ribbon and a soft ball.
Preparations in advance:	Wrap the gift ribbon around a soft ball. The gift ribbon should come off easily and be easy to catch. Practise throwing the ball to ensure that the gift ribbon comes off easily.
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

Everyone sits (or stands) in a tight circle (if the class is large then divide them into two smaller groups with an adult in each). It is important that it is a circle, and that the distance across the circle is not too big. The tempo of the exercise should be calm.

1. Everyone closes their eyes and is given a question to think about from today's session. When they are ready with their answer, they should open their eyes and look at the adult.
2. The adult repeats the question, takes out the ribbon ball, and begins by answering the question themselves. They hold the end of the gift ribbon firmly, make eye contact with a student and then throw the ribbon ball to them.
3. This student repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student, and throws the ribbon ball to them.
4. The process is repeated – everyone in the circle needs to repeat the steps and a group web will result.
5. Then the process is repeated and everyone is asked to reflect on question 2.
6. Finish the session with two good tips and ask everyone to remember them.

Questions for Session 2 (the ribbon is thrown back in the reverse order):

1. Ask the students to think about their inventor group: Share something one of them did that was good for group work.

Throw the ribbon back again with a new question – again in reverse order!

2. Imagine that they are a group work expert. Give a tip on what everyone can do to make a group work well.

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Session 2

TIME

90 min.
including
break



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MAIN ACTIVITY: BUILDING AN ENERGY INVENTION MODEL

This will happen:	The students build a model of their invention.
Materials needed:	Lots of recycled material to include wood, plastic, metal, etc. Preferably this should be from electronic devices and cables (from a recycling station or similar), old shoes, figurines, toys etc that can be taken apart and repurposed. Also include milk cartons and other materials which students would not normally be allowed to use. Include any other materials or resources left over from other AoL themes. Tools: pliers, scissors, glue, tape, steel wire, adhesive compound and any other left over resources.
Preparations in advance:	Find recycled materials and sort them by putting small items into boxes so that it is easy for the students to find what they need.
Preparations in the space:	'Recycling station' with access to all the material.
The space looks like this:	Workshop room with one table/one workstation for each group.

GUIDANCE:

- Based on the sketches from Session 1, the groups must make a model of their invention. They can use any of the recycled materials available.
- If necessary, remind them of the focus of the mission.

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Session 3-4

TIME

90 min.
including
break



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WARM-UP: INVENTOR TRICKS #3 AND #4: “YES, BUT” WHICH IS REALLY NO, AND “YES, BUT” WHICH BUILDS ON THE PREVIOUS SENTENCE.

This will happen:	Create inventor stories to practise interaction in the groups.
Materials needed:	
Preparations in advance:	
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

Session 3

In their invention groups, the students should create an invention story, where they each say one sentence and take turns. After the first suggestion, all further sentences must start with ‘Yes, but...’ Yes should be excited YES! And what comes next should build on the idea from the previous sentence.

Demonstrate an example of a ‘Yes but...’ (which is actually a no):

Person 1: I think that screw there fits very nicely as an eye!

Person 2: YES! But now we’ll take it off again, because I’m going to use that screw on the legs.

Ask: Why is this called this a yes, but it is really a no?

Each group creates new stories with “YES, but...” and this time it is a real YES! (and not a Yet but...(which is actually a no). Challenge students to find new places and new situations than those they have used in previous sessions. Remind them to mime what happens.

Reflection: Did they notice a difference between a real yes and a yes (but) that is really no? In which situations can they use this approach? (both inside and outside school).

Session 4

Repeat as in Session 3, but demonstrate an example of a “Yes, but” (which builds on the previous sentence).

Person 1: I think we should make a tail for our robot dog.

Person 2: Yes, but then I think the tail should be made like a vacuum cleaner tube so it can vacuum with it.

Person 3: Yes, but then the vacuum cleaner pipe has to be painted brown, so it looks like a real tail.

In the invention groups. Try saying “Yes, but” and making suggestions that build on the previous suggestion. Feel free to talk about inventions as a starting point.

Reflection: What is the difference between yes (a yes which is actually a no) and a proper yes (which is a yes)? What do they think the Inventor wanted them to understand from this exercise?

REFLECTION: “THE BOND BETWEEN US”

This will happen:	The class works in a circle throwing a roll/ball of gift ribbon so that everyone is involved, and they reflect on teamwork.
Materials needed:	A roll/ball of gift ribbon and a soft ball.
Preparations in advance:	Wrap the gift ribbon around a soft ball. The gift ribbon should come off easily and be easy to catch. Practise throwing the ball to ensure that the gift ribbon comes off easily.
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

Everyone sits (or stands) in a tight circle (if the class is large then divide them into two smaller groups with an adult in each). It is important that it is a circle, and that the distance across the circle is not too big. The tempo of the exercise should be calm.

1. Everyone closes their eyes and is given a question to think about from today’s session. When they are ready with their answer, they should open their eyes and look at the adult.
2. The adult repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student and throws the ribbon ball to them.
3. This student repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student, and throws the ribbon ball to them.
4. Then the process is repeated until everyone has had the ribbon ball.
5. Reflection: While the web is still held by everyone, ask everyone to stand up (slowly, while still holding their part of the web). Ask everyone to hold the web tight. Then throw a school bag or three into the web.
Ask: Why are they able to hold the bags on the web? What happens if one of them lets go of the web? (Test this out). Do they still have a connection between them when they are not connected by the web? For example, when they’re out at breaktime? As a class? What does it take to keep the connection between them?

Questions Session 3-4:

- Think about a challenge their invention group has faced. Share one thing they did to solve the problem.
- Think about their invention group: What has been their favourite part of the collaboration so far? What is their group the best at?

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Session
3-4

TIME

90 min.
including
break



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PROPOSALS FOR MAIN ACTIVITIES

Continue constructing the invention model

Prepare and practise presentation for the class/large assembly: Explain the presentation rules:

1. Everyone in the group must be active and talk.
2. Remember to include the most important things about the invention:
 - What is the name of the invention?
 - What will it be used for?
 - How does it work?
 - What energy source does it use?
3. The presentation cannot last longer than 2 minutes.

Day 4: Start with the groups presenting their inventions to another group, and give each other feedback. The groups are then given time to work on the feedback.

Wallace and Gromit – Snoozatron/Tellyscope:

<https://www.youtube.com/watch?v=vGxRUgIFFME> (1)

<https://www.youtube.com/watch?v=Xc5eqwzEgUo> (2)

Donald Duck and the Caravan: <https://www.youtube.com/watch?v=RxPIY3a7dMU> (3)

youtube.com (1)



youtube.com (2)



youtube.com (3)



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Session 5

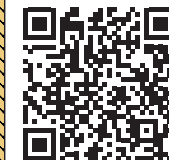
TIME

90 min.
including
break



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WARM-UP: INVENTOR TRICK #5: “YES, AND...”/“YES, BUT” WITH AN OBJECT

This will happen:	Create inventor stories to practise interaction and presentation in groups.
Materials needed:	A selection of objects (can be inventor material or things from around the room).
Preparations in advance:	
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

In the invention groups, the students create an advertisement for an object, using the “Yes, and”, and “Yes, but” (meaning “No”) method from Session 3-4. The first student to receive the object says a good reason why they should buy this particular one. The object is passed on, and the next person says “Yes, and...”/“Yes, but” another reason to buy the object. Keep this going for as long as the groups come up with new reasons to buy the object. Then switch to another object. Also remember that Yes should be an enthusiastic YES! so that everyone will buy the object!

Demonstrate: Select a single object, for example, a bottle.

Person 1: Buy this bottle because it is completely waterproof!

Person 2: YES! And it can also be used as a flower pot!

Person 3: YES! But it can't just do that. It is also filled with delicious lemon juice!

Use objects from the room, materials for the inventions etc.

Reflection: Was it different having to come up with ideas for concrete objects compared to previous sessions? Is there anything from this warm-up that would be helpful to prepare to present the invention tomorrow? If so, what and why?

REFLECTION: ‘THE BOND BETWEEN US’

This will happen:	The class works in a circle throwing a roll/ball of gift ribbon so that everyone is involved, and they reflect on teamwork.
Materials needed:	A roll/ball of gift ribbon and a soft ball.
Preparations in advance:	Wrap the gift ribbon around a soft ball. The gift ribbon should come off easily and be easy to catch. Practise throwing the ball to ensure that the gift ribbon comes off easily.
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

Everyone sits (or stands) in a tight circle (if the class is large then divide them into two smaller groups with an adult in each). It is important that it is a circle, and that the distance across the circle is not too big. The tempo of the exercise should be calm.

1. Everyone closes their eyes and is given a question to think about from today's session. When they are ready with their answer, they should open their eyes and look at the adult.
2. The adult repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student and throws the ribbon ball to them.
3. This student repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student, and throws the ribbon ball to them.
4. Then the process is repeated until everyone has had the ribbon ball.
5. Ask Question 2 and repeat the process.
6. Finish by repeating a couple of good tips for the presentation that everyone should remember.

Question session 5: (the ribbon is thrown back in reverse order)

1. Think about their invention group and what they have developed together. Think about what they have achieved together as a group – what are they most proud of?
2. Give a tip on how they can all support each other in Session 6 when they present their inventions.

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TIME

90 min.
including
break



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MAIN ACTIVITY: REHEARSAL OF THE PRESENTATION

This will happen: The inventions are presented and 'footprint' feedback is provided to each group.

Materials needed: Footprint posters with "I liked", "I noticed", "Even better if".

Preparations in advance: Print out or make your own footprint posters.

Preparations in the space:

The space looks like this: Presentation layout.

GUIDANCE:

1. Remind the students of the rules of presenting: 1) Everyone in the group must be active and talk, 2) remember to include the most important things about the invention: What will it be used for? How does it work? 3) The presentation cannot last longer than 2 minutes.
2. Presentation. Remind the audience of their important role too: Be a good audience, listen carefully and think about what they hear and how they can help the groups to make their presentations even better through the feedback given to them afterwards. Each group gets 2-3 minutes to present.
3. Lay out the footprint posters on the floor (NB! After the first group has presented!)
4. After each presentation: The group remains on the 'stage'. They may not speak or respond to the feedback – they can only listen to it. Invite the audience to come forward and offer their feedback on the invention and on how the group presented it (for example: "I liked that you all looked at the audience, not at your notes" or

"I noticed that you explained how the invention worked and how to switch it on and off". Reflect on whether the students remember doing this reflection before – they used it in Theme 5. Ask them if they can remember how to do this? The adult (or a student who can remember) demonstrates this by going up to one of the floor posters, reading the words and then providing their feedback. For example: "I liked that I understood well how the invention worked." Then invite another student to contribute. Be strict with the rules.

5. Repeat until all the invention groups have presented and received feedback. It is important that time is found for all the groups to present and receive feedback and then to have the opportunity to make improvements afterwards.
6. In their invention groups, they make the final adjustments/improvements to their presentation before the final presentation in Session 6.

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Session 6

TIME

90 min.
including
break



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WARM-UP: INVENTOR TRICK NO. 6: "YES, AND" WHERE EVERYTHING HAS GONE WELL.

This will happen:	Create inventor stories to practise handling presentation nerves.
Materials needed:	
Preparations in advance:	
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

Begin by giving all the students a short and positive pep talk. Remind them to do and say what they have planned, to 'sell' the invention with enthusiasm and to offer support and help to each other!

This goes in the order the groups will make their presentation. The first group is given the first sentence of a story and they complete it with "Yes, and" sentences!

Choose one sentence that each group gets or provide a few and ask each group to pick one. All the sentences must be set in the timeframe after the presentation (even though this happens before) and they must be written in a way so that it is clear that the presentations have gone well. The starting sentences could be:

"The presentation of our invention today went great because..."

"I am so proud of my group today because..."

Reflection: Explain that thinking what it is like after the presentation is complete and that it went well is another great Inventor's trick. Many real Inventors (and Artists) use this approach. Wish them luck and start the presentations!

REFLECTION: 'THE BOND BETWEEN US'

This will happen:	The class works in a circle throwing a roll/ball of gift ribbon so that everyone is involved, and they reflect on teamwork.
Materials needed:	A roll/ball of gift ribbon and a soft ball.
Preparations in advance:	Wrap the gift ribbon around a soft ball. The gift ribbon should come off easily and be easy to catch. Practise throwing the ball to ensure that the gift ribbon comes off easily.
Preparations in the space:	
The space looks like this:	Open space.

GUIDANCE:

Everyone sits (or stands) in a tight circle (if the class is large then divide them into two smaller groups with an adult in each). It is important that it is a circle, and that the distance across the circle is not too big. The tempo of the exercise should be calm.

1. Everyone closes their eyes and is given a question to think about from today's session. When they are ready with their answer, they should open their eyes and look at the adult.
2. The adult repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student and throws the ribbon ball to them.
3. This student repeats the question, states their answer, holds the ribbon ball firmly, makes eye contact with another student, and throws the ribbon ball to them.
4. Then the process is repeated until everyone has had the ribbon ball.
5. Reflection: While the web is still held by everyone, ask them what they have between them here? What can this 'bond between us' tell them? (they are a community, it shows what they achieve when they collaborate – see what emerges). Finish by repeating a couple of positive reflections about the 'bond between us'.

Question for Session 6: Think about their invention group. Share one thing they want to thank their group for.

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Session 6

TIME

90 min.
including
break



Art of learning

THEME
23



MAIN ACTIVITY: PRESENTATION OF THE INVENTIONS TO A REAL AUDIENCE OUTSIDE THE SCHOOL.

This will happen:	The students bring their models and present their inventions to a real audience who would benefit from the inventions, see below.
Materials needed:	The students' models and any other resources they need for their presentations. Refreshments for the celebration, see below.
Preparations in advance:	Find a suitable audience and a suitable venue outside the school. Think big – many people are really interested in children's ideas for inventions that can be useful for the future: Politicians, councillors and energy companies. Feel free to ask an external person to give a speech after the students' presentations and to thank them for their work and ideas. Contact the local newspaper to see if they can write an article about the project. Prepare a celebration event for the students after the presentation: provide a drink to make a toast with, soft drinks, candy and other food/treats the students will appreciate and enjoy.
Preparations in the space:	Ensure that the presentations will work well in the space and that the acoustics work well. Prepare any refreshments for the celebration.
The space looks like this:	Outside the school: The venue could be a science centre, municipal hall, public library or similar.

GUIDANCE: Each group presents their invention model to a real audience.	Ask an external person to give a speech after the students' presentations which should recognise their work and thank them for their input, ideas and suggestions.
Important: Make sure the start of the presentation is carried out in such a way that the audience takes the students and their ideas seriously.	After the presentations: A small celebration for the students (and possibly the audience) with some good refreshments and possibly a toast to the inventors.

NOTES