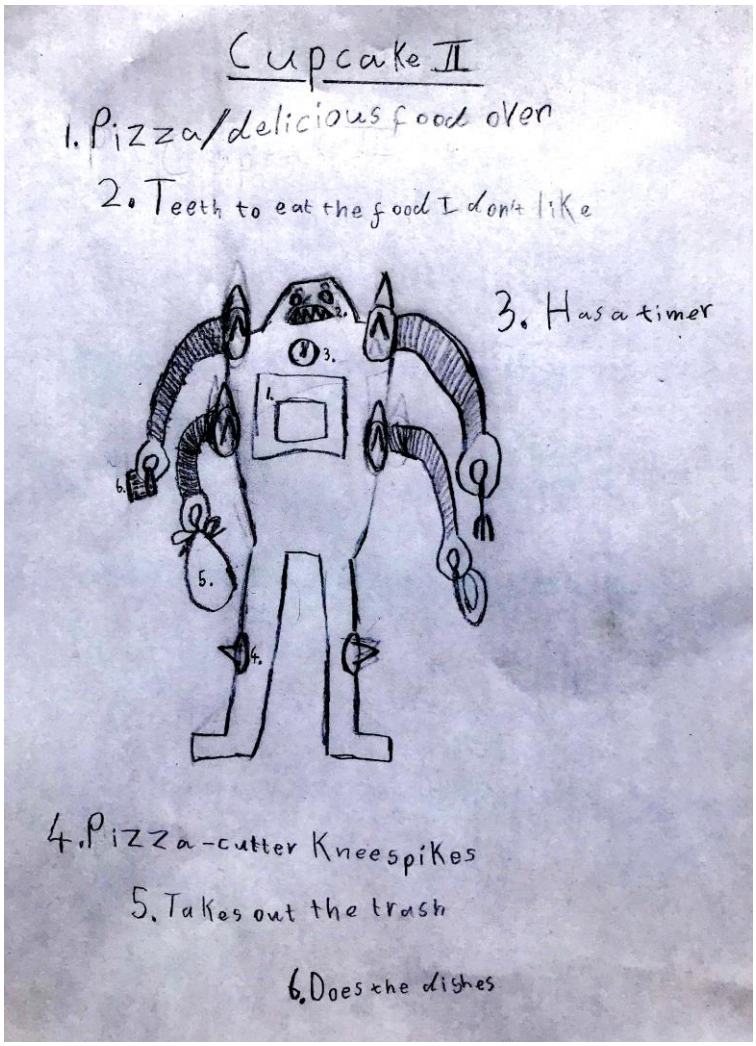
Regulating Robot
A drama about social rules, morals and creativity

Level 3

Adaptable for ages: 8 - 14 years old



BACKGROUND PLANNING AND REQUIREMENTS

Purpose and Learning

This drama gives students the opportunity to explore the necessity for social regulation, the risks and consequences of both making and breaking rules, and the relationship between rules and regulations on the one hand, and creativity and freedom on the other. It also explores how the impact of Artificial Intelligence (AI) on ordinary life might be managed.

Pre-text
No, David! The picture-book for younger children, by David Shannon.

Focus question:
What rules are necessary in social situations, and what is the relationship between rules, freedom and creativity?

The 5 W's
What's happening? A new generation of robots is being designed and marketed
Who's it happening to? The designers and manufacturers of the robots
Where is it happening? Here in New Zealand
When is it happening? Almost now - just in the future
What's at stake? Controlling Robot and preventing anarchy

The Hook
Robots are exciting in themselves, and the opportunity to invent and design one is an inviting challenge.

The Teacher-in-Role
- Alexis Singh[1], Design Manager, Universal Robotics
- Robot

Resources required
- Plenty of white cartridge or butchers paper and coloured pens and markers, and perhaps some spare coloured card, scissors, sticky tape etc.
- Designer Identity cards (1 per student - see Appendix A)
- Design Manager Identity card and tablet or clip-board (for Teacher-in-Role - See Appendix A)
- Design Brief sheets (See Appendix B and Step Five)
- The 4 Principles of Robot Behaviour (See Appendix C and Step Seven)
- The 4 New Principles of Robot Behaviour (See Appendix and Step Fourteen)
- 4 or 8 clipboards for Team Principles sheets (see Steps Seven & Fourteen)
- Robot symbol or costume item (See Step X) and one for you (from Step Fourteen).
- Projector with images from *No, David!* (if using Step One)
  [Many versions of this picturebook, some animated, are available on the Internet, e.g. https://www.youtube.com/watch?v=9Wsod3lPlYY]
- Slides for the Briefing Room (optional – Welcome, Principles of Behaviour etc.)

[1] Or choose your own pseudonym: Alexis and Singh are respectively the most popular gender-neutral first name and surname in New Zealand (2018)

Using the drama space

You will need a large clear classroom or utility space for this drama, with movable chairs and tables, so that you can easily move from one configuration to another. During the first two lessons you will be using:

- the talk chair
- a large cleared space for energetic movement games and activities
- The factory Briefing Room – rows of chairs
- The Designers' Studio: 4 or 8 tables with chairs (depending on class numbers), with drawing paper and implements for each Design Team
- a hot-seat horseshoe formation, seated on chairs
- The class separated into four or eight teams, each with its own space to act and move
- a large store-room or cupboard where a person can hide (If you don't have this, you can use the classroom door and agree to pretend there is a little store-room on the other side).

This is a long and complex drama, and it has been designed in three parts.
* **Part 1 (Step One)** is a kind of Prologue, which is optional, according to your time available and your knowledge of whether it is appropriate for your class.
* If possible, do at least **Parts 2 and 3** (**Steps Two to Seventeen** - about three hours in total).
* If your time is very limited, **Part 2 only** (**Steps Two to Thirteen + Seventeen** – about two hours) will still make sense and be useful learning, though of course it will lose the richness of the longer experience.
Whichever choice you make, ensure you finish with **Step Seventeen**.

UNIT PLAN

PART 1 – PROLOGUE (optional)

Step One: Are rules good? - introductory reading and dramatic activity)

Depending on how much time you have available, you may prefer to skip this introduction, and start straight away with **Step Two**. The purpose of this step is just to use the pre-text to get the students to focus on the theme of the drama, then bring them into the dramatic

context indirectly, and already thinking about the central theme of social rules and behaviour.

* Check if any of the students have come across *No, David!* as a young child, then show them the images – or animated video. Ask them to watch, not just what David is doing *wrong*, but what might be *right* or *good* about what he's doing… in nearly every picture. Elicit or prompt that David is doing quite a lot of creative and imaginative experimentation, but maybe just not in the right time and place! Get the students into pairs, each in their own space. Show some of those images, one at a time, and ask the pairs to make a freeze frame of the exact moment when Mother says NO!, and while frozen, the student playing David can think of what he would say to Mother, to explain or defend himself. On the signal 'unfreeze!':

1. Mother says, 'No, David!'
2. David replies with a sentence explaining why he is doing what he is doing
3. Mother has to explain why he should not be doing this NOW.

Cut, let the students swap roles, and move to the next image.

* Bring the children back to the talk chair, and discuss those brief interchanges, including whether Mother was always right, and what are good rule and bad rules. Try to let the students lead as much as reasonable, prompting and questioning them, to elicit the idea of young children like David needing to learn when and how to use the rules. Then introduce the idea of robots round the house, which are designed and programmed to follow set tasks. Ask the students what the students think about robots, and whether it would be good if we had robots around the house and our neighbourhood to do the jobs we don't like. Would programming robots be like training children? Would we want the robots to be able to think for themselves? Would we want them to be creative? Explain that this drama is going to explore these questions. In our drama we will be able to invent whatever robots we want, see what it would be like to live with them around, and even design the robots exactly as you'd like them to be. And we might find some surprises!

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PART 2 – INTO THE MEAT OF THE DRAMA

Step 2: Being a robot - movement exercise

* Get the students walking naturally round the room in all directions, avoiding each other, and tell them that each time you call an order to change their walking, they must respond to it immediately, starting with *quick* then *slow* (a few times, sometimes repeating yourself to trick them), then changing to *heavy* and *light*, then both of them 'quick and heavy… quick and light… slow and light…', then *direct* and *indirect* [they might need this one explained: in *straight lines, not in straight lines*] then combinations of all three. You might like to add that if they touch somebody else they have both to freeze immediately, and stay frozen till you

touch them free.

Give them a moment's rest, then get them (without the instructions) practising moving first like mechanical robots, very jerkily and slowly at first – first their arms, then their legs, then their body, then all of them. Then bring back the quick/slow, heavy/light, direct/indirect instructions – and the freeze for accidental touches. Make the changes speed up so they are constantly changing.
Then bring them back to sit down and rest at the talk chair.

Step 3: Becoming the Designers - introductory discussion and enrolment

Preparation:
Part of the room should be set up beforehand as the Factory Briefing Room, with rows of chairs facing the front (and if space allows, an area to mingle just inside or outside).
There must be chairs to sit on. Grown-ups don't sit on the floor in meetings.
Have the Design Working Group ID Cards (See Appendix A) ready to hand out.

* Tell the students that the drama will take place in a robotics factory, and in the first place they are going to be experienced industrial robot designers. Ask them to shut their eyes and imagine their past experience… *How many years have you been designing robotic machines? What got you interested in the first place? Which companies have you worked for, in New Zealand and overseas, and how did you get your early experience? Was it in a big project like a car factory or space travel, or in hospitals? …* And finally: *What is the most advanced work you have invented, that you are most proud of?*

Explain that they have all just been appointed in a new company called Universal Robotic Inc. (uRi) as New Zealand's top Robot Design experts. They will each be given Identity (ID) Cards with their assigned Design Working Group (**See Appendix A**), and every time they take role as those factory designers, they will be wearing their name tags. You will be taking part as the Design Manager. Show them your own ID card and prop; mention that you are changing your name when in role, but to save confusion, they can keep their own names. If the students are new to drama you might demonstrate that every time they put the ID card on they are stepping into role – so they know what to expect and won't giggle at their teacher being in role too.

* For some of the drama they will be working in Design Groups of between 3 and 6, so if there are twenty-four students or less in the class, assign them to 4 working groups of up to 5 students each group; if there are more than twenty-four, assign them to 8 working groups of 3 or more – but don't yet separate them into their groups.

Our first scene will be the first meeting and briefing of those designers, where they will put on their name-tags and meet each other, mostly for the first time.

If the students know each other well and work well in groups, you could play a game like 'clumps' to group them, or just let them to agree to work in friendship groups, but if not, it is probably wise to assign them in advance to groups where you know they will be able to work together amicably.

* Give out the ID cards and get them each to write their names in the space, and - if they like - a special title like Professor or some letters after their name... but **not** to put the cards on yet.

Step Four: Welcome to URI! – Briefing the designers
* Take the children to the mingling area or 'doorway of the Briefing Room', and instruct them that when the drama starts they will be designers who have travelled from all over New Zealand to meet here today, and first they will meet their fellow Designers, then the Senior Design Manager, who will give them their first task. As soon as they put the name-tags on, the drama will start and they will be playing those roles, and they should start by introducing themselves to a few of the others. They should share with each other their experience in the field and their own special skills, and then after a few minutes take their seats in the briefing room. Count them into the drama: *Three, two one…ID cards on!*

* Let them mingle for long enough to get them comfortably in role, then when you judge the moment is right, put your ID Card on and step into the room confidently.
Ladies and Gentlemen, welcome to Universal Robotics Inc. or as we like to call ourselves, URI [you/are/I], and thank you for responding to our call for experts. My name is Alexis Singh, and I am the Senior Design Manager here.

Take the time to shake a few by the hand and ask them to tell everybody where they come from and what is their greatest achievement, so far. This helps the group belief building. When you start your formal introduction, it is quite natural to be constantly referring to your script below, on your tablet or clipboard.

- *This is a great moment in our company's history, and for our society and way of life. The future has arrived! We are now moving into the field of Personal Robots, robots to help you around the house, in the workplace and around the streets. This company will be at the forefront of this movement, and this is why we have appointed you, and*

we want to make an immediate start.

- *Each of our robots will be quite human looking and will be able to speak simply, and they will be animated remotely, by Wifi. They will be designed for **one** specific setting and set of tasks. At the moment we don't have the technology for the robots to be entirely independent. Also we cannot yet make robots that move quite as well as humans, but we are on the way. For their set tasks however, we shall program them to be able to think for themselves.*
- *We shall be starting with four robots, all for use in the home: one will be designed to be a **kitchen** help, one for the **living room**, one for the **bedroom** including the bathroom, and one for **outdoors** - the garden and surrounds of buildings.*
- *You will find the Design Team and number that we have assigned you to on your ID card, and in the Design Studio you will find a table with that number, and your Design Brief. I realise that you are all strangers, and have not yet had time to meet each other, so you will need a few moments to find and introduce yourselves to the other members of your Team. When you have had time to do this, it is time to start work.'*

* Stand and invite the meeting to find and form their Design Teams, encouraging formal greetings and introductions.

Step Five: Designing the robots - collaborative design in role

Preparation:
You may be able to continue in role, if you have the space to have the Design Studio set up beforehand. Otherwise get the children out of role (taking off their and your ID cards), and rearrange the chairs with tables to be the Design Studio – either 4 or 8 work-stations according to the class numbers.
Place a Design Brief sheet (See **Appendix B**) on each table, along with a couple of big sheets of drawing paper and coloured markers or crayons.

* Put the ID Cards back on, lead the Designers to the Design Studio, get them to find their team's table with their Designer Brief task sheet [NB the specimen ID cards and Briefing Sheets in Appendices A and B are colour coded to make this easier], and let them go on the design tasks. They should give their Robot a name – one that will sell: catchy and distinctive, but not silly.

You can stay in shadowy role in the background, giving help on the task and keeping them focused, but absolutely deferring to their expertise as robot designers.

Give them a time deadline, and bring the task to an end before they start to lose focus.

* If you are able to have separate spaces set up as the Briefing Room and the Design Studio, ask them to bring their design and meet you at the Briefing Room; otherwise, do this at their tables. Still in role, ask each team or their spokesperson to present their design ideas in turn, quite formally. Encourage designers from other teams to ask questions or pose possible problems. Thank the designers, and say that you will get the factory to make prototypes of their robot for testing.

* Cut the drama by all taking off the ID Cards.

Step Six: Experimenting with their robots - movement exercise

* Give out the robot symbol or costume item, but ask them not to put it on yet. (We have been using a set of sports wristbands, with - optional but effective – a student-designed 'robot control panel' stuck on to each).

Clear the space or get into a clear space, and ask each student to 'find their own space' away from everybody else, where they can't touch anybody else, and put on their robot symbol. They will all be working at the same time, but they won't notice or interfere with anybody else – just avoid them and pretend they are not there.

This is a convention they will need to know and use often in their drama, and if they are not familiar with it, it may be useful to practise it as a short game or exercise, or at least refer back to the opening movement exercise.

Ask each student to take up a position, frozen, of the robot that they have just designed, and think about how that robot will move, which bits will be natural and which rather mechanical, and how it will move to carry out its allotted tasks – **those only**. One limb at a time (as in the opening exercise), the robots will become animated, and experiment with the associated movements.

* Extend the exercise by asking the robots, when they see another or others **of their own kind only** (i.e. the members of their Design Team) to start interacting with them in order to see and compare how they carry out their five set tasks.

When they have had time to enjoy this free play, freeze all of them and then get each of the groups in turn to unfreeze to demonstrate to the rest how they carry out their tasks, and how they move and speak.

Cut the activity and take off the Robot symbols.

This would be a very good place to finish Lesson 1.

Step Seven: Revelation and tension-building
* At the talk-chair, ask the students to remember Lesson 1, and to recapitulate the story so far.

***** Back to the Briefing Room. This time arrange the chairs in a horseshoe formation, which is better for open and general discussion. Get the students into their Design Team, sitting together round the circle.

* ID Cards on. Open the meeting as Alexis by excitedly announcing, with a slide if possible: *This is a great day for URI! We have just heard from the programming lab that there has been a triple breakthrough in robot electronics. The robots can now be programmed:*

- ***to make decisions***
- ***to learn new things***
- ***to have real human feelings!***

At this stage, they can only be programmed for four feelings, which are:

Love, Happiness, Fear *and* ***Curiosity****.*

With these very strong emotions, and the power to make decisions, the Company realises that they must also be programmed into strict Obedience. However, the Robot Behaviour controls are also limited to four. So the Designers are now required to decide for their own Group's robots, what the most important 4 Principles of Robot behaviour should be.

Still in the Briefing Room, give each team their clipboard (**See Appendix C)**, and ask them to come up with the Four Principles of Robot Behaviour for their type of Robot. To help the programmers, two of these will begin with I MUST AT ALL TIMES… and the other two will begin with I MUST NEVER…

When they have done this, ask each Design Team to read their Four Principles, and get the whole group comparing and discussing them; lead the discussion focussing on the appropriateness of those Principles for each type of robot, and robots in general.

* Cut the drama (ID cards off) and go straight back to the talk chair.

Step Eight: Reflective discussion and introduction of Time Jump
* Out of role, bring the discussion you have just had in role round to comparing robots and people, and their behaviour. Is it possible to work out four (or more) simple principles for people generally? For children? For adults? What are the principles we tend to take for granted? It may be useful, if you completed Step 1, to bring *No, David!* into the discussion - the students probably will anyway.

* At the end of the discussion, announce that the next scene in the drama will take place six months in the future. Narrate the following:
The new robots have been a great success, with all four types selling really well, and many people are buying sets of all four of them (one for the kitchen, one for the bedroom etc.) However, one morning, the Designers are summoned to the Briefing Room, for an unexpected emergency meeting with their Senior Manager, Alexis.

Step Nine: Disaster! - introducing tension and the crisis
* Back in role in the Briefing Room (ID cards on), Alexis is holding an official-looking memorandum, and in a very upset voice she says:

Last night a new set of robots had just been got ready for dispatch. As usual the last job was to activate the wifi connection and charge them up overnight, so they would be working properly when they were sent out. This morning when I got in, there was a terrible mess in the factory. Bits of new robots strewed everywhere, some of them broken; the Design Studio next door has been entered and stuff left in chaos, with lots of weird and crazy drawings on the designers' drafting paper. An email of complaint has already been received from the people in the apartment block next door to the factory, complaining about the awful din all

night. Everything seems to have been pulled out of the store-room cupboard, to add to the mess, and the store-room has been locked or jammed from the other side… I can't get into it. And the four new robots have all disappeared - can anybody explain what might have happened to them?

The Chief Engineer has been contacted and has checked, and apparently at the Programming stage there was some problem with the Wifi connection to that batch, while it was activating their Programming for Obedience, Decision-making and Human Emotions. However, the problem seemed to have been cleared up, so the batch was approved.

Get a discussion going, accepting all the Designers' ideas as possible, if they are sensible, and start to work out what you might do about it. Should you go to the police? Could somebody maybe help to clear up the mess? How might you go about finding the missing robots?
* Cut the drama, and step out of role, taking off your nametags.

Step Ten: What happened? - Imaginative discussion and movement improvisation
* Back at the talkchair, brief the students that (as they probably have guessed) something happened to the wifi controls, so that the Obedience Programming (The Four Principles) was cut off, and the robots came to life and went haywire. Each group of robots is only programmed for its five set tasks, but they do still have the human feelings of *curiosity*, *love*, *happiness* and *fear,* and the capabilities of making decisions and learning. They are totally new, and know nothing about the place they find themselves in.

Get the students into their teams (but not in role) and in their spaces. Get them to imagine and discuss *but not yet act out* what their robot might have done with the other robots, that was driven only by *curiosity*, *love* and *fear*, but still managed to leave such a trail of destruction. Encourage the children to talk about how they think these entirely new 'people' would feel…encourage them to talk about all the senses, and what it would be like to use language for the first time. Give plenty of time for this discussion – probably at least ten minutes.

* This next part of the step needs distinct spaces for the design tables, and for the students to practise movement around them. If the considerable space needed for this is not available, or if you have a class inexperienced in drama or volatile and unpredictable, you may choose to follow the **Alternative B** instructions.
* When giving the next directions for **Alternative A**, remind them of the convention that there will be other groups working at the same time, but they MUST ignore and not interfere with those.

Alternative A

* Have the design studio tables set up, each in its separate area, with the drawing instruments. Get the students to find their own individual space within that area, near their partners but not touching. Explain that they are going to bring to life the scene they have just been imagining. Get them to take up an appropriate position for their not-yet-alive robot, put on their Robot symbol, and practise standing absolutely still. When told, they will close their eyes and listen… open them and move only when they are told. Then using your most atmospheric voice, you narrate them in – stressing the four key words when they arise.

It is last night in the factory. All is still and silent and empty… when the four robots begin, ***very slowly****, to come to life, at first by yourself. Each robot, somehow, you know what your name is. Your eyes open and you look at a world you have never seen before. Very cautiously, you start to make movements…jerky and unnatural at first… you have never moved before… first you see your hands move, then your arms, and your head, and you look around… then you discover your legs and find you can sit and lie down, and crawl, and stand up again… You will suddenly find yourself doing the particular service task movements that you have been programmed for* (give time for this)…*You find you can talk, and so you practise speaking into the air… and THEN you notice that there is some other moving creature… in fact more than one… and, a bit* ***fearfully****, the robots start to meet and touch and find out about each other… and your* ***love*** *program kicks in so you make friends… and you find you can talk to each other… and do your five service tasks together… and you become* ***curious*** *so together you start to explore the factory… you find the design table near you… and you find the paper and pens and wonder what they are… one robot discovers you can make marks on the paper and it makes you* ***happy****… and I wonder what you draw..maybe they find the paper and how to make marks on it… I wonder, what will you draw?...*

As soon as you can, perhaps earlier than this, just stop the narration and let them improvise freely.

Alternative B

* Leave the design studio set up, and clear some floor space. With the imaginative discussion still in their heads, get the students into their own space, and to lie down. Let them put their Robot symbol on. *Together, we will imagine the scene last night when the robots came to life. Shut your eyes…*
Then recount a shortened version of the narration above, as atmospherically as you can, but with the robots in the third person: …***They*** *start to make movements…* Finish, as above, with …*I wonder, what will they draw?*

* Ask them to open their eyes, go to their table, as robots if they like, and draw what they decided or what they have just imagined: *those 'weird and crazy drawings' that Alexis told the designers about.*

* **(Both alternatives)** Cut the drama/drawing activity when appropriate, if possible with an alarm bell! Robot symbols off.

Step Eleven/Step Twelve

If time is very limited, you may choose to do just Step 12. Doing both does have an accumulative effect of reinforcing the students' thinking about the Principles of Robot Behaviour, and whether those would have worked if they had been switched on.

Step Eleven: What might have happened - performance demonstration
* We are going to explore and see more fully what happened, but using a different kind of drama, some performance.

Get the teams back into their own team space. Ask each team to choose **one moment** from what they did as robots (or in Alternative B what they imagined the robots did). It is a moment where if Alexis Singh, or any factory manager, had been there, they would certainly have said NO, ROBOT - DON'T DO THAT!

Imagine that this moment has been captured on CCTV security camera, and each team will reconstruct that piece of action (no more than 20-30 seconds) and rehearse it to show to the others – with robots wearing their symbols.

* In turn the teams show that moment to the rest of the class, who at the vital moment (led by you) will call out in chorus NO, ROBOTS - DON'T DO THAT! when the group will freeze.

STEP 12: What happened next – improvisation and performance
This is a more detailed, precise and demanding extension of Step Eleven.

* At the talk chair, narrate to everybody what happens next, after the alarm bell goes off:
*As soon as the alarm bell goes off, the robots' **fear** capacity kicks in. One of them manages to open a door and they flee outside… nobody knows where. It is possible that not all of them got out. (Any that could not, must be hidden somewhere in the factory).*
We are now going to find out what happened to the escaped robots.

Get the students in as much open space as you have - into their teams again.

Imagine that the escaping robots scattered from each other and ran and ran, and then each found itself lost, and in a very public place. But the robot had not been hurt, so it stopped

being **fearful** and became **curious** and interested in all the strange things around it. Each group is going to make up what happened to their particular robot – remind them to consider the five tasks which are all their robot can do. Think of some of the adventures and misadventures they might have, outside in the town, knowing nothing of how to behave and not having the 4 Principles of Robot Behaviour to guide them. Remember, they are only programmed for their five tasks, but they do still have the capacity for the four emotions of *fear, curiosity, love and happiness*. What problems might their ignorance of rules and behaviour cause, to themselves or others? Could they get into danger, into trouble, into being laughed at?

Allocate these locations (if you have eight teams); if four, choose from those below:

- One found itself in a shopping mall
- One found itself in a public park with a lake
- One found itself in a busy street market
- One found itself in a big international hotel
- One found itself in a fairground
- One found itself on a beach
- One found itself in a school yard
- One found itself in a football stadium

Some of the things the robots did were fun, and made themselves and other people laugh… some of them were not!!! Give the group a couple of minutes to discuss a few incidents or adventures or accidents that might have happened to the robot, and decide on one. Agree on who is going to play the robot (wearing their Robot symbol), and what other people will be there (people only – no animals or non-human characters). They will improvise the scene, which will end when the robot does something where one of the humans says NO - DON'T DO THAT! And this in turn will lead to the robot's ***non-violent*** recapture.
Tell the students that when you count them in, they are going to play out that adventure, of the recapturing of the robot.

Three, two, one… GO!

* When the groups have role-played their scene, cut the drama, but keeping the students in their groups and their space, tell them to imagine that as before, there was a surveillance video camera recording that incident. They can now recreate for the rest of the class what happened just in the few moments before the NO - DON'T DO THAT! command. This time the scene will be little longer than the earlier scene (if they did Step Eleven), but **no** longer than one minute's action, which they can time.

If you completed Step Eleven, this time take more time with the technical drama skills - particularly with older students (Year 6). Explain how to make dramatic action clear to an audience; the need to make everything audible; for characters not to talk or move all at the same time; and to keep one single main action in focus.

Give them a few minutes to practise replaying the scene. Then each group will announce their scene, titled as appropriate to their team:"What happened to the [Bedroom] Robot in the [Shopping Mall]" and the audience can, as before, join in the 'Don't do that!' chorus.

Step Thirteen: Reflective discussion

* Back to the talk chair, to let the students discuss these incidents, and what the implications were of removing the Principles of Robot Behaviour. You may like to have them sitting in their teams, so they can refer back to their Principles clipboards. It is a good idea to let them discuss in groups first, anyway, before they share in a whole-group discussion.

* This reflective debriefing is a quite important part both of the drama and the learning, so let the children do nearly all the talking, just using questioning to keep them focused and listening to each other – comparing the similarities and differences in what happened to each of the groups' robot.

* This should be the end of the lesson, because the following steps take the drama in a different direction.

* If you only have a very limited time for this drama, this is an appropriate place to end the drama – however, round it off with the addition of Step Seventeen.

PART THREE – ROBOT TRAINING

Step Fourteen: Opening discussion

* Explain that in the next part of the drama, they will again play their roles of Designers (check they have their ID cards). You will again begin in role as Alexis the Design Manager,

but then in the next scene you will be switching role to become one of the robots. Show them your own wristband or Robot symbol.

Even if this drama is your first attempt at using Teacher-in-Role, be confident and matter-of-fact about explaining this, not nervous that they might laugh at you in such a funny role. They have already seen you in role as a more 'ordinary' character, and they have also themselves practised being robots, so they will accept it easily.
If you have time and are brave, let the students give you a training session, showing you how their robots move!

* Back in the Briefing Room in their Design Teams (ID Cards on) , Alexis tells the Designers that nearly all the escaped robots were recaptured and brought back to the factory, to be re-programmed properly. They need this anyway, to be upgraded into Next-Gen Robots. The AI team engineering the Robots has made another breakthrough, and added a new, fifth capacity to go with *fear, curiosity, love and happiness:* ***Creativity.*** The new robots will be able to solve problems for themselves related to their tasks, *and* provide new and original services for their owners.

This means the Design Teams have a very important new job, to review and revise the Principles Of Robot Behaviour. Give out the clipboards with the New Principles sheet (**See Appendix D**). Get them to work out what changes they might now need to make to those rules, to ensure their particular robot is still safe and fit-for-purpose but can also be able to create new services in the bedroom/etc. for its owners. This is a tough task, and the students may need both time, and help and prompting.

* As in Step Seven, when they have done this, ask each Design Team to read their New Four Principles, and get the whole group comparing and discussing them; lead the discussion focussing on the appropriateness of those new Principles for each type of robot, and robots in general.

* Bring this important discussion to a close by announcing that there is still one serious problem remaining. *All the escaped Robots have been recaptured and brought back and accounted for,* ***apart from one****. Obviously one of them could not find its way out, and did not get far beyond the Design Studio. It has been tracked down to the store-cupboard in* (behind, next to) *the Studio, but it has somehow locked or barricaded itself inside. What might we need to do to get Robot out of the cupboard? Remember that it is a very expensive and possibly damaged robot, and probably its* ***Fear*** *capacity is driving it. Somehow it has to be got out and dealt with, and as the designers they need to solve that problem.*

Just get the students beginning to discuss this, then momentarily cut the drama.

Step Fifteen: Finding and Training Robot: Role-play with Teacher-in-Role
* Stay in the Briefing Room, but briefly bring the students out of role (everybody take off the ID Cards – but keep them in hand). Explain you will now be changing role to become that Robot. Show them your Robot symbol, and ensure they know where the 'store-cupboard' is (If there is no convenient store-cupboard, use the classroom door as the cupboard door). Explain that as soon as you have put your Robot symbol on and stepped behind the door, they will put their ID Cards on again and as the design staff, and together work out a way to get Robot to open the door and come out… and then deal with it. Remind them that though the Robot can speak, it does not know anything yet, and again, that its most likely driver is *Fear*.

This Teacher-in-Role will be powerful, as long as it is done with commitment and seriousness. That is why it was important to include the children in explaining the lesson mechanics, so they can engage their 'voluntary suspension of disbelief'
Make it as hard as you can for them… hard enough to be just possible, a bit at a time, to gain your confidence… give just enough hints that you might be keen to learn about the world when they have made you confident enough. Counter-intuitively, although you are nominally completely in the students' power, you hold all the control cards in this scene – to use sparingly – the most powerful of which is Robot's fear, whenever they put a foot wrong.

***** This section will be flexible, and depend on what the students decide. It will probably proceed something like this: Robot has to be coaxed out, and gently treated (it may run back and close the door if it is alarmed). The Designers will introduce themselves and show Robot that they are called people, and how they are like Robot in most ways. Perhaps they can explain what robots are for and where this one came from.

Through gentle coaxing, the Designers will get Robot to explain (e.g.): *I came to life, and think the world* [this factory is all Robot knows] *is wonderful and exciting, and I found some friends, and we were having a lot of* ***happiness****…*
When the big noise [alarm bell] *rang - Robot does not know what that is - we were all terrified, and most ran away out of the opening in the wall, but Robot couldn't in time, so I ran and hid in the space [the store-room], where you found me.*

Keep the scene going while there is still high energy and interest… the children can explain what the factory is, and what designers are and what robots are for and how they work – and what you are supposed to do.

* When you feel the energy and imaginative conversation just beginning to flag – or if the Designers get stuck in thinking up new things to show you and talk about – steer them back towards the Briefing Room with its wonders…

Then, changing your timid manner completely, commandingly utter the word *Freeze!*

Step Sixteen: Wrap and congratulations – Reflection-in-role with Teacher-in-Role
* As soon as everybody is still, very visibly take off your Robot symbol, immediately replace it with your Alexis Singh ID card, and welcome the Designers back to the Briefing Room, with the words: *Welcome back – I believe you found the missing Robot? Well done – Do sit down and tell me all about it.*

Enjoy the pleasure of playing teacher-in-Role while the students tell you all about what they have been doing with Robot – which of course was you - for the last fifteen minutes or so! Probe from your position of complete ignorance of Robot and how it reacted. At the end, congratulate the Designers on on a job well done, and tell them that they have saved Universal Robotics from enormous damage, if Robot had been left to its own devices in the factory, or yet more reputational damage if it had been allowed to get out and create even more mayhem. Cut the drama and everybody take off their ID Cards.

Step Seventeen: Robots and My Future – Reflective discussion and in-role ritual reflection
* Bring the subject back to the present, by asking whether they themselves would like to have (obedient!) robots in their house to do the kind of household tasks they have invented, and have a discussion about the advantages… and probe for disadvantages or problems that might arise. Bring up the question of creativity, if the students do not themselves. Point out that AI is already giving us robots like Siri that can be a little bit creative, and guess their owner's needs. Would more of this be a good or a bad thing, and why?

*Then break the students into threes, **A** and **B** and **C**, each threesome in its own space.

* If the numbers do not divide by three, give one group or two an extra member.
* It would be a slight advantage to have the pairs from the same design team, but is not necessary where the numbers don't fit).

Ask them all silently to consider:

~ if each of you owned the robot that you have invented, what would you yourself like most or find most useful about that robot? When they have decided – just in their

head to begin with - to put it into one sentence, starting: My Robot is good because**…** On a signal, each in turn will say their sentence to the others, while the other two listen carefully. Give them thirty seconds to discuss their three statements, and come to an agreement about which is the most interesting or convincing reason for liking and approving of their robot. Ask them all to remember that one (If possible, write it down).

~ Next, ask them all silently to consider: What problem or disadvantage might the robot create in your life? – and to put that into one sentence, starting: My Robot is bad because… Again, on a signal, each in turn will say their sentence to the others, while the other two listen carefully. Give them thirty seconds to discuss their three statements, and come to an agreement about which is the most interesting or convincing reason for not liking or approving of their robot. Again, ask them all to remember that one (If possible, write it down).

~ Lastly, remind them of the creativity discussion, and ask them all silently to consider: What would be the most valuable and creative capacity that your particular robot could have, to transform your life while you are using that room or space? Once more, when they have decided, to put that into one sentence, starting: I wish my Robot could… Again, on a signal, each in turn will say their sentence to the others, while the other two listen carefully. Give them thirty seconds to discuss their three statements, and come to an agreement about which is the most wishful creative robot capacity. Again, ask them all to remember that one (If possible, write it down).

Each trio then has one agreed *'I like…'* sentence, one agreed *'I do not like…'* sentence, and one agreed 'I *wish…*' sentence,. **A** will get to speak the *'I like…'* sentence. **B** will get to speak the *'I do not like…'* sentence and **C** will get to speak the '*I wish…*' sentence. It does not matter that the sentence might not refer to their own original robot. Give them a moment or two to practise saying them aloud to each other, to make sure they remember them exactly. Then bring all the students, in their threes, into a circle. You can be directing proceedings from the middle, or going round behind them, cueing them by tapping their shoulder. Explain this little ritual: *Each person in turn, speaking clearly, is going to announce your chosen sentence, while the others all just listen silently, and think about the statement –*

whether you agree with it or not, whether it's something you had not thought of, etc. We will go right round the circle without interruption. Start with one of the **A**s, pause briefly, then move to their **B** partner, and then to the **C** partner; then the next **A,** and so on, until you have been right round the circle, before you break the spell.

That is the end of the Drama. The children might, or might not, want to discuss their choices.

POSSIBLE EXTENSIONS

By now, you and the children might have had quite enough of Robots. However, sometimes a dramatic theme and context so absorbs them that their appetite seems to become endless – and this is the kind of subject that might just do that (we have discovered this to be the case!). If you have endless time – say, in a co-curricular drama club – here are a couple of follow-up activities that you can try. By now you will know how to set up and run the drama in detail.

PART 4 – EDUCATING ROBOT

The Designers' experience of dealing with the Robot hiding in the cupboard has given Alexis the idea for an experiment with the next batch of Robots, using this very Robot as a trial. Since they have shown the ability to feel those four human emotions, to learn and make decisions, and show creativity, perhaps they could respond to programming by means of a human style education – Robot School - which would make them far more valuable.
A Special Needs school for the Gifted and Talented (G & T) has been contacted and has been willing to accept Robot and prepare a special one-term learning program for it.
In this extension, the children will not be playing the Designers, but instead they will play the students (and possible a teacher or two) in the G & T school. You will still alternate between playing Alexis and Robot.

1. The G & T children are commissioned to draw up an appropriate curriculum for Robot – taking into account the New Principles of Robot Behaviour, Robot's five emotional capacities (including Creativity) and Robot's limited task base round the house.
2. Robot's first day at school – where the G & T children have prepared the classroom to make Robot feel comfortable, but will have to explain **everything!**

PART 5: ROBOT TRAINING ONLINE

If you and the students want to continue the theme beyond the drama into Media Arts, how about getting them to devise a YouTube clip or online Learning Program for Robots and a parallel program for their new owners. This could entail getting them to pepare a storyboard, and going from there. The possibilities are almost endless!

APPENDIX A: DESIGNER ID CARDS

UNIVERSAL ROBOTICS INC.
Robots to serve and obey

NAME……Alexis Singh……

SENIOR DESIGN MANAGER

UNIVERSAL ROBOTICS INC.
Robots to serve and obey

NAME……..

OUTDOOR ROBOT GROUP

DESIGNER

UNIVERSAL ROBOTICS INC.
Robots to serve and obey

NAME……..

KITCHEN ROBOT GROUP

DESIGNER

Robots to serve and obey

NAME……..

BEDROOM ROBOT GROUP

DESIGNER

UNIVERSAL ROBOTICS INC

Robots to serve and obey

NAME……..

LIVING ROOM ROBOT GROUP

DESIGNER

APPENDIX B: DESIGN BRIEF SHEETS

KITCHEN ROBOT DESIGN GROUP
BRIEF: A robot specially designed for all normal kitchen tasks:
1. WHAT are the five main set tasks that a robot will need to do to help humans in a kitchen?
*2. Decide on the most important of these, and design an **approximately human looking** robot that is particularly suited to that task, but could also manage the others.*
3. Label the important parts and special features clearly.

BEDROOM ROBOT DESIGN GROUP
BRIEF: A robot specially designed for all normal bedroom tasks:
1. WHAT are the five main set tasks that a robot will need to do to help humans in a bedroom?
*2. Decide on the most important of these, and design an **approximately human looking** robot that is particularly suited to that task, but could also manage the others.*
3. Label the important parts and special features clearly.

BRIEF: A robot specially designed for all normal outdoor tasks:
1. WHAT are the five main set tasks that a robot will need to do to help humans outdoors?
2. Decide on the most important of these, and design an ***approximately human looking*** *robot that is particularly suited to that task, but could also manage the others.*
3. Label the important parts and special features clearly.

LIVING ROOM ROBOT DESIGN GROUP
BRIEF: A robot specially designed for all normal living room tasks:
1. WHAT are the five main set tasks that a robot will need to do to help humans in a living room?
2. Decide on the most important of these, and design an ***approximately human looking*** *robot that is particularly suited to that task, but could also manage the others.*
3. Label the important parts and special features clearly.

APPENDIX C: THE FOUR PRINCIPLES OF ROBOT BEHAVIOUR

[To be given on clipboards with a pen to each Design Group]

UNIVERSAL ROBOTICS INC.

MAKING DECISIONS LEARNING NEW THINGS HAVING REAL FEELINGS

Curiosity Love Happiness Fear

THE FOUR PRINCIPLES OF ROBOT BEHAVIOUR

Type of Robot: (**Kitchen**, **Living Room**, **Bedroom**, **Outdoor**)**……..**

I must at all times……

I must at all times……

I must never……

I must never……

APPENDIX D: THE NEW-GEN FOUR PRINCIPLES OF ROBOT BEHAVIOUR

UNIVERSAL ROBOTICS INC.

MAKING DECISIONS LEARNING NEW THINGS HAVING REAL FEELINGS

Curiosity Love Happiness Fear Creativity

THE NEW FOUR PRINCIPLES OF ROBOT BEHAVIOUR

Type of NEW-GEN Robot: (Kitchen, Living Room, Bedroom, Outdoor)…….

I must at all times……

I must at all times……

I must never……

I must never……