

Can you solve a water crisis on an alien planet?

Session Leader Notes

You will need:

- Printed worksheets
- Access to computer, projector and sound to display Oxplore Challenge Slides
- Writing surface and pens
- Information sheets (printed)

General pointers on this session:

- This session takes approx. 45 minutes to deliver.
- This session works well with group sizes from approx. 8 to 40 pupils.
- Pupils will need to be broken up into small groups. Small groups should ideally not contain more than 4 pupils per group.
- This session is designed to build the Oxplore Key Skills of self-direction, creativity and problem solving.
- This session is focused on STEM subjects but skills are transferrable across all subjects.

Session breakdown:

Suggested timings (minutes)	Slide content	Discussion points/Notes
Prior to pupils entering room	Slide 1: Title	<ul style="list-style-type: none">• Move to Slide 2 as soon as pupils begin entering
From first pupil entering room to all pupils seated	Slide 2: Brain teaser (I always run, but never walk I have a mouth, but cannot talk, I have a bed, but do not sleep, I have a mouth, but do not eat. What am I?)	<ul style="list-style-type: none">• Pupils may start calling out ideas/discussing aloud.
0.00-3.00	Slide 3: Answer: a river	

3.00-5.00	Slide 4: Skills you'll be building today (Self Direction, Creativity, Problem Solving)	<ul style="list-style-type: none"> Briefly introduce each skill, give more detail if this is group's first Explore Challenge You could point out here that these skills are essential for careers and further study, and will help you in your GCSEs and A-levels.
5.00-6.00	Slide 5: Video Pt 1 (video approx. 01:12)	
6.00-12.00	Slide 6: Why do we need water anyway? Initial discussion questions.	<ul style="list-style-type: none"> Direct pupils to discuss in pairs or groups Some groups may require check-ins to keep on task. Get them to share their answers with the rest of the class
12.00-13.00	Slide 7: Video Pt 2 (video approx. 1 minute)	
13.00-33:00	Slide 8: Challenge prompt:	<ul style="list-style-type: none"> Put the class into small groups Direct them to travel around the classroom picking up information from factsheets and complete the timed exercises in their handouts.
33.00-34.00	Slide 9: Action: Send Team Explore your worksheets	<ul style="list-style-type: none"> If you would like to, please photograph pupils' work email it to us at (exploreteach@admin.ox.ac.uk). There is no obligation to do this, but it is very helpful for qualitative evaluation purposes. If uploading, please do not include identifying information about pupils, eg. crop/blur names. Pupils may ask "Do people at Oxford really read it?", the answer to this is yes, as it helps us to understand whether or not our programmes are helping people to develop their skills
34.00-37.00	Slide 10: Have you practised these skills today? (Self-Direction, Creativity, Problem Solving)	<ul style="list-style-type: none"> Pupils are asked to judge whether they have practised each key skill. You could ask pupils to carry out their self-assessment by: <ul style="list-style-type: none"> Closing their eyes and raising their hands if they feel they have practised each skill Giving a thumbs-up/thumbs-down to say whether they feel they have practised each skill If you are able to record how many pupils feel they have practised each skill, please email this to us (exploreteach@admin.ox.ac.uk) This is another good time to build academic self-concept by emphasising that these skills are important for your future, and will get stronger each time you use them.
37:00-40:00	Slide 11: Congratulations	<ul style="list-style-type: none"> This could be a good point to gesture forward to future Explore Challenge sessions, or tally how many sessions the group has now completed if you are keeping count.

40:00-45:00	Slide 12: If you enjoyed this session, here are some subjects you may be interested in studying in the future...	<ul style="list-style-type: none">• Here you can discuss the 'Take this further...' slide, this could be a useful jumping-off point for discussion about future areas of study and/or supercurricular opportunities available within your school/local area.
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NAME:

DATE:

Can you communicate in outer space?

Key Term

Social cognition: the ability to detect and understand social information given by others, e.g. about their thoughts and emotions.

Can you think of a time when you worked out how someone was feeling without them using words to tell you?

How can you tell if someone is excited?

How can you tell if someone is worried?

Can you think of a time when it was difficult to tell how another person was feeling?

Why was it difficult to tell?

Can you communicate without words or facial expressions?

	My Guess	Answer
Emotion 1		
Emotion 2		
Emotion 3		
Emotion 4		

What did you find difficult about this activity?

What extra information might have helped?

How could we prevent misunderstandings from arising while travelling in space?

Below are four experts from different fields. Can you work out one suggestion that each expert might make to help prevent misunderstandings arising in space?

VISUAL COMMUNICATION SPECIALIST

My job is to come up with different ways to use pictures and animations to convey information. I work on tasks such as designing easy-to-recognise icons for websites, creating universally recognisable signs to guide people around buildings, and deciding the best way to place graphics over TV news reports.

My suggestion would be:

PSYCHOLOGIST

I focus on how people think, feel and behave, and the impact this has on them and on their relationships with others. I'm interested in how people communicate, including through body language and posture. I also help people deal with the frustrations of not being able to communicate clearly and of being misunderstood.

My suggestion would be:

SOFTWARE ENGINEER

I design and create computer systems and applications to solve real world problems. These include the apps and computer programmes which we use today to help us to communicate. I'm very excited about the ways in which artificial intelligence (AI) will create new ways for us to communicate with one another.

My suggestion would be:

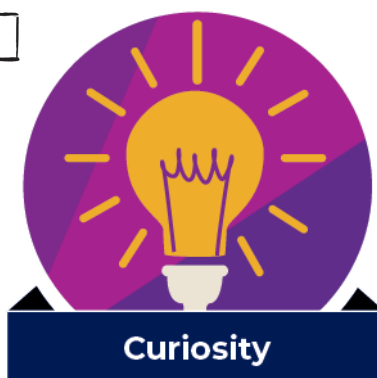
LINGUIST

I study how different languages are related to one another, how they change over time, and how people learn and process language. I'm interested in how languages are spoken and written, including the use of text messages and emojis! I think languages are evolving all the time and humans continually find new ways to communicate.

My suggestion would be:

CHALLENGE SKILLS

Tick the skills you have practised.



Learning Resource

Cue Cards



Surprised



Happy



Embarrassed



Sad

Learning Resource

Cue Cards



Excited



Angry

Can You Communicate in Outer Space? Transcript pt.1

00:01 Hello, my name is Tianqi Wang. I'm a research in biology at the University of Oxford. I study guppies, which are a type of fish. Researchers study how guppies grow, evolve and communicate. You might not think this has anything to do with humans or even outer space, but there are more connections than you might think.

00:19 As humans, we cannot survive on our own. Humans are constantly looking for the chance to interact and bond with others. However, living on another planet could be very different from our lives on planet Earth.

00:36 If connecting with others on Earth is already a difficult task, how are we supposed to understand what others think and feel in outer space?

00:42 Social cognition is the term that psychologists use to describe the ability to detect and understand the social information that other people give us. This includes understanding each other's thoughts and emotions. Thanks, to evolution, most human beings' minds are capable of detecting even the most subtle of social signals. This makes many social detectives.

01:03 Social signals are behaviours we use to give other people social information. Some common social signals are facial expressions, eye contact and body gestures. In your groups, you now have a few minutes to think of some examples of how you might use social cognition in every day life.

Can You Communicate in Outer Space? Transcript pt.2

00:01 Some interesting thoughts and ideas there, but what might be different about how social cognition works when we're travelling in outer space?

00:08 Since not many people have been to space yet, and most of those have been highly trained astronauts, we don't know very much about what it would be like for ordinary people to interact with each other in outer space.

00:17 At least some of the time it seems like we would have to wear heavy helmets and suits that protect us from harmful radiation. However, wearing helmets would mean that we would not see each other's faces so easily. We could miss subtle facial expressions. Wearing heavy suits would stop us from walking as smoothly as we do on Earth and might make changes to our body language too. Zero gravity might also impact our posture and movement and affect our ability to make hand gestures.

00:53 For our next activity we're going to try to imagine what that might be like. You'll need to get into pairs. Both of you need to put on face masks so that you cannot read each other's facial expressions. You will read the cue cards and act out the emotions on the card. Your job is to figure out what emotion your partner is trying to convey.

01:013 You can write down the feelings and compare your answers afterwards. How hard was it to communicate?