

Inquiry Curriculum context planning

Title: Dinosaur Island

A team of scientists are sent to a secret island location to study, protect and *survive* a colony of previously thought extinct creatures...

Context:

Hidden from the rest world on a mysterious island a team of expert scientists strive to protect, preserve and study a colony of creatures previously thought long extinct. Working in difficult conditions and constant danger the scientists responsibilities are both to the animals themselves and to the ecology of the island which has sustained them for millions of years.

The Worldwide League for Nature (WLN), the island's owners and protectors, are concerned that while the team work they are careful not to damage the island's environment and to work in utter secrecy, keeping the island and its inhabitants away from the world's prying eyes and those who might look to exploit or damage it.

Furthermore, however difficult their mission might seem, its about to get a whole lot worse as the island's volcano, long thought dormant, begins to show alarming signs of activity.

Inquiry Questions:

Social: What are our responsibilities to preserving and protecting endangered animals and other species?

Scientific: *What do human beings and other living creatures need to survive and flourish?*

Political:

Historical: *How can we find out about the past and understand the evidence?*

Environmental: 1. *How can the environment be managed sustainably and why is this important now and in the future?* 2. *How can we protect and preserve endangered animals and their environments?* 3. *In what ways can we notice and appreciate the relationship between the physical, built and economic environments?*

Critical: *What can evidence from the past tell us about the history of our planet and the place of human beings?*

Ethical: 1. *What can evidence from the past tell us about the history of our planet and the place of human beings?* 2. *What should we sacrifice to protect other animals and the planet?*

Philosophical: *In what ways do people actions have consequences for the environment?*

Spiritual:

Main Curriculum areas:

History:

- Chronological understanding
- Knowledge & understanding of changes in the past
- Historical interpretation
- Organisation & communication
- The passage of long periods of time
- The process of evolution and its effects
- The chronology of the planet and its species
- How to look at evidence of the past
- How to interpret evidence and make reasoned conclusions
- To explore, understand and critique competing theories, for example evolution, the extinction of the dinosaurs, global warming

Science Sc1: Scientific enquiry

- Ideas and evidence in science
- Investigative skills
 - Planning
 - Obtaining and presenting evidence
 - Considering evidence and evaluating
- How near extinct species are classified
- Examples of extinct species during the history of the earth

- Explore different theories concerning the extinction of the dinosaurs

Science Sc2: Life processes & living things

- Life processes
- Humans & other animals
- Green plants
- Variation & classification
- Living things in their environment
- The names of dinosaurs
- Their distinguishing features
- Their diets and habitats
- Their breeding habits
- What human beings and other animals need in order to survive and flourish – water, food, shelter etc.

Geography

- Significant geographical features
- How to make & read a map
- Factors that affect weather and climate
- How animals and other living species are affected by human beings and their actions
- About organisations which campaign for and protect the planet, for example WWF

ICT

- How to use ICT for research and communication purposes

Overview:

Author: Tim Taylor

Theme: Dinosaurs

Age Range: EY - KS1

Main curriculum focus: History & Science: SC2: *Humans & Other animals*

Inquiry Question: “What can evidence from the past tell us about the history of our planet and the place of human beings?”

Expert team: Scientists

Client: The Worldwide League for Nature (WLN)

Commission: To preserve, protect & study the dinosaurs, protect the island and keep it secret

Steps in:

Resources

- A large sheet about the size of double bed sheet, it will depend on the size of your classroom and the number of students. Try to go for a neutral earth colour, not bright pink! And not blue
- A collection of other material, which could be dressing up clothes, student's coats, jumpers etc. Anything that can go under the sheets to give shape and definition.
- A ball of blue string or wool
- A ball of dark coloured (not blue) string or wool
- A stack of A5 paper
- Two version of the geographical features list (see resources below). One copy photocopied, laminated and cut out. The other on A3 pinned up in a prominent place
- A copy of the story script if you need it
- A good supply of Dinosaur Topic books, ready to put out for the students
- Some different coloured tissue paper, especially blue, red, yellow, green and orange
- Depending on the age and experience of the students you might also need a small collection of books on island habitats and/or some laminated photographs (see resources) which can be either put up on the walls of the classroom or given to the students while they work

Introduction

This unit starts with the students creating the island of the dinosaurs using a large sheet. As mentioned above, the sheet needs to be large, at least big enough for all the students to gather round. If your classroom isn't large enough then perhaps book the hall. Building the island should take about half a day. While the students work and once finished take photographs to use as part of a display. This unit creates multiple opportunities for map work and representing geographical landscapes in different ways.

Step 1: Starting the story

Gather the students together in a large circle. Unfold the sheet and lay it in the centre of the circle, some of the students might like to help.

Have the material, string and A5 paper close to hand. Lay the geographical features list out on a table and have the books and pictures ready to use.

Begin once the students are settled and ready. Imagine you telling them a story, try to speak as if you were telling the story to a room of adults, this is not a fairytale. Print out and use the story script if you need to (see resources).

"The island had stayed hidden for millions of years, behind the cloud of fog and storms that surrounded it. Sailors who came close would turn their ships around and sail away, afraid of the swirling clouds, flashes of lightening and clashes of thunder. And so they had stayed unfound and undisturbed, the last of their kind, the last of the great creatures who had once been rulers of the world.

When the great meteorite came it killed all of their kind, everyone of them became extinct, everyone, except the ones who lived on this island.

How they survived is still a mystery. A mystery even to the scientists, who came with their machines and found a way through the maze of fog and storms. Even to the scientists who found the creatures living unchanged in the forests, caves and mountains of the island. To them they were a miracle, an unbelievable wonder, and a chance to watch, study and understand.

But the scientists were not fools and they knew there were other people in the world who would not be content to watch and study, but would want to own the creatures. To hunt them down, catch them in nets and take them away from the island. To put them in cages and make their fortunes by parading them around the cities of the world.

So the scientists worked in secret. They kept the island safe and secure. Determined to protect and preserve it from those who would do it harm and steal the creatures away. They invented stories about the dangers of the fog and storms, and told tales about ships and planes that disappeared in the swirling clouds, scaring away those that would come too close.

And it worked. The scientists work there still, in secret, watching, studying and protecting the great ancient creatures. Photographing them, filming them, recording their sounds and noting their movements and habits. The scientists live in a corner of the island now, in buildings they built from wood, and only travelling around the island on foot, determined not to damage or change its sensitive environment in any way. Keeping the island, and the creatures who live there, as they have been for millions of years, unchanged and undisturbed."

Depending on the age of the children this passage might contain a few unfamiliar words. So, as with every story you read them, take the time they need to understand it. You might need to read it through a second time, asking them to stop you when you read a word or sentence they don't understand. At this stage they don't need to understand *everything*, just the gist of it, so don't worry too much. And don't interrogate them!

The purpose of the story is to establish the context of the unit and lay in some of the givens:

- The island is secret
- Surrounded by fog and storms
- The scientists keep it hidden by inventing shipwreck/plane wreck stories
- The island is inhabited by creatures (possibly/probably including dinosaurs) who have survived a mass extinction for millions of years (there are some obvious issues here about evolution - see notes below)

- There are people (if they discover the secret of the island) who would like to catch the creatures and take them away
- The scientists are watching, studying and protecting the creatures
- They are determined not to damage the island's environment
- They have built their building from wood
- They only travel by foot on the island

Note on evolution: Obviously any species left alone on an island for millions of years will have evolved and changed in unimaginable ways. However, for the purposes of this unit (a curriculum of dinosaurs and geographical landscape) we are ignoring the process of evolution. This is a strategic teacher move. One you may disagree with. If so, you have, it seems to us, two alternative options. The first, is to include evolution from the beginning, introduce the process to the students early on, when they start inventing the creatures of the island (see step 6). The second, (one we would recommend) is introduce the theory later on, once the context is strongly established and the students are firmly invested.

Something like: *"You know, the creatures on our island, I'm not sure they would have stayed the same for millions of years. Some scientists say that not all of the dinosaurs became extinct 65 million years ago and that some of the smaller ones survived. They changed, slowly over millions and millions of years and are still among us. Some even think birds evolved from the dinosaurs..."* etc

Step 2: : The shape of the island

After discussing the story start step 2.

"You might be wondering about this big sheet. I thought we might try and use it to make the island in the story. I've got these other bits of material here (show the students the other miscellaneous pieces of material) we could use to make the hills and the mountains of the island. I'll show you what I mean."

Take one of the pieces of material fold it in to a loose ball and then push it under the big sheet to the middle. Take a bit of time shaping it, ask the students for advice. *"What do you think? Should it be bigger? Perhaps someone could pass me..."* Etc.

Once you have the mountain in place, sit back. *"What do you think? Do you think there should be more hills and mountains on our island?"*

Note: You know your class. If you think they can handle working on this part of the activity without support then let them go. However, they might need a little bit more structure. Dorothy Heathcote calls the level at which a class can work independently, and interdependently, their 'social health'. A class with poor social health will need a great deal of support and structuring, a class with good social health, less, and a class with excellent social health, none at all. Interestingly, in our experience the level of social health of a class is not always directly related to their age. Some young children can work very cooperatively, while some older children find it almost impossible. Whatever level of support you decide your students need, the principle is always to guide them toward less and give them opportunities to work independently and interdependently.

Step 3: Geographical features

Once the students have finished shaping the island then they will need to start adding the geographical features. If they are very young and/or inexperienced they might not know very much about islands or even what an island is. In which case you will need to help them gain this knowledge using the **resources** you have already prepared and any information you can give them yourself. Be careful, however, not to lecture them or they will soon switch off.

Think of it as a briefing for a team of scientists new to the island - make sure you have the laminated geographical features nearby:

“As you can see the island is surrounded by the sea, to get to it we will need to go through the fog and the storms that hide it from the rest of the world. The ride can be very bumpy I understand. You’ll notice the tall mountain in the centre of the island, some say it might be a volcano, and the surrounding hills. The island is very mountainous, some of the tallest have coverings of snow that stay all year round.

“The rest of the island has all the geographical features you would expect, forests, rivers, caves, waterfalls...” As you speak lift up the appropriate laminated feature, give the students the opportunity to join in if they want to, five or six should be enough.

“I think it would be very helpful if we knew where all these features were on our map of the island. Do you think you could use these things to help you? I’ve brought along some different coloured wool and string, some tissue paper... You might also find these photographs of the island useful to look at, they might give you some idea of the climate and terrain.”

Task: The students set to work creating the geographical features of the island using the materials and resources available. Encourage them to label the features as they make them, either using the laminated labels or making ones of their own.

As the students work give them support as they need it. Encourage them to use the resources and ask them questions, for example: *“That’s interesting, could you explain to me where this river is going?”* etc.

Note: You will need to take photographs and take note of any misunderstandings or lack of knowledge the students demonstrate. This is a good activity for assessing the current knowledge of the children, but resist the temptation to put them right. For the moment you need an island, but the island needs to be *their* island. The class are *both* creating the landscape for the coming inquiry *and* developing an **investment** in the work. If they start to feel they’re getting it wrong or are supposed to be making an island for you, then their levels of interest and enjoyment will drop. Later on there will be plenty of opportunities for you to create activities where the children can develop the knowledge and understanding they currently lack.

Step 4: Reflection and feedback

Once the island is complete, tidy up, and gather the class back together. In step 5 the students are going to start to imagine themselves as a team of scientists newly arriving on the island. The purpose is to shift the focus of the work from 'we as creators of the island' to 'we as scientists living and working on the island'.

But first spend a bit of time reflecting on the work done building the island: *"What a huge job. You've built an island. Did you get tired at all? Not even at the end? I noticed..."* (Let the students see you referring to your notes)

Note: This is not about '**praising**' the children. Telling them how clever they are or what a good job they've done. Worse rewarding them with stickers and such nonsense. It's about providing useful feedback, things you noticed about the way they worked. For example: *"I made a couple of notes in my book, if you don't mind me reading them: 'Noticed Ryan using the blue string to make the river, he seemed to stop several times, change his mind and then move the string to another place. I wonder what he was thinking?'"* etc.

Involve the students in the process: *"As you worked did you notice anything about the way other people were working?"* etc.

Step 5: Coming to the island - story writing

"Well I was thinking, if we were the scientists, living and working on the island, how we might have got here. Bearing in mind the fog and the storms. I'm not sure I would like to have come in a plane, I think I would have been happier on a boat. Even if it was a bumpy ride. What about you? I mean what way would you have liked to come?"

Give the students time to talk to each other. Help them if they need it. As they talk get the A5 paper ready.

"How many different ways are there to get here? Who came by plane? Who by boat? Did anyone come in a submarine? Was the plane one of those sea-planes? You know the ones that have floats attached so they can land in the sea. What about by helicopter? It would have to be one of those helicopters that can land on the sea. We're not allowed to damage the island."

"Did anyone have really bumpy ride? Did anyone see a storm? Or lightening? Or hear thunder? My journey wasn't too bad, but I heard some people had a really bad time. Did anyone of you have a rough journey?"

Task: *"I wonder if we could collect all our stories together. I bet they would make a fantastic adventure book. One that people might like to read late at night. What do you think? Could you grab a piece of paper here and make some notes or drawings about your journey to the island. The things you think other people would like to read. Of course, it will have to be a secret book, only for those of us on the island."*

Step 6: Inventing the creatures on the island

In step 6 the students will invent the creatures of the island. Up until now the language of the story has been deliberately ambiguous. In our experience some children love dinosaurs, some are indifferent and some are actively disinterested. You'll need to judge the students in your own class. I once used this context with a class of year 2 children where we deliberately kept the creatures of the island as ambiguous as possible. For those that were interested in dinosaurs, they were dinosaurs, for those who weren't, they were something else. Ancient earth history has enough diversity to allow some leeway.

For resources you will need:

- The dinosaur topic books laid out on the class tables
- A5 paper
- Coloured pencils
- Scissors

Note: By this stage the model of the island may still be in the classroom or you may have packed it up. If so, then have it represented in another way. Either a display on the wall of photographs, drawings and notes or a map, either drawn by you or by the children, that the children can see and you can refer to.

Gather the class together.

"Could I ask you, in your imagination, to go to somewhere on the island, as one of the scientists. You'll have to have got there by walking, so it might have taken quite a while. You might be a bit tired from the journey. You might have had to climb one of the mountains or walk along one of the forest pathways.

"In your mind now, could you try and imagine the heavy rucksack on your back, full of the things you need for your work. Binoculars, notebook, camera, first aid kit, rope. And could you imagine you've just seen something moving a little way ahead. Something you would like to take a closer look at, perhaps it is one of the ancient creatures?

Could you take something out of your rucksack that you could use to record the creature, your camera, video camera or computer and could you imagine getting a little closer. As quietly as you can, perhaps you are crawling along the ground or keeping in the dark of the shadows. If you stop for a moment you might hear the sound of the creature breathing and chewing. See if you can get a bit closer, without being seen.

"See if you can get close enough to film or take a picture. If you can, then please take one of these pieces of paper and draw what it was you saw. If you look in the books on the table you might find one that looks the same. If you do can you please make a note of the name of the creature, it will really help us with our work..."

Task: The students set to work drawing the creatures they have seen on the island. Support them as they work by asking questions and then extend their thinking by setting a series of follow up tasks, do this as they work, like an after thought. Go slowly so as not to overwhelm them and add extra support where needed.

- If you find the creature you saw in one of the books could please make a note of their name and what they eat, that is their diet, that will be very helpful. Could you please note if they are a herbivore, a carnivore or an omnivore. Thank you.
- Could you also please note where the creature was when you found it, next to a river, climbing a tree, in a cave...
- Also, it would be helpful if we knew what the creature was doing at the time, hunting, or eating, caring for its young...
- Could you also please take a close look and see if the creature has any scars or injuries that might need treating, if so, then we'll need to see if the medical team are available...

By the end of this task. The children will have created a large number of different creatures and scenarios, each of which could provide an event for future exploration, and inquiry.

In step 7 we will look at one possible invention as an example.

Step 7: The injured triceratops

This is a genuine example from work with a class of year 2 students in Warrington.

Gather the class together in a circle after collecting the reports together and displaying them on a noticeboard: 'Scientist Reports of Creatures on the Island'. You and the students might have organised them into categories. For example, species of creature or seriousness of injury - priority cases.

Have in front of you the case you are going to explore together. It will be one you've selected as a good example. This one is a female triceratops, found near a river, with bite marks and scratch marks in its hind legs and neck. The creature is lying on on its side.

As you talk move your hand across the space of the carpet indicating where the creature is lying, helping the students to imagine the size and shape (it will not be the real size of a triceratops, which would be too big, but one just the right size for now).

"We have here a female triceratops, (you turn to the student who invented the scenario for guidance) fully grown? (the student nods - she is the one who knows). She has sever bite marks and scratch marks here, on her back legs, and here, on her neck. As you can see she has lost a great deal of blood and is having difficulty breathing. I'm not sure if she can move (turn once again for confirmation - another nod), um, so this is a very serious situation. Has she moved since you found her? (Shake of the head) Did you see what made these marks? (Another shake of the head) What do you think did it? (A shrug of the shoulders) Yes, I understand, I'm not sure either. (Turn to the rest of the class) Does anyone else have an idea?" Give time for discussion.

"Um, well. Is she unconscious do you think? I don't want to get too close until I'm sure she can't move. You know these big dinosaurs, even the herbivores can be quite aggressive if hurt or attacked. Do you think we should give her an injection to make sure? Can you see if you have a syringe in your backpacks."

(Pin up the picture of a syringe - see resources - then look in you own imaginary backpack to model the action, as you search watch the students to see who are joining in and who are unsure of what to do, this will give you an idea of the pace you need to go at. Some children find this way of working intuitively easy, others can feel confused or self-conscious. Don't force the reluctant ones to join in, let them watch at first to get the idea).

"If you have a syringe can you fill it with sedative... (again model the action, holding up the syringe, pushing the needle into the bottle.) how much of this sleeping medicine do you think she'll need? We don't want to give her too little and have her wake up when we're working close. But we also don't want to give her too much that she never wakes up again!"

Use the picture of the syringe to help the students scale from 1 to 5. *"OK, I think we're ready. Now be careful, and be gentle. She is likely to be very scared and very weak."* (You lean forward and model injecting the dinosaur, those that want to, join in. You lean back, watching and waiting). *"What do you think? Has her breathing slowed down? I'd like to listen to her heart. Have you got a... (pause, mime with your hands) stethoscope? For listening to her heart and breathing."*

Pin up the picture of the stethoscope (see resources) and model looking in your bag. Then lean forward and model listening to the heart and breathing. Watch to see if you are being followed.

"What do you think? Does it sound OK? We'll have to keep a close eye on her heart beat. Can you have a look in your backpack again and see if we have anything for monitoring her heart. You know something that will make a noise, beep, beep beep..."

The pace of this is entirely up to you. But make sure the tension stays high, too much detail and it'll become a chore, not enough support and the children will get confused.

"I think we're ready to start. Can you take a close look from where you are and see what needs your attention. Anything you think will need some medical treatment. It might be a scratch, a bite wound or something stuck in her flesh. Can you now take out your medical kit and use the tweezers (model again) to pick out anything that stuck in her... (model...) I've got something here... It looks like a tooth! Gosh, and it's big... I'll just see if I can get it... No, I'm going to need a sharp knife, can you pass me the scalpel... Thank you. Ah, go it. I'll put it in the bag, might like to look at that tooth later. Does anyone recognise it? A T-Rex! I hope its not close by. We're going to have to work fast."

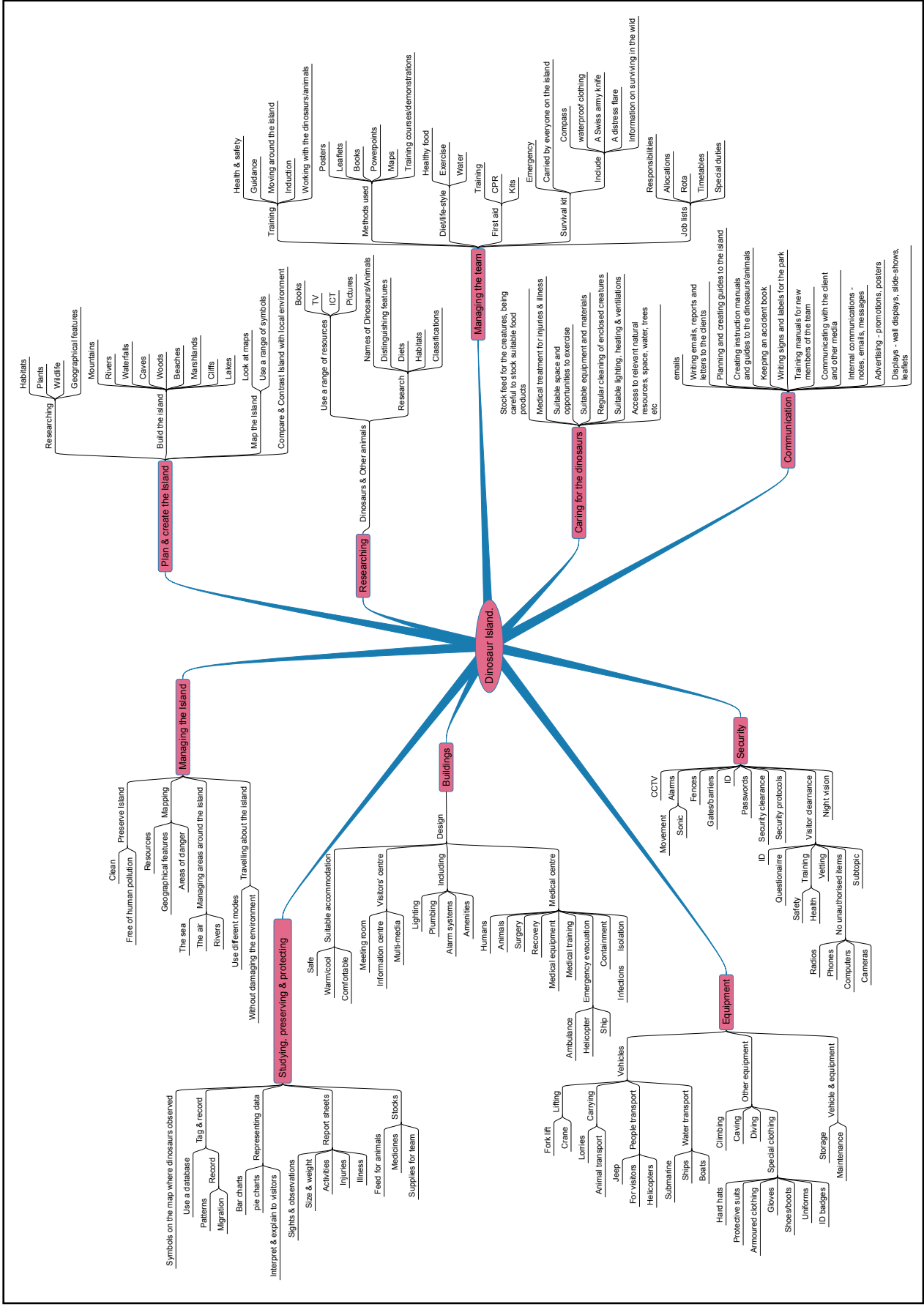
"Right, this wound it going to need cleaning and sewing..." (model continued work. Hopefully most of the children are joining in at this point. Working alone or in groups)

Give them the time to finish, then sit back. Turn to the student who invented the scenario: *"What do you think? Do you think she will live? I expect she'll need care back at the medical centre, can you organise that? Do you think you'll need the helicopter? OK, I can help you with that."*

Turn to the rest of the class. *"We're going to call in the helicopter to air-lift the triceratops out and back to the medical centre. I know you all have emergencies of your own to sort out, can you organise yourselves into teams and get to work on the most urgent cases... I'll be over here if you need me."* (Turn away and start radioing for the helicopter) *"Hello, can you hear me? Is that helicopter control? Good, I'm part of the science team, we're over by the river with an injured triceratops. Can you please send us a helicopter, we need immediate evac..."* etc.

As you continue working watch the rest of the class. They might just get on, organising themselves into teams, without the need for any further help. Or they might look confused and sit waiting for further guidance. Or they might just start running around being attacked by dinosaurs! Whatever they do, give them the appropriate level of support they need, as little or as much as necessary. Don't feel disempowered. Don't be worried if you need to stop the drama. Make it clear that's what you're doing, so the class can see what's happening.

"Everyone... I'm just stopping our story for a moment. So we're all clear what's happening. I think we've got a lot on here, so we'll need to be really organised. We don't want any of the injured or sick creatures to die. Do you need my help organising yourselves into teams or can you do it yourselves? I guess four or five would be the right number, although less might work..."



Resources and links:

There are lots of excellent books and resources for the theme of Dinosaurs available through local library services and online. Models and other resources can also be bought cheaply and many children have their own toys at home which they might like to bring into school.

Below are a short list of some of the resources and links currently available:

Links

[Smithsonian National Museum of Natural History - Dinosaurs](#)

[Dinosaur - Wikipedia, the free encyclopedia](#)

[KidsDinos.com - Dinosaurs For Kids](#)

[Dinosaurs: Discovery Channel](#)

[Dinosaurs - EnchantedLearning.com](#)

[Dinosaurs: Natural History Museum](#)

[BBC Nature - Dinosaurs videos, news and facts](#)

[Find Dinosaur Pictures - Illustrations of Dinosaurs](#)

[The official Walking with Dinosaurs, Arena](#)

[Dinosaurs - Dinosaur, facts, paleontology, pictures, and information](#)

Resources

[Dinosaur Time](#)

[Dinosaur models - Natural History Museum](#)

[The Dinosaur Shop - Dinosaur Toys, Books, Models and Fossils](#)

[Dinosaur Models - www.Fossilsforsale.co.uk](#)

[Dinosaurs for Kids | Dinosaur Toys - Everything Dinosaur](#)

[Fossil Cavern - Dinosaur products - Dinosaur kits, games & models ...](#)

[Pack of 12 Dinosaur Model Figures: Amazon.co.uk: Kitchen & Home](#)

Island photographs

There are lots of good photographs freely available on the Internet of island environment and different geographical features. Use Google Image and choose the kind of landscapes you want the students to study. Below are a small sample.

Mountains: [NZ South Island](#) / [beautiful mountains](#) /

Coast: [Island Coast](#) / [Coastal rocks](#) / [coastal view](#) / [coastal landscape](#) /

Misc: [Wonderful Green Island](#) / [Ferns](#) / [forest.1](#) / [forest.2](#) / [forest.3](#) /

Beach: [Tropical island](#) / [Beach with mountain](#) /

Water: [waterfall](#) / [large waterfall](#) / [rapids](#) /

Island Story

“The island had stayed hidden for millions of years, behind the cloud of fog and storms that surrounded it. Sailors who came close would turn their ships around and sail away, afraid of the swirling clouds, flashes of lightening and clashes of thunder. And so they had stayed unfound and undisturbed, the last of their kind, the last of the great creatures who had once been rulers of the world.

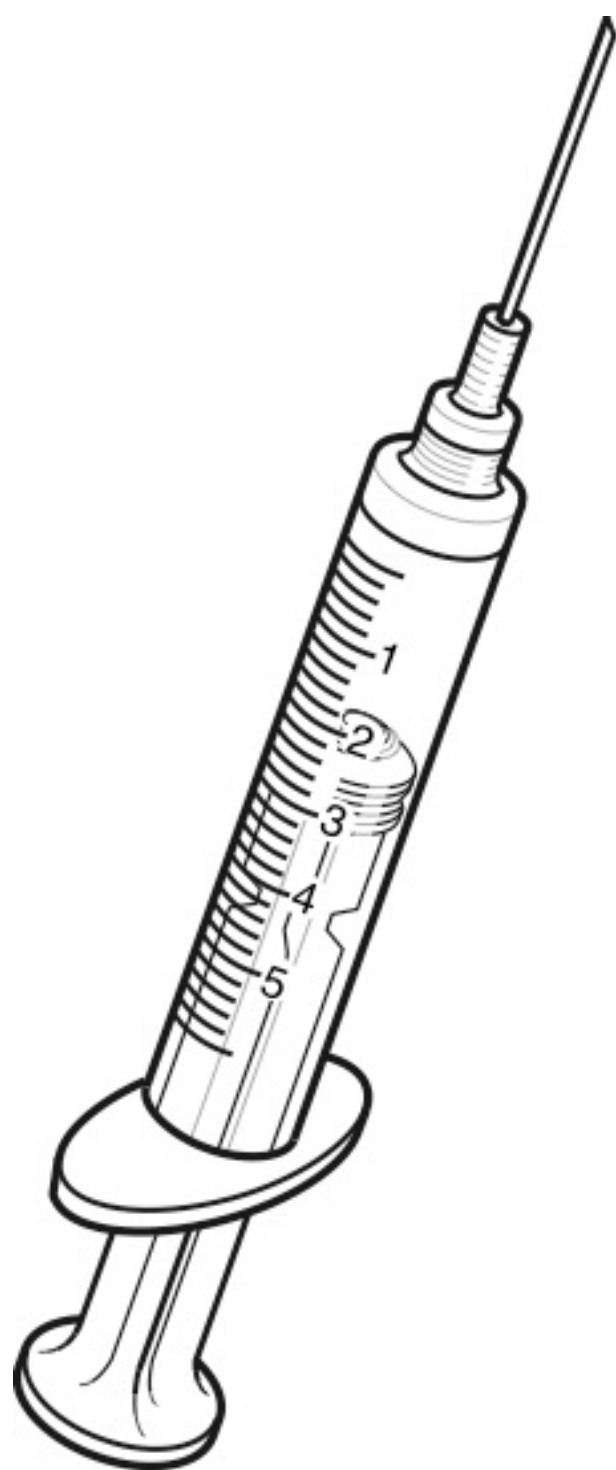
When the great meteorite came it killed all of their kind, everyone of them became extinct, everyone, except the ones who lived on this island.

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A list of geographical features, use the ones appropriate for your students.

forest	mountain	hill
river	cliff	beach
waterfall	grasslands	valley
rapids	delta	wood
cave	volcano	bay
creek	desert	lake
peak	plain	pond
sea	stream	swamp