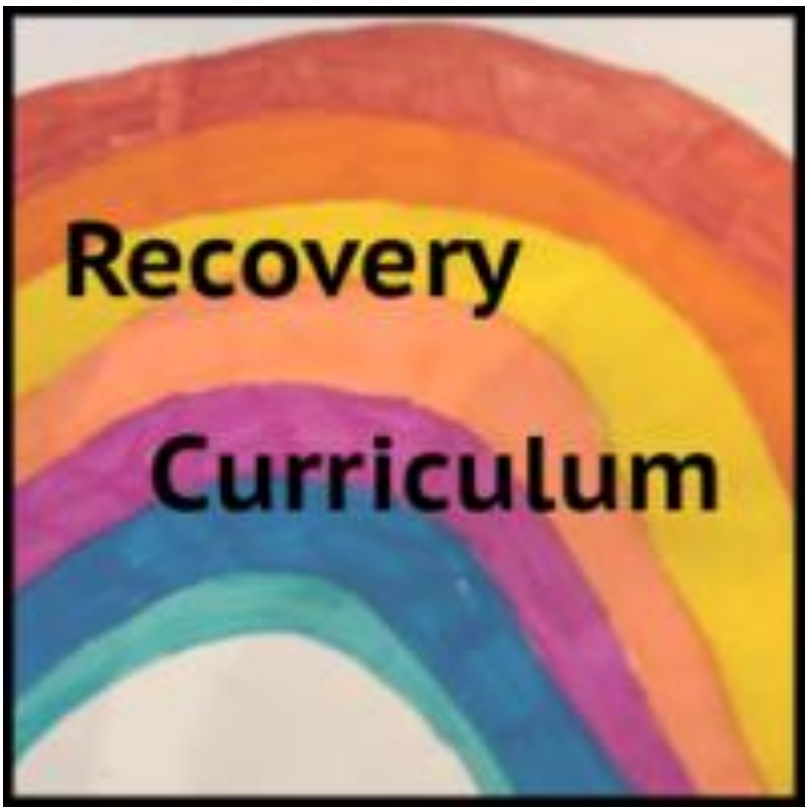
RECOVERY CURRICULUM

Subject: Science



Subject:	Science	Teacher:	Science staff
Year:	Year 8	Class:	Year 8 classes
Unit title:	7A- Cells, tissues, organs and systems, 7H-Atoms, Elements and Compounds and 7I-Energy		
Duration:	2 weeks		

Intent

Intent Statement - at Landau Forte Amington, we believe learning powerful knowledge helps students achieve and creates a fairer society. How are you trying to accomplish this, with this unit/topic?
This topic will focus on student recovery following the pandemic, which has resulted in students experiencing the following possible losses: routine, structure, friendship, opportunity and freedom. It will support students academically, socially and emotionally, in order to transition students back to Academy life and support with the issues resulting from loss.
Aims - what do you want pupils to be able to know and do by the time they finish this unit/topic?
The aim of this topic is for students to understand that cells are the Building blocks for life. It is important to know how cells function in all living organisms and the features of plant and animal cells. Students will also look at Atoms, elements and compounds and discuss patterns and trends displayed in chemical reactions and also be able to predict the name of a compound made from certain elements. Students will also look at Energy and the different energy stores there are how they can be altered used and transferred.
Academy values – at Landau Forte Amington, we want students to be ambitious, brave and kind. How are these values promoted in this PoS?
• Ambitious - Students are able to access the content and their appropriate level and the content allows for all students to be stretched in their development of new skills, knowledge, and application. Students learn through a range of activities, including practical work where possible. All students will be stretched through the various forms of new learning and assessment. • Brave – Student will have to be brave and feel confident about using skills that haven't been used for a long period of time, and not be afraid to get things wrong. • Kind – Students will have to be kind to themselves about reintegrating themselves back into learning and using skills again that they may struggle with.

Content – what is being covered, ensuring breadth & depth?	National Curriculum/Exam Specification - how does the content link to the NC or Exam Spec?
What are the minimum requirements for cells to exist and how do they carry out their role? What is their structure and function of their organelles? Students will carry out simple and engaging	Cells and organisation - cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope. Students should know the functions of the cell wall, cell membrane, cytoplasm, nucleus,

experiments, such as using a microscope, to help to build their scientific intrigue and skill. Looking at the different energy stores that are used to provide us with energy. Students will look at the different energy stores that humans use for example: electrical energy or heat energy and then build on their understanding of how we use these stores for our own uses. Students will be introduced to atoms and the Periodic Table so that they can gain an appreciation that everything is made up of something and as a young scientist they can then study atoms and which elements to use to make certain compounds. Introduction to the Periodic Table, chances are most students will not have seen one before.	vacuole, mitochondria and chloroplasts and be able to describe the similarities and differences between plant and animal cells. Atoms, elements and compounds – they should be able to draw a simple atomic model, describe differences between atoms, elements and compounds and have a knowledge about chemical symbols and formulae for elements and compounds. Energy – pupils should know about comparing energy values of different foods (from labels) (kJ), comparing power ratings of appliances in watts (W, kW), comparing amounts of energy transferred (J, kJ, kW hour), and about domestic fuel bills, fuel use and costs.
Powerful Knowledge - what powerful knowledge is included in this SoW? Consider what knowledge is it important for our students to know, so that when they leave school they can engage in and lead discussions, with people from the most advantaged backgrounds?	
Cells – An understanding of how the body functions. How our cells function through healthy lifestyles. Plant and animal cells (eukaryotic cells) have a cell membrane, cytoplasm and genetic material enclosed in a nucleus. Bacterial cells (prokaryotic cells) are much smaller in comparison. They have cytoplasm and a cell membrane surrounded by a cell wall. The genetic material is not enclosed in a nucleus. It is a single DNA loop and there may be one or more small rings of DNA called plasmids. Students should be able to demonstrate an understanding of the scale and size of cells and be able to make order of magnitude calculations. Why do we have thousands of chemicals yet only 92 naturally occurring elements? Students will understand why chemicals react and their likely properties. Students will gain an understanding of the 9 energy stores. How these can vary but total energy is maintained. The main energy resources available for use on Earth include: fossil fuels (coal, oil and gas), nuclear fuel, bio-fuel, wind, hydroelectricity, geothermal, the tides, the Sun and water waves.	

Implementation

GAPS	
Identification – how are you going to identify the gaps in knowledge/skills?	**Triage** – how are you going to rank order these gaps in knowledge/skills and 'fill' them, in order of importance?

• DNA activities to assess prior knowledge • Quick quizzes • General questioning • Use activities that require reading, writing and numeracy skills to assess their skills	• Assess student progress via numerous different activities, and prioritise skills that students struggle with • Ensure that the basics of cells are understood before moving on to further content
KEY CONCEPTS	
Key Concepts – what are the key concepts being taught?	**Progression** – how will studying these key concepts support progression to the traditional curriculum that has been planned?
Animal and plant cell structure and function of the organelles. The different types of energy stores and their uses. The structure of atoms, elements and compounds and their reactions.	Cell biology forms the basis of key biology concepts. This is necessary knowledge for students to progress to GCSE. Energy stores and their uses under pins most of our Physical processes. Atoms are our building blocks to make elements and compounds which is how we then make materials. These are
WELLBEING	
Lockdown – how will students share their experiences of lockdown?	**Social and Emotional** – how will student social and emotional health be supported?
• Within group discussion – this could be the very first discussion within a live lesson • Analogies within the content	Letting students know that it is important to talk about anything that they are struggling with, giving them options of how they can do this.
RE-ESTABLISH	
Learning Skills – how are you going to re-establish the skills for learning?	**Relationships** – how are you going to re-establish classroom relationships?
• Use activities within the content that require students to use reading, writing and numeracy skills	• Use the first session to discuss experiences during lockdown, introductions and an icebreaking activity.
OPPORTUNITIES	
Discussion – what are the discussion based opportunities?	**Group** – what are the group work based opportunities (while still ensuring social distancing)?
• Many opportunities throughout the topic, including a debate about stem cells	• Stem cell debate • Specialised cells presentation • Video discussion of chemical reactions

Delivery

		1) Lesson Type (classroom or blended for remote homework)		2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
1	3	Classroom (whole sequence completed)	X	• Label a diagram of a microscope • Reading material about the history of the microscope • What is an organ? • Can you list any examples? • What is an organ system? • Can you name one?	What	• The job role of different cells within all organisms • The organs in are bodies and what they do • The function and importance of organ systems in the human body
		Blended (live and remote as independent study)	☐		Why	• So we understand the importance of cells in our bodies and in plants • So we understand how our body works and how doctors can therefore fix problems when something goes wrong • So we understand how organs and their systems work together in our bodies
					How	• Completing exam questions to demonstrate understanding and recall the job role of different cells • Completing exam questions to demonstrate understanding and recall most of the organs in our bodies • Completing exam questions to demonstrate understanding and recall examples of organ systems

Number of lessons in cycle:	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)
	• The structure of plant and animal cells • The function of DNA and Mitochondria • The names of the organs in the human body	• Quick Quiz style questions to check the structure of plant and animal cells • Quick Quiz style questions to check the names of the organs in the human body	• Provide models of the structure of plant and animal cells, organs and organ systems in the body • Provide diagrams to label	

		• The function of the pancreas and liver for our bodies metabolism • The names of the organ systems in the human body • The function of the Endocrine system	• Quick Quiz style questions to check the names of organ systems in the human body	• Provide writing frames for exit ticket style 6 mark exam questions.	
		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)
		• Attempt 6 mark exam question independently • Create a plant/animal cell model using different materials	• Use mark scheme to assign a mark to the exam question. Students to write down corrections from mark scheme	• Quick quiz • Exam questions • End of topic test questions	

2	4	1) Lesson Type (classroom or blended for remote homework)		2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)
		Classroom (whole sequence completed)	X	• Look around the classroom. List the objects made of metal • Can you draw a particle diagram to represent an atom, element and compound? • What are the 7 main stores of energy?	What: • Today we are learning about metals and non-metals • Today we are learning about making compounds • Identify elements, compounds and mixtures from descriptions and particle diagrams • Name simple compounds • Describe changes that you might see when compounds are formed • We are learning how energy is stored and transferred Why: • To learn about why metals are used for the saucepan
		Blended (live and remote as independent study)	☐		

					and non-metals are used for the handle • Today we are learning why compounds like the rust on our bikes form • To learn how rides at theme parks work	
				How	• Describe and identify metals and non-metals by their properties • Relate the use of an element to its properties • Recall the law of conservation of energy • Describe the different ways in which energy is stored • Describe the different ways in which energy is stored	
	Number of lessons in cycle:	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)		Synchronous (live)
		• Basic concept of the structures of an atom, element and basic compounds • Drawing particle models to show atoms, elements and compounds and also how elements react to make compounds • The 7 energy stores and how they are transferred. • Drawing energy transfer diagrams	• True or false quiz • Fill in the gaps activity • Labelling diagrams • Drawing energy transfers • Drawing particle diagrams to show atoms, elements and compounds	• Provide models of the structure of atoms, elements and compounds • Provide diagrams to label • Provide writing frames for exit ticket style 6 mark exam questions.		
		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)		Asyn chro

		• Attempt 6 mark exam question independently • Attempt to draw diagrams for atoms etc. and energy transfer independently	• Use mark scheme to assign a mark to the exam question. Students to write down corrections from mark scheme	• Quick quiz • Exam questions • End of topic test questions	
3		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐ Blended (live and remote as independent study) ☐		What Why How	
	Number of lessons in cycle:	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)
		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)
4		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐ Blended (live and remote as independent study) ☐		What Why How	
	Number of lessons in	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)

		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)
5		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐		What	
		Blended (live and remote as independent study) ☐		Why	
				How	
	Number of lessons in cycle:	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)
		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)
6		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐		What	
		Blended (live and remote as independent study) ☐		Why	
				How	
	Number of lessons in	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)

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7		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐		What	
		Blended (live and remote as independent study) ☐		Why	
				How	
	Number of lessons in cycle:	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)
		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)
8		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐		What	
		Blended (live and remote as independent study) ☐		Why	
				How	
	Number of lessons in	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)

		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)
9		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐		What	
		Blended (live and remote as independent study) ☐		Why	
				How	
	Number of lessons in cycle:	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)
		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)
10		1) Lesson Type (classroom or blended for remote homework)	2) DNA (Do Now Activity/Reading)	3) Learning Intentions (what, why & how)	
		Classroom (whole sequence completed) ☐		What	
		Blended (live and remote as independent study) ☐		Why	
				How	
	Number of lessons in	4) New Material (previous learning/ new material)	5) Check for Understanding (questioning/checking)	6) Prepare for Practice (model/ scaffold)	Synchronous (live)

		7) Deliberate Practice (guided/ independent)	8) Feedback (light/deep)	9) Review (daily/monthly)	Asynchronous (remote)