

Class Seven | Learning Journey & Curriculum Map

Class Seven | Child Development

In their thirteenth year, the children's thinking is developing rapidly. There is a hunger to find out for themselves. As a reflection of this, 'Discovery' is a strong, central theme in Class 7. It runs through the year as we examine the goings-on inside our own bodies, the chemical processes at work in everyday substances and phenomena, the origins of things we take for granted, and emerges explicitly as we follow the Portuguese and Spanish explorers of the so-called 'Great Age of Discovery', to Africa and America. Generally, this year we work on developing the students' independence in thinking and in their work and behaviour. They have more freedom in many ways, but also more guidance in how to make the right choices. For example, they are asked to include their own views in their writing, and to pick out aspects that appeal to them from what they hear or read, but only after we have had a comprehensive class discussion, so that they have a more rounded picture, made rich by a variety of different points of view. Without this, the strong wish to form judgments that began to develop in Class 6 can lead to prejudice and unconsidered opinions.

Class Seven | Science

Active Learning Intention	Active Teaching Implementation	Active Environments Impact
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<p>Plants and Animals</p> <ul style="list-style-type: none"> ● Understands and describes what humans need for healthy growth and development ● Understands human puberty, sexual relationships and parenthood, contraception ● Describes how to care for their own body—care of the senses, heart and lungs and digestive system and related illnesses; the need for sleep and activity; uses of drugs and substance abuse; personal hygiene and self-care <p>Physics</p> <ul style="list-style-type: none"> ● Describes and use a range of levers, e.g. effort arm and load arm, digital balance, inclined plane, winch, pulleys, block and tackle, wedge, screw, linkages, gears ● Knows some formulae for the lever and inclined plane ● Knows the Golden Rule of mechanics, i.e. ‘velocity ratio’ ● Understands and can describe shadows, and the effects of light on planes and curved surfaces ● Can use a thermometer ● Understands and can describe the effects of conduction of heat ● Can describe sources and flow of current 	<ul style="list-style-type: none"> ● Making sure that they understand the whole cycle. ● Require exact descriptions of what has been observed using all sense impressions. ● Demonstrate experiments. ● Provide opportunities for groups to work on various experiments. ● Present things with various media. ● Present things from different perspectives to help them see the bigger picture. ● Request them to do and present research. ● Teach through biographies/stories. ● Involve students in the demonstrations. Provide different analogies. 	<ul style="list-style-type: none"> ● Providing many opportunities for observations and self experimentation. ● Organising the building of a lime kiln at school or on residential (eg. On The Hill) ● Trips connected to Physics (mechanics) eg sailing with pulleys or On the Hill - forestry moving of tree trunks with pulleys etc. ● Building of bonfires eg for St. John’s Festival. ● School trips to lime caves and prehistoric beaches (eg. Brighton/ Jurassic Coastline). ● School trips to Science museums ● Providing different metals to experience. ● Opportunities for self biographies (leading to biology). ● Opportunities to draw, paint and model. ● Opportunities for discussion and to raise questions (anonymous as well). ● ●
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<p>and the relationship to electrical appliances.</p> <ul style="list-style-type: none"> • Understands the effects of magnets and electro magnets, and can describe some technical applications • Describes some of the dangers of electric current, including lightening <p>Chemistry</p> <ul style="list-style-type: none"> • Understands and describes a range of forms of combustion, e.g. burning of different materials, the role of air/oxygen, generation of oxygen from plant and mineral sources, the role of carbon dioxide in human and plant respiration • Understands the formation and use of a range of salts, e.g. limestone and marble, caves and cliffs, lime kiln and lime cycle, cement and mortar, toothpaste • Understands the chemistry and cultural/historical/technical significance of a range of metals that can be obtained from the earth or through reduction of the ore with charcoal • Describes the process of smelting iron 		
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Class Seven | Science | Curriculum Narrative

Natural science is differentiated further this year, into Physiology, Physics and Chemistry. In Physiology, we begin with a study of the physiological structure of organs of the human body and an introduction to the three main bodily systems: breathing, eating and reproducing. We look at the different food types and nutrition, expanding on what we learned about carbohydrates in Botany last year, and how the body processes, uses and stores food. We look at respiration; how the body takes in oxygen, what it's for and what happens if we don't have it, leading to blood circulation and the heart. We then go on to the reproductive organs and how they work. Part of the study of each system is discussion about the effects on the body and mind, as well as some of the social implications of smoking, drugs, alcohol, food, sex, music and art. If there is time, we can begin to explore the senses of hearing, sight, taste, smell and touch, and how they connect us with the world. In Physics, the children use their developing observation skills to study the 'Six Simple Machines' - the Lever, the Wedge, the Inclined Plane, the Wheel and Axle and the Screw. Experiments are carried out to discover how each one makes work easier, by spreading effort over either a longer time or a longer distance. The children make detailed measurements to work out which were most effective and noted the advantages and disadvantages of each one.

Once they understand how the simple machines work, they can be asked to think about how they could be improved, or why this one worked better than that one. To bring this work into relationship with their own lives, it is illustrated with examples of each in everyday life, so that it was easy to see why, for example, the door handle is at the opposite edge from the hinge and how many of the things we use incorporate two or three of these principles. In the Chemistry Main Lesson we begin by exploring the phenomena of combustion. Different materials are closely observed as they burn. The children are encouraged to be aware of what they can see, smell and hear throughout the whole process and to come to understand what is happening when something burns. Working with what we experience through our senses and honing our observation skills are important parts of science lessons in Waldorf education. We then study acids and bases through testing a variety of materials sometimes using a universal indicator which can be made from red cabbage juice, before using litmus paper. Making soap is a practical experience of combining acids (the oils) with a base (sodium hydroxide). As the culmination of their Chemistry Main Lesson, Class 7s often build a lime kiln out of willow wattle and daub or bricks. Coal and limestone are poured into this structure and a fire is built underneath. The coal and limestone burn at an extremely hot temperature for about ten hours and in the morning, after camping out to follow the process, we can extract the limestone, now changed into quicklime from the firing. We add water to 'slake' it, and then it can be used to mortar bricks into place in the garden wall. Through this activity, the class is able to experience the lime cycle.