

<b>The Curriculum and Approaches to Learning</b>		<b>Key Programmes / Competitions</b>
<p>In line with the requirements of the Design and Technology (D&amp;T) Lower Sec 2017 Syllabus, the teaching of D&amp;T at YSS focuses on educating students as persons through the development of cognitive skills and abilities unique in the field of design.</p> <p>D&amp;T education aims to nurture in the students a way of thinking and doing, dispositions that are inherent in design practices:</p> <ul style="list-style-type: none"> <li>- Embracing uncertainties and complexities</li> <li>- Be cognizant of and resolve real-world, ill-defined problems</li> <li>- Relentless drive to seek out how things work</li> <li>- Use of doodling and sketching, and 3D manipulation of resistant materials as a language for visualisation, communication and presentation</li> </ul>		<p><b>Competition</b></p> <ul style="list-style-type: none"> <li>- Internal school competition</li> </ul>
<b>Term</b>	<b>Learning Experiences (chapter, activity)</b>	<b>Learning Outcomes &amp; Assessment</b>
1	<p><b><u>Learning through mini project (handphone holder)</u></b></p> <p>Students will go through a teacher-guided mini project, where the design specifications and the dimensions of the acrylic material will be given:</p> <ul style="list-style-type: none"> <li>- be aware of safety rules, processes, procedures in the workshop, and properties of plastic material</li> <li>- plan and monitor own progress using a flow chart</li> <li>- conduct basic research (find out the dimensions of different handphones) and use this information in the design of the handphone holder</li> <li>- design and make an acrylic handphone holder using tools and machines (hand-eye coordination, learn to follow verbal and written instructions)</li> <li>- use lines and curves to generate random shapes (a simple creative ideation technique)</li> <li>- critique design ideas and selection of idea suitable for the intent</li> <li>- understand basics of working drawing</li> </ul>	<p><b><u>Learning Outcomes</u></b></p> <ul style="list-style-type: none"> <li>- Empathy &amp; Safety consciousness</li> <li>- Basic research skills</li> <li>- Free-hand sketching skills [2D sketches, conversion from 2D to 3D drawings, idea generation skills]</li> <li>- Knowledge and understanding of plastic material (acrylic)</li> <li>- 3D manipulation [handling acrylic material]</li> <li>- Evaluation of completed prototype against design specifications</li> <li>- Testing of prototype</li> <li>- Reflection of learning process and areas for improvement</li> </ul> <p><b><u>Weighted Assessment 1</u></b></p> <ul style="list-style-type: none"> <li>- Skill-based project (handphone holder)</li> </ul>
2	<p><b><u>Learning through mini project (EZ-link card holder)</u></b></p> <p>Students will go through a teacher-guided mini project, where the design specifications and the dimensions of the acrylic material will be given but they will come up with the design using random line trigger ideation technique:</p> <ul style="list-style-type: none"> <li>- be aware of safety rules, processes, procedures in the workshop, and properties of plastic material</li> <li>- plan and monitor own progress using a flow chart</li> </ul>	<p><b><u>Learning Outcomes</u></b></p> <ul style="list-style-type: none"> <li>- Empathy &amp; Safety consciousness</li> <li>- Basic research skills</li> <li>- Free-hand sketching skills [2D sketches, conversion from 2D to 3D drawings (oblique, isometric), idea generation skills]</li> </ul>

	<ul style="list-style-type: none"> <li>- design and make an EZ-link card holder using tools and machines (hand-eye coordination, learn to follow verbal and written instructions)</li> <li>- use lines and curves to generate random shapes (a simple creative ideation technique)</li> <li>- critique design ideas and selection of idea suitable for the intent</li> </ul> <p><b><u>Learning through mini project (mechanical toy using recyclable materials)</u></b></p> <p>Students will go through a teacher-guided mini project, where a theme, the design brief and some design specifications will be given:</p> <ul style="list-style-type: none"> <li>- be aware of safety rules, processes, procedures in the workshop, and properties of recyclable materials</li> <li>- plan and monitor own progress using a flow chart</li> <li>- learn about different types of mechanisms and choose a suitable mechanism(s) to implement in mechanical toy project</li> <li>- learn about structures and how to reinforce structure within the project to ensure stability</li> <li>- conduct basic research (find different types of automata and different designs) and use this information in the design of the mechanical toy</li> <li>- design and make a mechanical toy using tools and machines (hand-eye coordination, learn to follow verbal and written instructions)</li> <li>- use shape borrowing technique to generate ideas</li> <li>- present the final idea through rendering</li> </ul>	<ul style="list-style-type: none"> <li>- Knowledge and understanding of mechanisms, structures, recyclable materials</li> <li>- 3D manipulation [quick mock-ups and on handling recyclable materials]</li> </ul> <p><b><u>Weighted Assessment 2</u></b></p> <ul style="list-style-type: none"> <li>- Task (3D sketching)</li> </ul>
3	<p><b><u>Learning through mini project (mechanical toy using recyclable materials)</u></b></p> <p>Students will go through a teacher-guided mini project, where a theme, the design brief and some design specifications will be given:</p> <ul style="list-style-type: none"> <li>- be aware of safety rules, processes, procedures in the workshop, and properties of recyclable materials</li> <li>- plan and monitor own progress using a flow chart</li> <li>- design and make a mechanical toy using tools and machines (hand-eye coordination, learn to follow verbal and written instructions)</li> <li>- modify the idea and use a mock-up to test out the idea</li> <li>- determine dimensions of the toy and its parts</li> <li>- critique design ideas and selection of idea suitable for the intent</li> </ul>	<p><b><u>Learning Outcomes</u></b></p> <ul style="list-style-type: none"> <li>- Empathy &amp; Safety consciousness</li> <li>- Knowledge and understanding of mechanisms, structures, recyclable materials</li> <li>- 3D manipulation [quick mock-ups and on handling recyclable materials]</li> <li>- Testing of mock-up</li> <li>- Evaluation of mock-up</li> </ul> <p><b><u>Weighted Assessment 3</u></b></p> <ul style="list-style-type: none"> <li>- Theory test (Mechanisms and Structures; Workshop safety; Plastics; 3D sketching)</li> </ul>
4	<p><b><u>Learning through mini project (mechanical toy using recyclable materials)</u></b></p> <p>Students will go through a teacher-guided mini project, where a theme, the design brief and some design specifications will be given:</p> <ul style="list-style-type: none"> <li>- test the prototype on the workability of mechanism(s) and structural stability</li> <li>- critique the prototype on the suitability for the intent</li> </ul>	<p><b><u>Learning Outcomes</u></b></p> <ul style="list-style-type: none"> <li>- Evaluation of completed prototype against design specifications</li> <li>- Testing of prototype</li> <li>- Reflection of learning process and areas for improvement</li> </ul> <p><b><u>Semestral Assessment</u></b></p>

		<ul style="list-style-type: none"><li>- Coursework design journal</li><li>- Skill-based project (mechanical toy using recyclable materials)</li><li>- Skill-based project (EZ-link card holder)</li></ul>
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