Sample Unit of Learning

This resource was developed as part of a Engineering webinar which aired on the 30th of March 2020 and can be viewed on jct.ie within the CPD supports tile under the elective workshops tab.

Webinar Link:
https://www.jct.ie/technologies/cpd_supports_engineering_elective_workshops

This webinar entitled "*Goal-orientated problem solving in the Engineering specification*" focused on how a teacher developed with a specific area of learning in mind, while also using Action Verbs to design the learning experience. Throughout the webinar the teacher involved discusses the thought process which went into the teaching and learning of the unit.

What is included in this PDF?

1. Exploration of the learning outcomes.

Included are the learning outcomes which this teacher considered as they planned this unit of learning. The learning outcomes which have been explored in this document should be considered incomplete and are a work in progress. They were explored with this specific school context in mind by the relevant teacher.

A big thank you to the teachers involved for making these resources available to the JCt4 team.

Note: It is recommended that you watch the webinar in conjunction with using this resource to contextualise the resource and make a better connection between how the plan was developed.

Strand 1: Processes and principles

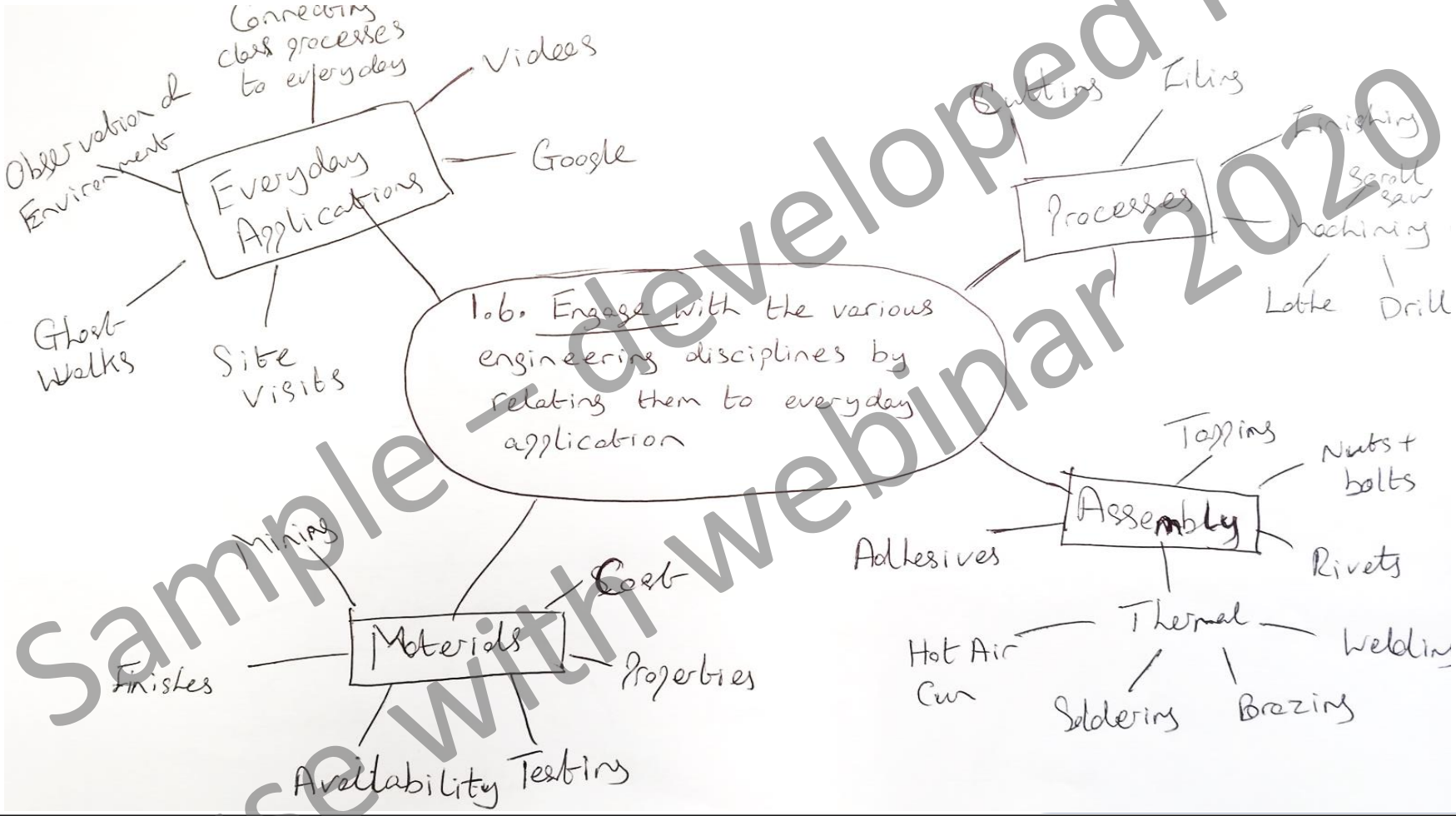
In this strand, students will learn about and employ the fundamental processes and principles of engineering. Students will apply their knowledge of materials and equipment to design and manufacture products. Students will be encouraged to use the engineering principles and processes, together with accuracy and precision, to help develop an engineering 'mindset' which ultimately leads to the production of innovative and efficient solutions of high quality and finish.

Strand 2: Design application

In this strand, students will learn about the key stages of the engineering design process. They will understand the importance of design in both the end-user experience and the economic and social impact of the product. They will discover how informed choice of materials and processes combine to produce a solution that is functional and efficient. Students will learn the value of good project management and how to manage themselves and the product development through the journey from the design to the manufacture stage.

Strand 3: Mechatronics

In this strand, students will use a combination of mechanical, manufacturing, electronic and software engineering to explore the relationship between simple inputs, processes and outputs. Mechatronics engages students in learning how high-tech manufacturing is performed and why it is becoming one of the fastest-growing career areas. Students will develop an appreciation of how control systems operate on a much larger scale and consider how the design of control systems can impact positively on the environment and sustainability. They will appreciate the role that Engineering can play in employing 'systems thinking' to design products and services that contribute to a better future.



Element 1: Engineering knowledge and awareness

The learning outcomes in this element are designed to raise student awareness and develop knowledge of relevant engineering principles and developments. Students will learn how to use the materials and equipment available to them in Engineering to inform their decisions about material and resource selection to engineer a product or solution.

Element 2: Innovation and exploration

In this element, the learning outcomes encourage students to explore the applications of engineering in the world around them. Students research existing and emerging developments and gain an appreciation of their impact and potential application to an engineered product.

Element 3: Developing and manufacturing

In this element, the learning outcomes develop the student's abilities to produce products and solutions through various materials. Students combine their learning from other elements to engineer products to a high, functional standard. The key focus is on efficiency, accuracy, precision and high-quality finish.

Element 4: Communicating

Throughout this element, the learning outcomes encourage students to communicate, through appropriate media, to relay technical information, design ideas and the impact engineering has on the environment around them.

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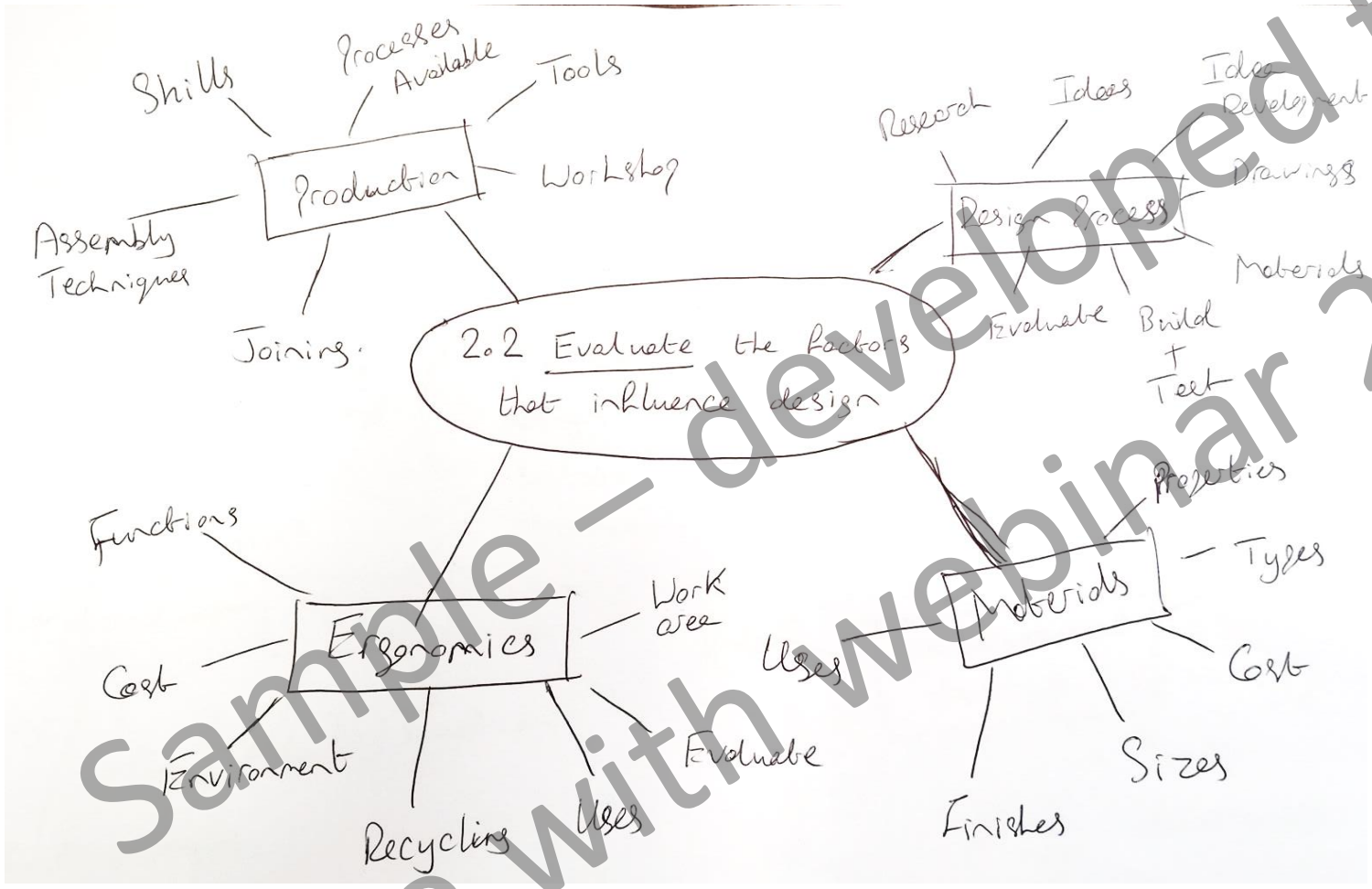

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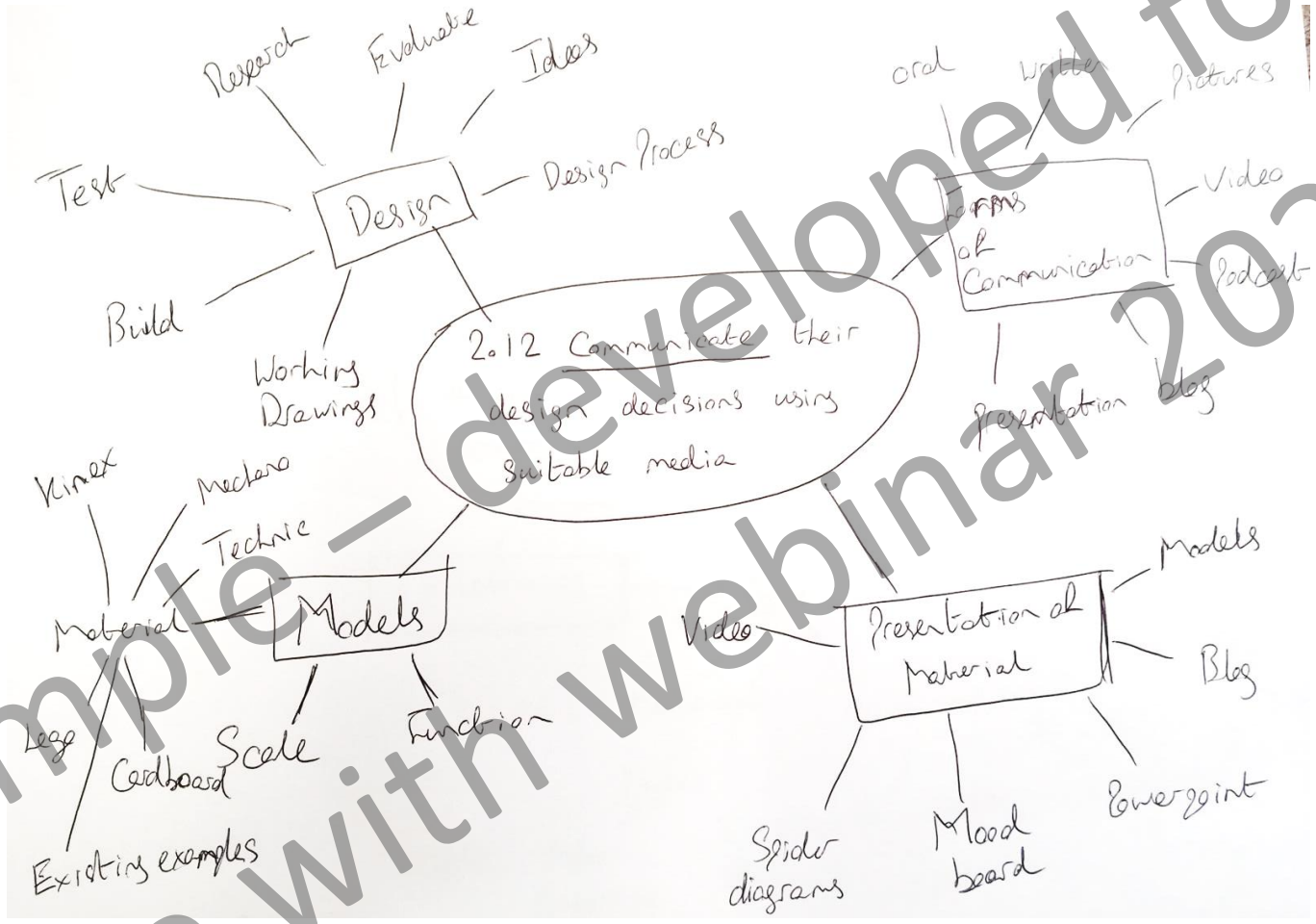

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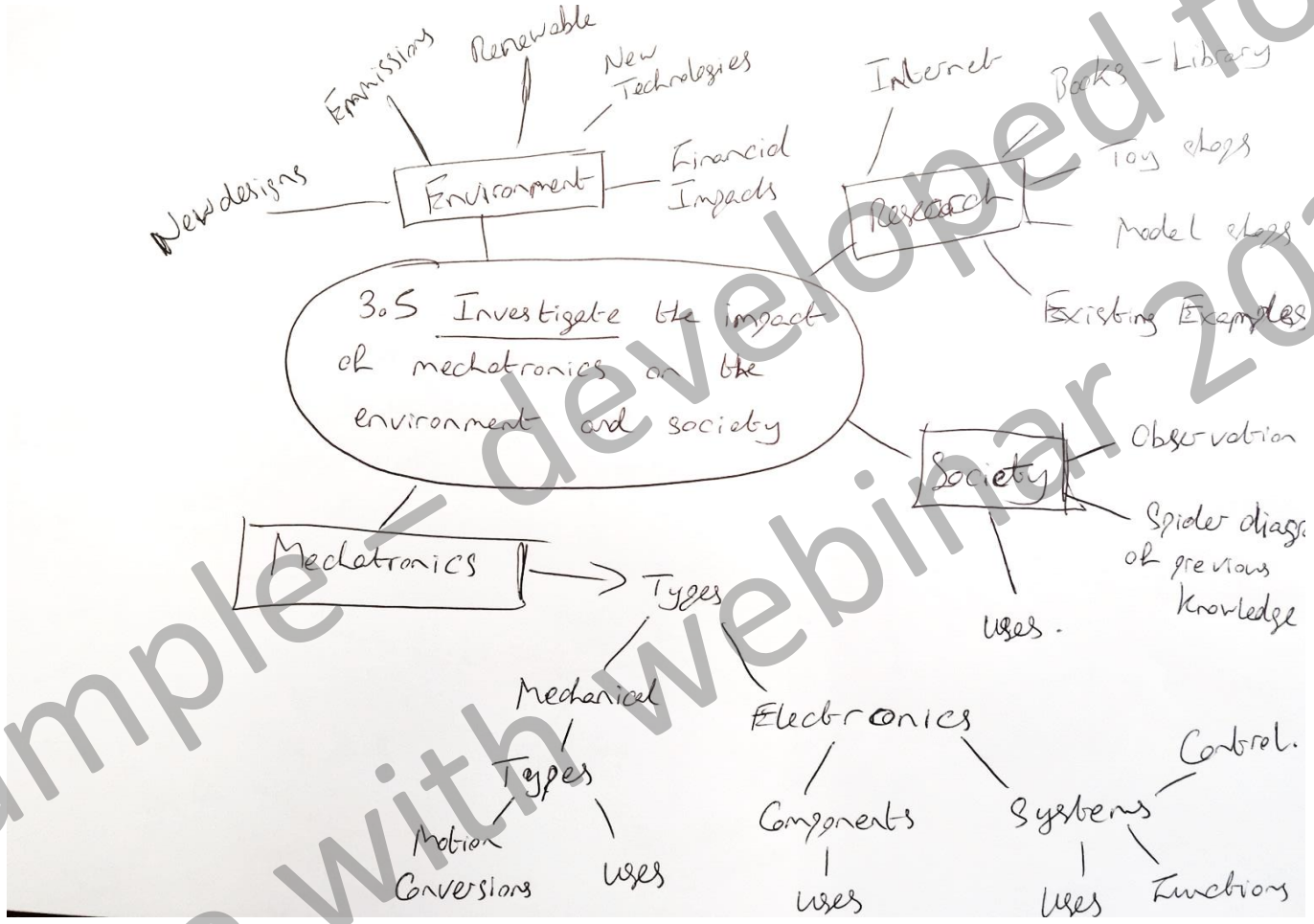

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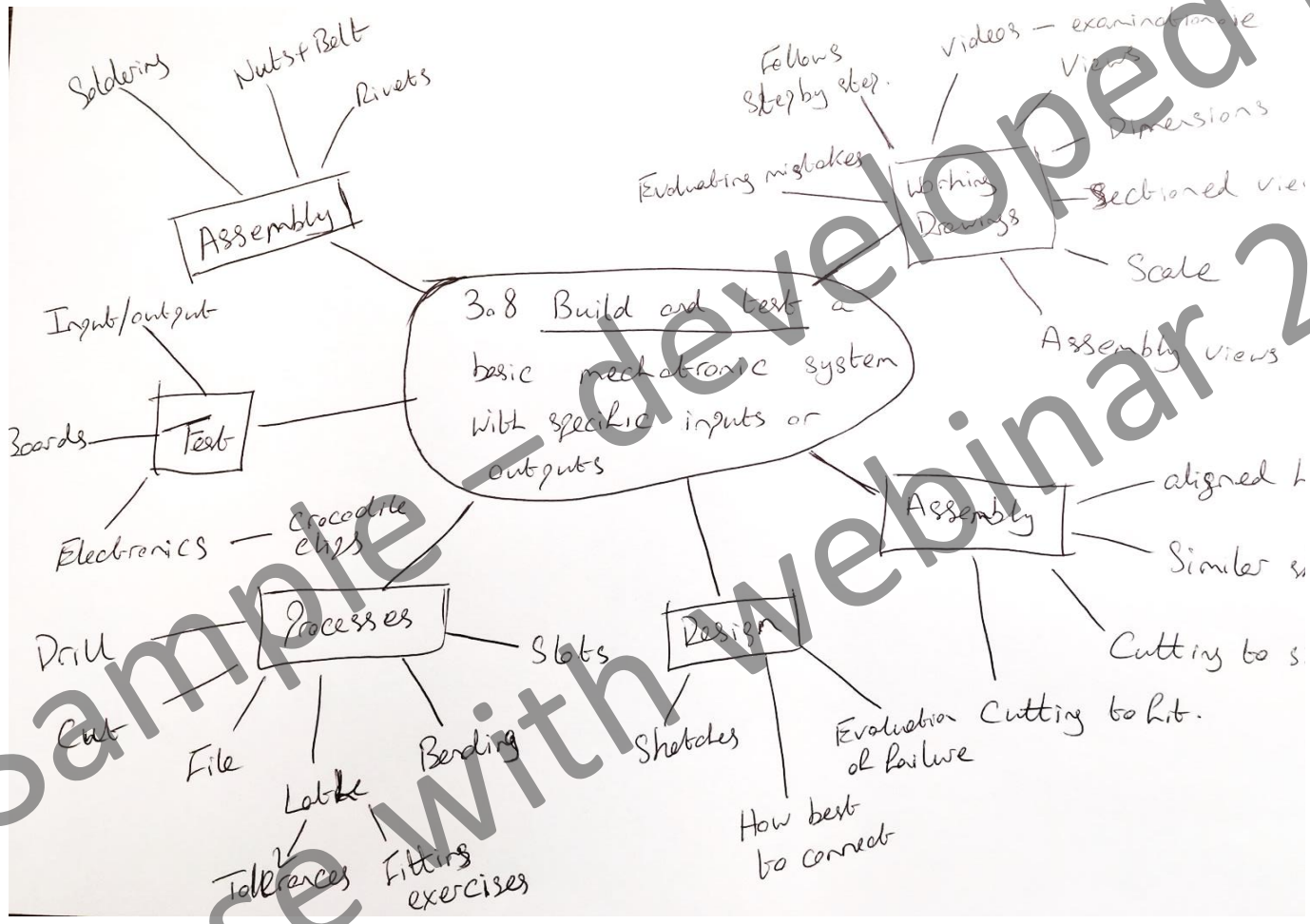

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This resource was created to support an online webinar broadcast on 30/03/2020 and sits within a wider unit of learning.