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Tacú leis an bhFoghlaim Ghairmiúil i measc Ceannairí Scoile agus Múinteoirí

Supporting the Professional Learning of School Leaders and Teachers

Applied Technology

PLE 2025/2026

Key Website / Online information

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www.curriculumonline.ie

www.ncca.ie

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www.scoilnet.ie

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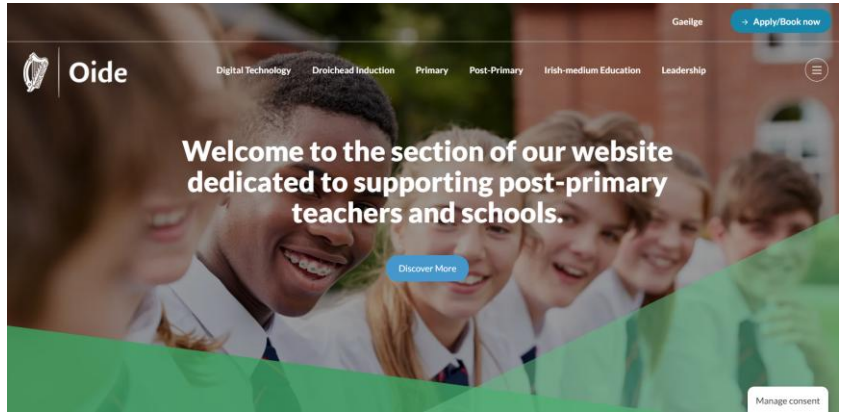
info@oide.ie



Oide Mailing List

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Supporting the Professional Learning of School Leaders and Teachers

Applied Technology

PLE 2025/2026

Session 1

In this session, we will…

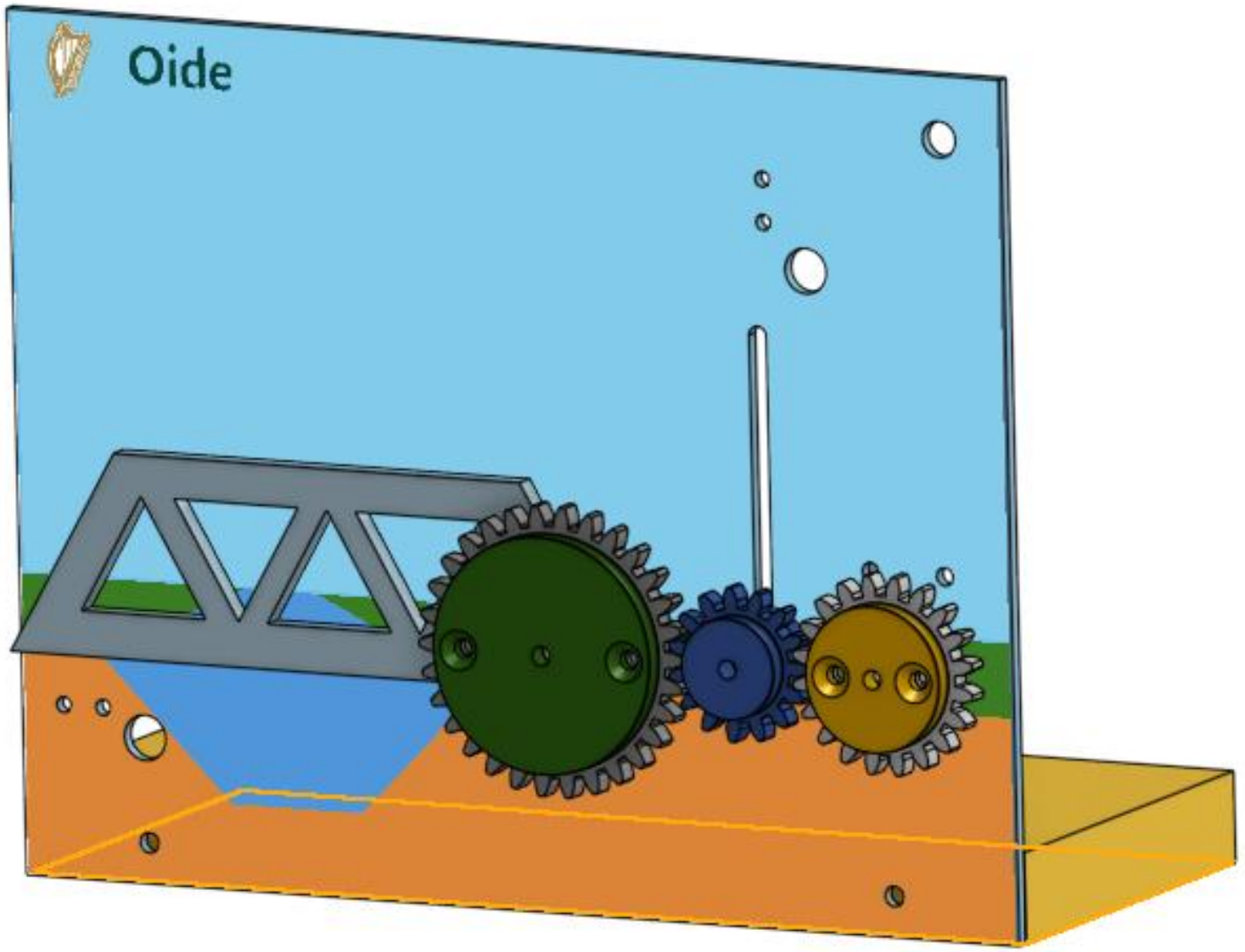
Experience the benefits of an integrated approach to both the practical and theoretical aspects of the specification, through the lens of electronics and mechanisms.

Group Discussion

Last year's PLE focused on the fundamentals of electronics.

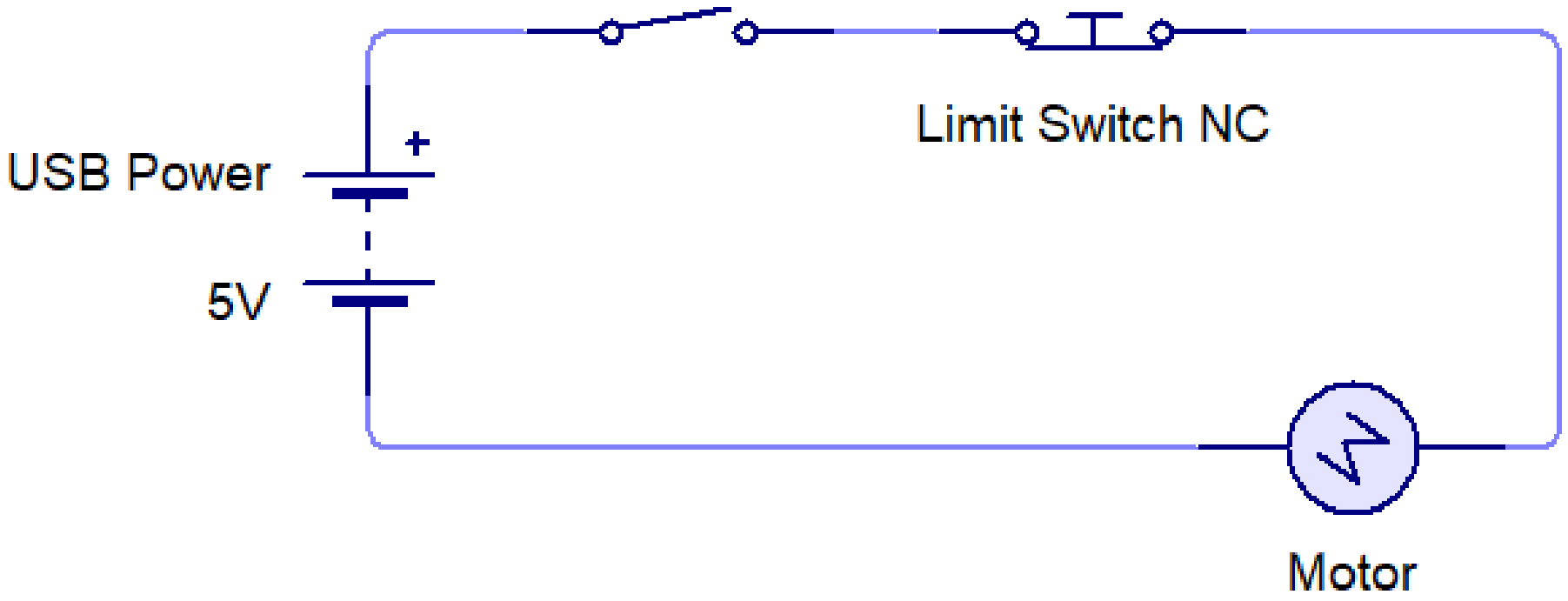
Has your approach to teaching electronics changed?

Prototype Bridge Activity



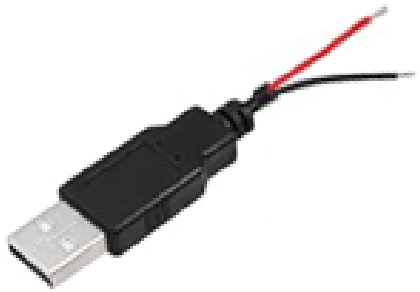
Identifying the legs of the limit switch

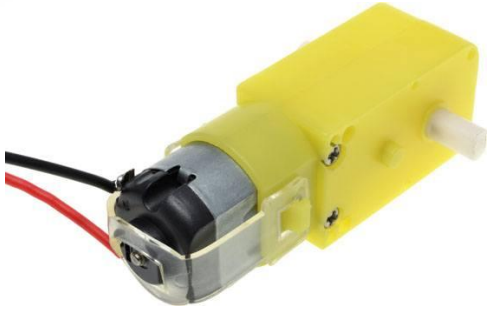
Breaking down the circuit

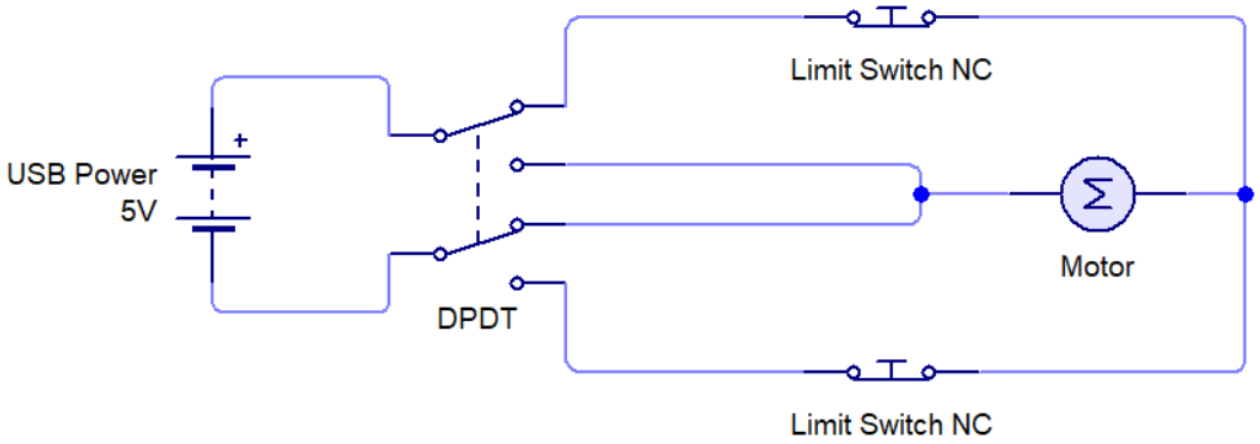


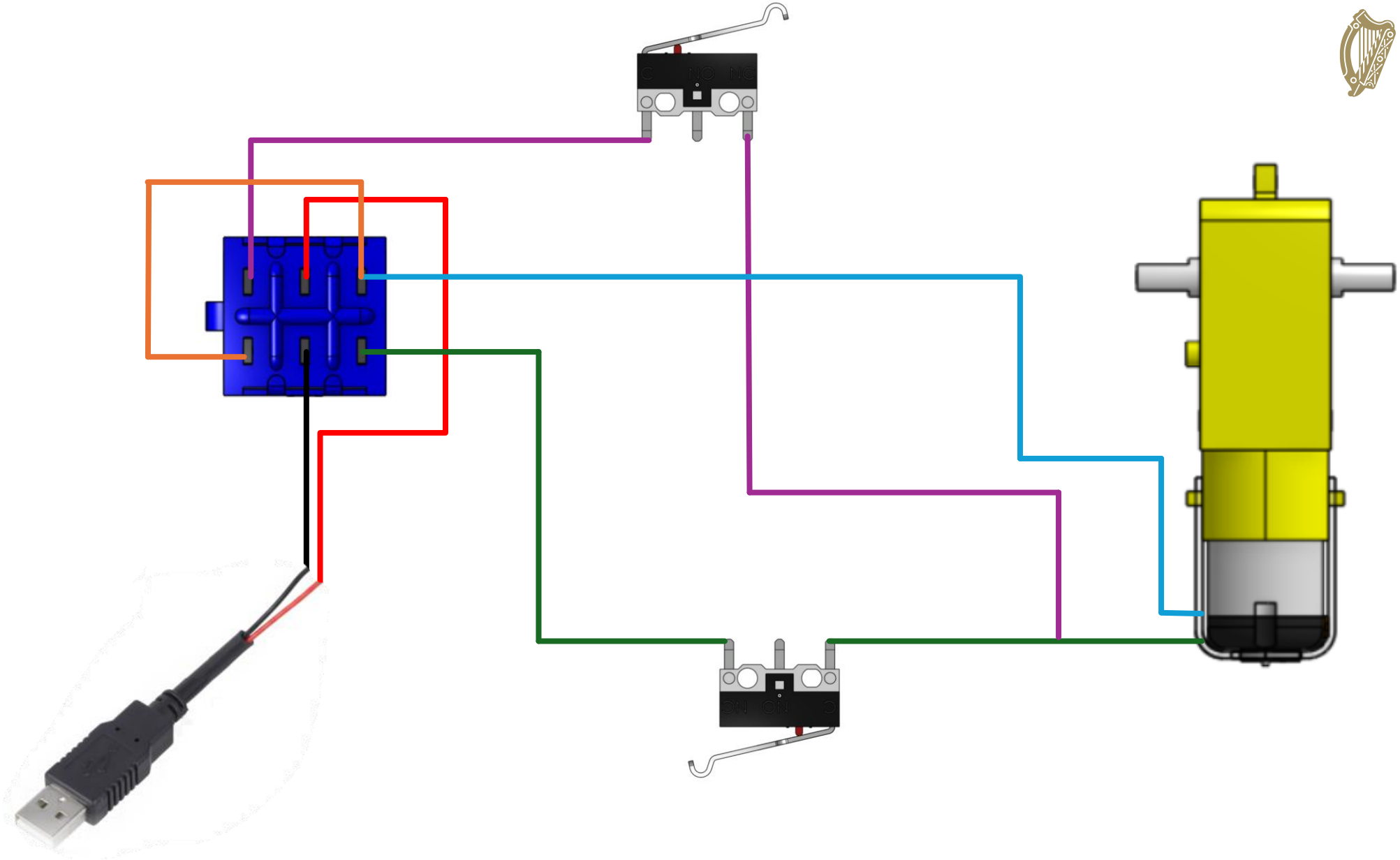
Activity:

Using the circuit diagram below, complete the wiring diagram shown





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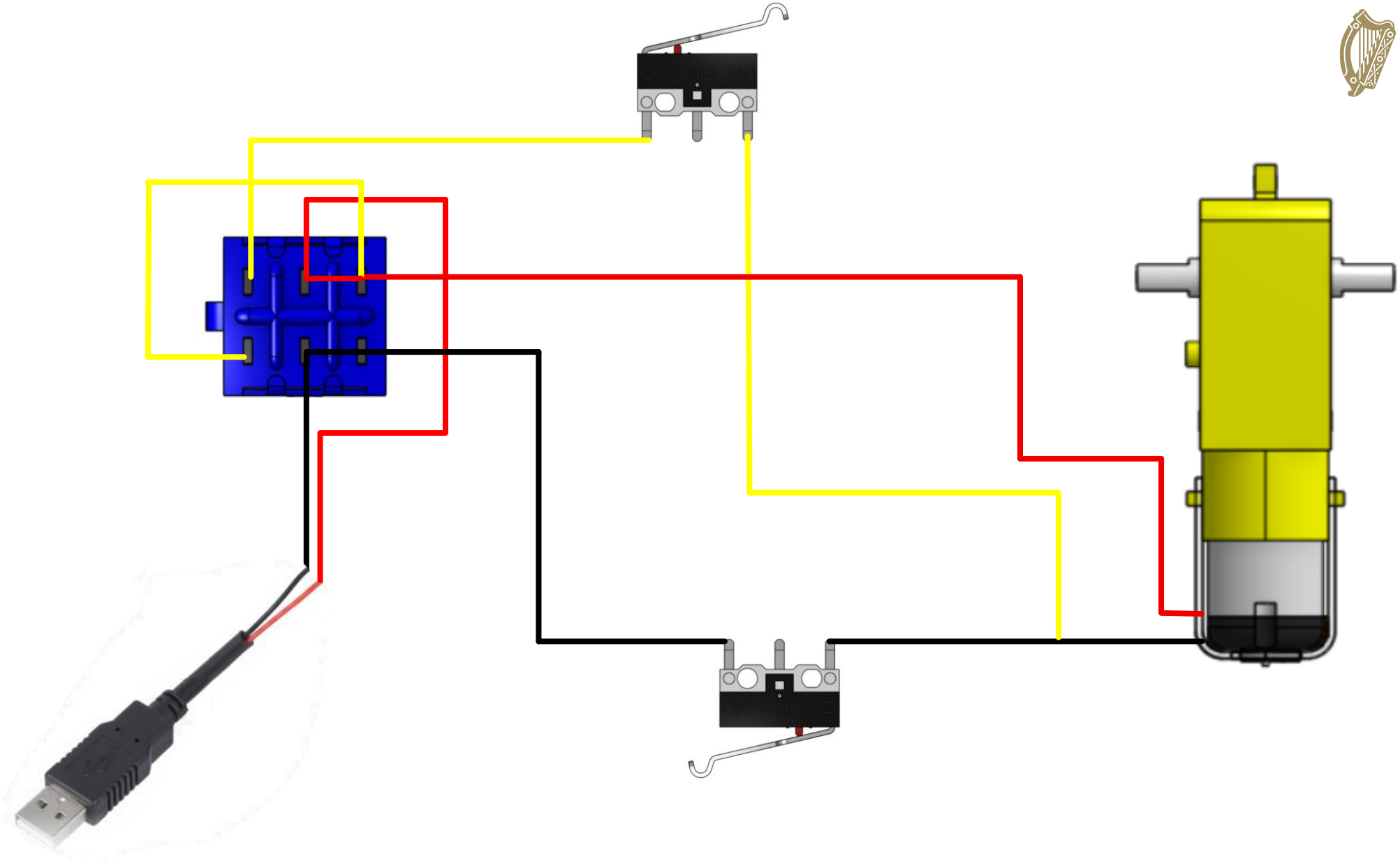
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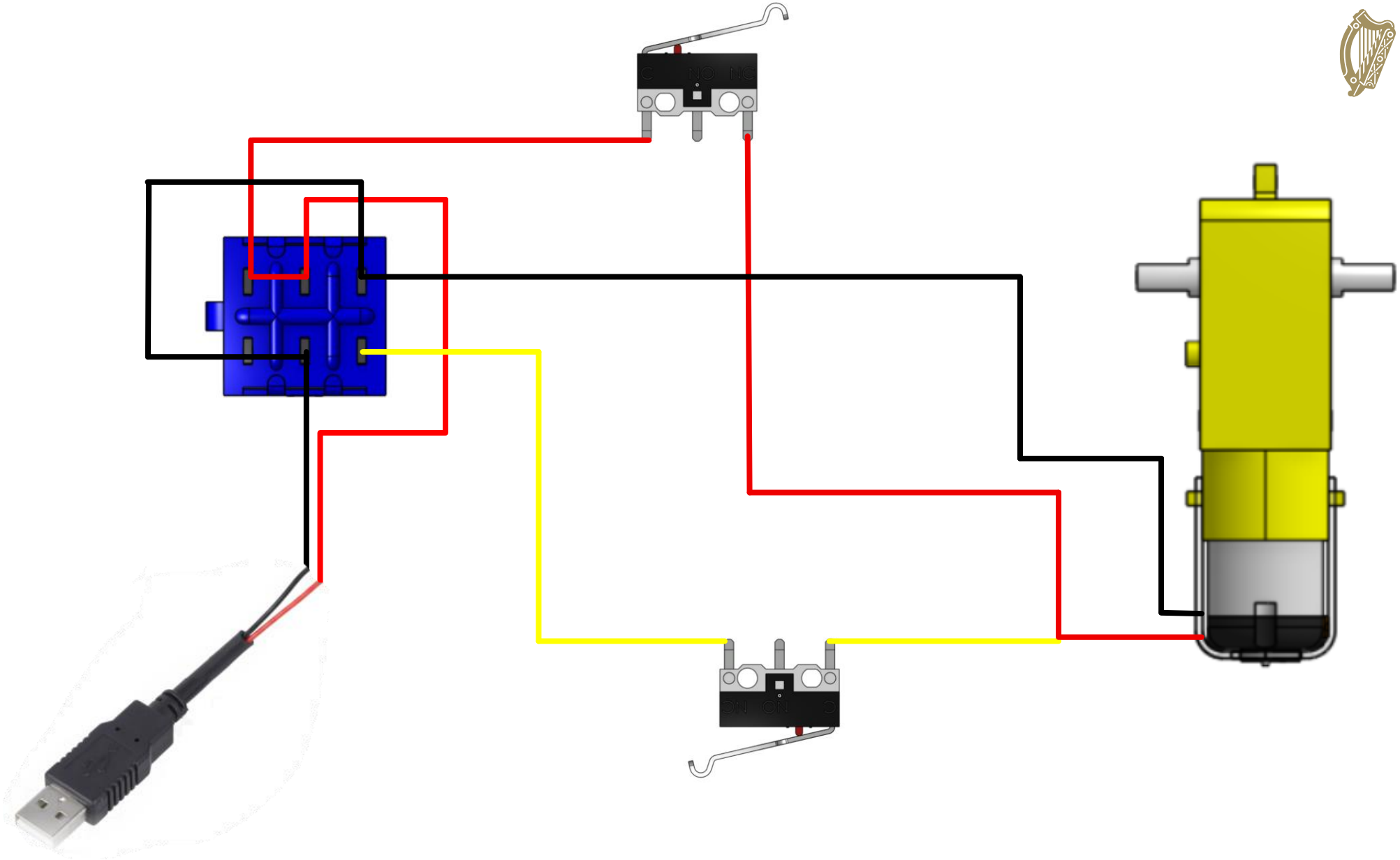
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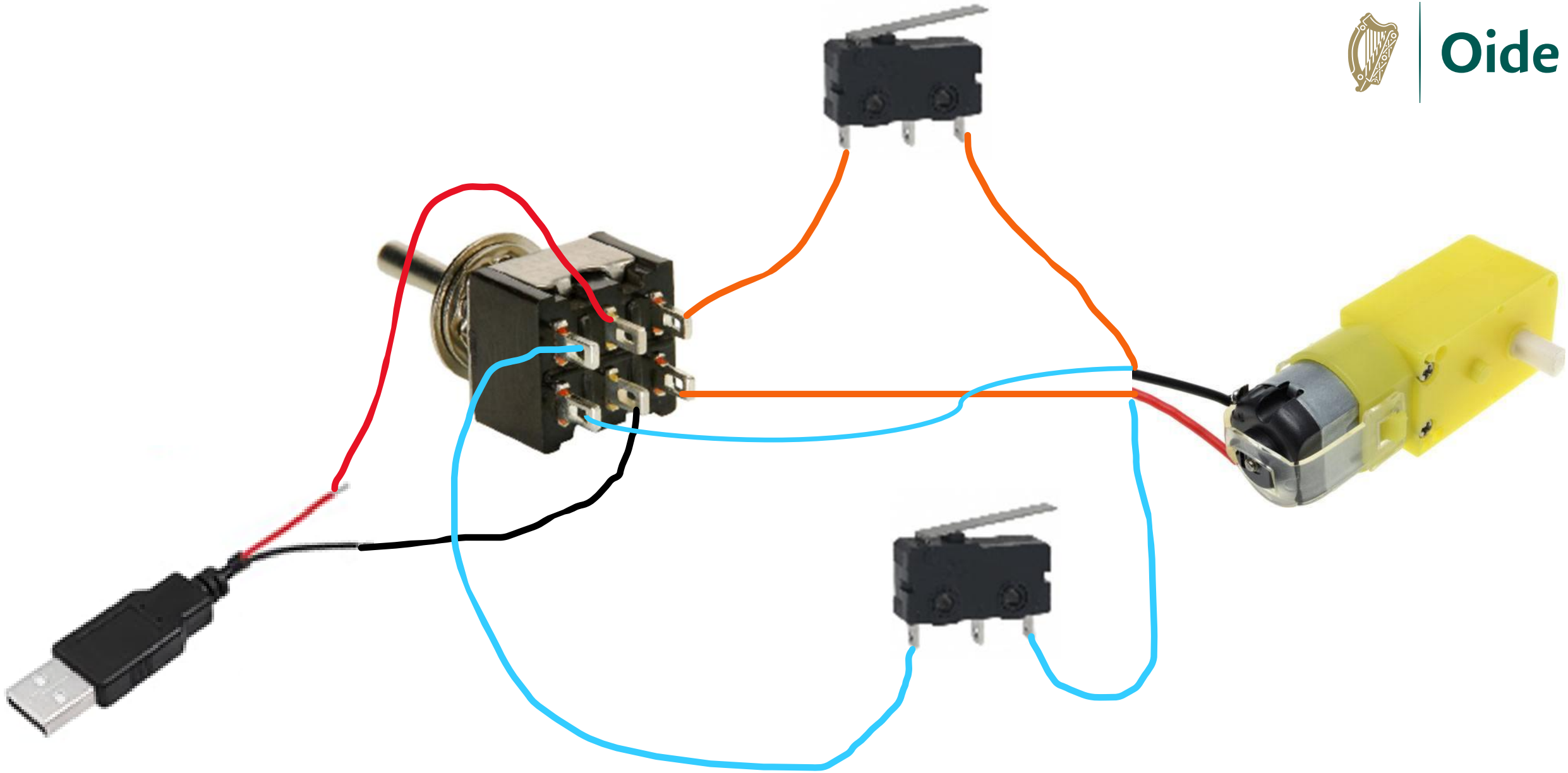

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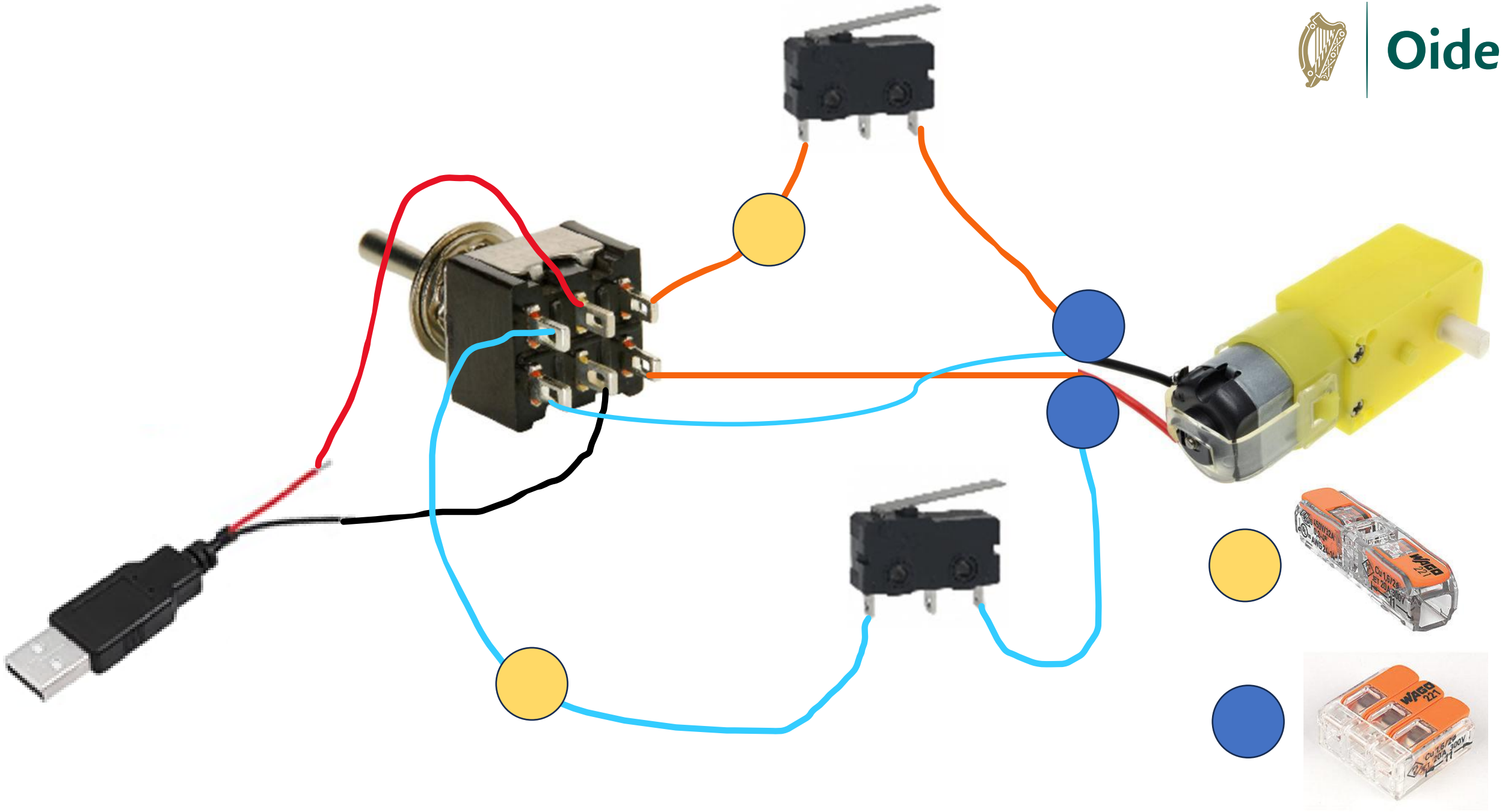


Components needed

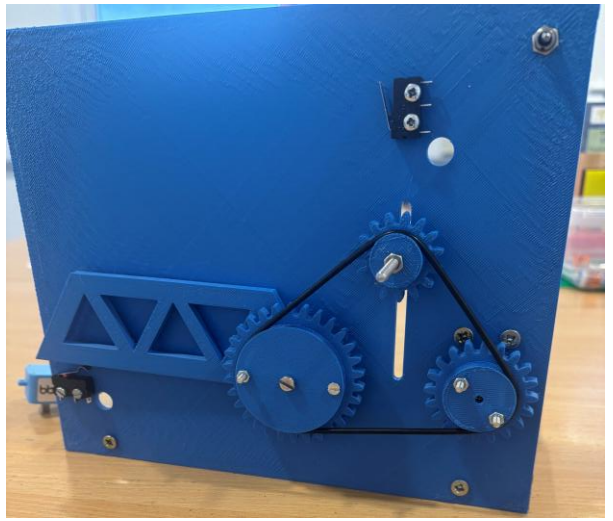
- 4 spade connectors
- 2 Wago 3-way lever connectors
- 2 Wago 2-way in-line lever connectors
- 1 motor gear
- 2 idler gears
- 1 chain
- 1 belt

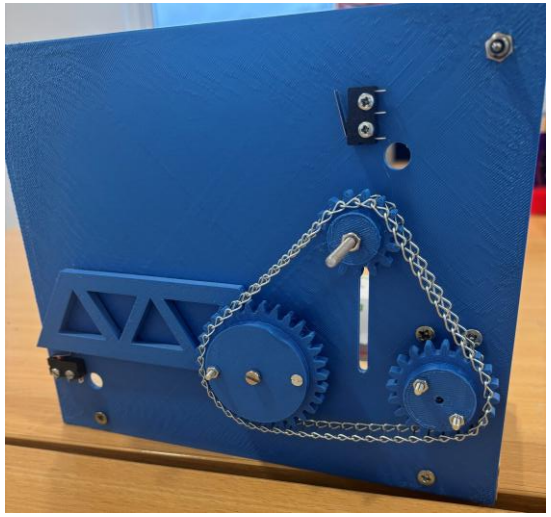
Types of Indirect Drives

While keeping the same circuit, change the indirect drive mechanism to:

- Simple gear train
- Pulley drive
- Chain drive

What did you notice about each drive mechanism?



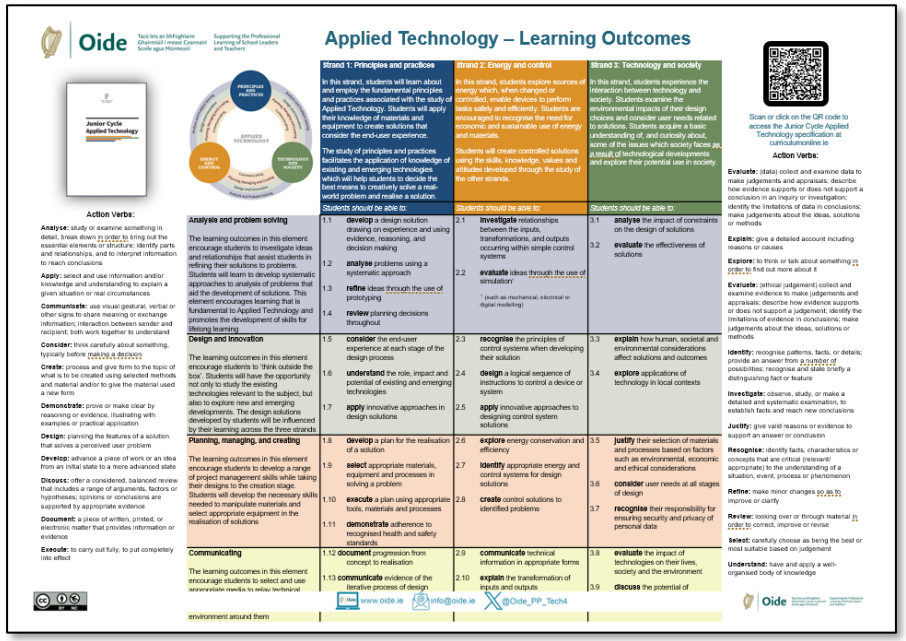


Open Floor Discussion

Moving forward, how might this resource impact your teaching?

Personal Reflection Moment

- What learning outcomes could be addressed by this learning experience?



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Applied Technology – Learning Outcomes

Junior Cycle Applied Technology

Strand 1: Principles and practices

In this strand, students will learn about and employ the fundamental principles and practices associated with the study of Applied Technology. Students will apply their knowledge of materials and equipment to create solutions that consider the end-user experience.

The study of principles and practices facilitates the application of knowledge of existing and emerging technologies which will help students to decide the best means to creatively solve a real-world problem and realise a solution.

Strand 2: Energy and control

In this strand, students explore sources of energy which, when changed or controlled, enable devices to perform tasks safely and efficiently. Students are encouraged to recognise the need for economic and sustainable use of energy and materials.

Students will create controlled solutions using the skills, knowledge, values and attitudes developed through the study of the other strands.

Strand 3: Technology and society

In this strand, students experience the interaction between technology and society. Students examine the environmental impacts of their design choices and consider user needs related to solutions. Students acquire a basic understanding of, and curiosity about, some of the issues which society faces as a result of technological developments and explore their potential use in society.

Students should be able to:

Analysis and problem solving

The learning outcomes in this element encourage students to investigate ideas and relationships that assist students in refining their solutions to problems. Students will learn to develop systematic approaches to analysis of problems that aid the development of solutions. This element encourages learning that is fundamental to Applied Technology and promotes the development of skills for lifelong learning

1.1 develop a design solution drawing on experience and using evidence, reasoning, and decision making
1.2 analyse problems using a systematic approach
1.3 refine ideas through the use of prototyping
1.4 review planning decisions throughout

2.1 investigate relationships between the inputs, transformations, and outputs occurring within simple control systems
2.2 evaluate ideas through the use of simulation*
* (such as mechanical, electrical or digital modelling)

3.1 analyse the impact of constraints on the design of solutions
3.2 evaluate the effectiveness of solutions

Design and innovation

The learning outcomes in this element encourage students to 'think outside the box'. Students will have the opportunity not only to study the existing technologies relevant to the subject, but also to explore new and emerging developments. The design solutions developed by students will be influenced by their learning across the three strands

1.5 consider the end-user experience at each stage of the design process
1.6 understand the role, impact and potential of existing and emerging technologies
1.7 apply innovative approaches in design solutions

2.3 recognise the principles of control systems when developing their solution
2.4 design a logical sequence of instructions to control a device or system
2.5 apply innovative approaches to designing control system solutions

3.3 explain how human, societal and environmental considerations affect solutions and outcomes
3.4 explore applications of technology in local contexts

Planning, managing, and creating

The learning outcomes in this element encourage students to develop a range of project management skills while taking their designs to the creation stage. Students will develop the necessary skills needed to manipulate materials and select appropriate equipment in the realisation of solutions

1.8 develop a plan for the realisation of a solution
1.9 select appropriate materials, equipment and processes in solving a problem
1.10 execute a plan using appropriate tools, materials and processes
1.11 demonstrate adherence to recognised health and safety standards

2.6 explore energy conservation and efficiency
2.7 identify appropriate energy and control systems for design solutions
2.8 create control solutions to identified problems

3.5 justify their selection of materials and processes based on factors such as environmental, economic and ethical considerations
3.6 consider user needs at all stages of design
3.7 recognise their responsibility for ensuring security and privacy of personal data

Communicating

The learning outcomes in this element encourage students to select and use appropriate media to relay technical

1.12 document progression from concept to realisation
1.13 communicate evidence of the iterative process of design

2.9 communicate technical information in appropriate forms
2.10 explain the transformation of inputs and outputs

3.8 evaluate the impact of technologies on their lives, society and the environment
3.9 discuss the potential of

environment around them

Action Verbs:

Analyse: study or examine something in detail, break down in order to bring out the essential elements or structure; identify parts and relationships, and to interpret information to reach conclusions

Apply: select and use information and/or knowledge and understanding to explain a given situation or real circumstances

Communicate: use visual gestural, verbal or other signs to share meaning or exchange information; interaction between sender and recipient; both work together to understand

Consider: think carefully about something, typically before making a decision

Create: process and give form to the topic of what is to be created using selected methods and material and/or to give the material used a new form

Demonstrate: prove or make clear by reasoning or evidence, illustrating with examples or practical application

Design: planning the features of a solution that solves a perceived user problem

Develop: advance a piece of work or an idea from an initial state to a more advanced state

Discuss: offer a considered, balanced review that includes a range of arguments, factors or hypotheses; opinions or conclusions are supported by appropriate evidence

Document: a piece of written, printed, or electronic matter that provides information or evidence

Execute: to carry out fully, to put completely into effect

Scan or click on the QR code to access the Junior Cycle Applied Technology specification at curriculumonline.ie

Action Verbs:

Evaluate: (data) collect and examine data to make judgements and appraisals; describe how evidence supports or does not support a conclusion in an inquiry or investigation; identify the limitations of data in conclusions; make judgements about the ideas, solutions or methods

Explain: give a detailed account including reasons or causes

Explore: to think or talk about something in order to find out more about it

Evaluate: (ethical judgement) collect and examine evidence to make judgements and appraisals; describe how evidence supports or does not support a judgement; identify the limitations of evidence in conclusions; make judgements about the ideas, solutions or methods

Identify: recognise patterns, facts, or details; provide an answer from a number of possibilities; recognise and state briefly a distinguishing fact or feature

Investigate: observe, study, or make a detailed and systematic examination, to establish facts and reach new conclusions

Justify: give valid reasons or evidence to support an answer or conclusion

Recognise: identify facts, characteristics or concepts that are critical (relevant/appropriate) to the understanding of a situation, event, process or phenomenon

Refine: make minor changes so as to improve or clarify

Review: looking over or through material in order to correct, improve or revise

Select: carefully choose as being the best or most suitable based on judgement

Understand: have and apply a well-organised body of knowledge

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Key Learning Reflection

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3 Things I learned

2 Actions I will take

1 Question I have

In this session, we…

Experienced the benefits of an integrated approach to both the practical and theoretical aspects of the specification, through the lens of electronics and mechanisms.

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Supporting the Professional Learning of School Leaders and Teachers

Applied Technology

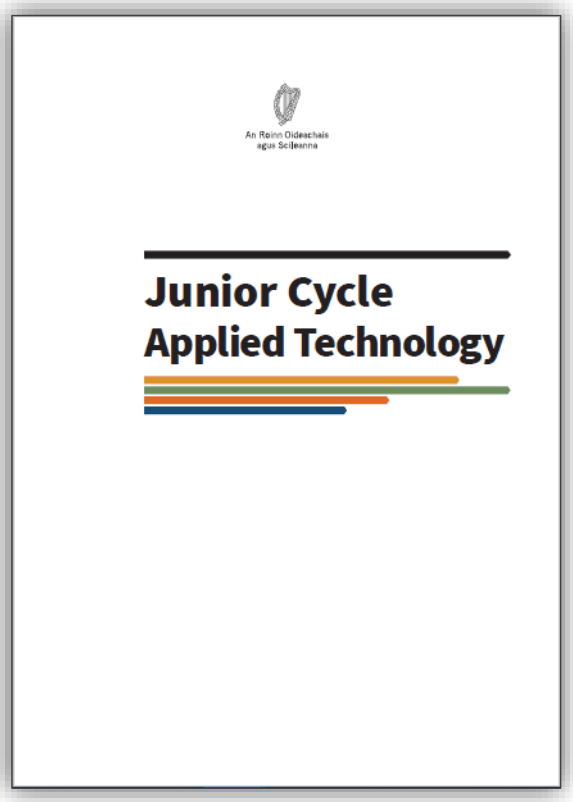
PLE 2025/2026

Session 2

In this session, we will…

Consider teaching approaches when creating control solutions to identified problems.

Applied Technology Specification



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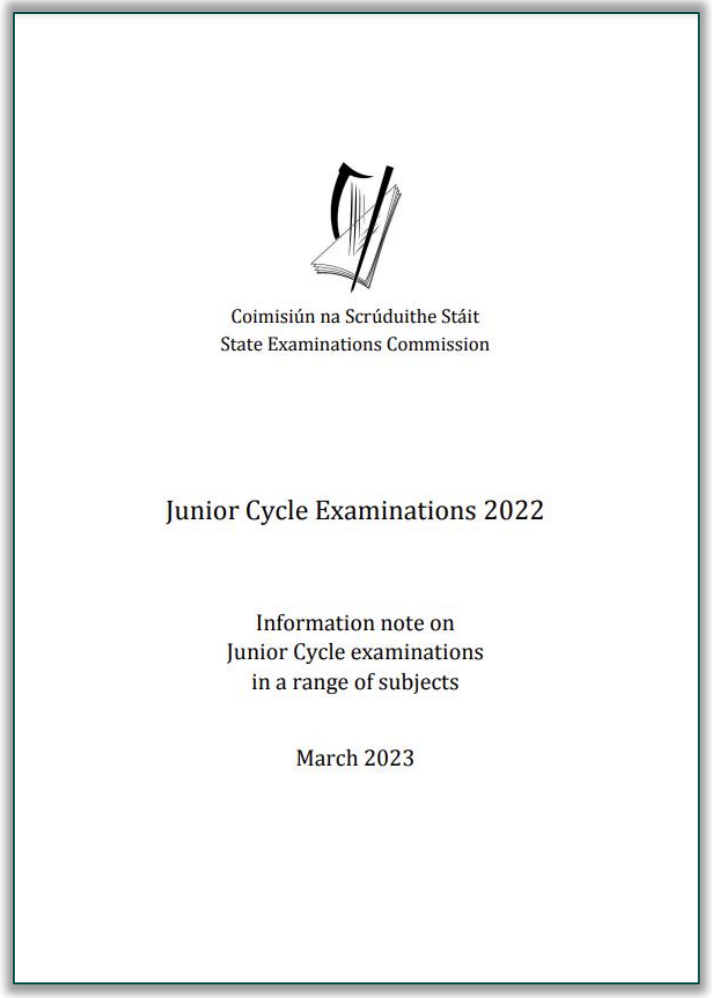
*Students will develop an **understanding** of the principles of energy and **control** to **resolve practical problems**. Students will have the freedom to explore design and systems thinking through an iterative process to conceive, refine, realise and evaluate ideas.*

NCCA, Applied Technology specification, page 4.

SEC Information Note


Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Cycle Examinations 2022

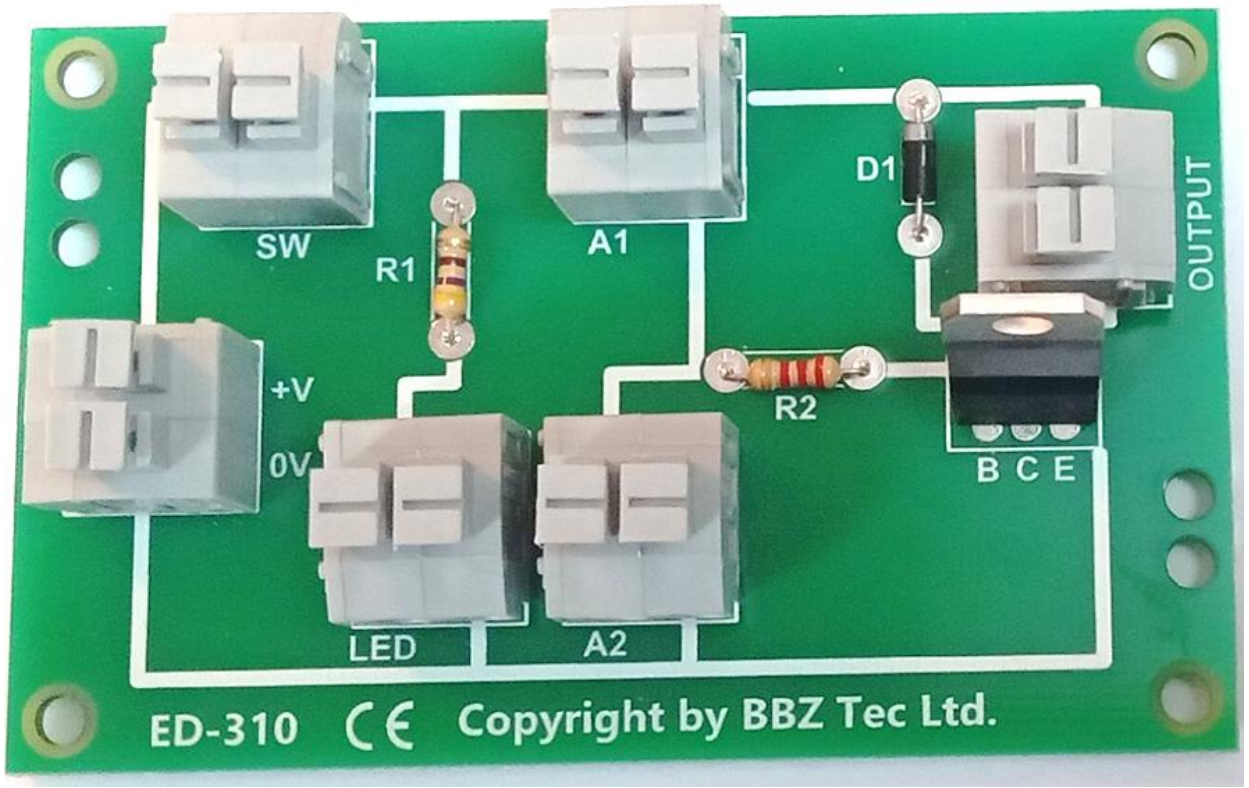
Information note on
Junior Cycle examinations
in a range of subjects

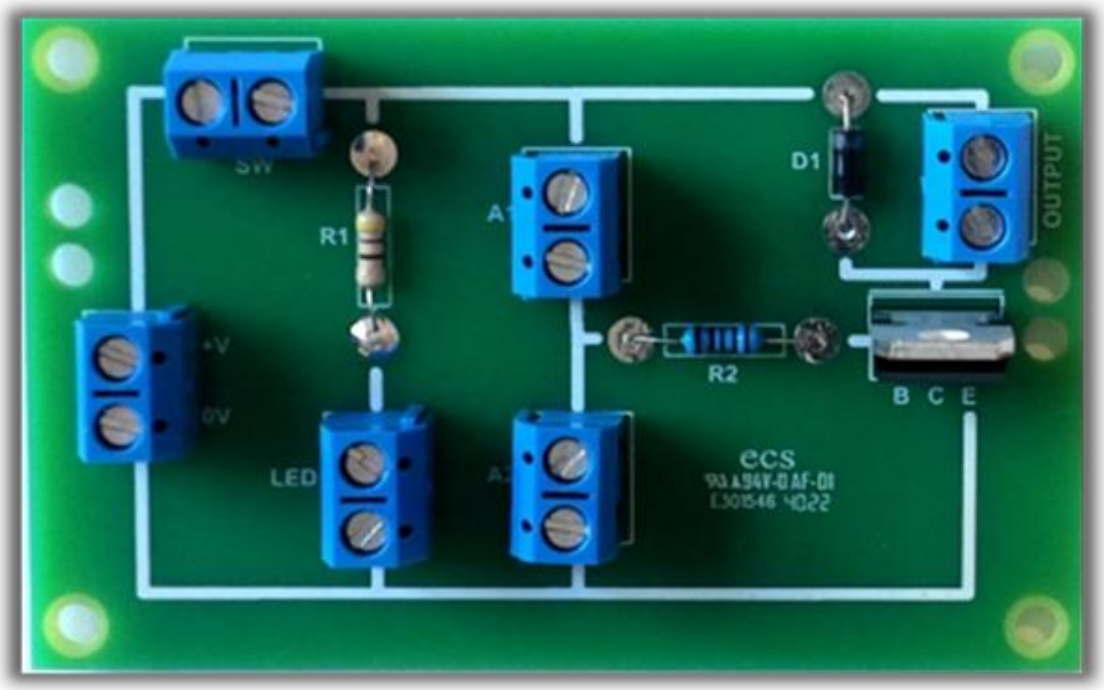
March 2023

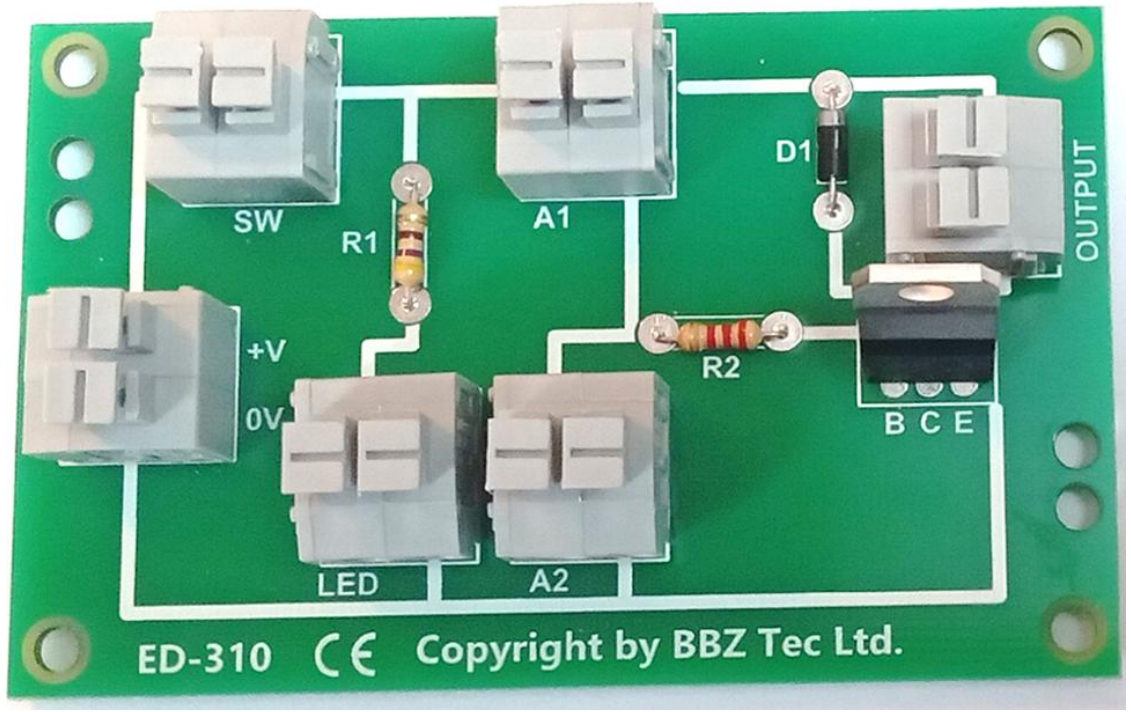
Candidates are advised to provide a justification for the mechanical or electro-mechanical sub-system as well as the electrical or electronic control elements used.

SEC, Information note on Junior Cycle examinations in a range of subjects, page 40.

Introducing the Sensor Circuit Board



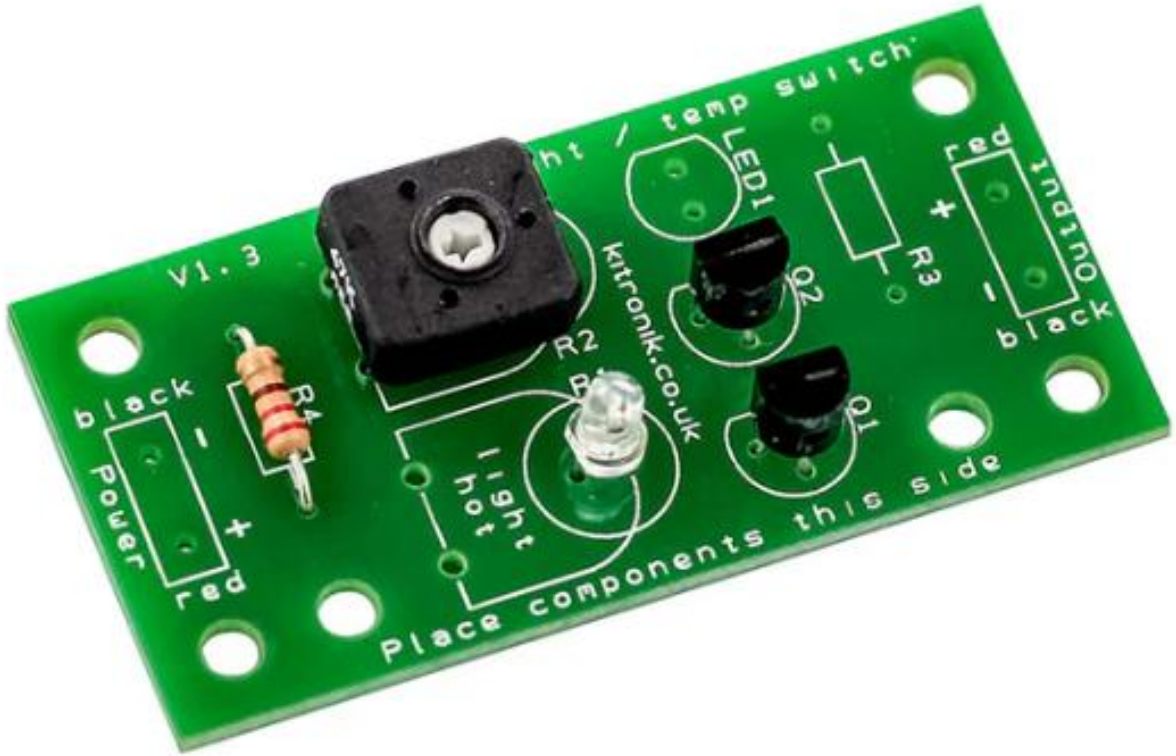




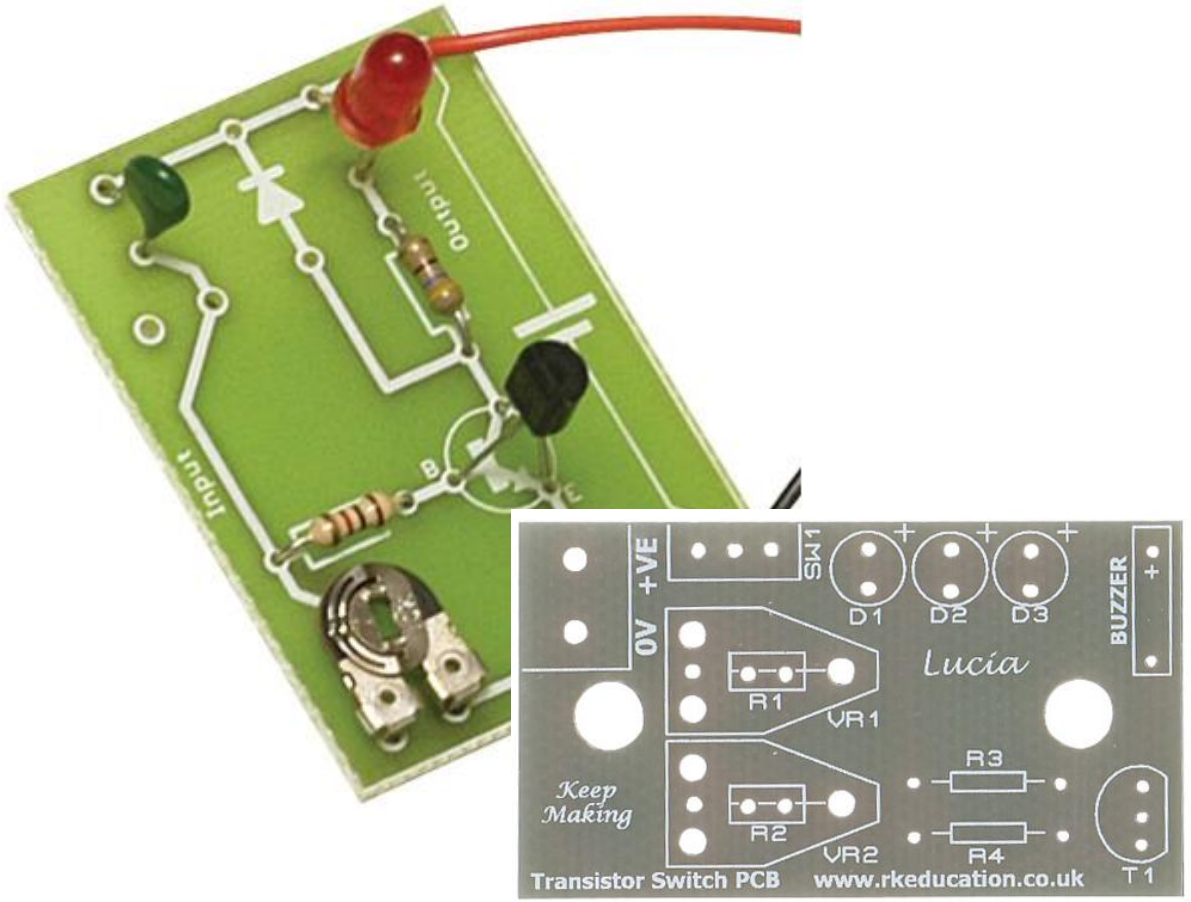
Printed Circuit Board (PCB) layout

Other commercial solutions:

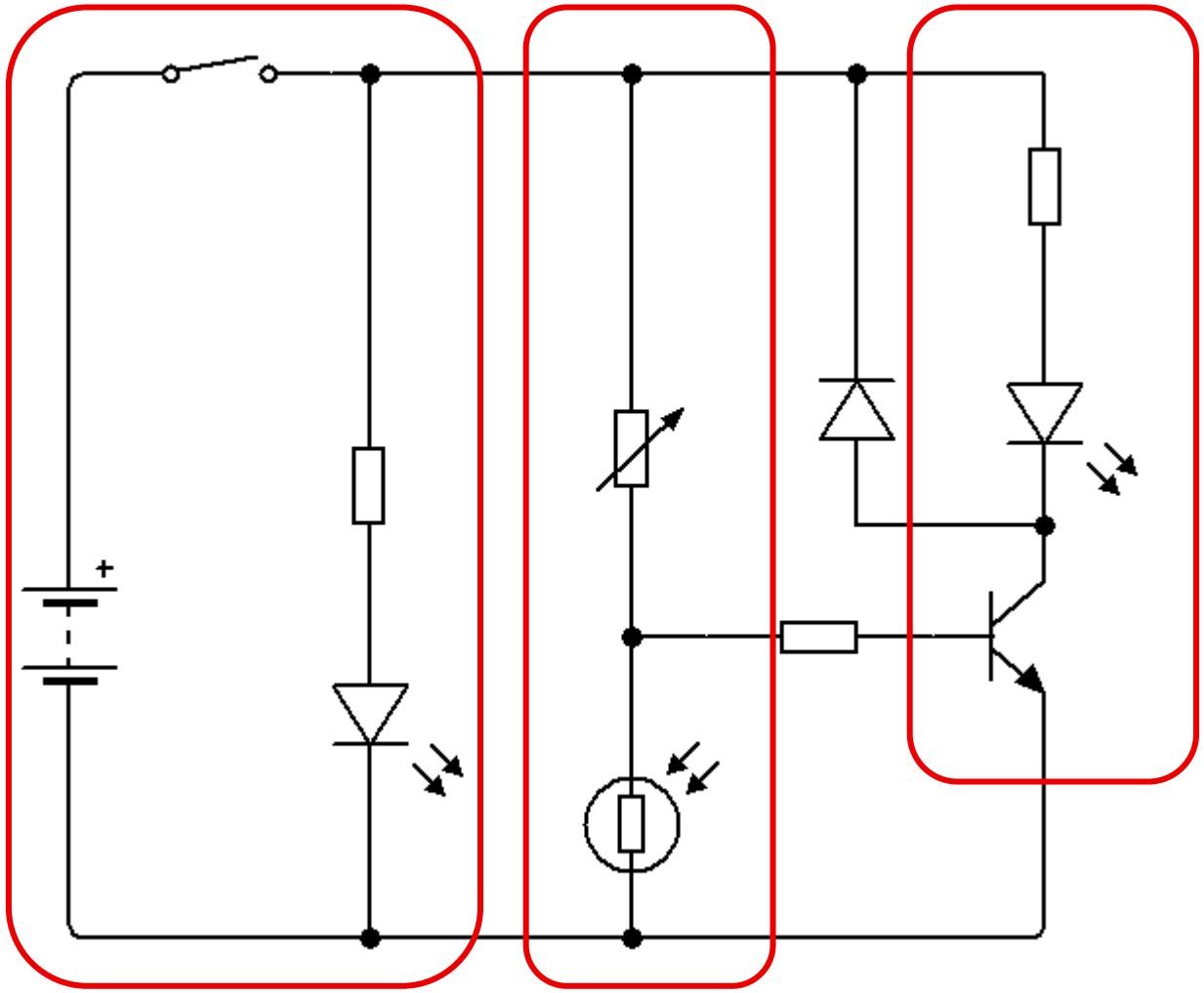
- Kitronik

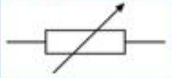
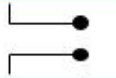
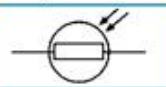
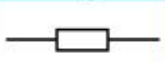
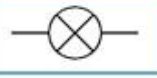
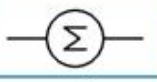


Rapidonline

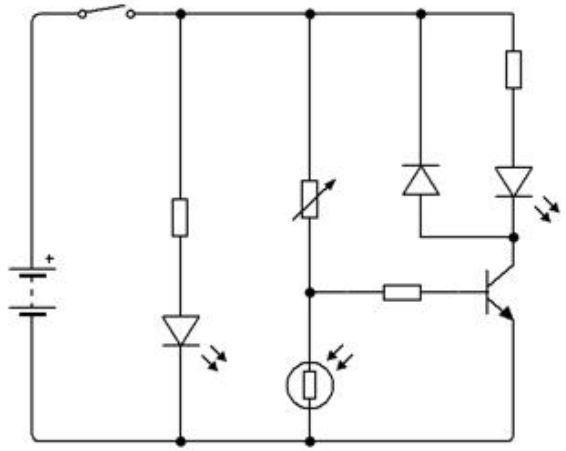


How the circuit works

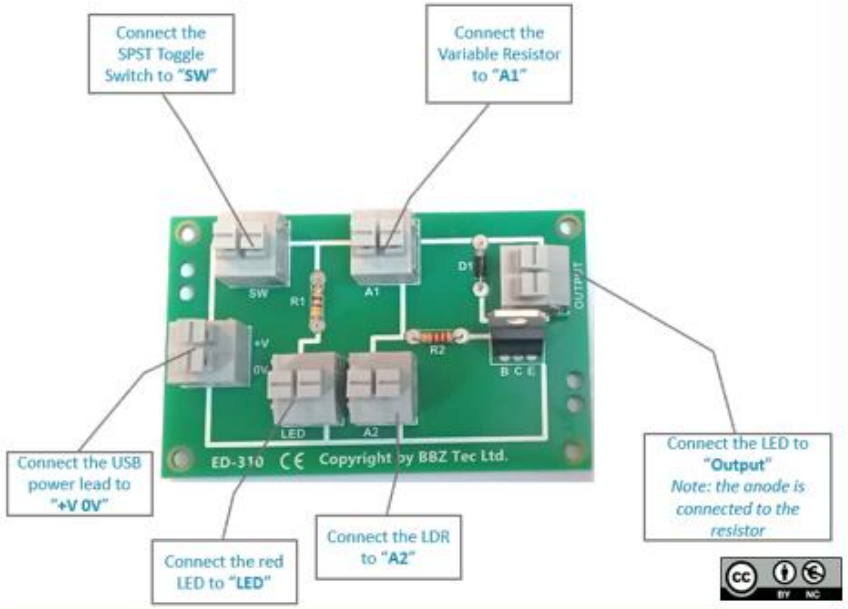


	Component	Name	Symbol	Description
INPUTS				
				
				
				
				
				
				
PROCESSES				
				
				
OUTPUTS				
				
				
				
				

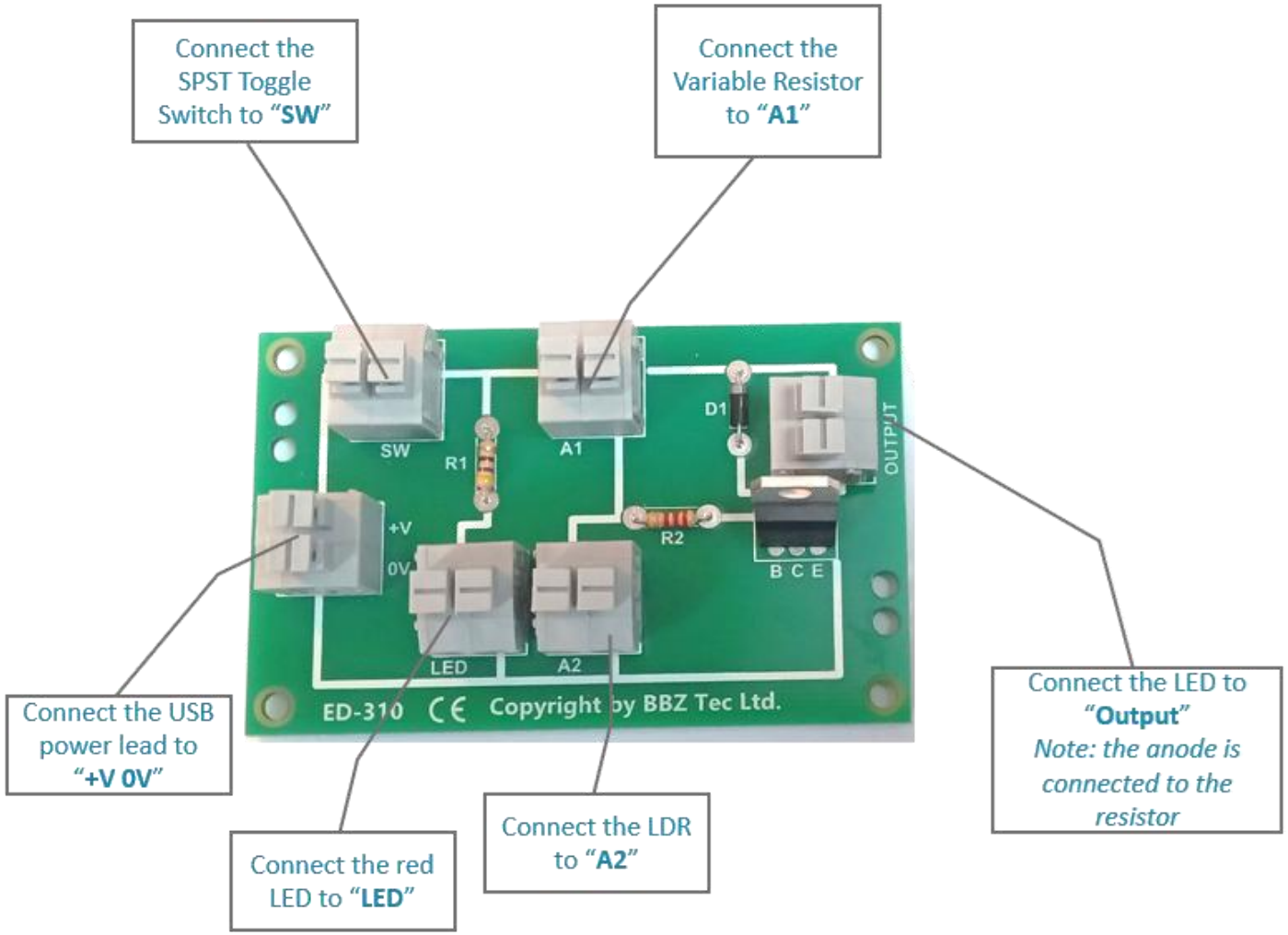
Circuit Diagram: Identify and label the components.



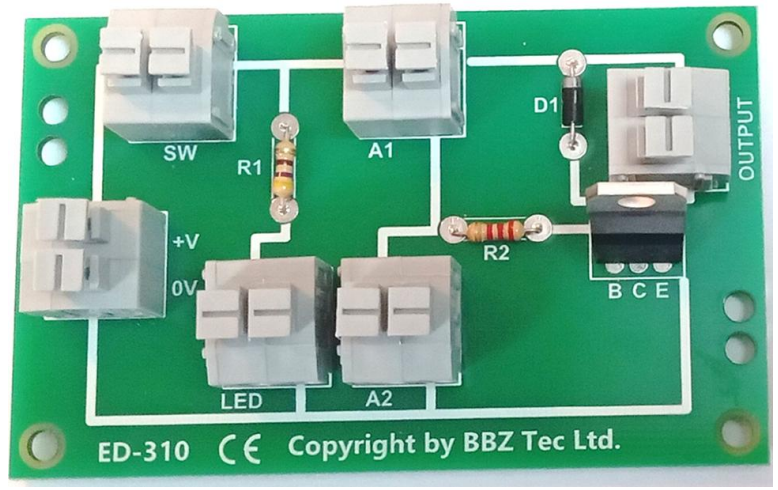
Circuit Diagram: Identify and label the components.



Build and test the automatic night light



Open Floor Discussion



How can this resource support student learning?

Enacting the learning

Context:

A smart greenhouse uses **sensors to control conditions** for the optimum growth of plants.

Student Challenge

Using your sensor circuit board, create a circuit that automatically activates an output of your choice (motor/LED) to meet the needs of a plant.

Group Feedback & Discussion

What other learning can be addressed using this resource?

Key Learning Reflection

Oide

3 Things I learned

2 Actions I will take

1 Question I have

In this session, we …

Considered teaching approaches when creating control solutions to identified problems.

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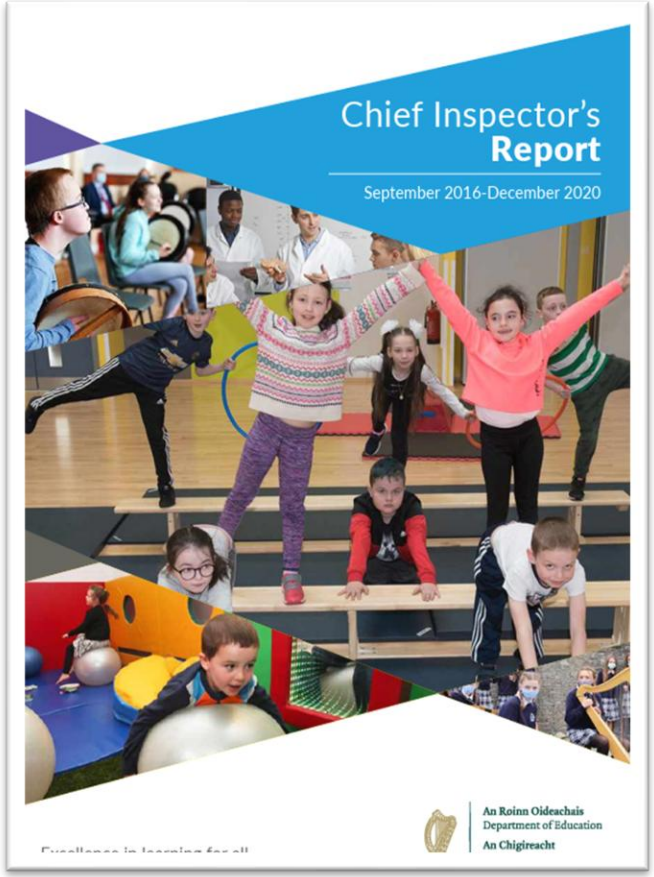
Session 3

In this session, we will…

- Further develop teachers' skills in the provision of feedback to support student learning.

Inspection Reports

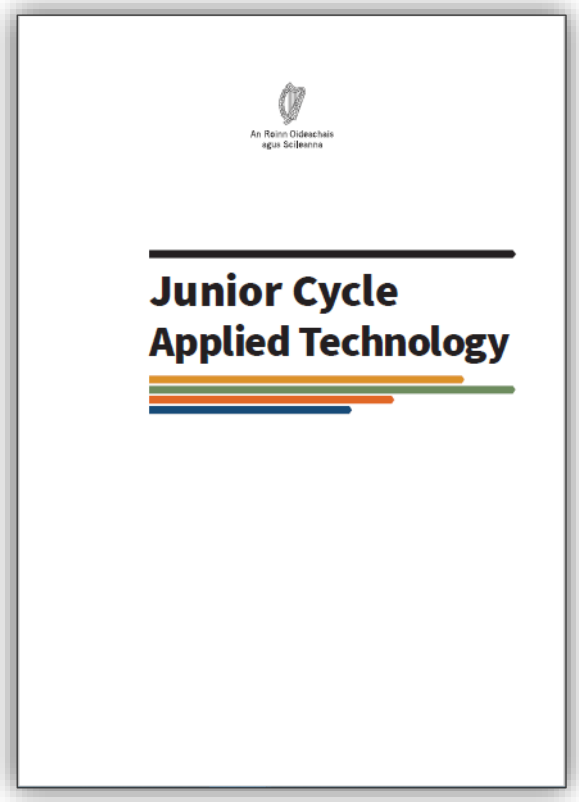
‘Students should be encouraged to record and reflect on their design journeys from conception to realisation on all projects; detailed written formative feedback should be provided by teachers on this work to support students’ learning and to enable them to self-assess their own work.’



Chief Inspectors Report 2016-20 pg. 160

Applied Technology Specification

Develop students' resilience through constructive critique and support their learning in a 'safe failure' environment



NCCA, Applied Technology specification, page 5.

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Pause and Reflect

When it comes to practical work, how do you currently engage with giving students feedback?

Types of Feedback (Skills and Feedback)

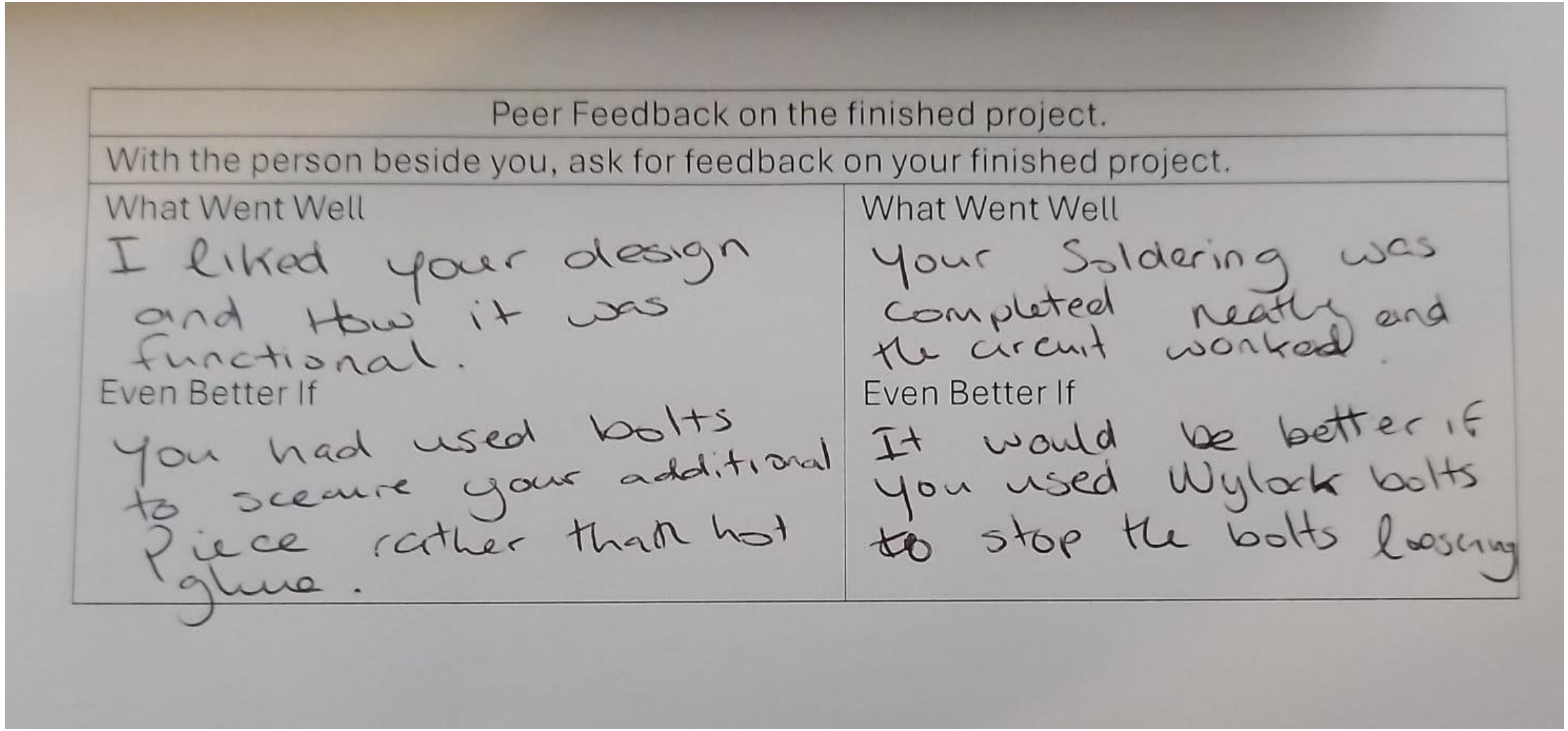
Process/Skill 1: Drilling	Process/Skill 2: Finishing
Rate how you did?	Rate how you did?

1	2	3	4	5
			x	

1	2	3	4	5
			x	

<u>What Went Well:</u> I didn't break the piece with the drills. The holes were even and symmetrical. <u>Even Better if:</u> I had the measurements perfect for the holes to slot perfectly. <u>Teacher Feedback:</u> Look to improve on accuracy when marking out.	<u>What Went Well:</u> The edges were really smooth, and curves were equal and rounded. <u>Even Better if:</u> I had lubricated the sandpaper to make it even smoother. <u>Teacher Feedback:</u> Yes, in the future you can use water in the sanding process. You could also peak to improve the finish further.

Types of Feedback (Peer Feedback)



Peer Feedback on the finished project.

With the person beside you, ask for feedback on your finished project.

What Went Well	What Went Well
I liked your design and how it was functional.	Your Soldering was completed neatly and the circuit worked.
Even Better If	Even Better If
You had used bolts to secure your additional Piece rather than hot glue.	It would be better if you used Wylock bolts to stop the bolts loosing

Types of Feedback (Audio Feedback)

- Audio feedback using free website
  - https://Eu.qwiqr.education

My Design Journey

Feedback

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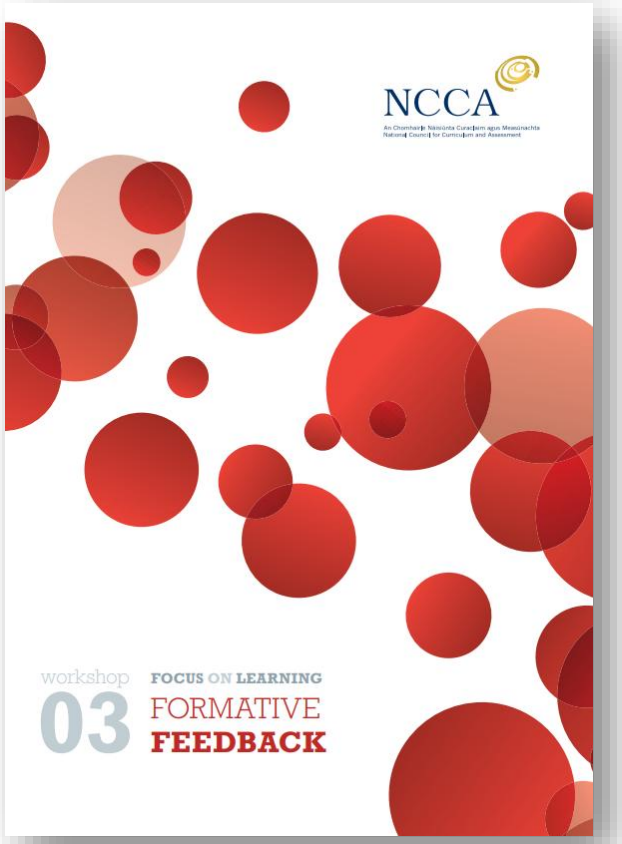
Effective feedback is designed to improve student learning

Feedback is effective when it:

- Focused on the quality of student work
- Related to agreed ***success criteria***
- Identifies success and achievement
- Indicates suggestions for improvement
- Prompts student thinking
- Allows time for improvement to take place



Sample 2nd year student project

Design Brief:

Public places, such as car parks, benefit from appropriate lighting in the evening and night.

Design and make an automatic light that illuminates in low light conditions.

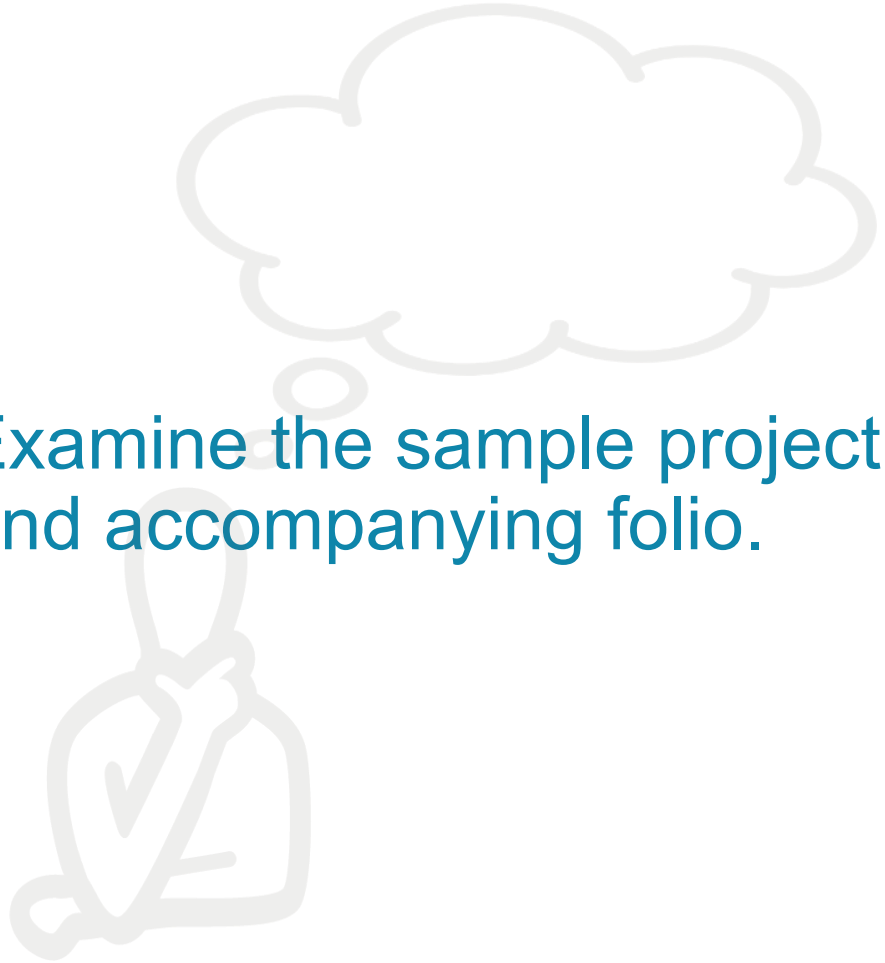
Group Discussion

What is the student being asked to do in the brief?

Co-creation of success criteria

From your understanding of what the student is being asked to do in the given brief, create agreed-upon success criteria for the portfolio and artefact

Pause and Reflect



Examine the sample project
and accompanying folio.

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Design Brief 1:

Public places such as car parks benefit from appropriate lighting in the evenings and nights. Design and make an automatic light that illuminates in low light conditions.

Research

Good car park design should include the following attributes:

•Easy entry and egress to the car park and the parking stalls
•Uncomplicated and logical traffic flow around the car park
•Unimpeded movement
•Low maintenance
•Safe and secure.

•Lights should automatically come on at night

Reference: https://steelconstruction.info/Car_parks

Project Ideas

Idea 1

Idea 2

Idea 3

Justification of Design Idea

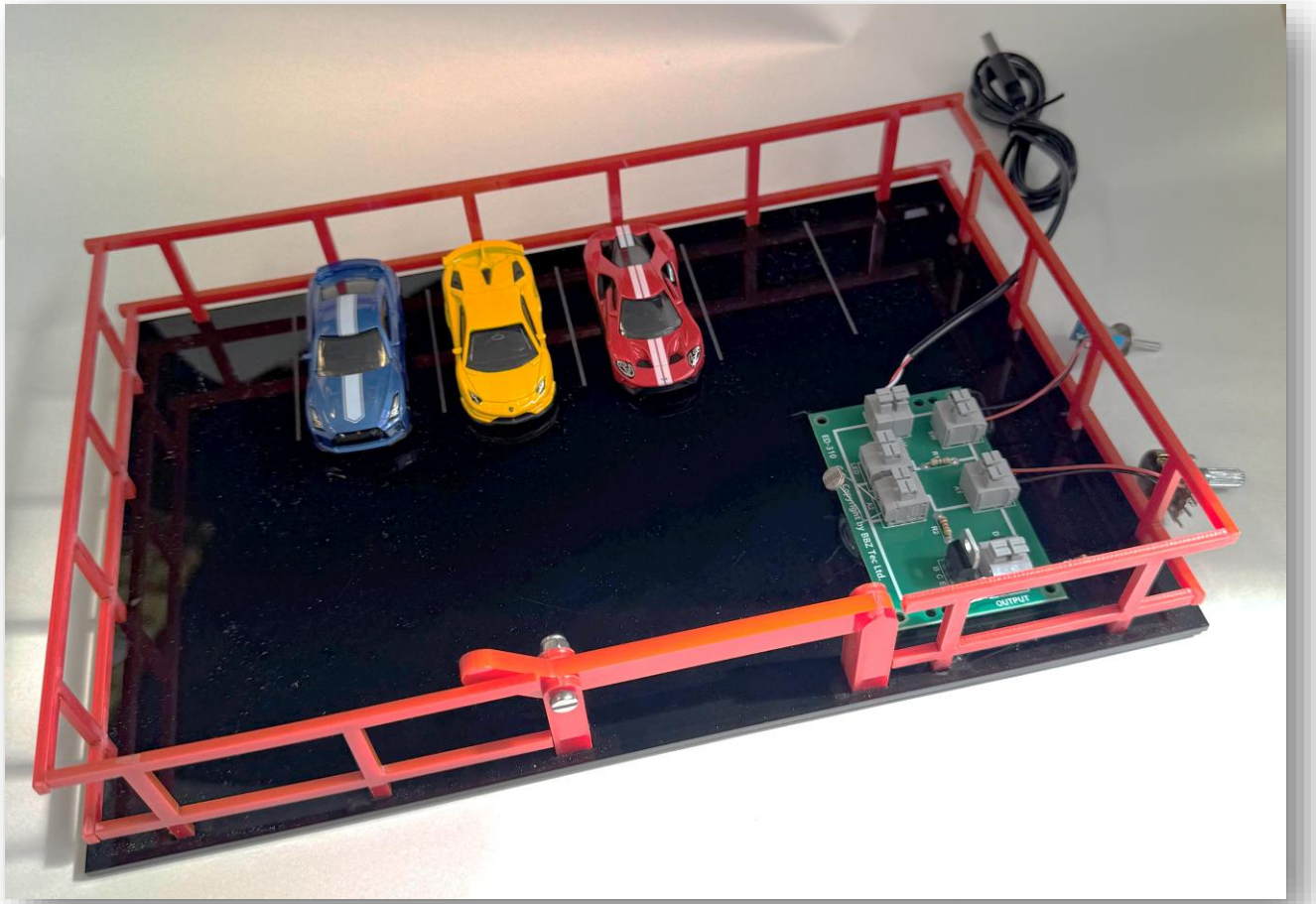
- I decided to create idea 2 as it is a simple idea
- The car park will be easy to assemble and I will only need a small fence around it to keep animals and other things out of the car park
- I will use the laser cutter and acrylic in order to make sure that the project looks well
- I will design the car park on on-shape to cut out on the laser cutter
- I will use the PCB for the light as it turns on in the dark.

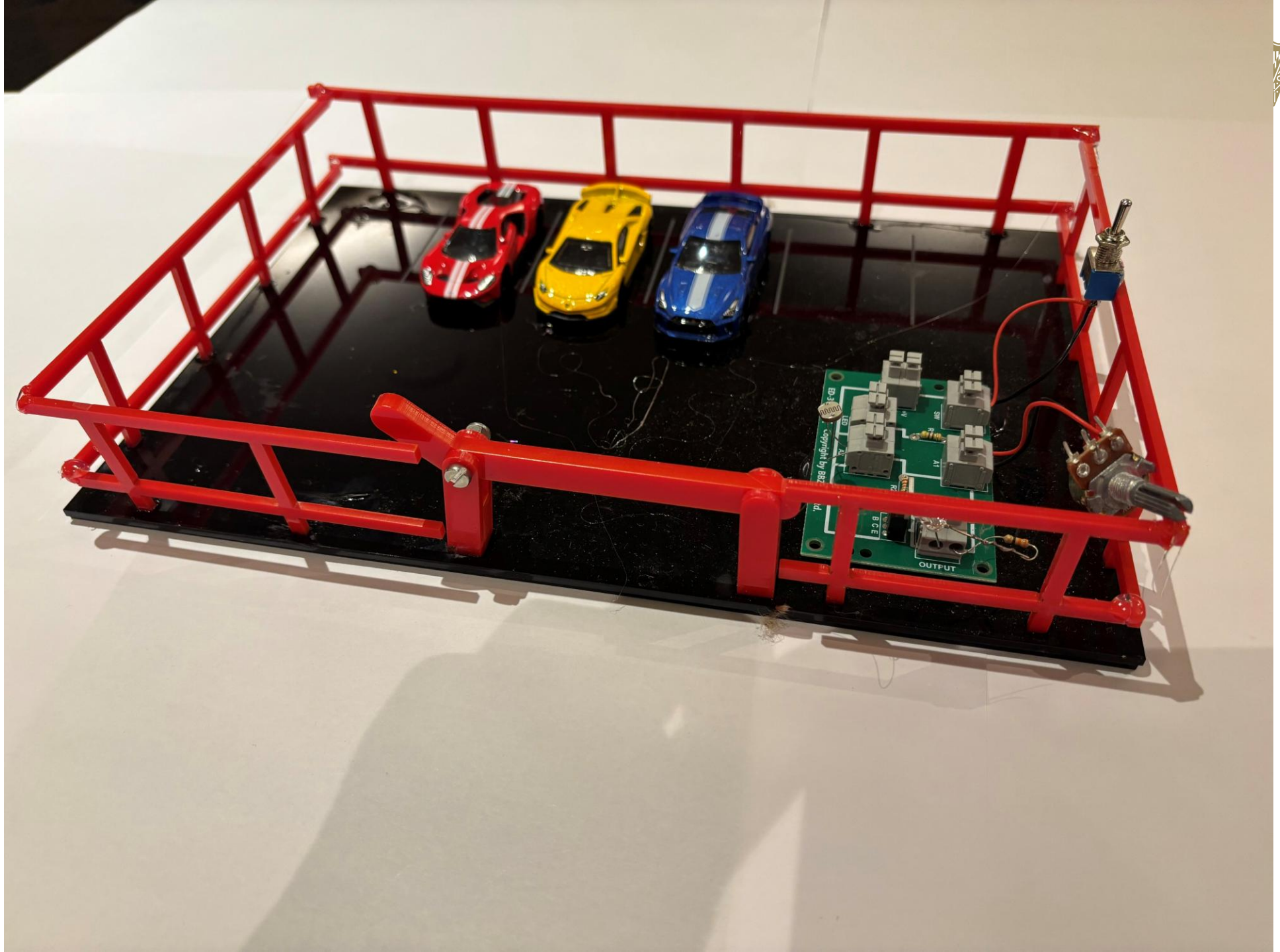
Evaluation and Reflection

- I am very happy with the project as the car park came out really well.
- The cars can fit neatly between the spaces allowed and the barrier is easy to raise and lower.
- The laser cutter did a very good job making sure it was accurate and I glued it together really easily.
- The light circuit worked well.
- If I was to do it again I would make the carpark a bit bigger so it would fit more cars.

Pause and Reflect

What feedback could have been used to greater support the student creating this solution for the brief?





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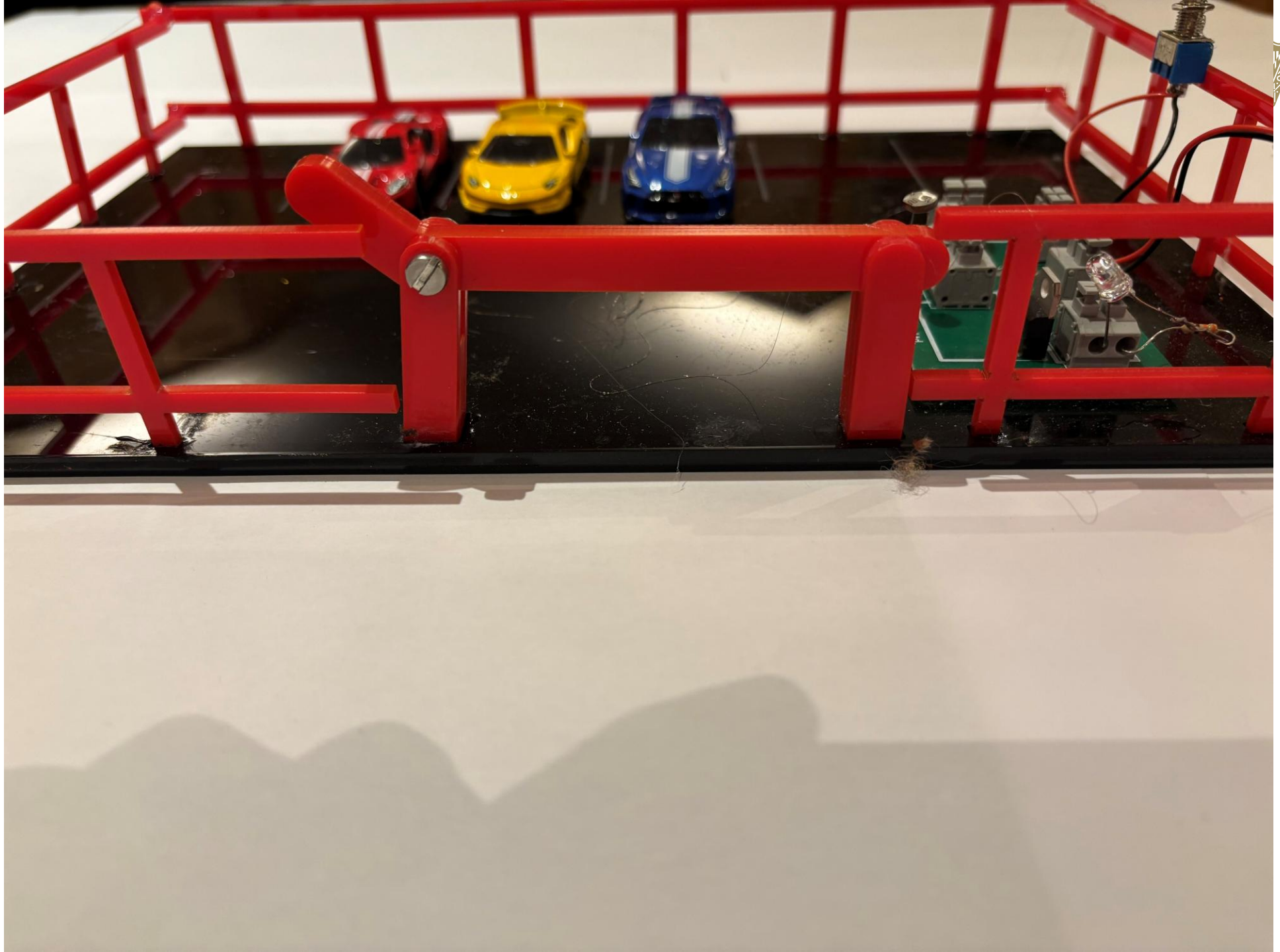

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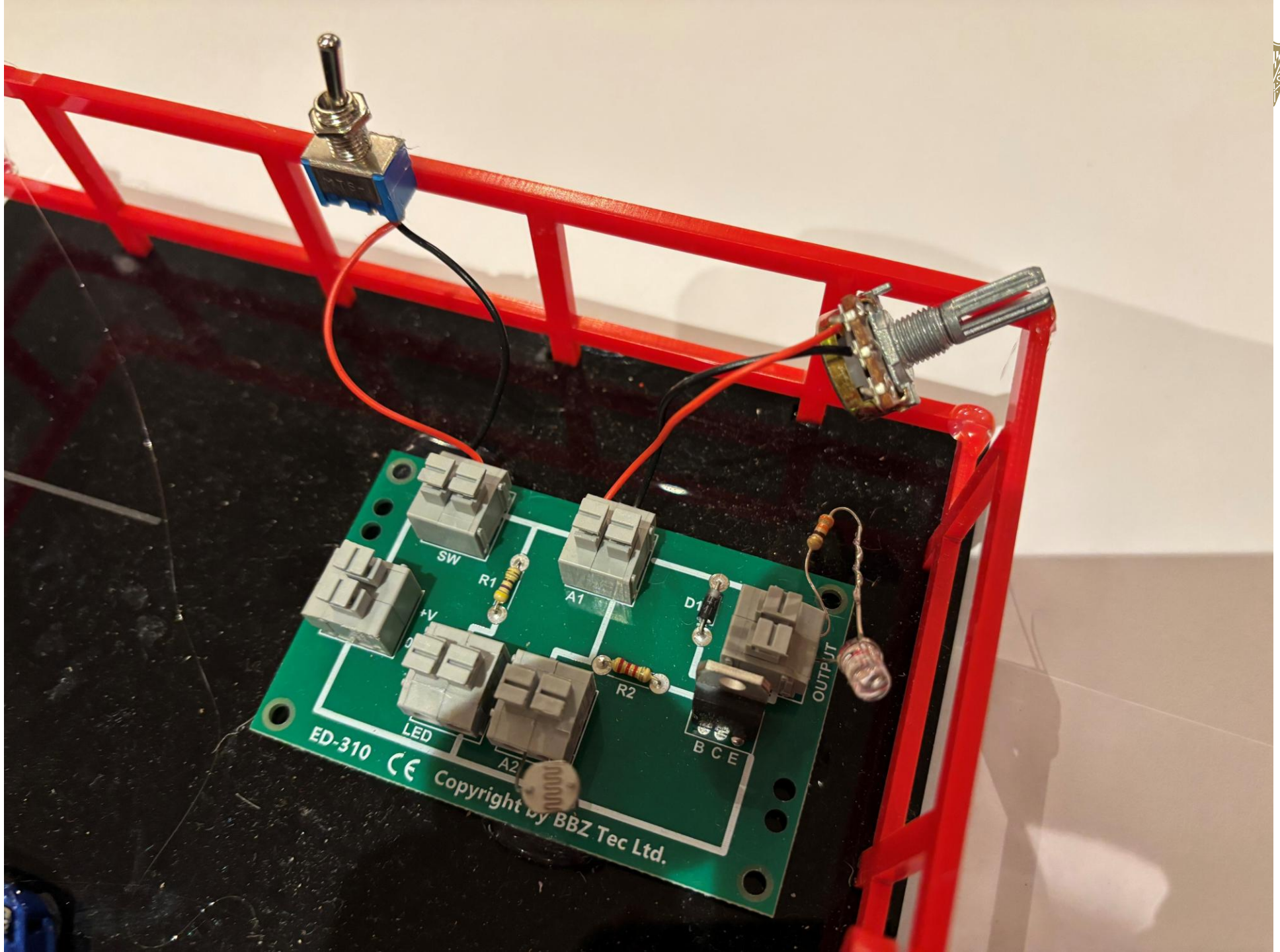
SW
R1
A1
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R2
OUTPUT
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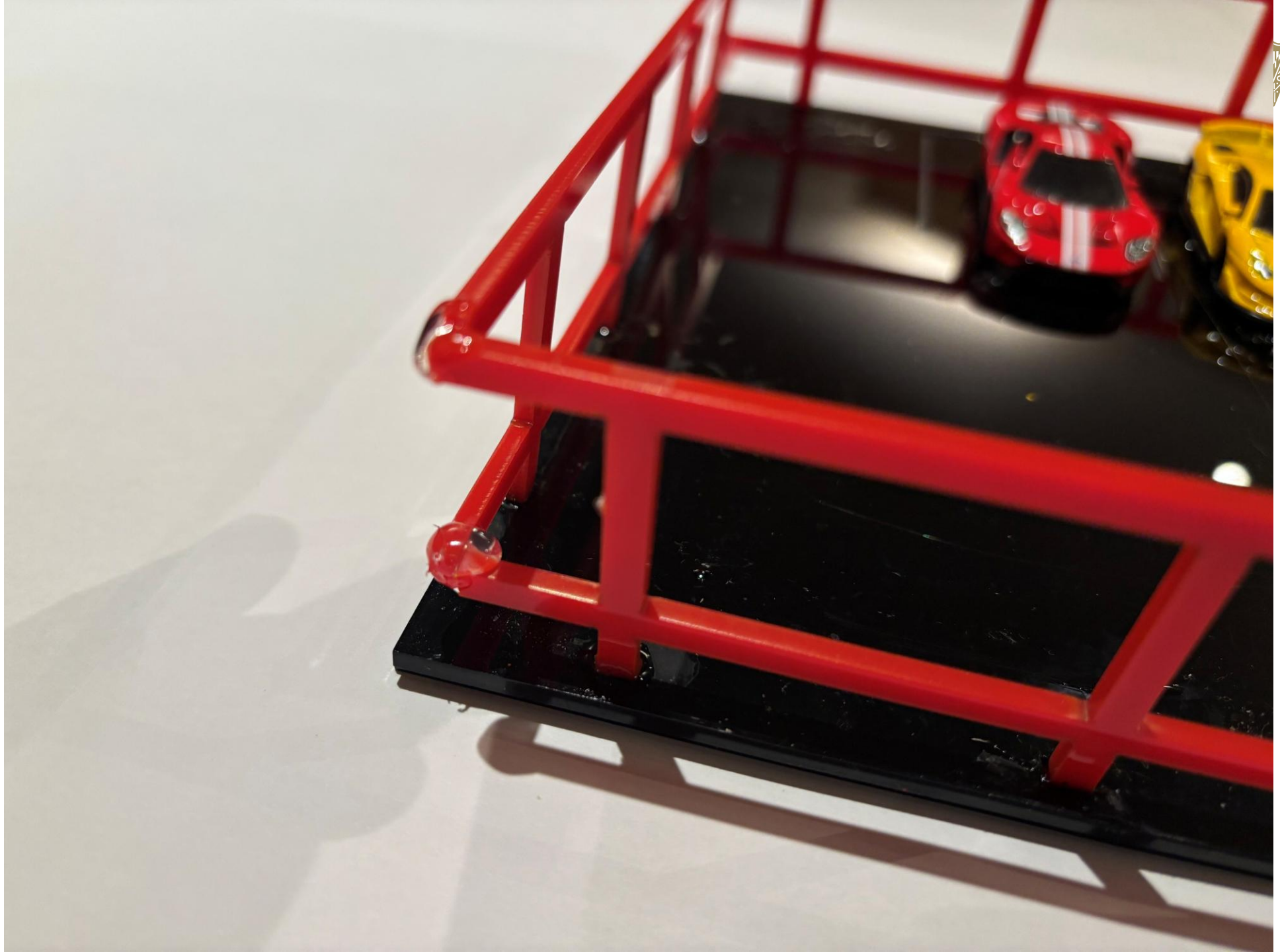

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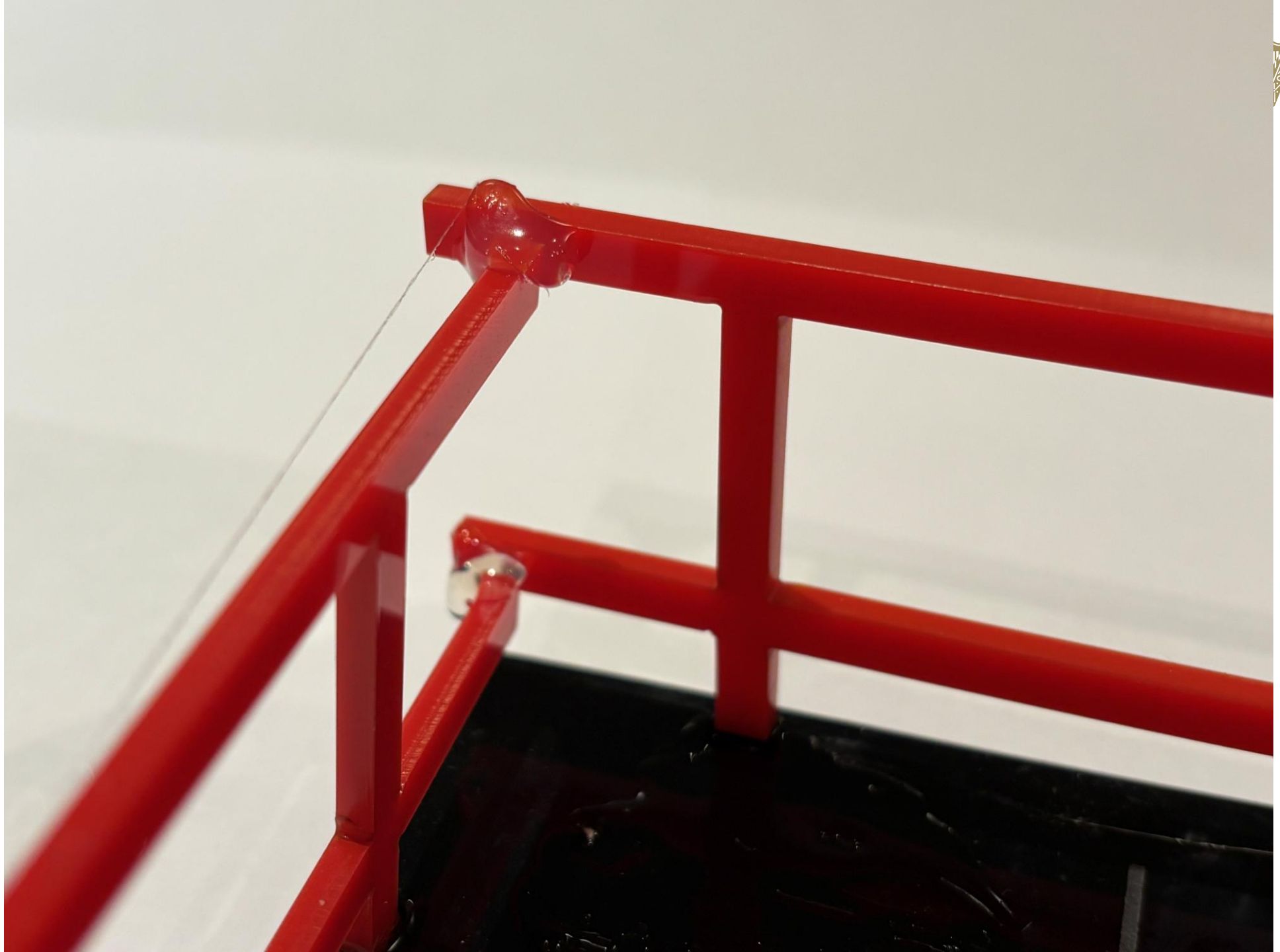

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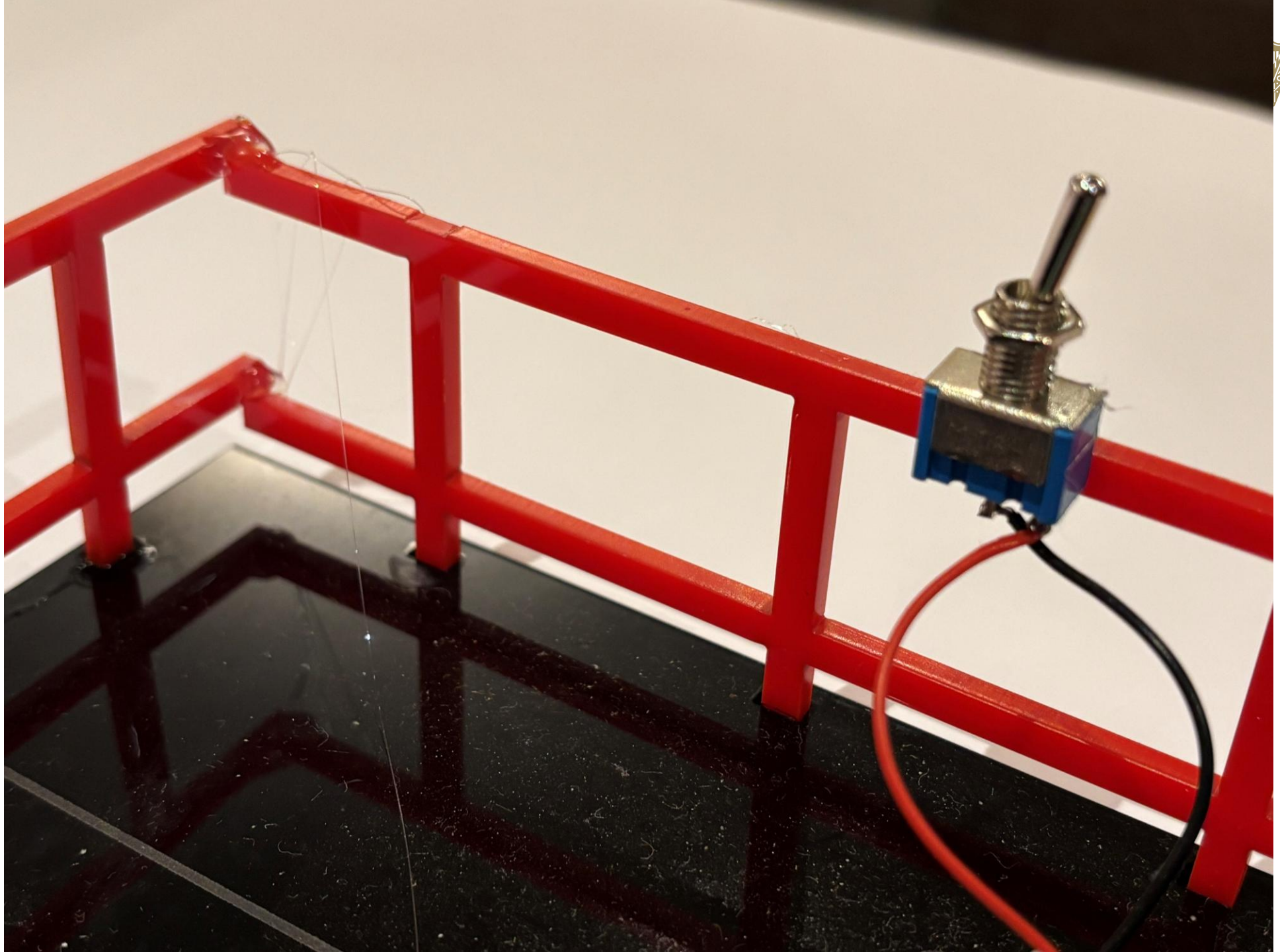

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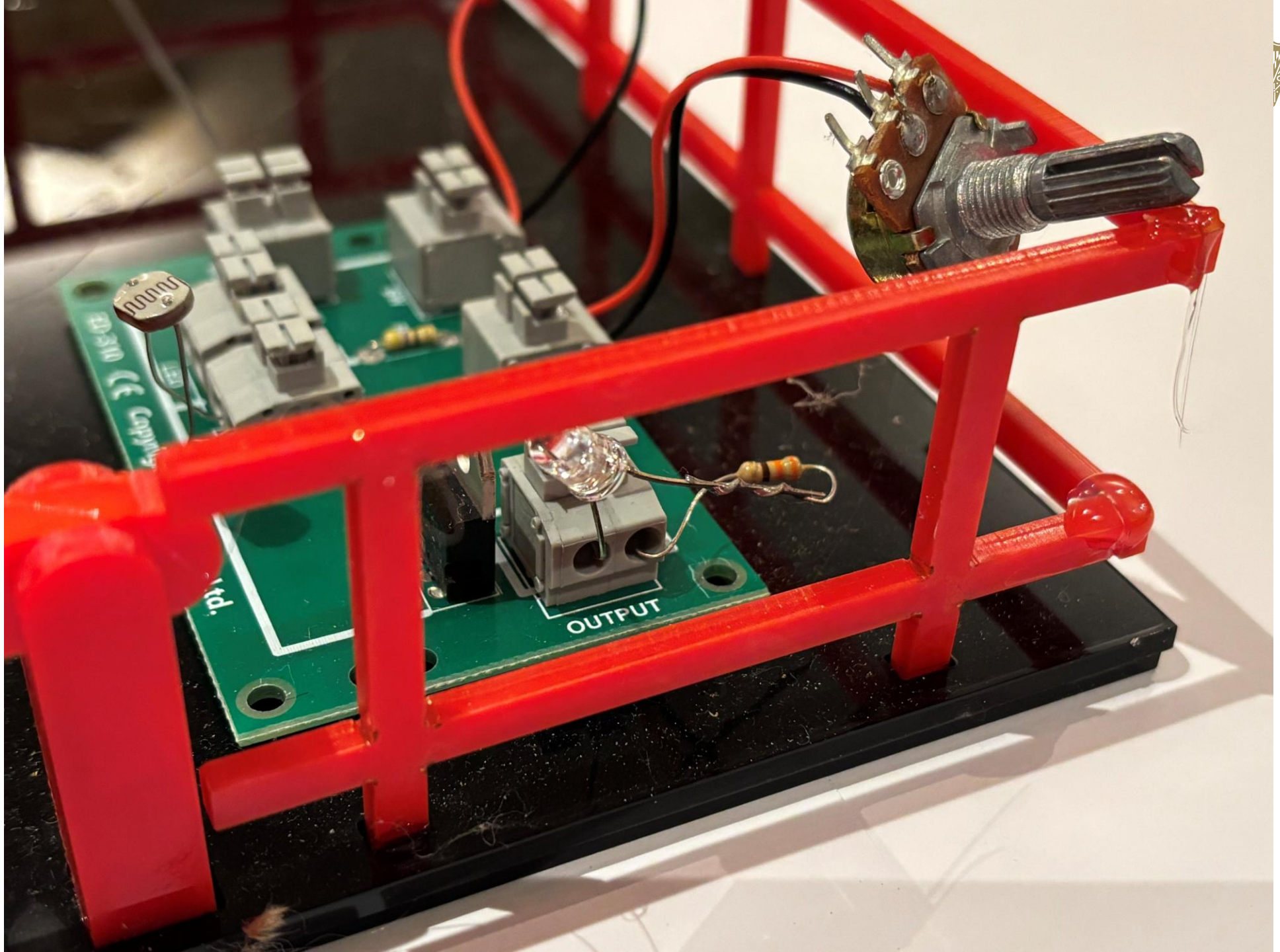

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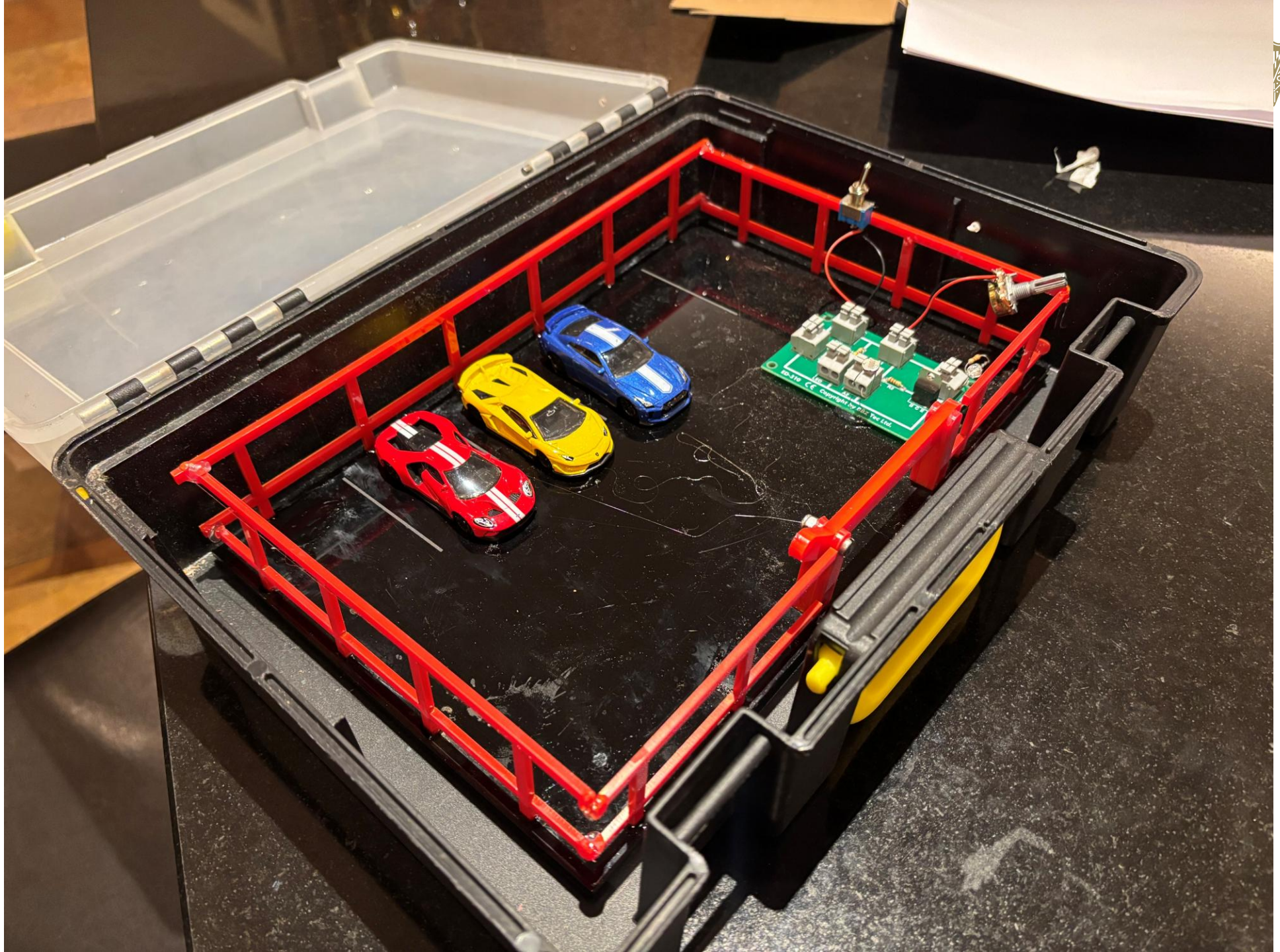

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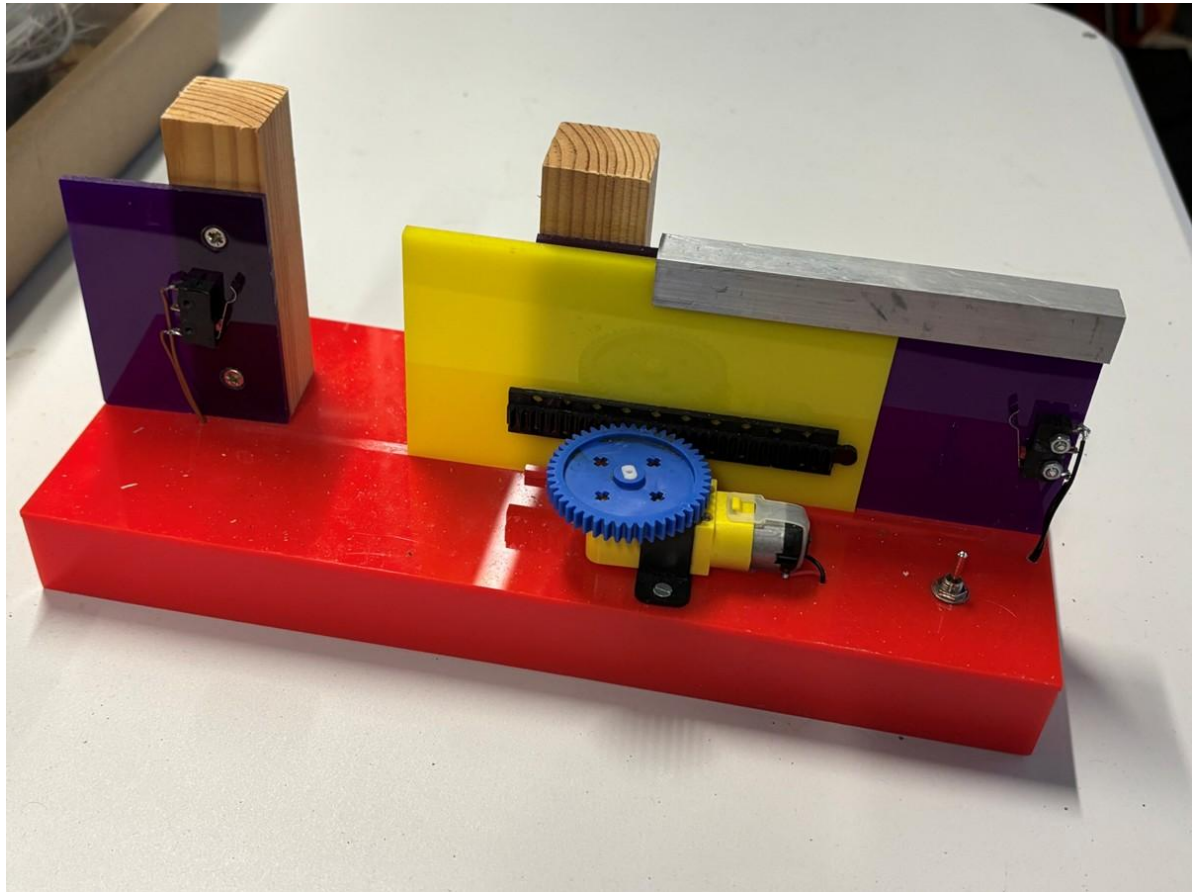
Sample 2nd year student project 2

Design Brief:

Farmers often find difficulty in opening and closing farm gates.

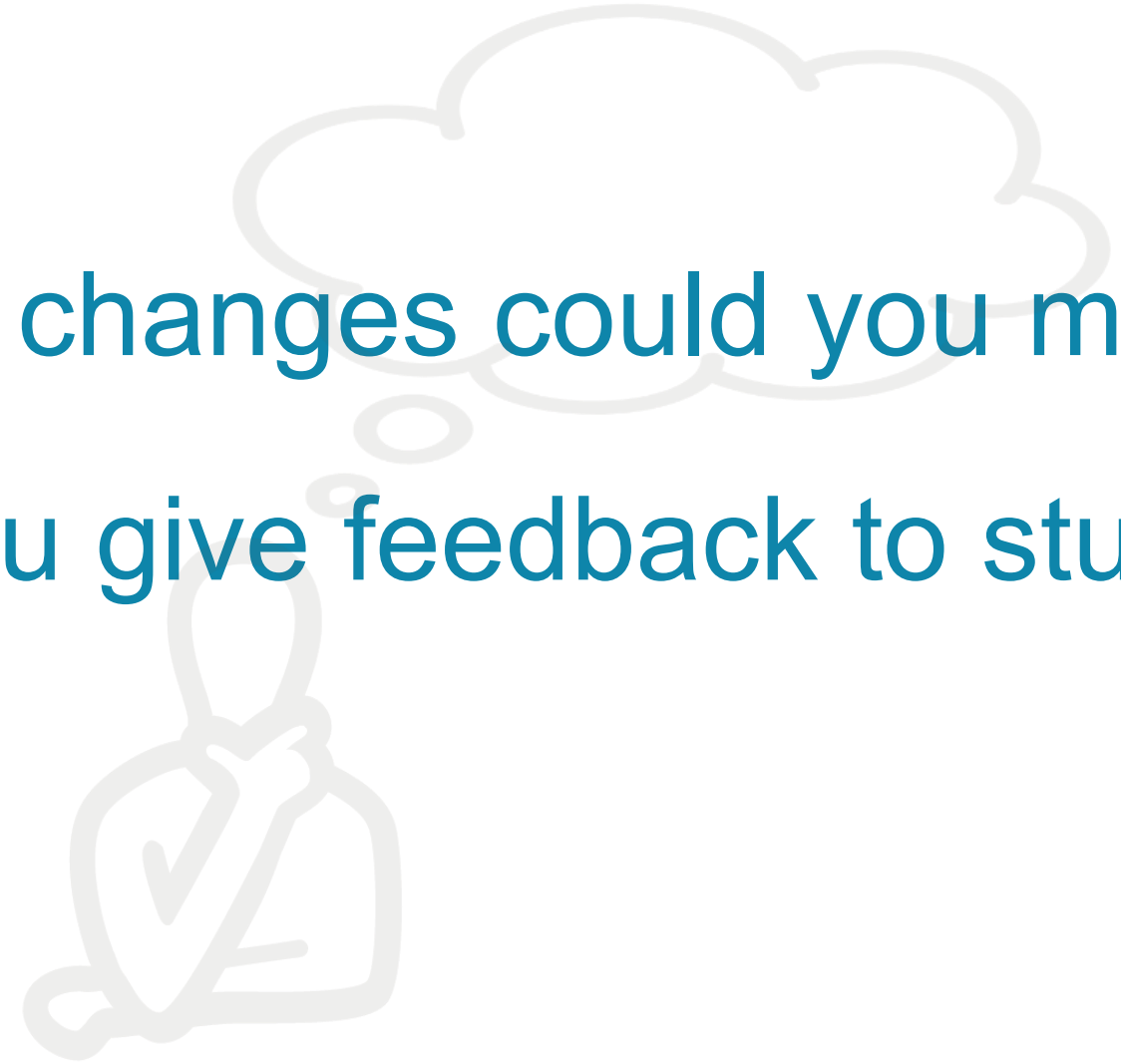
Design and make an electro-mechanically controlled gate.

Limit switches or other appropriate safety features should be incorporated into your design.



Consider your practice

What changes could you make in how you give feedback to students ?



In this session, we…

- Further developed teachers' skills in the provision of feedback to support student learning.

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Supporting the Professional Learning of School Leaders and Teachers

Applied Technology

PLE Day 2025 - 2026

Thank you for your participation in today's session