T Level Technical Qualification in Engineering and Manufacturing – Design and Development

8714-321 Mechanical

Grade standard exemplification material

Pass - summer 2024

Version 1-0

Version and date	Change detail	Section	Question
v1-0 Oct 2024			

Contents

Introduction

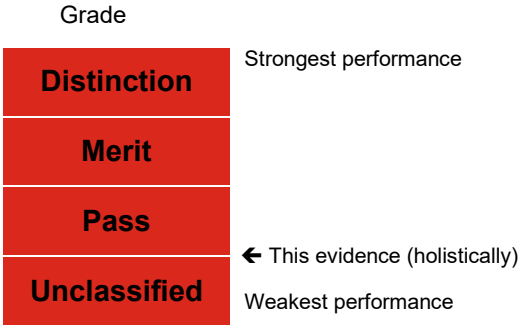
Summer 2024 Results

This document is aimed at providers and learners to help understand the standard that was required in the summer 2024 assessment series to achieve a pass grade for the 8714-321 Design and Development in Mechanical engineering Occupational Specialism (OS).

The grade standard exemplification evidence (Grade SEM) provided for the pass grade displays the holistic standard required across the tasks to achieve the pass grade boundary in the summer 2024 series.

The aim of these materials is to provide examples of knowledge, skills and understanding that attested to pass standard (threshold competence) in summer 2024. It is important to note that in live assessments a candidate's performance is very likely to exhibit a spikey profile and standard of performance will vary across tasks.

The Occupational Specialism is graded Distinction, Merit, Pass or Unclassified.



The pass grade boundary is based on a synoptic mark across all tasks. The materials in this Grade SEM are separated into two sections as described below. Materials are presented against a number of tasks from the assignment.

Tasks

This section details the tasks that the candidate has been asked to carry out. What needs to be submitted for marking and any additional evidence required including any photograph/video evidence. Candidate evidence that was or was not included in this Grade SEM has also been identified within this section.

In this Grade SEM there is candidate evidence from:

Task 1 Design
Task 2 Manufacture and Test
Task 3 Peer Review
Task 4 Evaluation and implementation

Candidate evidence

This section includes exemplars of candidate work, photographs of the work in production (or completed) and practical observation records of the assessment completed by provider assessors. This was evidence that was captured as part of the assessment and then internally marked by the provider assessor.

The Occupational Specialism brief and tasks can be downloaded from here .

Important things to note:

- We discussed the approach to standard setting/maintaining with Ofqual and the other awarding organisations before awarding this year. We have agreed to take account of the newness of qualifications in how we award this year to recognise that students and teachers are less familiar with the assessments (grading-arrangements-for-vtqsand-technical-qualifications-within-t-levels-in-the-academic-year-2023-to-2024), whilst also recognising the standards required for these qualifications.

- The evidence presented, as a whole, was sufficient to achieve the pass grade. However, performance across the tasks may vary (i.e. some tasks completed to a higher/lower standard than pass grade).

Grade descriptors

To achieve a pass (threshold competence), a candidate will be able to:

A. Demonstrate a basic use of software/technologies to model, evaluate and produce mechanical engineering diagrams and simulations that meets the requirements of the brief.

B. Demonstrate basic technical skills when developing models and prototypes, resulting in a prototype that may require some modifications.

C. Apply basic knowledge and understanding of testing processes, resulting in a prototype that has been tested against most of the design criteria.

D. Interpret information, plan, assess risk and follow safe working methods appropriately when applying practical skills to an acceptable standard in response to the requirements of the brief.

E. Apply basic knowledge and understanding of the design principles required for mechanical engineering resulting in proposals and solutions that meet the minimum requirements of the brief.

F. Work safely showing an understanding and suitable level of awareness in the preparation and application of processes, selection and use of tools and manufacturing materials and components, resulting in tasks that are carried out with some minor errors.

G. Use industry and technical terminology accurately most of the time in both written and verbal contexts.

Task 1 - Design

Assessment number (eg 1234-033)	8714-321
Assessment title	Mechanical Engineering Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	1
Evidence title / description	Design specification Annotated sketches Justification of the choice of one design for further development Justification of selection of the materials and components Design calculations, including all workings Engineering drawings of the proposed design Outcomes of virtual modelling of the proposed design, either as screen captures or printouts Bill of materials Any notes produced of research undertaken including citation of sources and internet search history
Date submitted by candidate	DD/MM/YY

Task 1

Assessment themes:

- Health and Safety
- Design and Planning
    - Documents
    - Drawings and diagrams
    - Virtual modelling

You must:

a. produce a detailed design specification that builds on the design criteria given in the assignment brief, including references to any research used
b. sketch and annotate three potential designs for the lifting device
c. select one appropriate design for development with justifications
d. select and justify the use of the materials and components needed for the proposed design
e. carry out the following calculations to support the proposed design:
    - the loading applied to any components of the design that are subject to stress.
    - the mechanical advantage afforded by the design
f. create engineering drawings of the proposed design using CAD software
g. produce a virtual model of the proposed design using CAD software
h. create a bill of materials (BoM) listing all of the parts required in your final design proposal.

You must complete the design activity prior to carrying out Tasks 2, 3 and 4

If you provide a design plan that is not fit for purpose it is expected that your tutor/assessor will intervene and provide necessary feedback that will be commented on in the marking documentation and reflected in marks awarded.

Additional evidence of your performance that must be captured for marking:
none

Task 1 - Candidate evidence

Task 1 – Design specification

The device must grasp and lift a beaker from a known starting point, and move it a minimum of 100mm in a straight line and lowering it to an analysis point.

It must be able to then lift the beaker from a second starting point and move it at least 100mm again, before lowering it to a disposal point. It must be able to pick up a minimum weight of 200 grams.

I belive the design I have chosen is the best out of my three ideas. This is because I feel it has the best features of both combined without much issue. The handle which is used to lower the beaker is going to be made out of plywood, meaning it will be strong enough to hold the beaker safely without losing control of its movement, which is likely to happen when using something like a cable or string.

On top of this, I have chosen to use a claw in my design, I know this is a good option because the use of a mechanical claw allows the user to have a bespoke grasp of the beaker, ensuring it doesn't get dropped or damaged when attempting to move it to the designated spots.

Furthermore, I have added the handle and lever on the screen side of the device, meaning the operator should rarely if ever need to reach over the other side, as the brief states the device handles samples of hazardous materials.

I have implemented 3 different directions of movement, this is to make sure that the device can move to almost anywhere within the parametres of the base. This is effective, because if the device is needed to grasp the beakers and move them somewhere not specified in the brief, it has the ability to do so and another device doesn't need to be planned and made. This therefore saves time energy and recourses.

Health and Safety

There are many health and safety concerns along different steps of the process. This includes the manufacturing of the prototype and the actual device and handling the hazardous materials.

Hazard	How dangerous	Likeliness of occurring	What can we do	Total rating
Getting a wound from sawing	2	3	Ensure material is in vice properly and set up correctly	2x1=2
Getting sawdust in the eye	2	2	Wear correct PPE like Protective glasses	2x1=2
Touching hazardous materials	3	2	Stay using the device behind the screen	3x1=3
Material setting fire	3	1	Ensure no heat sources are used near the material	3x1=3
Someone unauthorised uses tools e.g a child	3	2	Make sure to put all tools and equipment back safely	3x1=1

Mechanical Lifting Device

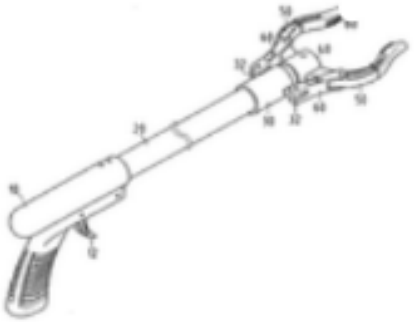
- Manually powered and operated
- must be able to grasp and lift a 200g beaker and move minimum 100mm in a straight line and lower it
- the lifting must take place safely
- the device can be free standing or fixed
- it must be assembled as a permanent product

Grabbing part of device

Rubber to have grip on the beaker.

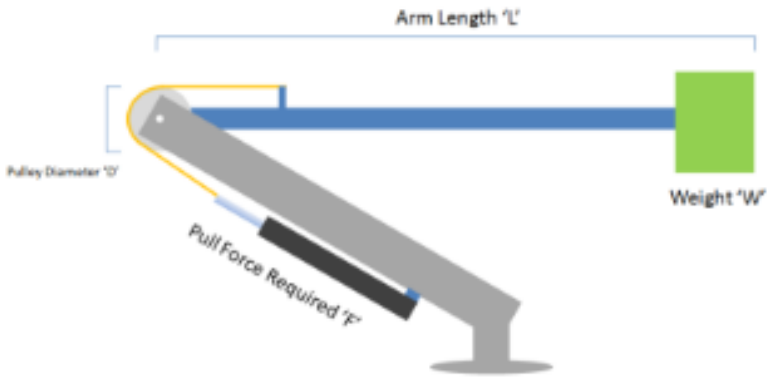
Able to be tightened by input force.

Mechanical grabbing mechanism



In a mechanical disc brake, steel cables transfer force from the lever and connect the brake lever at the handlebars to the brake caliper. Squeezing the lever applies force to the cable and the pistons inside the brake caliper.
https://www.velotricbike.com/blogs/story-landing/mechanical-vs-hydraulic-disc-brakes#:~:text=In%20a%20mechanical%20disc%20brake,pistons%20inside%20the%20brake%20caliper.

(idea) When lever is squeezed, pulls a cable grabbing the beaker, the device can then pivot to move



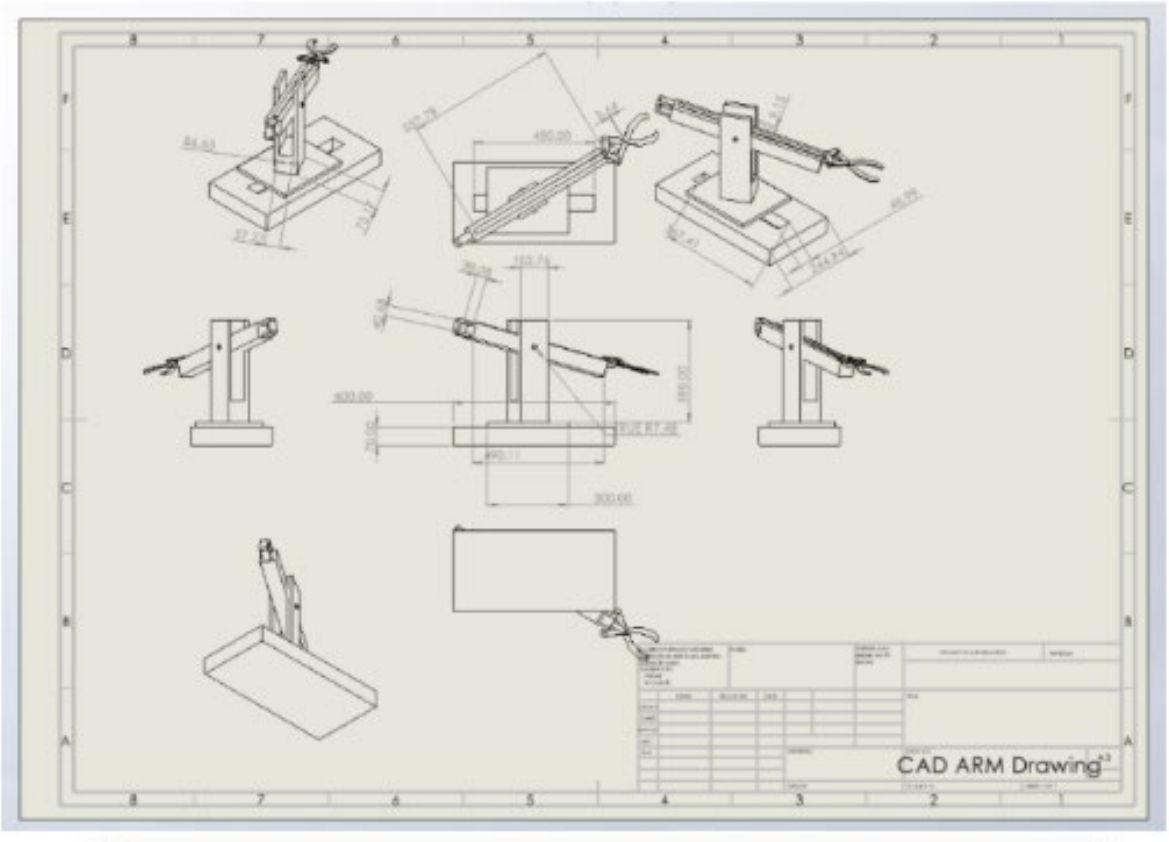
Materials

Plywood - high strength, stress resistance, moisture resistance

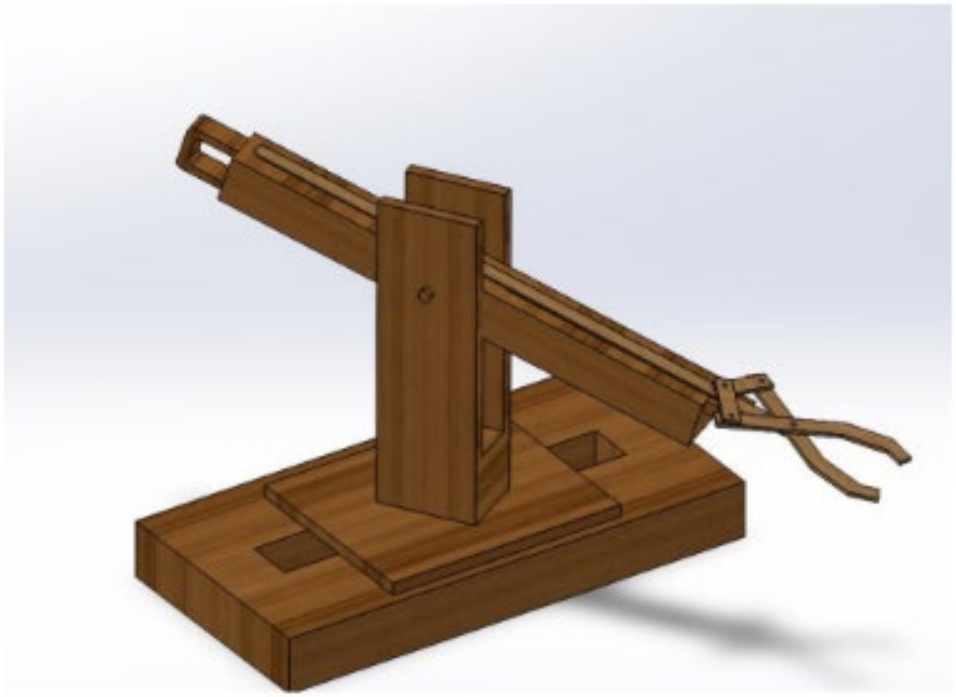
using wood for the gripper, going to put hot glue on the ends to add more grip when picking up the beaker.

Going to use 2 gears to create a mechanical advantage when moving the arm left or right to move the beaker 100mm

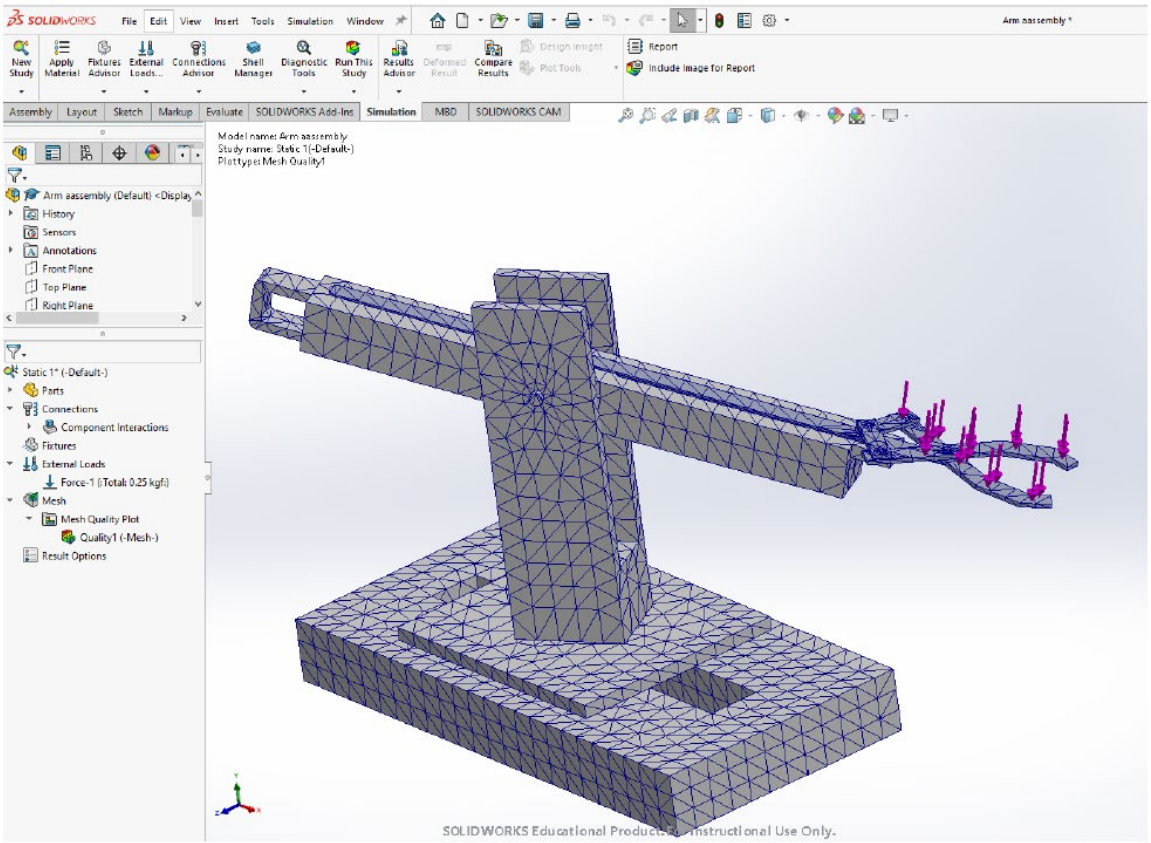
CAD Engineering Drawing of proposed design to develop



CAD Model of Design to Develop



Testing Design



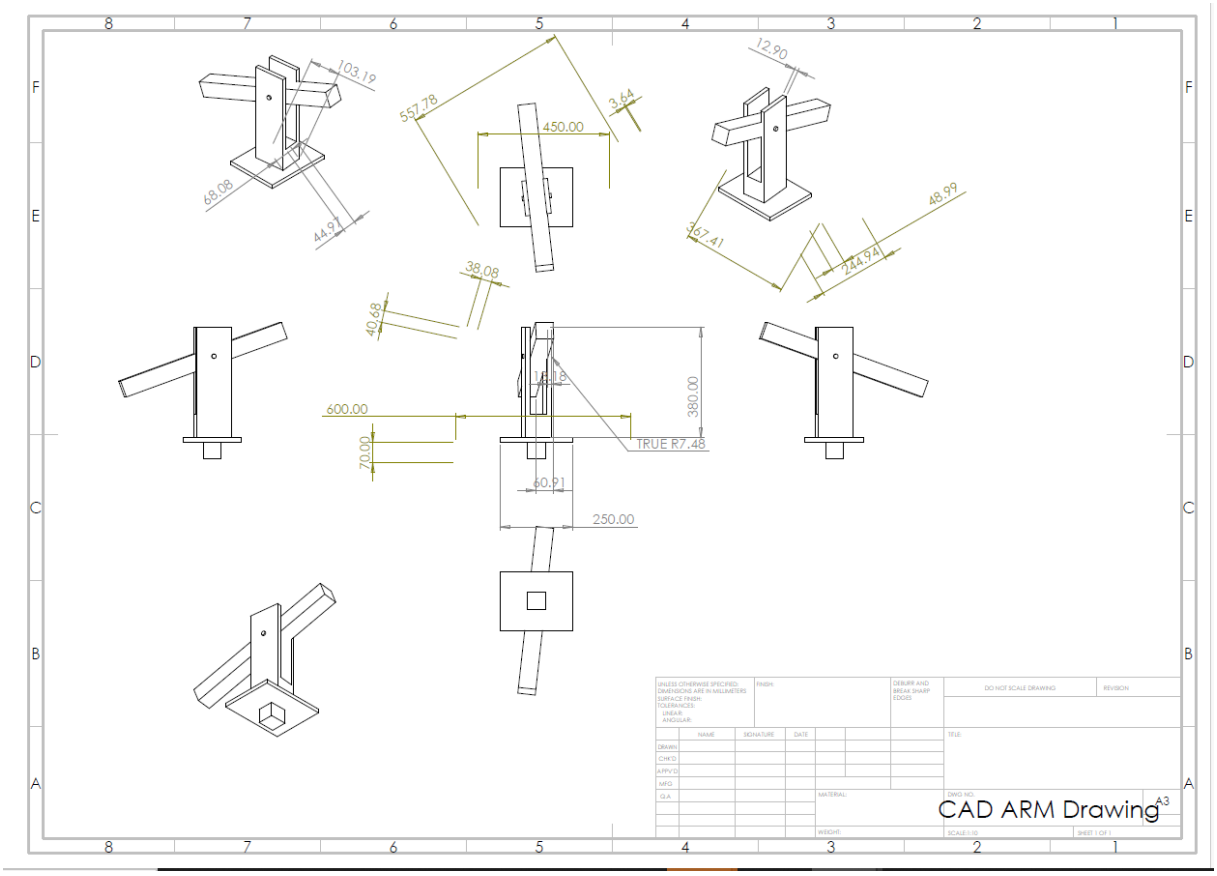
I have created a mesh and added 0.25 kgf on the claw, so that I can do static and more ways of testing on it to see how it recats under stress. This is to make sure that the model works under different types of stress and strain, without having to use recources and money to make it and test it.

Task 1 – Citation of sources and internet search history

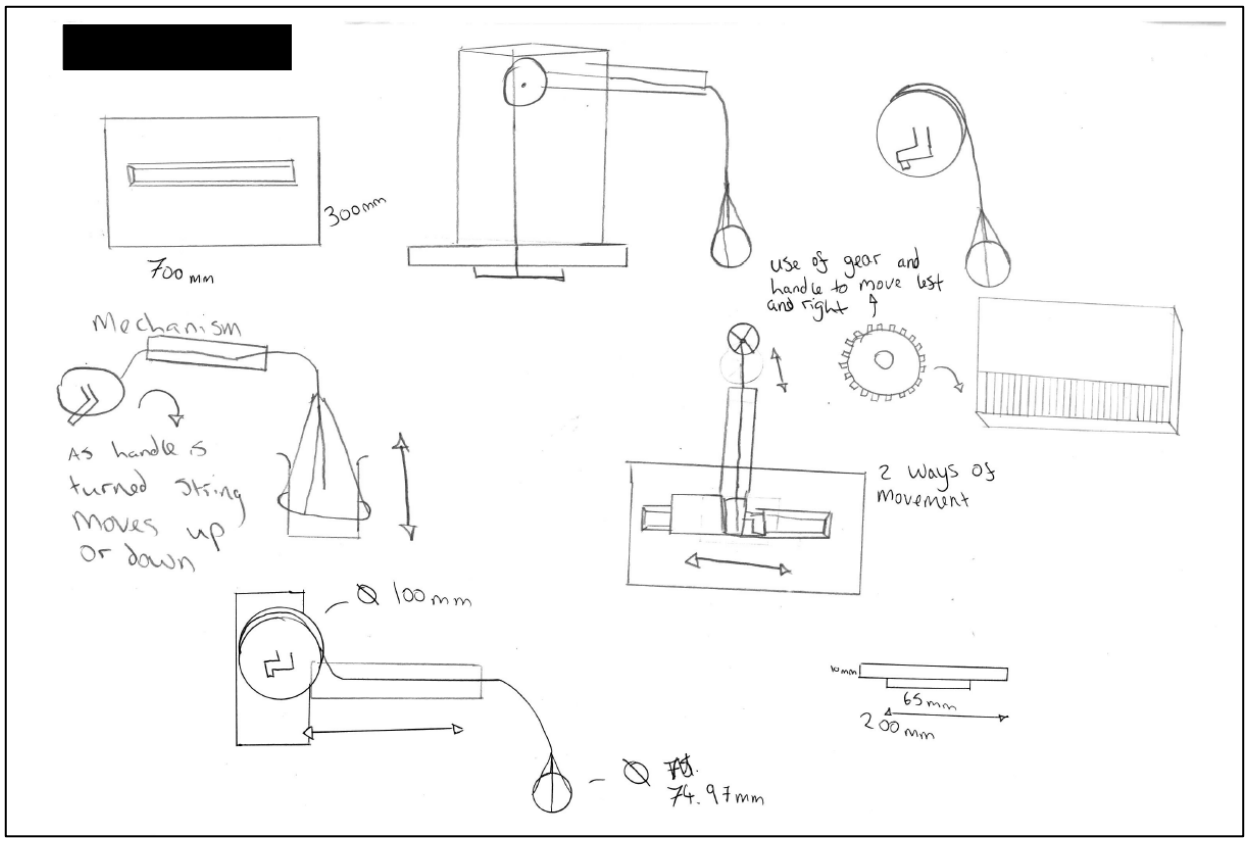
Sources:

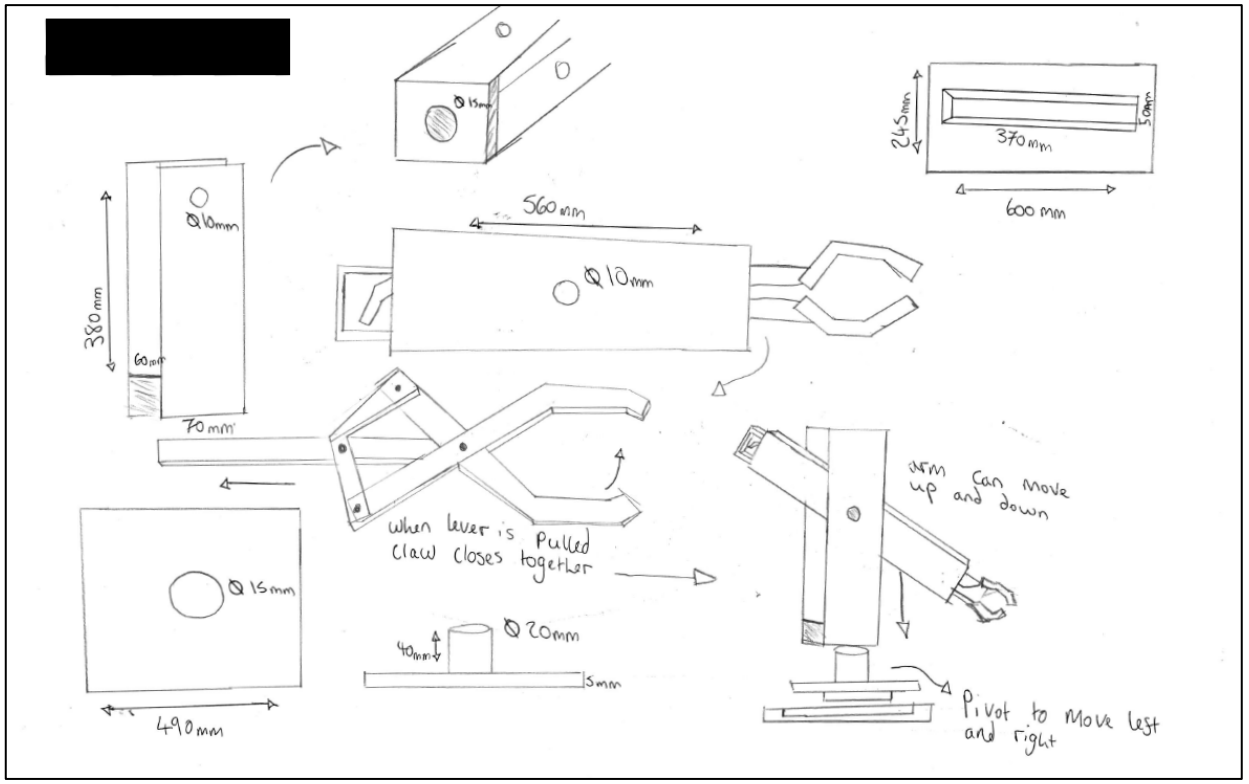
https://makezine.com/article/technology/robotics/making-an-impressive-robotic-arm-from-cardboard/

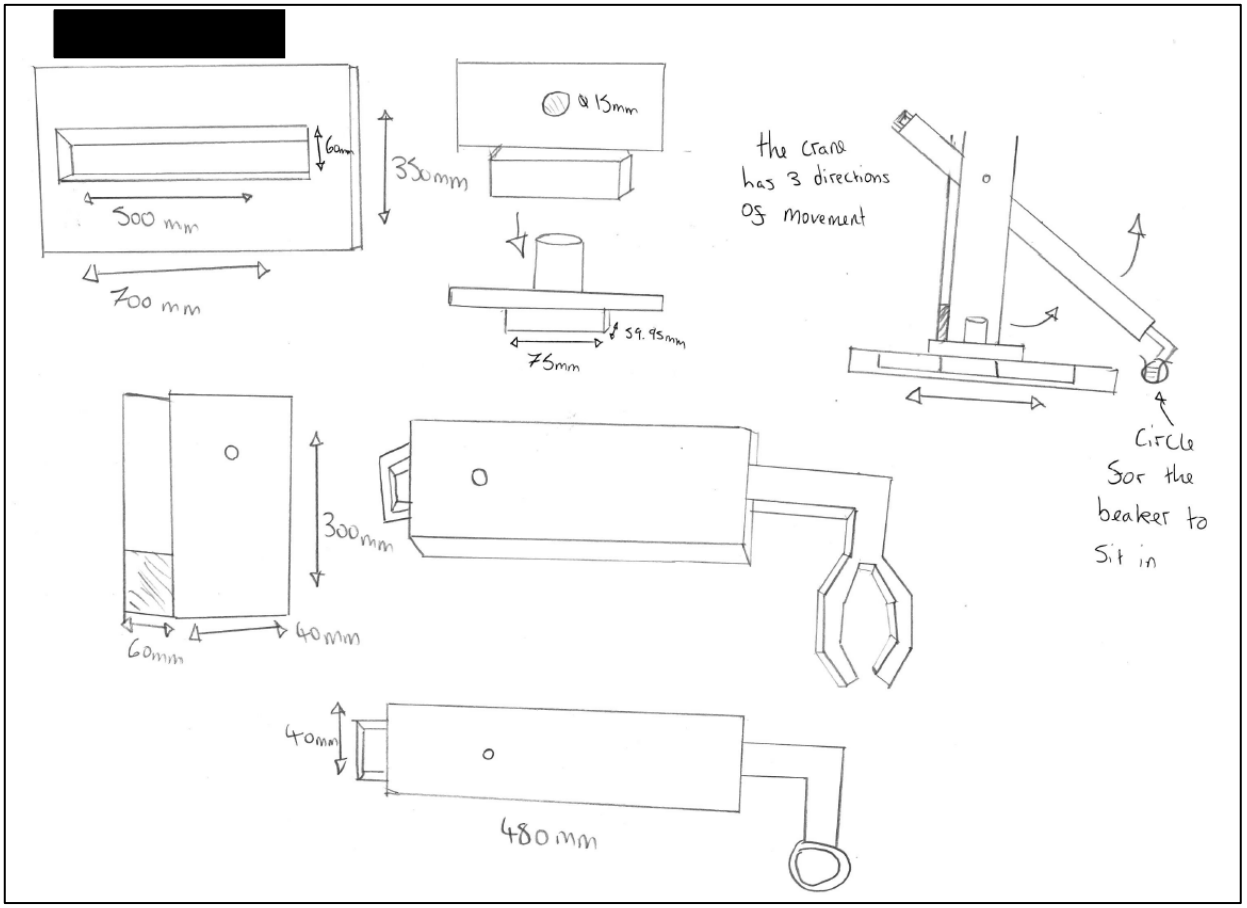
https://www.youtube.com/watch?v=ahSS5HUylT8



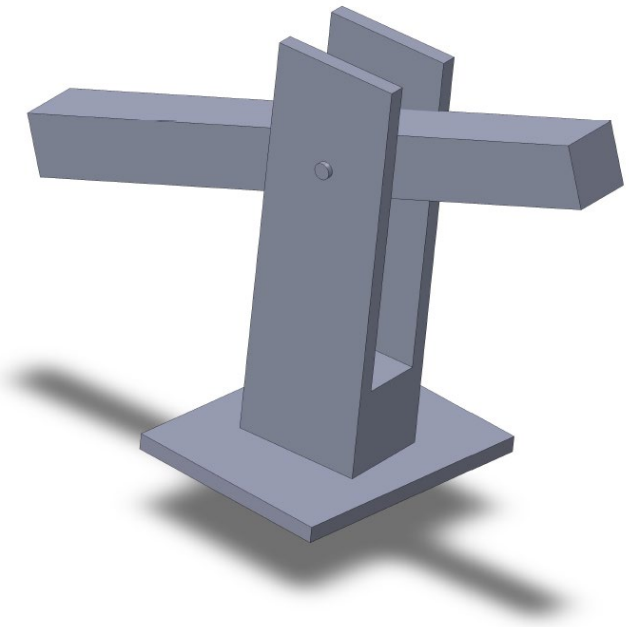
Task 1 – Annotated sketches



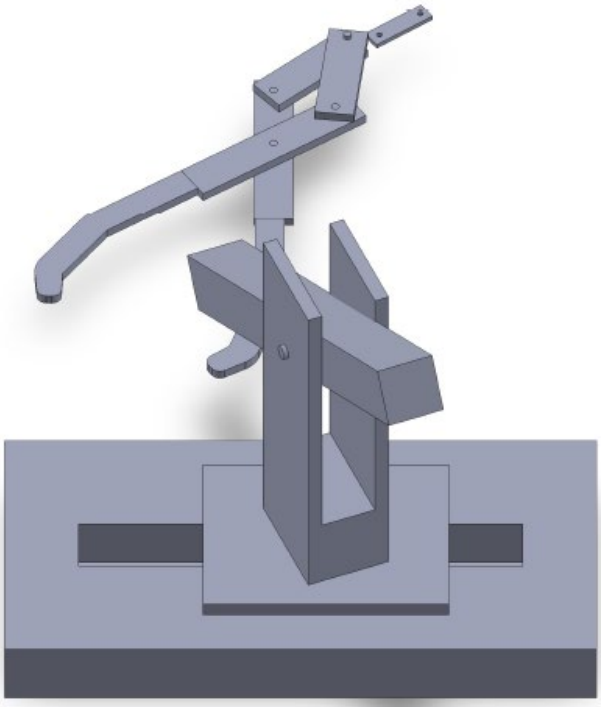




Task 1 – CAD 3D Arm assembly



Task 1 – CAD 3D Entire assembly



Task 2 - Manufacture and Test

Assessment number (eg 1234-033)	8714-321
Assessment title	Electrical & Electronic Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	2
Evidence title / description	Risk assessment Test records for the results of testing the prototype Prototype
Date submitted by candidate	DD/MM/YY

Task 2

Assessment themes:

- Health and Safety
- Manufacturing
    - Prototype/model
    - Developing
    - Testing
- Reports
    - Implementation
    - Record/reports

You must:

a. produce and complete a risk assessment for the manufacture of the prototype
b. manufacture the prototype
c. test the operation of the completed prototype.

Note: The physical prototype can be full size or a scaled prototype (the minimum acceptable size is 1:5 scale).

Additional evidence of your performance that must be captured for marking:

- assessor observations:
    - manufacture of the prototype
    - testing of the prototype.

To support the comments made within the Practical Observation the assessor must capture the following photographs and videos that must be submitted as supporting evidence for each candidate.

Photographic evidence which shows:

- sequence of photos during the construction of the prototype, to include:
    - results of tool selection and usage
    - the fit and relative orientation of the mechanical parts
    - final prototype.

Video evidence which shows:

- functionality of the prototype.

Task 2 - Candidate evidence

Task 2 – Completed risk Assessment

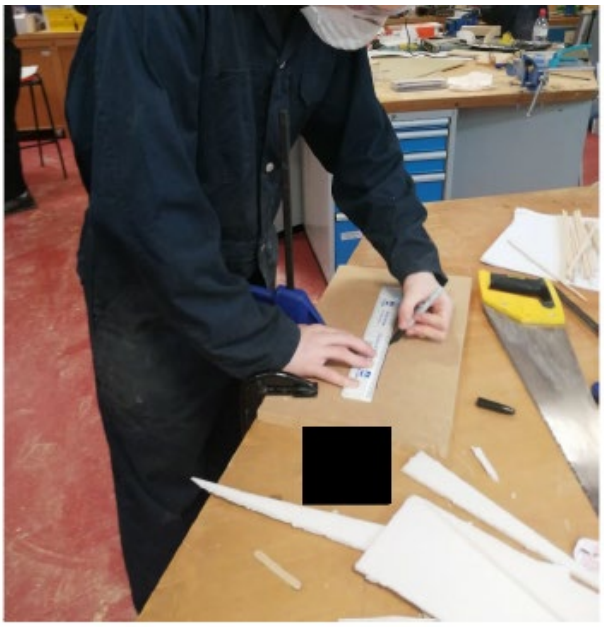
Hazard	How Serious	Likeliness	What can we do	Total score
Wounding the skin with saw	2	3	Secure the material properly, and wear PPE	2x2=4
Getting saw dust in the eyes	2	2	Wear protective glasses	2x1=2
Tripping over material in workshop	3	2	Make sure the workshop is tidy and material is put back after use	3x1=3
Wounding skin with file when fitting	2	3	Use correct techniques and make sure the material is secured properly	2x1=2
Burning skin with hot glue gun	2	3	Make sure to not touch near the nozzle of the gun and put it down in a suitable place where it will not burn anything.	2x1=2
Piercing skin with nails	2	2	Wear correct PPE, ensure fingers are out of the way when using nail and hammer.	2x1=2
Breathing in sawdust and other waste materials	3	3	Use correct PPE, such as face masks to ensure that all dust is blocked out	3x1=3

Severity is calculated by assesing the harm caused by the risks and how threatening it is to life. For example piercing the skin with a nail would cause temporary pain and wounding so would be a 2 and the likeliness of this occuring would be 2 as it could be quite likely.

However, breathing in sawdust could result in a fatal illness in future so is has a severity rating of 3 but in total before control measures has a rating of 9 as it is highly likely someone will breathe it in.

Task 2 Photographic evidence

Above is a photo of me with all the material I thought I would need for the manufacturing of the prototype. This includes several different files, rubber bands for the operation of the claw, quick grips and sand paper. All materials are set out separetely and neat to ensure I know where all are and so my station is tidy. I have a dustpan and brush so that I can clean and reinstate my workplace at the end of the day.

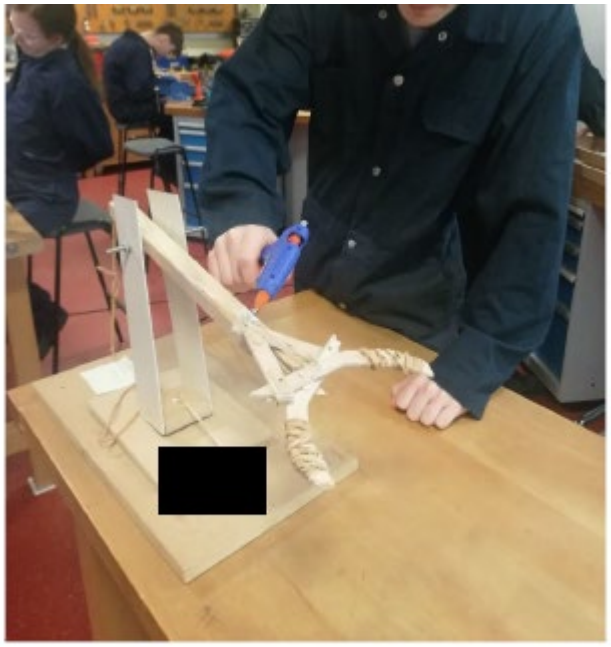


Above is a photo of me marking out my wood accurately with a ruler to cut out the slot for my base to sit in and move horizontally. I am wearing protective glasses, I have a protective face mask on to protect myself from sawdust in the air. All jewellery is removed. I have steel toe cap boots on to protect my feet. I am wearing protective overalls to protect my clothes underneath and skin from any dust or other materials that may cause a mess or harm.

The photo above shows me using hand skills to apply weight on the wood to hold it still in addition to the quick grip, to ensure I have the best accuracy with the drill, in which I drill a 5mm

hole in the wood for the claw mechanism. I also used the small saw next to my hand to cut the parts of wood to presision, to make sure my mechanism works correctly.

The image above shows me measuring the wood and marking out my grabber end piece. I then cut it accurately with the saw on the photo, cutting through different angles to get a clean cut. I then use a file and sand paper to give the wood a clean finish. Using the 420 grit sandpaper means that the piece has a flush finish and can move freely against each other with less friction than if I used a higher grit sandpaper.



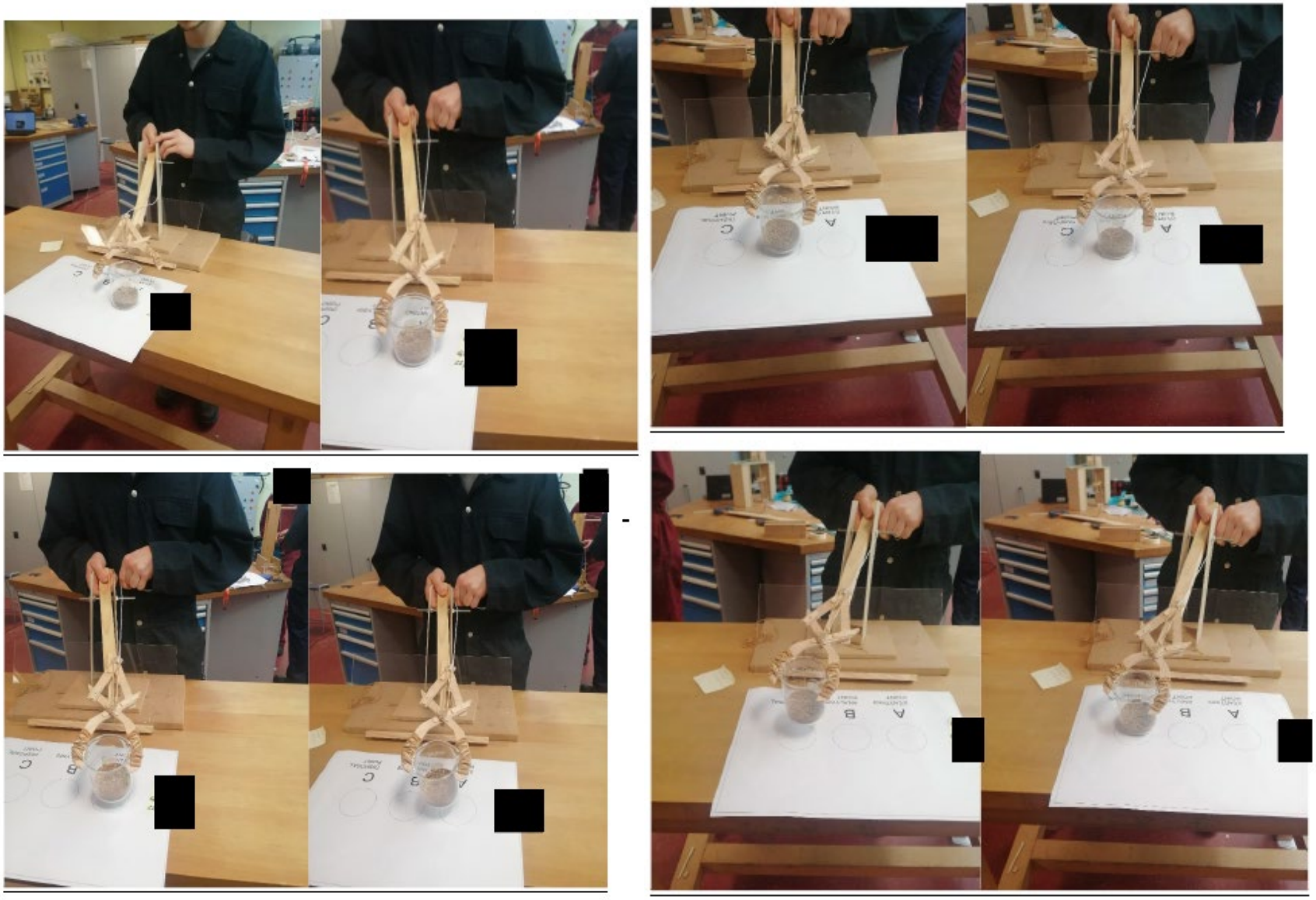
Above is a photo of me using a hot glue gun to assemble my claw and stick it to the string for a high strength connection. Have safety glasses on to protect my eyes.

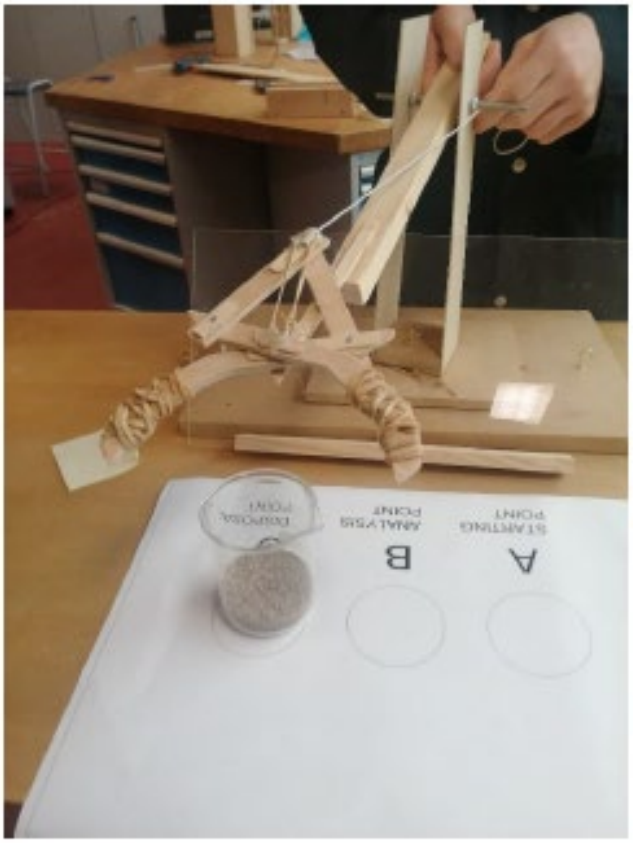
The photo on the left shows me using a digital vernier caliper to measure the width of my column to check accuracy and quality of the build.

Task 2 Test record for the results of testing the prototype

Evaluation

Design Requirement	How it was tested	Outcome
To be able to be operated from one side of the screen	Functional test	Passed
Manually operated	Functional test	Passed
To be able to lift a beaker with a total weight of 200g	Functional test	Passed
To be able to move the beaker 100mm to one point	Funtional test	Passed
To be able to put down and pick back up the beaker to move it another 100mm to final point	Functional test	Passed
Lifting to be carried out safely and not damaging the beaker	Functional test	Passed
Device must be able to return back to initial position	Functional test	Passed





The above photos show the process of my mechsnism being manually operated by me, picking up the 200g beaker and moving it to point A succesfully, then releasing the grip, before grippying it again and moving it to point C to then release grip again on the disposal point. This was carried out safely with no damage to the beaker, and I operated and moved it from only one side of the screen. My use of Rubber bands wrapped around the end of the claw helped a lot with the grip of the beaker, ensuring I didn't drop it, meaning it took no damage.

Task 2 Practical observation form

8714-321 Design and Development: Mechanical - summer 2024

Candidate name	Candidate number
<first name> <surname>	ABC1234
Provider name	**Date**
<provider name>	25th April 2024

Complete the table below referring to the relevant marking grid, found in the assessment pack.

Do not allocate marks at this stage.

This observation must cover	Assessor observation should include:	Assessment Themes
Construction of the prototype	• The construction of the prototype.	• Health and Safety • Manufacturing
Testing and verification of the prototype	• The testing and verification of the prototype.	• Health and Safety • Manufacturing

Notes – *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*

Construction of the prototype:

The candidate prepared the work area with all the important tools and materials necessary for the build. Materials like wooden strips , wooden dowels, hand saw, junior hacksaw , engineer's square, sandpaper, hand sander, packet of elastic bands, files, set of screwdrivers, glue, clamps, brush, dustpan , threaded bolt, vernier calliper and steel rule were all arranged for selection of materials and tools.

The candidate correctly marked out the base of the assembly made out of wood using a steel rule, and marker pen. These were then cut to dimension using a hacksaw to complete the base of the stand assembly. He also used the clamps to secure the job piece tightly together , thereby ensuring a smooth cut. When cutting the wooden strips for the vertical mast the candidate showed a good demonstration of accuracy and care was taken not to lose or damage the wooden sections by carefully sawing the edges, before cutting to length. The grabbing claw mechanism was built by cutting section of curved sections of wood as per his drawing dimensions. This was the difficult job as he had to intricately cut the pieces together without damaging them.

Most of the edges of the stand were rounded off and the rods were cut with minor measurement inaccuracies, which contributed to a reasonably fine finish. The strings had been wound between the claw mechanism and on a threaded bolt to ensure tension was created while lifting the beaker and moving it.

The candidate then manually drilled holes using a handheld drill for accuracy. This was to ensure that the claw mechanism can be glued together and would function as

intended. The work like cutting and sawing was carried in a safe and clean manner .The candidate also ensured that he tidied up his work area after regular intervals of work.

The testing and verification of the prototype:

The candidate has provided a detailed risk assessment as evidence for the build. Control Measures and risk rating was appropriately identified. Testing records were also completed to ensure the testing of the system were appropriately checked alongside the design criteria.

Internal assessor signature	Date
X	25/4/24

If completing electronically, double-click next to the 'X' to add an electronic signature once the record is **finalise**

Task 3 – Peer Review

Assessment number (eg 1234-033)	8714-321
Assessment title	Mechanical Engineering Occupational specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	3
Evidence title / description	Peer review feedback form Feedback record form
Date submitted by candidate	DD/MM/YY

Task 3

Assessment themes:

- Reports – for consideration only

As part of the development and design process it is critical that engineers can work constructively with others and consider feedback to inform designs to ensure they meet their purpose and requirements.
The assessor will set up the groups and make sure that candidates have access to copies of their design.

You are required to present your design;

a. Prepare to present your design verbally using annotated sketches and diagrams.
b. Present and explain your design.
c. Peer reviewers will now have time to reflect on your design.
d. Discuss feedback from the group on your design presented in part b.
e. Peer reviewers will now complete the peer review feedback form.

For parts a), b) and d) **you** must:

- proactively participate in the discussion
- manage your time
- seek any clarity in the feedback given and be prepared to ask questions
- record any feedback notes on the feedback record form provided.

For parts c), d) and e) **peer reviewers** must:

- proactively engage in the discussion
- respond constructively and fairly
- ensure the peer review feedback form is completed fully and handed to the assessor.

Additional evidence of your performance that must be captured for marking:
none

Candidate evidence

Feedback Record Form

Assessment ID	Qualification number
8714-321	8714-031
Candidate name	**Candidate number**
<first name> <surname>	ABC1234
Provider name	**Provider number**
<provider name>	999999a
Date	**Series**
29/4/24	Summer 2024

Candidate's notes
Strong design. Calculated evidence shown that it would be able to hold the weight as it was stress tested in CAD. It clears over the screen Less risk as the claw was tested and so we know it won't break so there won't be any danger. Glue over screws for health and safety.

Peer Review Form – Reviewer 1

Assessment ID	Qualification number
8714-321	8714-031
Candidate name	**Candidate number**
<first name> <surname>	ABC1234
Provider name	**Provider number**
<provider name>	999999a
Date	**Series**
29/4/24	Summer 2024

Question	Feedback
Explain how well the diagrams/drawings meet the design criteria.	Shows a manually powered mechanism shows ability to pick up beaker meets specification for pick up height and movement
Explain how well the diagrams/drawings meet the specification criteria.	Knew materials before construction and used a wide variety picked materials based off of mechanicaal advantages load arm is longer
Explain how well the diagrams/drawings conform to the relevant conventions.	Drawing is in 3rd angle projection with detailed dimensions
Explain how the system could be optimised/improved.	Make the claw from a stronger material

Peer Review Form – Reviewer 2

Assessment ID	Qualification number
8714-321	8714-031
Candidate name	**Candidate number**
<first name><surname>	ABC1234
Provider name	**Provider number**
<provider name>	999999a
Date	**Series**
29/4/24	Summer 2024

Question	Feedback
Explain how well the diagrams/drawings meet the design criteria.	I feel as though the drawings meet all design critirias. produced a manually powered graspiing system with required dimensions and movements.
Explain how well the diagrams/drawings meet the specification criteria.	design has incorporated a variety of materials based on property research they did. Which they stuck to throughout the process.
Explain how well the diagrams/drawings conform to the relevant conventions.	In the main drawing use of third angle projection with detaailed dimensioning.
Explain how the system could be optimised/improved.	A 50mm clearance over the screen may have been a better alternative for the basing of the hinge.

Task 4 – Evaluation and Implementation

Assessment number (eg 1234-033)	8714-321
Assessment title	Mechanical Engineering Occupational specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	4
Evidence title / description	Outcomes of virtual modelling Revision control document Evaluation and implementation report
Date submitted by candidate	DD/MM/YY

Task 4 – Evaluation and implementation

- Assessment themes
- Health and Safety
- Design and Planning

You must:

a. update the virtual model of the final design solution using appropriate software to incorporate any changes made and research completed in response to feedback or as a result of manufacturing and testing

b. produce a revision control document or report justifying why changes were made or not made as a result of the peer review feedback. This document should typically be 500 words

c. produce a report evaluating the design and development work completed. The report should typically be 800 words. This must include:

   - the information necessary for a third party to manufacture the design, including health and safety considerations
   - calculations of the operating efficiency of the device
   - an explanation of the test methods used, reasons for their use and their limitations.
   - an evaluation of the fitness for purpose of the device and its conformance to the specification
   - any further improvements or adaptions required to the design, including any reasoning and justifications if adaptions or improvements are not required.

Additional evidence of your performance that must be captured for marking:
none

Candidate Evidence

Evaluation report

In the research and design phase of the project I made and tested the virtual model by adding the 200g load on it so that I could have a visual representation of what my model would look like, and so that I knew the device would be able to do the task before using any materials or time to do so.

I built a slightly scaled down version of the model for my prototype for testing. Building a prototype and testing it helps me ensure the device and mechanism works properly, and portrays any faults that may need changing in order to get the best outcome.

Before the functional test, I measured the height of the screen to ensure my device could reach over it, as specified in the brief, and sanded down any rough edges to make sure there wasn't any risk for cuts or splinters. On top of that, I covered the ends of the nails that were showing in hot glue, so that when it dried the sharp ends were blunt so no one hurts themselves when operating the mechanism.

The functional test invovled setting up the screen and the liifting points with the beaker at starting position. I did have to slightly angle the screen, which was another reason of why I decided to change the design to make the whole device taller. I then grasp the top arm lever with my hands and lower it to the beaker, pull the string with my other hand to grasp the beaker and lift the beaker up moving it right 100mm before lowering it to point B, then repeating that, placing it on the disposal point. The lifting didnt need much effort as the length of the arm was used as a lever, meaning I had to put less effort in to lift more. This is good because it reduces the risk of injury or strain to any operator. This test has limitations though, as it only shows the operation once and so we don't know how the operation will perform over time, as it uses components like rubber bands which may go over eelastic potential over time or get damaged.

The testing outcome showed that my device is fit for purpose and I met most of the requirements in the design specification, such as placing down the beaker, then grasping, lifting and moving it 100mm again. The lifting operation didn't need much force.

The mechanical advantage of the device is 2:1 as force is applies using a lever and fulcrum - mechanical advantage lever (load / effort) MA = 0.5m / 0.25m = 2 or 2:1

Information needed

In order for a third party to implement the prototype they will need the following documents and information:

- The initial design criteria and information fromn the brief explaining what the device should do
- The technical drawings for each component of my device, such as the claw mechanism
- The CAD drawings with all dimensions clearly labelled
- A bill of materials so they know what they need before manufacturing
- A cody or PDF of the CAD model assembly so that the third party can have a visual representation of what the device is supposed to look like after manufacture and assembly
- The risk assesment from task 2

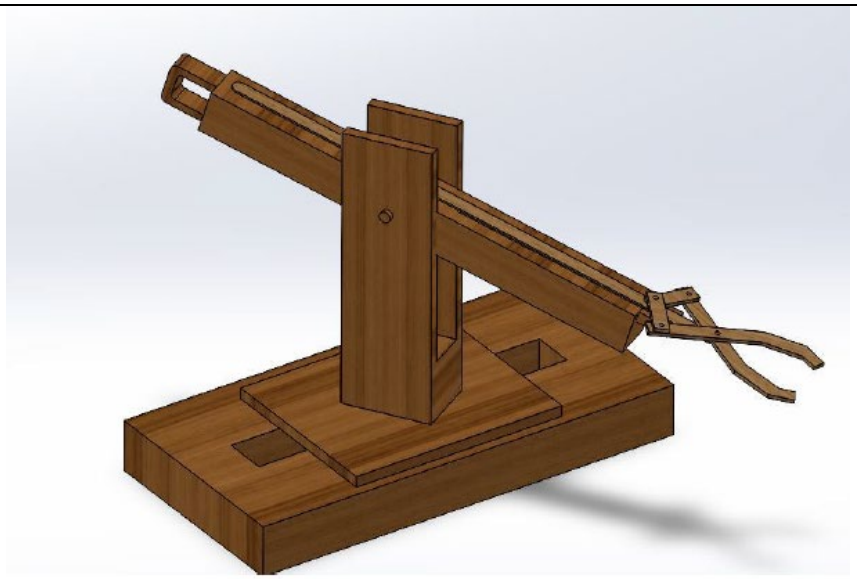
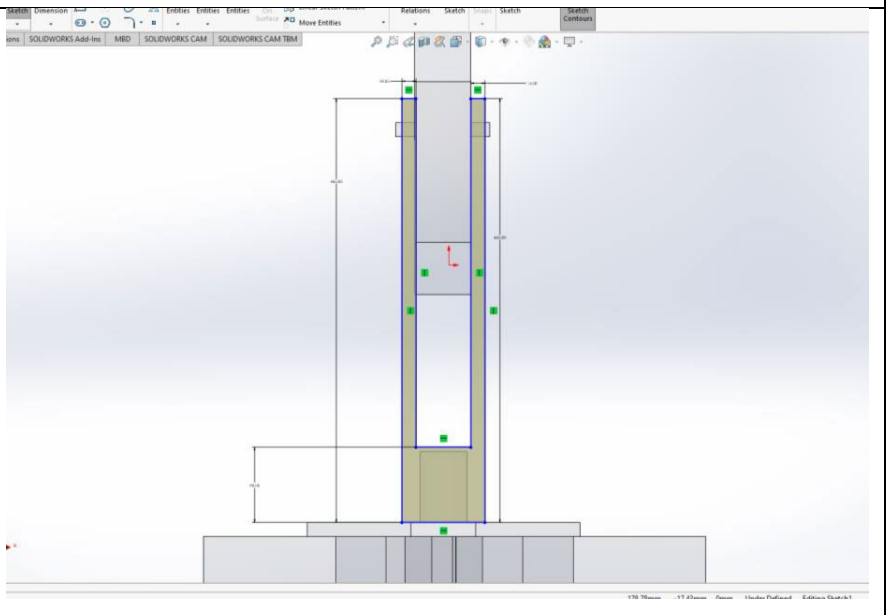
The main health and safety considerations when manufacturing the device was wearing PPE - which included protective glasses, protective masks to protect us from breathing in potentially harmful dust, steel toe cap boots to protect our feet and overalls. Anyone who operates the device must be trained to before hand.

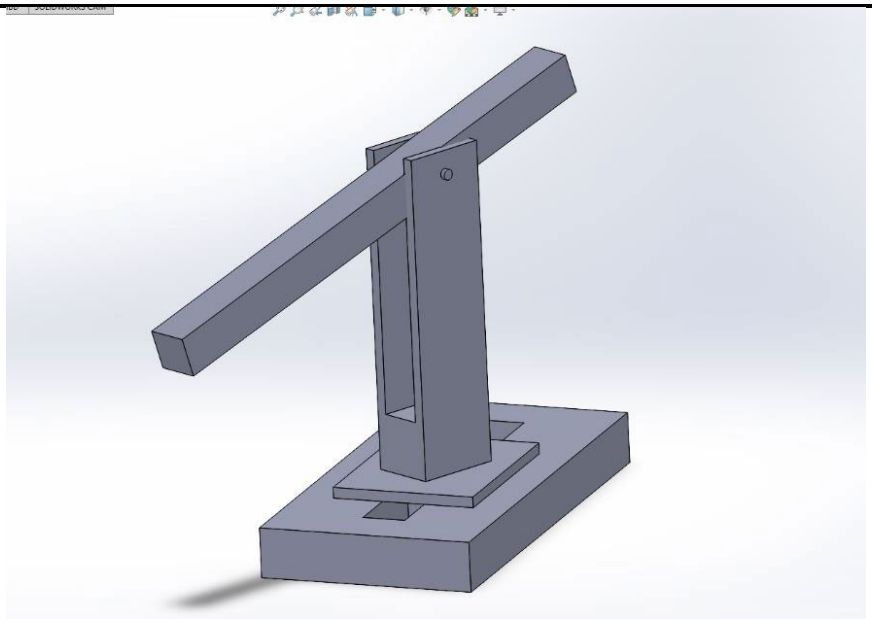
When using the device any loose clothing should be tucked away, hair should be tied back and all above PPE except face masks must be worn.

Revision control document

Design Description	The device is a manually powered, mechanical grasping system, which can safely grasp and lift a 200g beaker (without damaging it), move it 100mm and lower it onto a specific point, before doing it again.
Changes to virtual design	In my peer review, one person reccomended making the height of the mid section taller so it has at least a 50mm clearance over the screen. I have chosen to adopt this and added it to my virtual model, but as a result of making this taller (450mm), i've had to make the top length with the claw longer so that it can reach the beaker safely. Furthermore, the other person suggested that I make the claw mechanism out of a stronger material. I have chosen not to adopt this idea. This is because, as a result of testing the virtual model and testing my prototype in real life, the material the claw is already made from was more than strong enough to pick up and move the load of 200g, and so I believe it doesn't need updating. However, over time with many uses of the product, the grasping mechanism may get strained and could potentially break or show signs of wear. As a result I have decided to make the claw swappable, with operators being able to change the claw on the end of the device if they should need to.
Changes to documentation	The new dimensions will need to be added to the technical drawings. The virtual model's dimensions have been altered. The design criteria does not need to be changed

Overall comments	Overall I am pleased with the feedback I have been given. I believe my design has met the brief well and is fairly easy to operate. The changes I have decided to adopt help meet the brief and complete the task more efficiently.

The image portrays my initial virtual model before any changes to design	
The image shows me making my changes to the CAD model	

This imge shows the final changes to the CAD design the longer middle support and longer arm on top. However, when saving the assembly in task 1, the claw mechanism file was lost from the assembly.	

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