Prototyping, Modelling and Final Design

I decided to utilise prototyping and modelling in the design process of this project as it helps source any functionality and aesthetic problems befre the project is built. Also both prototyping and modelling act as a 'proof of concept'.

PROTOTPYING-TENSION UNIT MECHANISM

The prototpye of the tension as seen below allowed me to confirm that the mechanism would in fact act as a tensioner when the tracks are attatched to the real project. As seen in the images below, the prototype for the tension untis is very rudimentary yet it still will function with the basic principles of the actual tension units on the project.

MODELLING-COMPLETE SCALED MODEL

The school has a CNC laser cutter so I decided to utilise this in regards to the modelling of the project. By doing a model out of laser cut wood, I was able to assemble and glue together a scaled model of the project. I was also able to check for any conflict points, particularly with the loader arms when they pivot. Originally, I was going to 3D print the model for the project however the 3D printer at school was not working at its full potential so I decided to use the laser cutter at school. Upon reflection using the laser cutter was the better option as assembling the model is similar to how the actual project will be assembled.
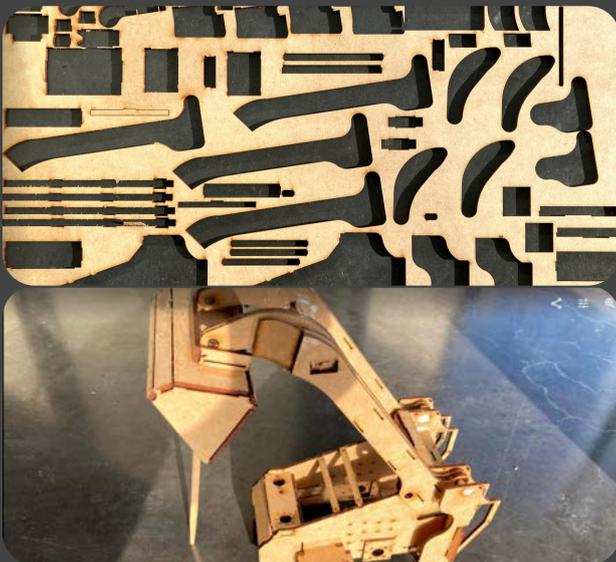
Majority of the designing of my Mini Loader project was done aided by computer softare. This begun with 2D DXF files completed on AutoCAD, however, after visiting the workers at Laser Bend Weld in Bathurst (where all of the metal laser cutting was completed) they mentioned the software of Autodesk Inventor. This software allowed me to assemble the project by extruding the 2D files and joining them together. This process allowed me to realise various errors made when the DXF files were created in AutoCAD. By using this 3D software I saved materials and therefore cost by fixing the DXF files before sending them off to Laser Bend Weld to be cut. Also I was able to make this model operate in this software with the basic lift and crowd functions.