Deliverable D1 - Project plan and BOM

# Introduction

The construction of the final product is a crucial element of any engineering product and is the most exciting part of development, but the product cannot be developed if there is no plan in place as to how the product will be developed. Initially, a plan must be made to describe the process through which the product will be made, because the product cannot simply be created all at once. This plan will describe how each piece of the product will be developed, and the order in which this creation will take place. This will allow those working on separate parts of the project to coordinate with each other and, ultimately, reach the end goal together and on time. This document will describe the project plan that has been developed for this task, as well as providing an analysis of the estimated cost of the project. Also attached to this document will be a feasibility study, which will describe whether the project is possible for the group to accomplish, and whether there will be any legal or operational constraints preventing on the development of the product.

# Group Tasks

|  |  |  |  |
| --- | --- | --- | --- |
| **Task Number** | **Task** | **Estimated Duration** | **Assigned Group Member** |
| 1 | Acquire a pair of children skis roughly waist high in length | 2 days | Kieran  Leo |
| 2 | Perform necessary cutting in the skis for the wheel insert, rubber rollers, and conveyor belt links | 2 days | Julian  Mihir  Kieran  Leo |
| 3 | Research what type of material we will use for each component, and if there are already products that we can use instead of building our own. | 5 days | Kieran  Mihir |
| 4 | Machine metal for wheel guide and lock on top of the ski and drill holes into the ski and thread them for the installation of the bracket | 7 days | Julian  Mihir |
| 5 | Acquire or make rubber wheels to install into the inserts on the skis | 3 days | Leo  Kieran |
| 6 | Locking mechanism build and install | 5 days | Kieran  Mihir |

# Bill of Materials

|  |  |  |  |
| --- | --- | --- | --- |
| **Material** | **Cost** | **Location to purchase** | **Justification to Price** |
| Pair of Children’s Skis | $25.00 | <https://www.kijiji.ca/v-ski/ottawa/kids-downhill-skis/1389270377?enableSearchNavigationFlag=true> | The price of these skis are justifiable because these skis have already been used for a season of snow, and the advertisement states that the skis are in good condition. |
| Rubber Rollers (Wheels) | $13.95 | <https://www.walmart.com/ip/Inline-Skate-Replacement-Wheels-68mm-78A-Blue-Clear-4-Pack/808233386> | The price of these wheels are justifiable because these wheels are coming from a reputable source that is Walmart. |
| Locking Mechanism | TBD | TBD | TBD |
| Ski Wax | Free | Free | Free |

**Total Expected Cost: At least $40**

# Risks and Uncertainties

The risks and uncertainties for our project are mainly focused on the availability of skis and the price of skis. Since we only have a total of $100 for the development for our final prototype, we can not purchase a pair of skis that will use up a lot of our budget. To be more specific, our uncertainty is the type of skis that we buy because each pair of skis will be different, and since each pair of skis is different, the price of each pair of skis is different. Additionally, the risks with our project are that we would need to buy another pair of skis if we completely fail to properly make the full product.

On the other hand, another risk and uncertainty with our project is the attachment of the locking mechanism. Since we have to create a locking mechanism onto the skis, this attachment indicates that we have make adjustments, edits, or cutting to the skis. Therefore, this attachment becomes a risk to the project because we can potentially create an irreversible edit on our pair of skis such that we would have to buy another pair of skis.

# Conclusion

This document includes a project plan which has forecast the future of this project and the path it will follow towards completion, with dates set in the future for the expected completion of each component of the products development. Along with this plan is a list of the products which will need to be purchased for the development of the final product. The list contains expected prices for each of the items (with examples of sources), and the prices of these products is used to determine the expected final price of the product. Our estimated price to develop the product falls short of the total $100 allotment for this project, meaning that there is enough wiggle room in case any items need to be purchased at higher price points or some issues which arise during development cause unexpected increases in budget requirements. There are several risks associated with developing a product like this from scratch, which are outlined in the Risks and Uncertainties section of this document, that may affect the overall cost of the design of this product, but these risks are allowed for with the extra monetary allowance granted by our expected costs sitting far enough below the $100 limit. The attached feasibility study also indicates that the completion of this project is an attainable goal, and that we have the necessary tools at our disposal to complete this task.