

Marshall Playground ME 476C-5 Team F4 October 4th, 2017



Group members:

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Project Description

Main goal:

- Our project is designated for Marshall elementary school
- We are required to build a playground for children as needed
- Our clients are both teachers Eva Herberger, Krista Branch From Marshall school
- Our stakeholders are the children with disabilities and their families

Background:

- Researching
- Something Fun
- Creativity
- Work for all



Figure 1: [1]



Figure 2: [2]

Benchmarking

- Looking for similar designs in the market
- Evaluating those designs
- Develop our designs from what we have seen



Figure 3: existing designs A
[1]



Figure 4: existing designs B [1]



Design and Customer requirements

Table 1: CN and Design requirements

Design Requirements	Customer Requirements
Fun apparatus for children with disabilities	Portable, Longlife, less cost
Withstand various weather conditions	Safe, harness
Potentially portable	No sharp edges
Safe	Material needs to be rubber and soft
	Consider different sizes
	Sound motivations
	Nontoxic material



Engineering Requirements

- Final design must cost less than \$2000
- Device shouldn't weigh more than 30 lbs (Portale)
- Lasts for at least 5 years
- Round all sharp edges to $\frac{1}{8}$ "
- Platform needs to be at least 6X6 ft
- Children ages range between 4 to 8 years

Design Considered (Product)

Design 1: Feature Wall

- Wall includes different features, toys, sound-making instruments for accessible by students
- Spanning a large space, approximately 15' by 5' high
 - Lengthwise accessible by many students (15'), height-wise accurate for those in wheelchairs who can reach at approximately 5'

Design 2: Kart Track

- Similar to go-cart track, about 45' long
- Built in cart will be safe for children with disabilities
 - Includes safety belt, railing, sensor braking system
 - Noise-making instruments
- Long-lasting track material



<https://www.pinterest.com/pin/489133209500107899/>

Figure 4: Featured wall



Pros/Cons

Design 1

- **Pros**
 - **Price point:** inexpensive paneling, additions
 - **Safety:** safety braces
 - **Accessibility:** room for many students at once
 - **Options:** many different toys, can work with students on preferences
- **Cons**
 - **Lack of interactivity**
 - **Physically not demanding**

Design 2

- **Pros**
 - **Interactive, fun**
 - **Special, something new and innovative for a playground**
 - **May be used for other students but priority given to those with disabilities**
- **Cons**
 - **Price point:** costly rail system, braking sensors
 - **Accessibility:** only one student at a time



Budget

- Our budget is \$2000
- Current estimated total cost is shown in table 2

Table 2: Cost Breakdown



Tools	Cost
Wooden blocks	\$23.4
Rubber platform	\$75
Casters	\$35
Chimes	\$11.99
Harness	\$8.99
Picture icons	\$14.99
Boundaries/Borders	\$26
2X2' playground floor	\$29.80
Edge Cushion	\$12.99
	Total cost = \$238.16



References

[1] Pictures of exiting designs, <http://meyerdesign.com/galleries/index>.

[2] School, M. (2017). Marshall Elementary school, Flagstaff, Arizona. Available at: <https://www.fusd1.org/marshall>.



Any Questions ?

Appendix A

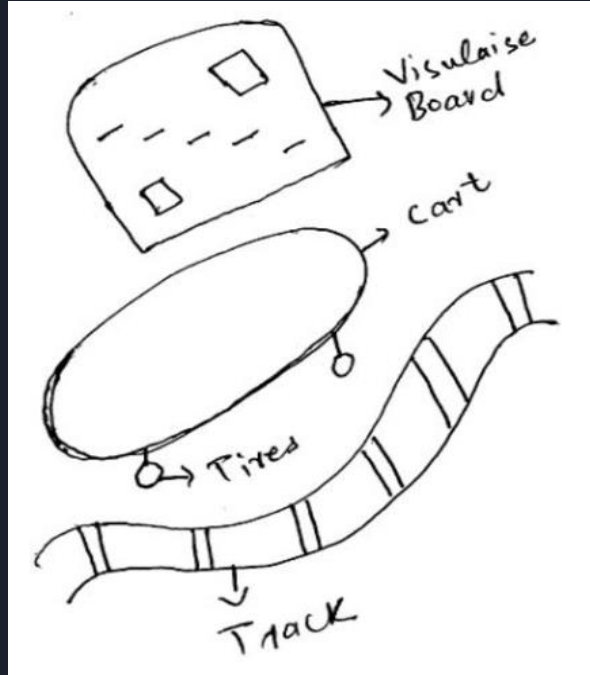


Figure 6: Kart Track sketch

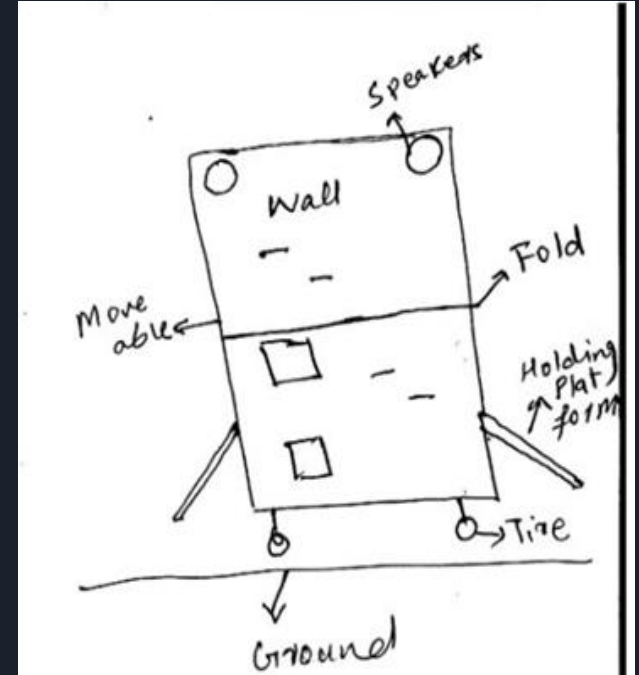


Figure 7: Featured wall sketch