

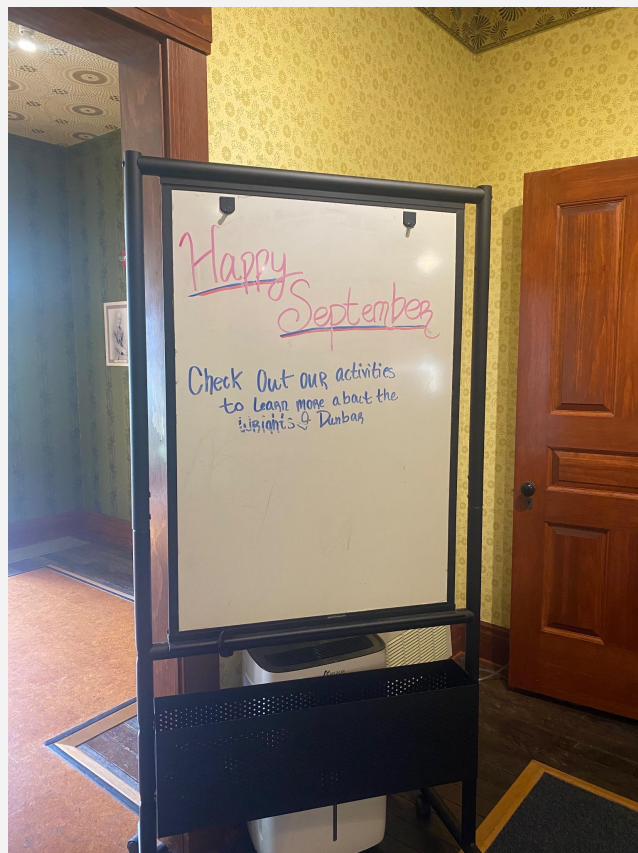
Pitch N' Yaw

Wright Flier Stacking Game
Benjamin Drake
'23 OSU Industrial Design Capstone

Physical Access - Research



Time Access - Research



Academic/Literacy Access - Research

On New U

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December 4, 1901.
No. 4.
Dec. 4, 1901.
Ire. Camber 1/17 Chord. Aspect, 1.
Span, 2.5"
Chord, 2.4"
Area, 6 sq. in.

| Angle | Lift Coef. | Drag |
|-------|------------|------|
| -5.0° | .000 | |
| 0° | .174 | |
| 2.5° | .260 | |
| 5.0° | .345 | |
| 7.5° | .428 | |
| 10.0° | .515 | |
| 12.5° | .605 | |
| 15.0° | .716 | |
| 17.5° | .811 | |
| 20.0° | .892 | |
| 22.5° | 1.013 | |
| | 1.124 | |
| | 1.136 | |
| | .983 | |
| | .764 | |

Feeling Lift & Drag

The Wright brothers' wind tunnel experiments allowed them to test the lift and drag of various curved surfaces as they searched for the most efficient wing shape. This exhibit does not recreate the Wrights' experiments, but it gives you a chance to feel lift and drag.

To feel the effects for yourself, follow the directions below.

1. Push button to start fan.
2. Hold the end of the rod and place the wing shape in the wind tunnel.
3. Hold the wing shape parallel to wind direction and turn the leading edge slightly upward. Can you feel it lift?
4. Hold the shape perpendicular to the wind direction. Can you feel the resistance or drag?
5. Return rod. The fan shuts off automatically.

er unique in

The Wind Tunnel Tests

"It is perfectly marvelous to me how quickly you get results with your testing machine.... You are evidently better equipped to test the endless variety of curved surfaces than anybody else." —Orville

In late 1901, Wilbur and Orville built a wind tunnel in their bicycle shop and used it to test small wing shapes. The test was like that it was the best way to find out what caused the suspected errors in Otto Lilienthal's work.

After a few weeks of painstakingly detailed experiments, the Wright brothers identified the error. The problem lay in the assumed value Lilienthal used for the camber coefficient, a vital part of the equation used to calculate lift. The chosen value had been too high. Prager (an Orville's cousin), a theorist of the performance calculations and explained the difficulties that the Wrights' early gliders experienced.

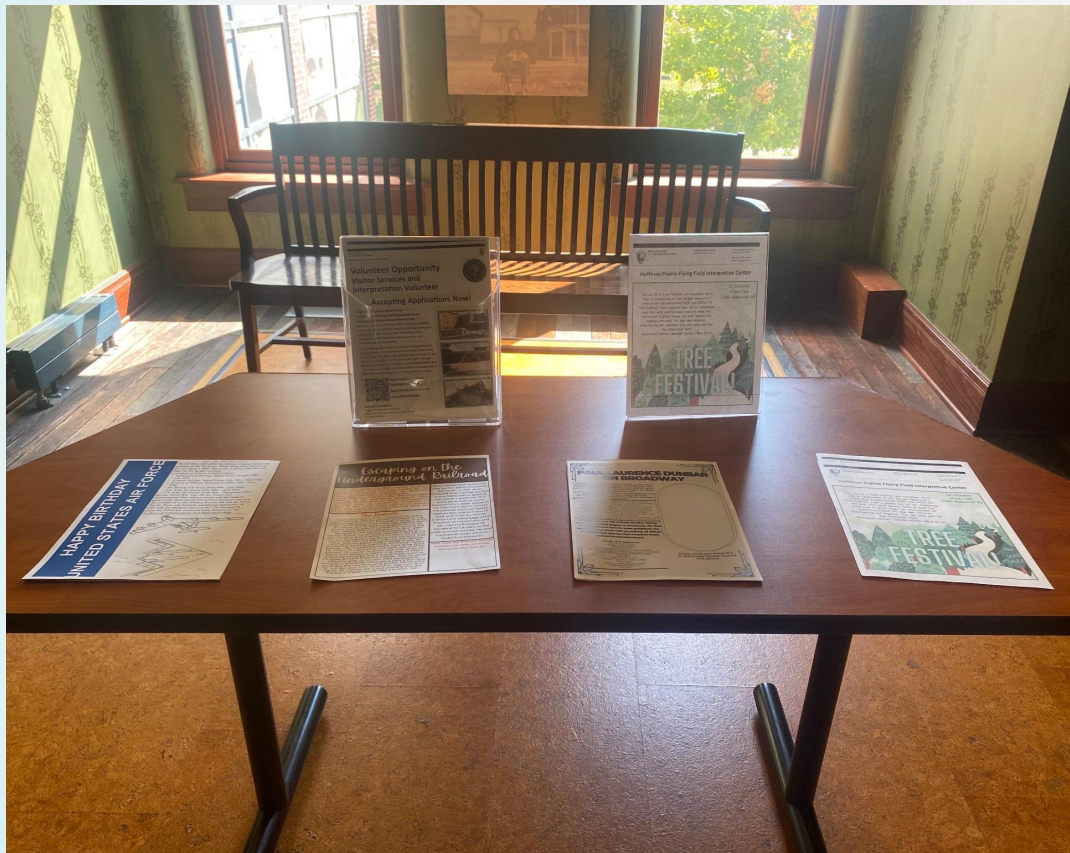
*11/64
LX 3 1/4*

the table of tangentials on this sheet gives the value of the angle PCW in slope. When the resultant pressure R is to the rear of the normal of the tangential is positive; when to the front it is negative and is so indicated by the minus sign. The angle of gliding descent of a surface is equal to

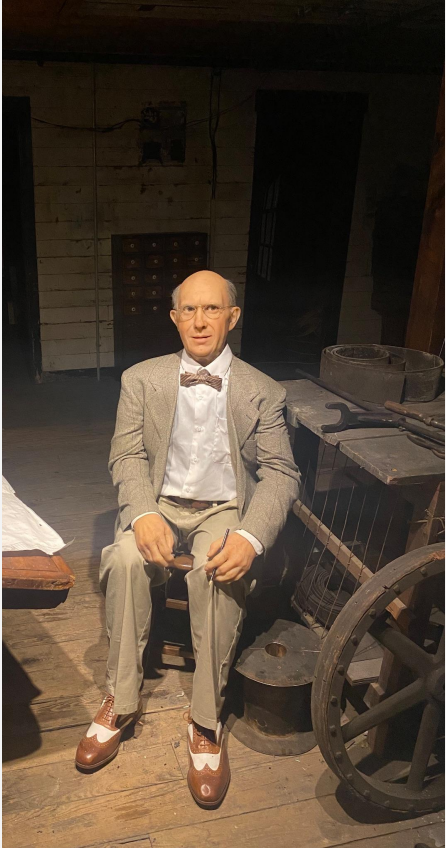
*4/10
6/10
1-10*



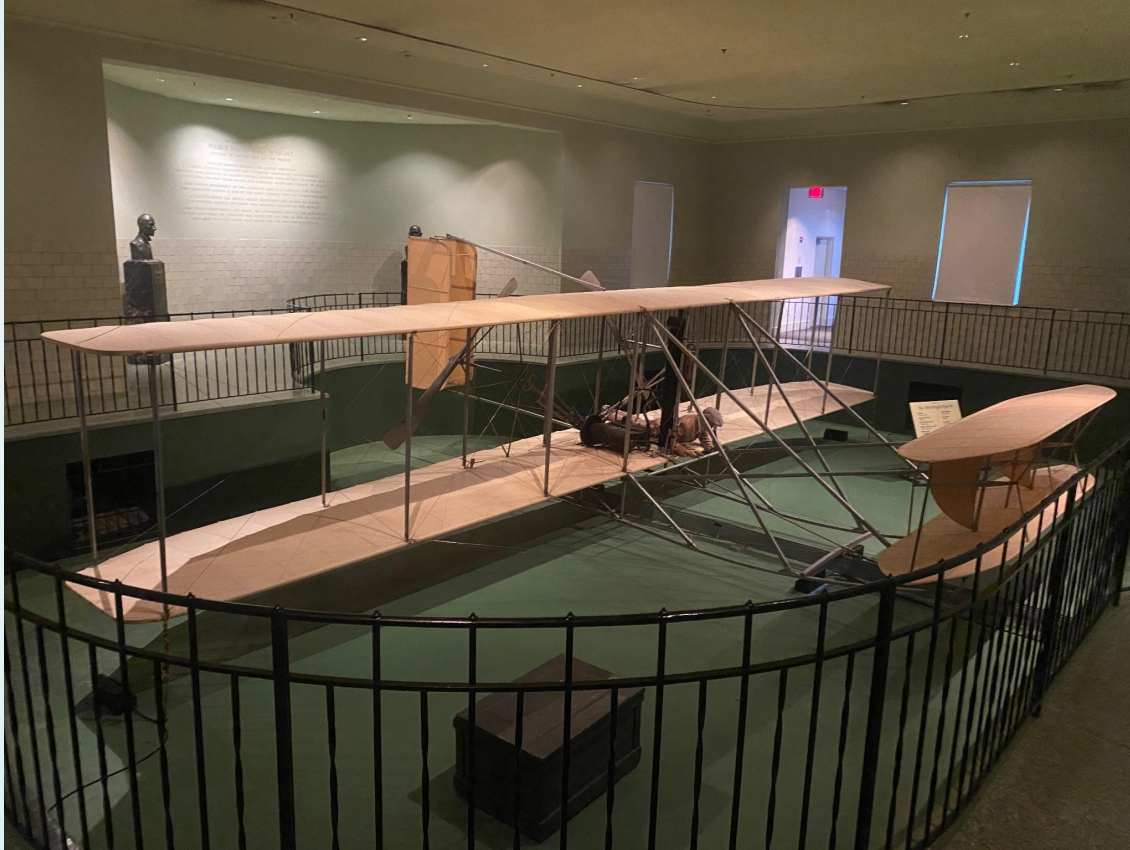
After Hours and Events/Shared Experiences - Research



Escapism and Freedom - Research



Risk, Challenges, and Overcoming - Research



Brief Review

Types of Access

Physical Access

Academic / Literacy Access

Time Access

Feelings Associated w Flight/Wright Bros.

Risks/ Challenges

Persistence/ Overcoming

The moment of falling

competition

Other Goals

Shared Experience

Wright Brothers' Story

Not Site Dependent

Easy to Understand

Other Goals II

Uses Emotions to Create Connecting Experience

Something for Children and Adults

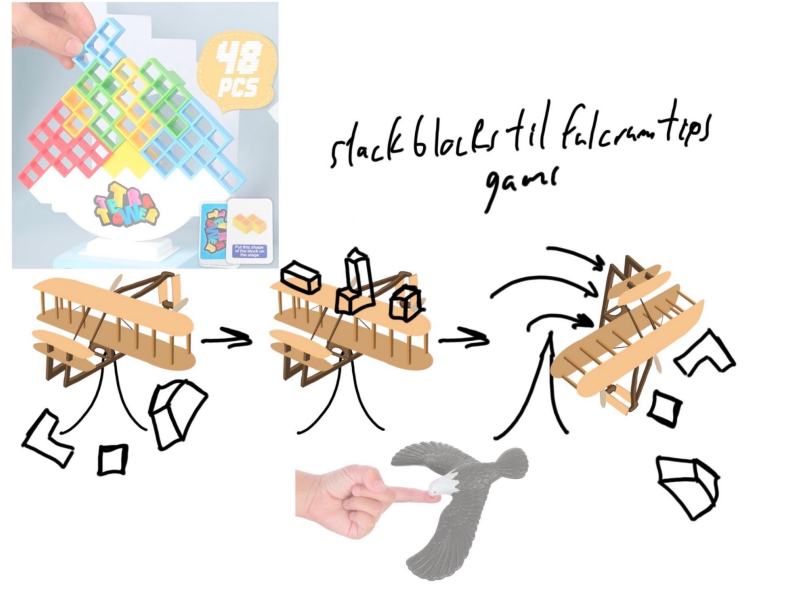
Stakeholders

Primary: DAHP; Park Visitors; Potential Visitors; People Who Can't Reach the Park

Secondary: Funding Groups; NPS

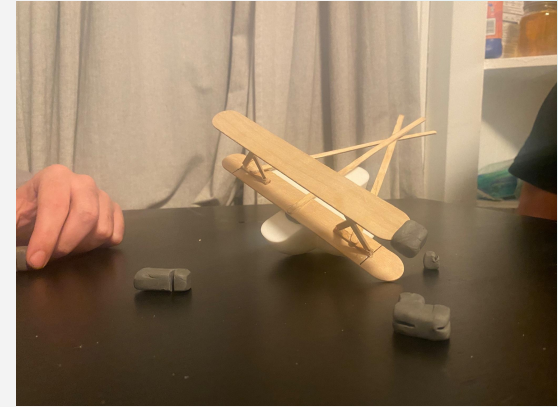
Tertiary: Dayton Community

Concept Iteration + Test 1 Results - Development

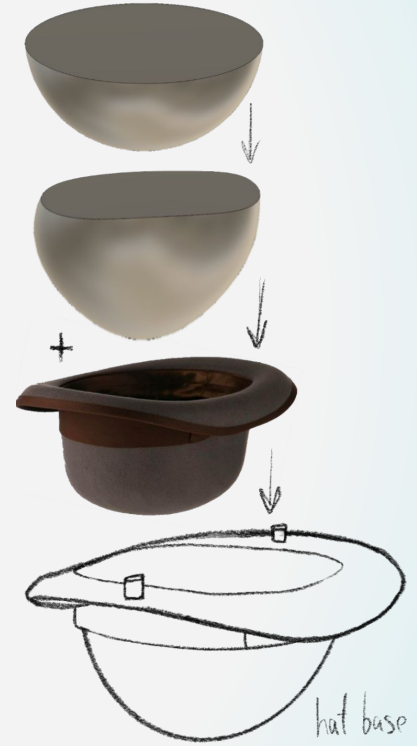


- Divergent scenario
- Long list of axes
- 60 ish concepts
- Top 3
- Formative test 1 results
- Balance game

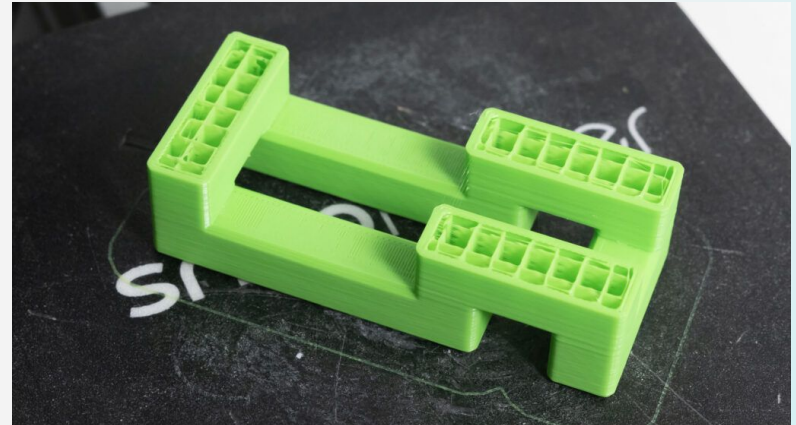
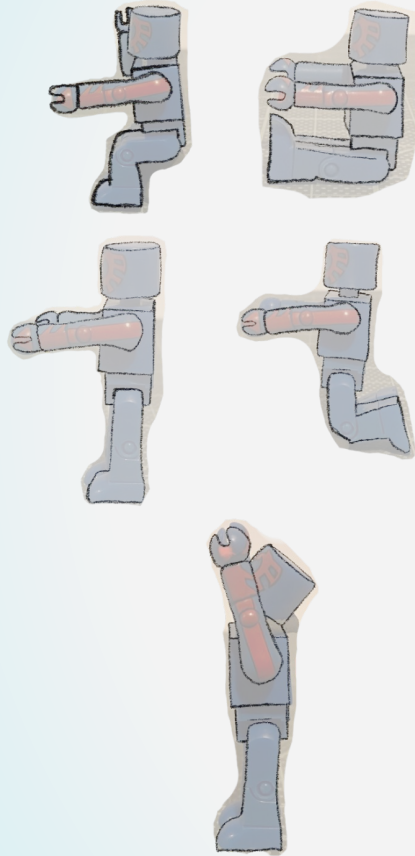
Base Form Iteration + Test 2 Results - Development



Base Form Iteration + Test 2 Results - Development



Stacking Piece Form Iteration/Inspiration - Development

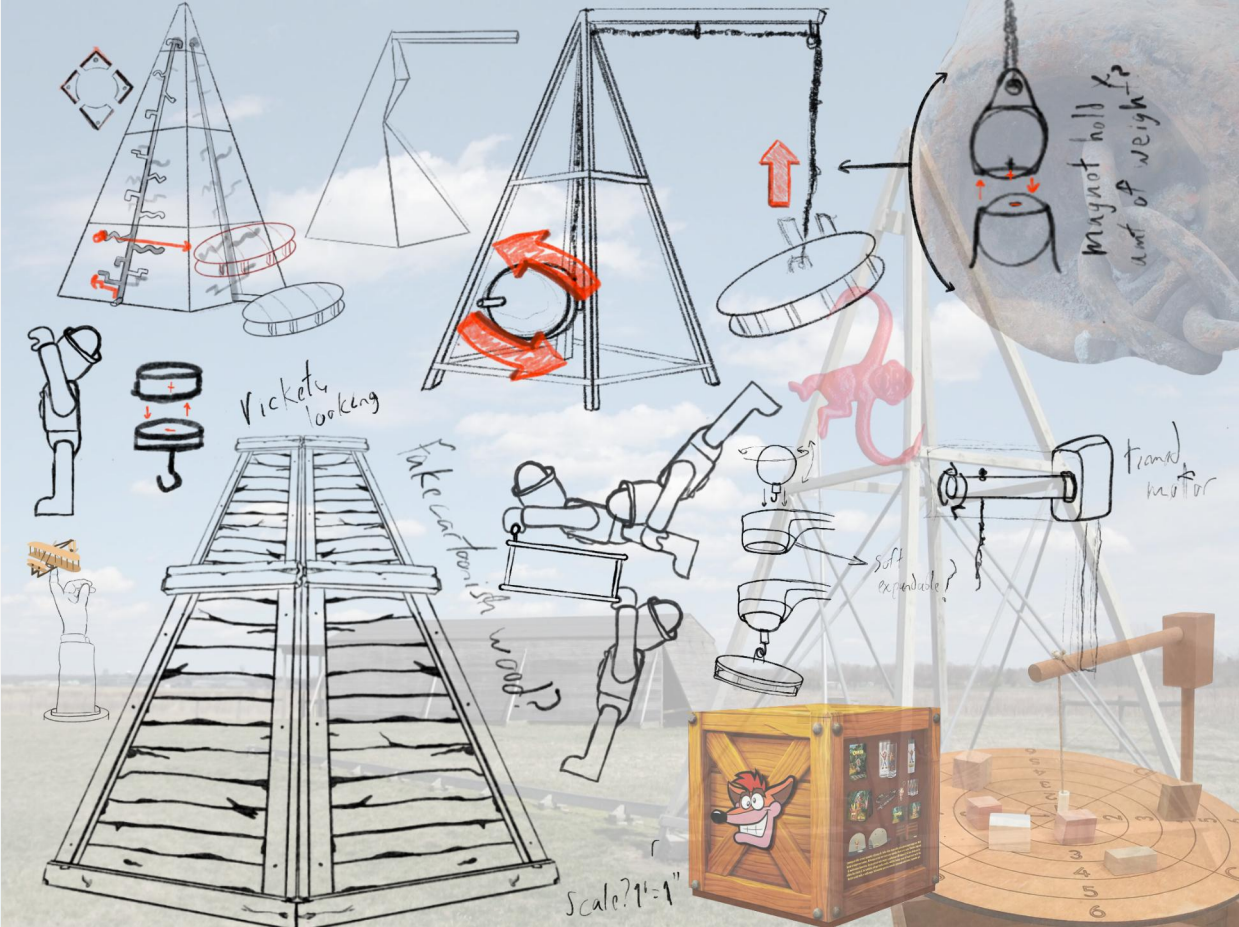




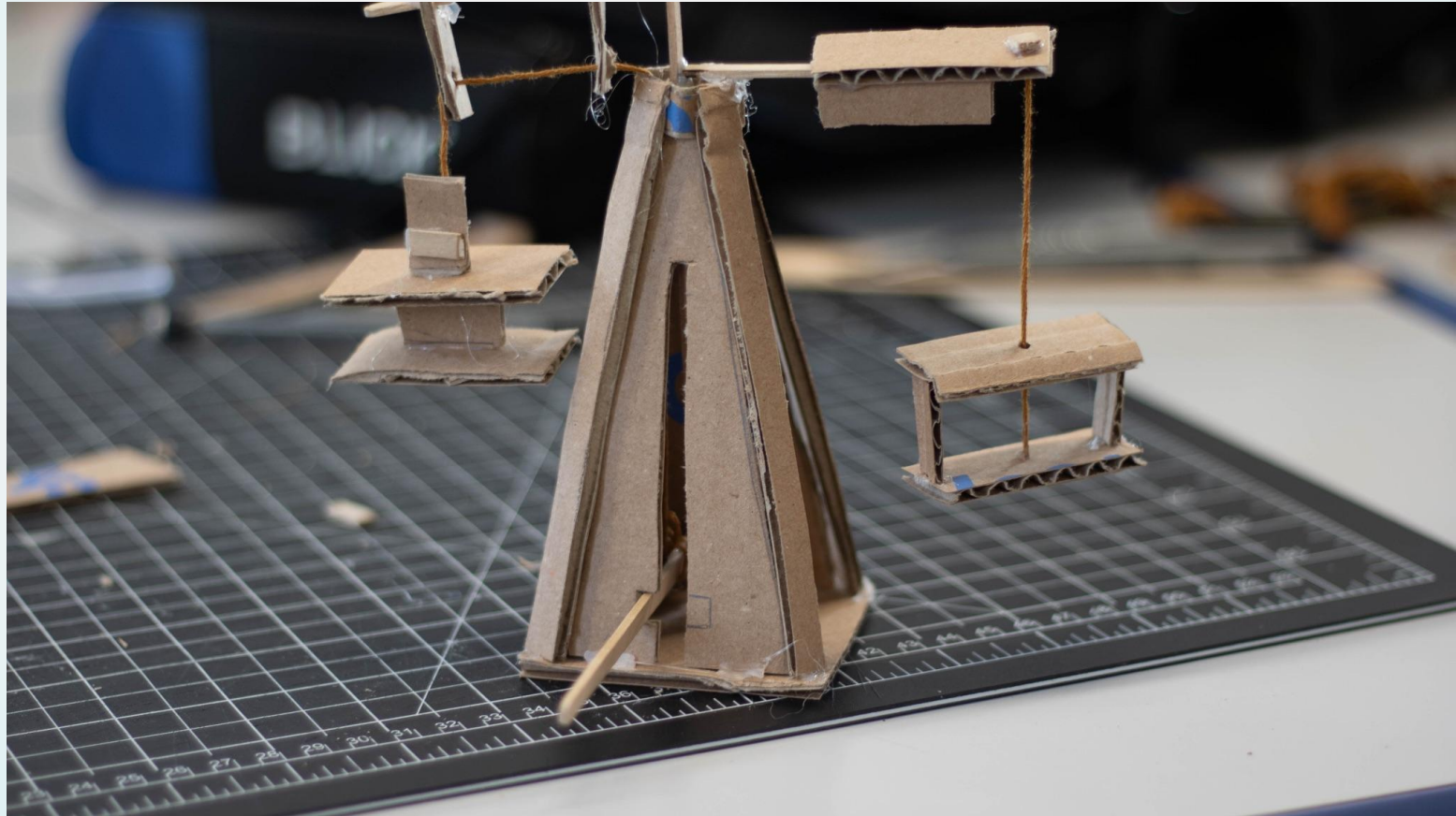
VBL/Moodboard - Development

- Canvas/old paper textures
- Wood
- Bowler hat
- Brothers themselves
- Flier/technical diagrams
- Sepia or desaturated colors
- Early 1900's fonts

Form Iteration/VBL - Development



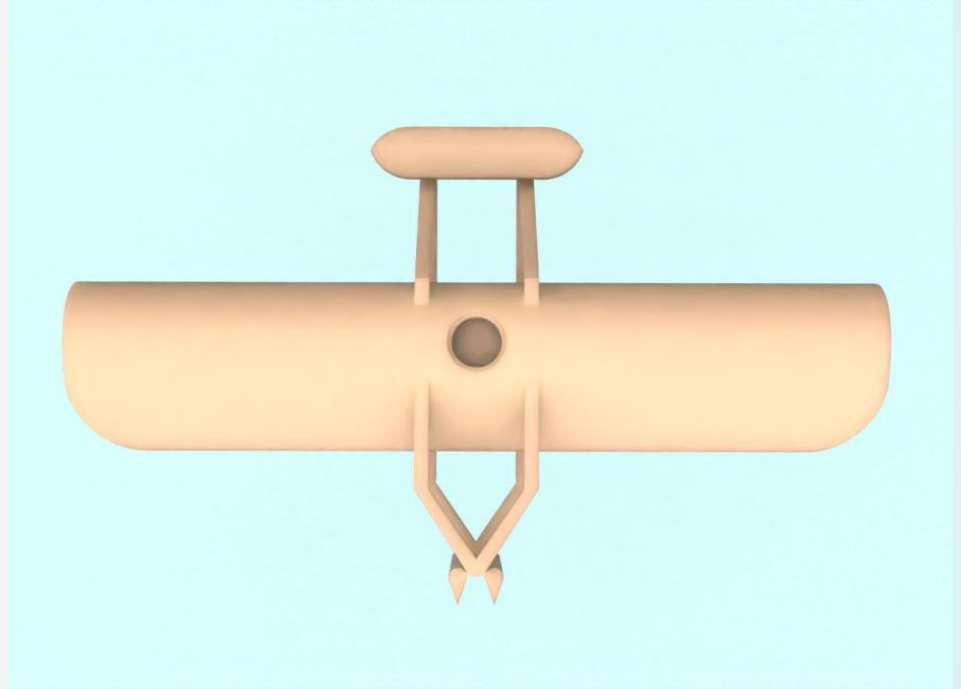
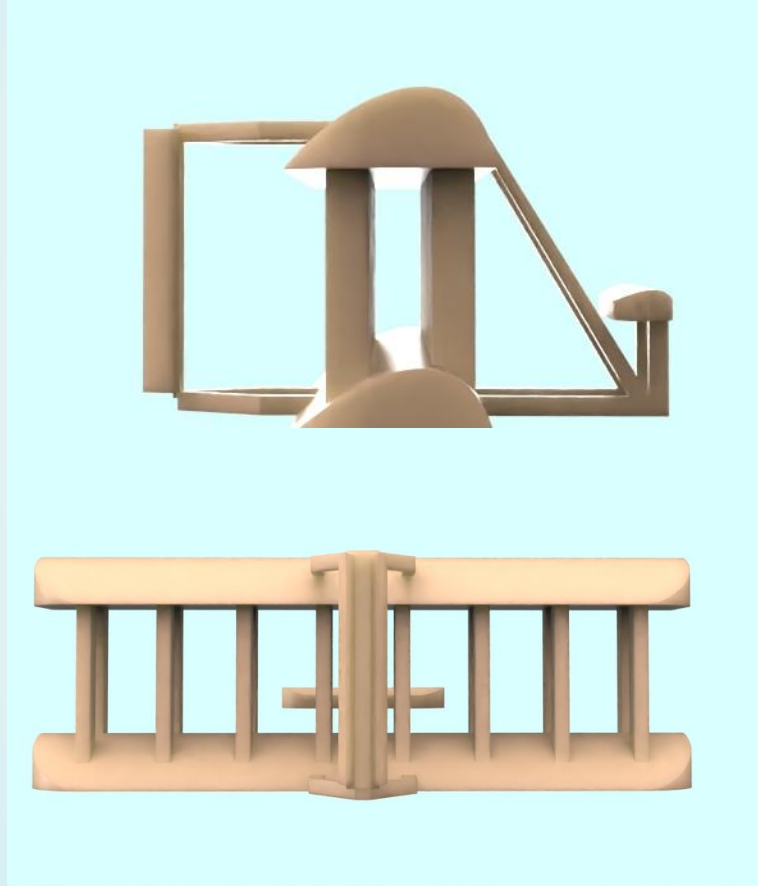
Form Iteration - Development



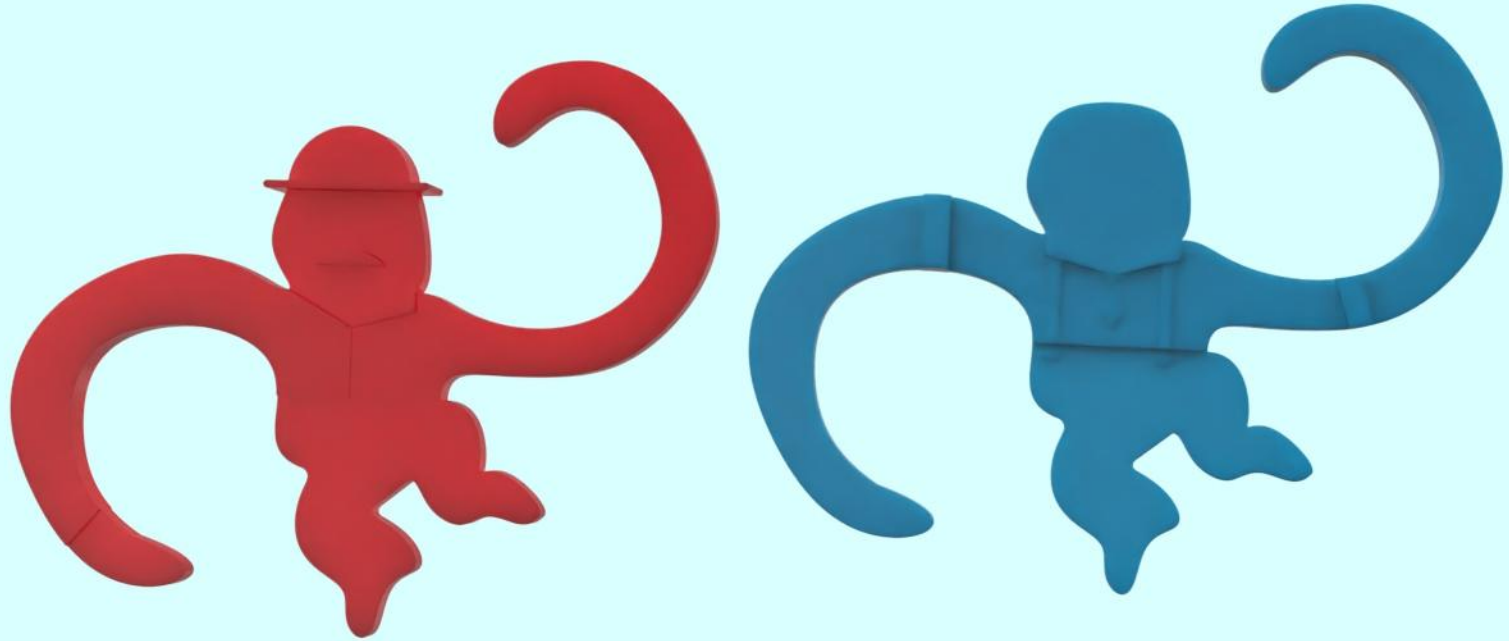
Form Iteration - Development



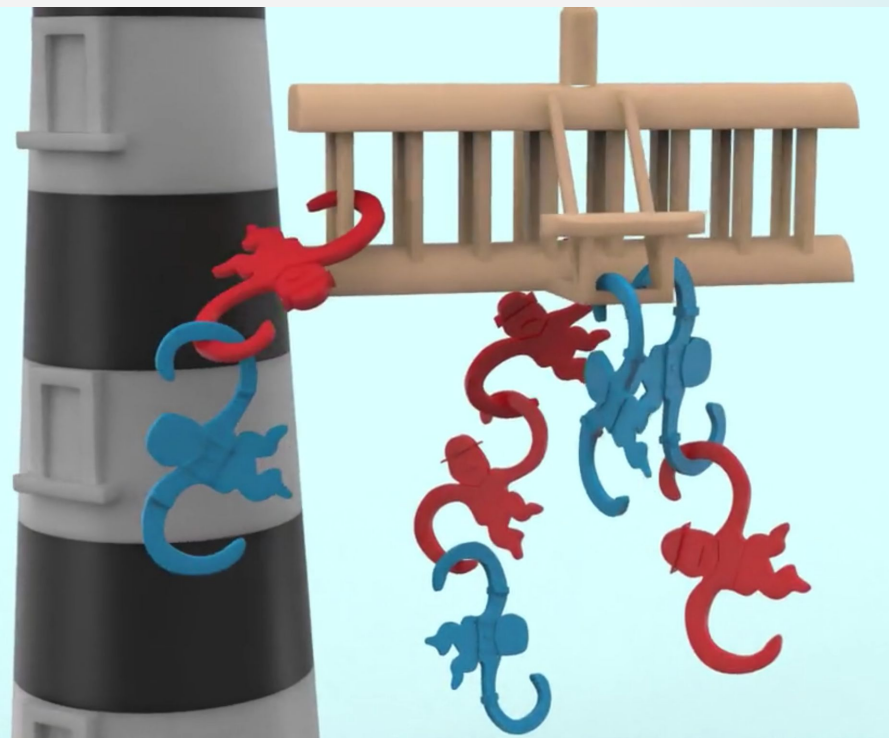
Form Iteration - Development



Form Iteration - Development



Gameplay - Development



What's Next?

- Form refinement of hanging elements to make personalities more pronounced
- Refinement of game rules/mechanics
- Packaging, brand language, instruction sheets, game mat, etc.
- Experiment with new way to include the movement of air