Contents
Preliminary Design Proposal........................................................................................................3
    Need Statement:..................................................................................................................3
    Background:.....................................................................................................................3
    Methodology: ...................................................................................................................3
        Recognizing the Need: .................................................................................................3
        Planning the Project: ....................................................................................................4
        Research: .....................................................................................................................4
    Expected Results: .............................................................................................................5
    Costs:..............................................................................................................................5
Appendix A................................................................................................................................6
    Project Timeline ...............................................................................................................6
Appendix B................................................................................................................................7
    References........................................................................................................................7
Preliminary Design Proposal

Need Statement:
Design a child sized “reacher” that can allow the child to manipulate small items (game pieces, beads, etc.).

Background:
Children that have injuries or physical disabilities may need to use a reacher to pick up small items, such as puzzle pieces and beads, from a distance. There are pediatric reachers already available but they have limitations. Existing units can be difficult to use to pick up items such as puzzle pieces and may not have the ability to pick up items using a magnet.

Methodology:

Recognizing the Need:
Customer Needs:
easy to use; reasonable price; adjustable; able to grip small items

The engineering members of the team recognized the need by talking to their OTA team members. The engineers asked them what the overall purpose of the reacher is, what specific features they wanted it to have, and what the preferred age group for the user is.

Defining the Problem:
Goal Statement: To design a child sized reacher that can manipulate small items, such as toys or game pieces.
Objectives: Design a pediatric reacher that a child can use to pick up small items, it should be multi-purpose, have a modest cost, adjustable, durable, and lightweight.
Constraints: Be able to grab small, flat items; be lightweight, weigh less than 8 ounces; be able to function after being dropped on a hard surface; be able to grab and hold items weighing up to five pounds; an adjustable handle for the size of the child’s hand; should cost less than $40.
Criteria: Functionality, weight, length, durability, safety, and cost.
Planning the Project:

The team started the project creating a Code of Conduct document and by electing positions for the members.

**Group Leader:** Wes Russell (ENG) & Carley Boice (OTA)
The group leader is responsible for assigning tasks and to delegate the workload. The group leader is responsible for direct communication with the client.

**Group Organizer:** Nanna Bush (ENG) & Cassidy Lenox (OTA)
The group organizer is responsible for maintaining all documentation for the project and making it available to all group members. He or She will also keep meeting notes/logs.

**Scheduler:** Noah Gordon (ENG) & Michelle Shick (OTA)
The scheduler will monitor the deadlines. If a group member is not able to make their deadline they must notify the scheduler immediately. The scheduler will work with the group leader to resolve this. He or She will be in charge of scheduling additional meetings and emailing group members about updates for meetings as well as for any deadline and workload redirection.

**Treasurer:** Wes Russell
The treasurer will be responsible for the budget. He or She will keep record of all expenses. The treasurer will also be responsible for ordering all parts needed for prototyping and for the final product build.

Group member resumes are available electronically, as a separate PDF document titled Group 5 Resumes. The paper copies of them are attached at the end of the printed version of this preliminary proposal.

**Research:**
The group is currently researching products, testing an existing product used in the OTA department, and developing concepts. The group will review, screen, and score the concepts to determine a final design. These results will be detailed in the final project documentation. See Project Timeline, Appendix A.

**Existing Product 1:** The Pediatric Reacher picks up light objects. The length and trigger are designed for smaller hands and limbs. The reacher measures 15" from trigger to tip. With a combination of plastic and plastic-coated aluminum, it is extremely lightweight.¹
Existing Product 2: Pediatric Reacher - Green, Lightweight, For children with small or weak hands, Made of plastic coated aluminum, 15" long, Hang up hole.

Expected Results:
To create a prototype pediatric reacher that allows a child to pick up small items. This may be done by making modifications to existing reachers, or by creating something new.

Costs:
The current budget is $100. As the concepts are refined and a final concept is chosen, the $100 will be used to purchase and develop the prototype. The breakdown of costs associated with this is yet to be determined.
# Appendix A

## Project Timeline

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Proposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Study Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate &amp; Select Concept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Product Spec's</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produce Prototype</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitch idea / prototype</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Report</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B

References