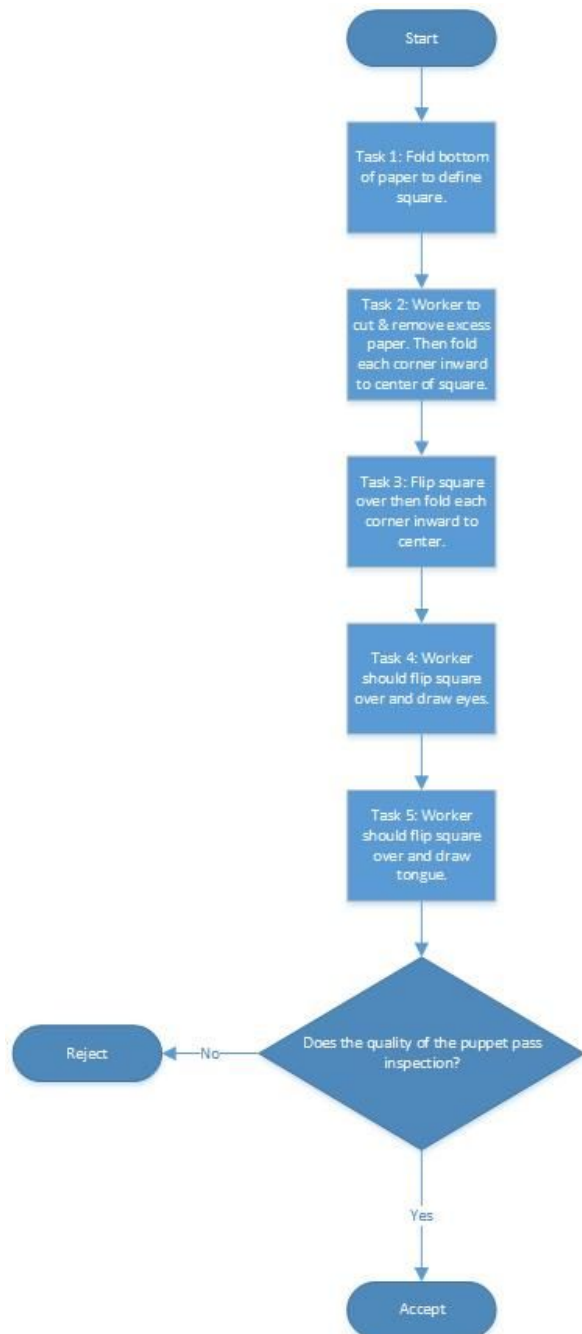


Puppet Game Charts and Recommendations

An explanation below each tool as to why the team used the specific design, what they learned from the tool that helped in decision-making, and how it related to their overall recommendations

Flowchart of Original Process



Check sheet for reasons rejected by task			
Poor eyes	3		
Poor lips	3		
Poor fold/function	11		
Ripped paper	1		

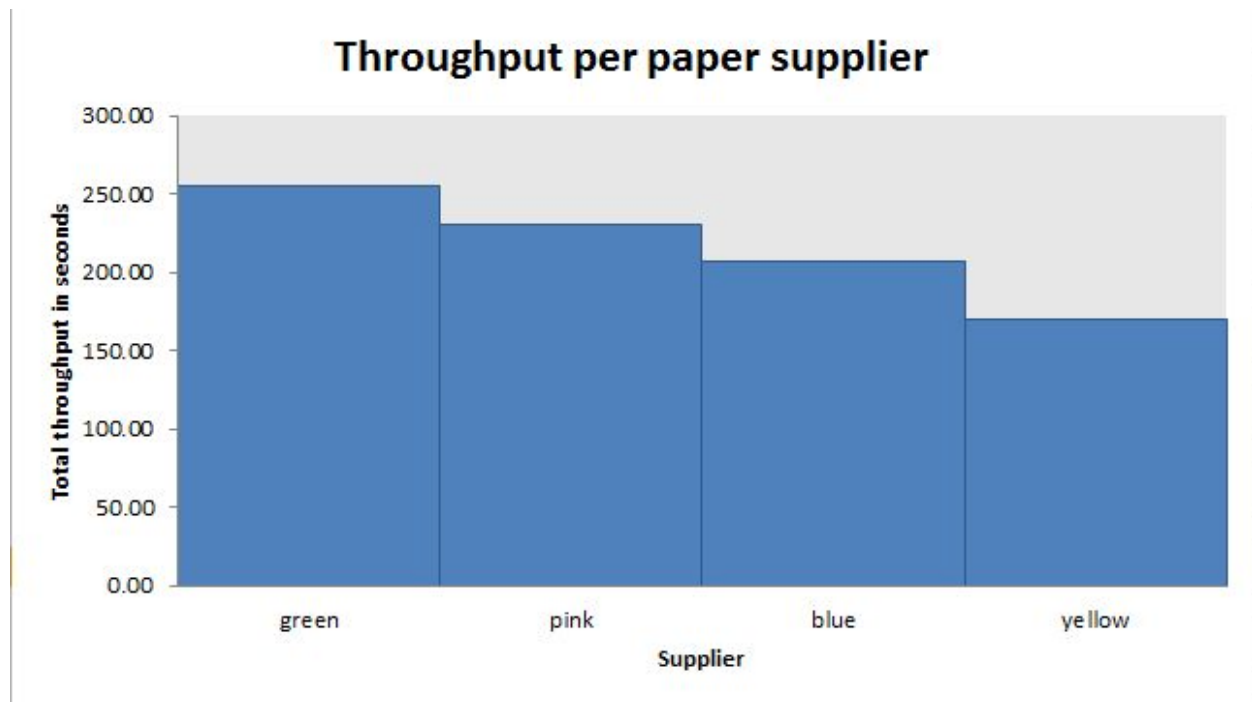
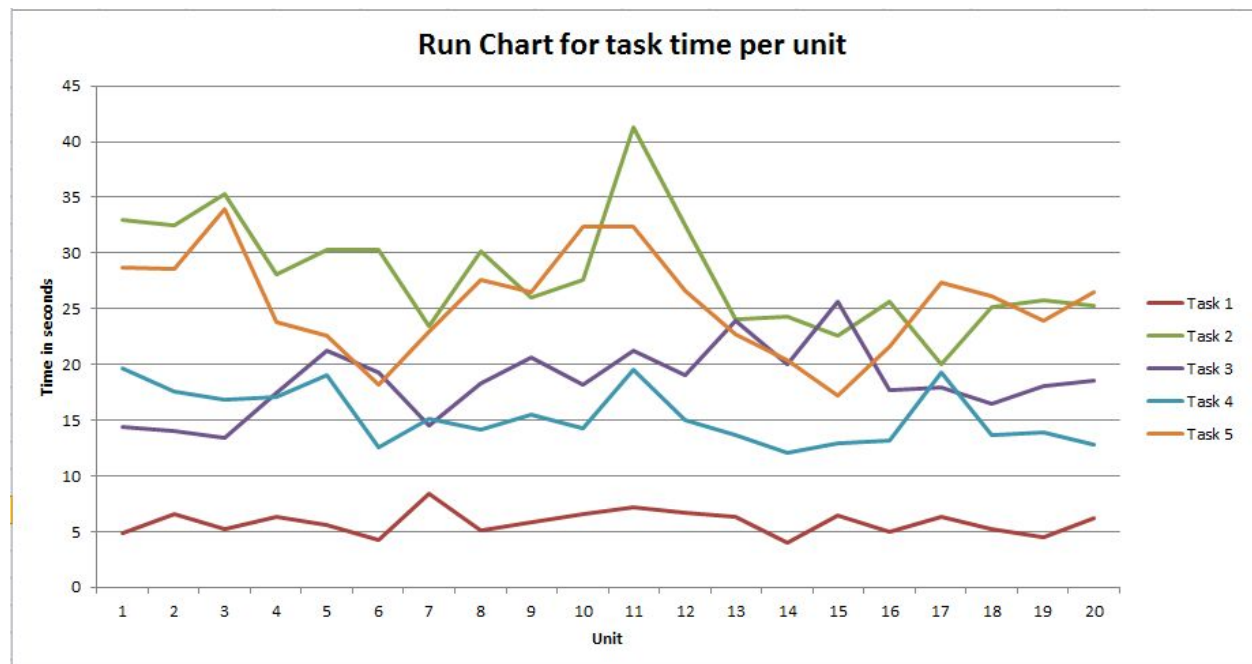
Chart Title

A pie chart titled 'Chart Title' showing the distribution of reasons for rejection. The chart is divided into four segments: a large green segment for 'Poor fold/function' (61%), a blue segment for 'Poor eyes' (17%), a red segment for 'Poor lips' (17%), and a small purple segment for 'Ripped paper' (5%). A leader line points from the 'Ripped paper' label to its corresponding segment.

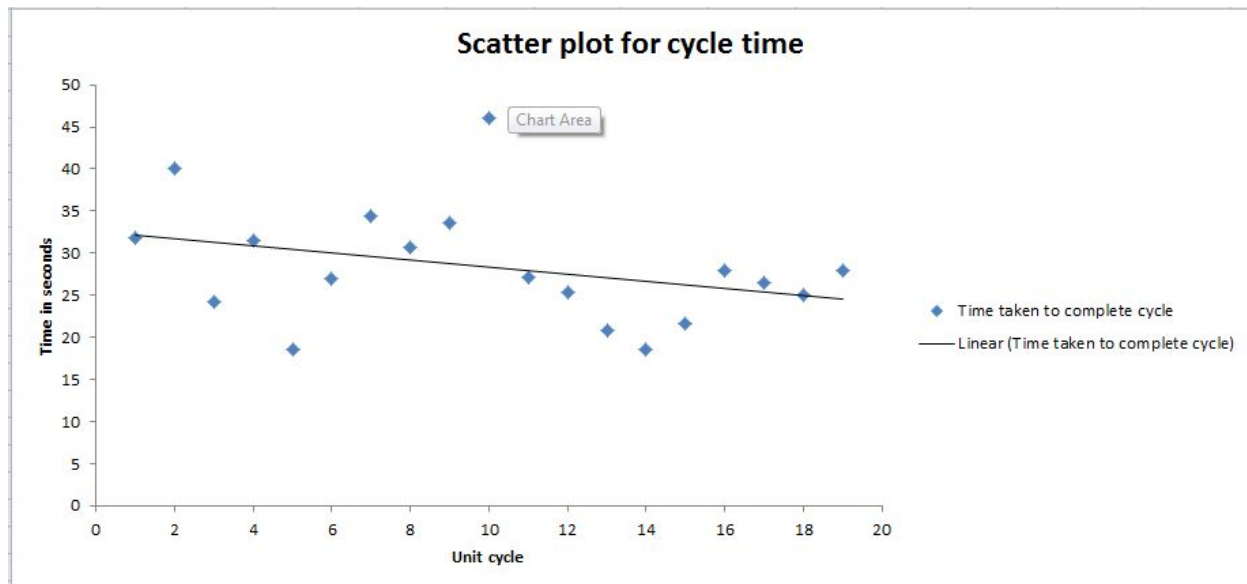
Reason	Count	Percentage
Poor eyes	3	17%
Poor lips	3	17%
Poor fold/function	11	61%
Ripped paper	1	5%

A bar chart titled "Average time taken per task" showing the average time in seconds for five tasks. The y-axis is labeled "Average time in seconds" and ranges from 0.00 to 30.00. The x-axis is labeled "Task" and has five categories. The bars are red with black outlines.

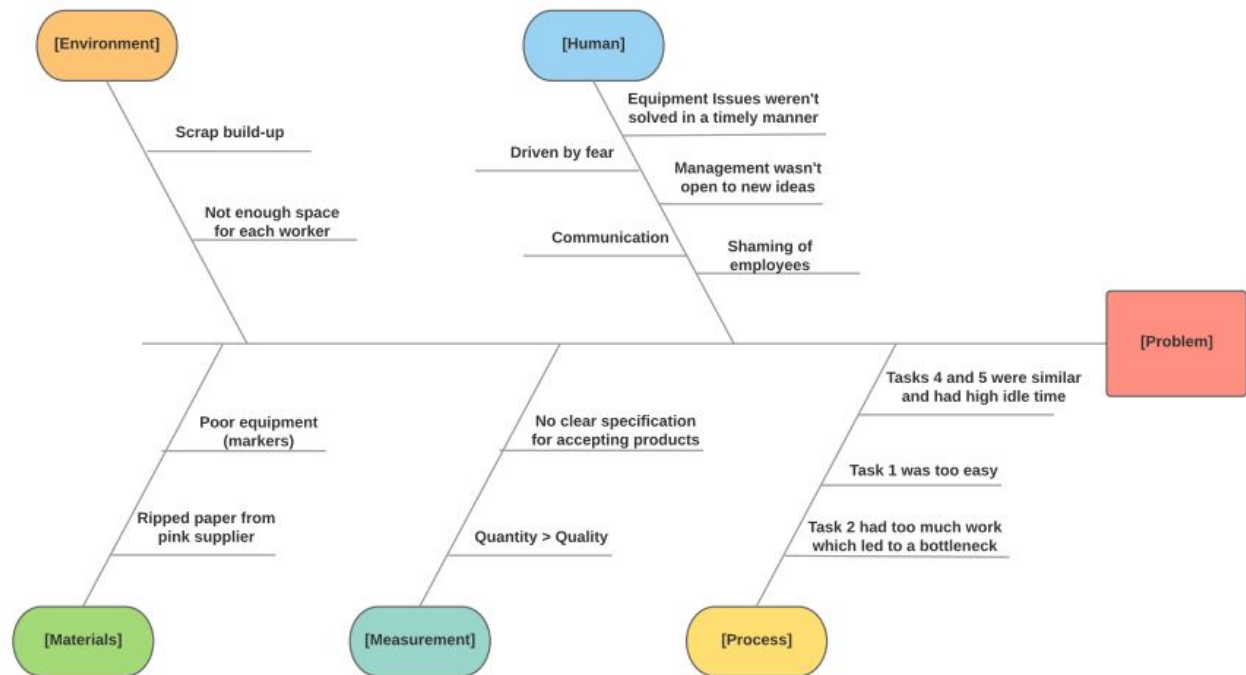
Task	Average time in seconds
1	5.5
2	28.5
3	18.5
4	15.5
5	25.5

Pareto ChartRun Chart

Scatter Plot



We chose this data to see if there was a visible correlation in unit cycle and time. We found that there is a slightly negative correlation, but it isn't quite a strong correlation due to the variability of the points plotted. What we learned from this graph is that as unit cycles went on the time to complete the product would decrease. This makes sense, as workers continually make the same product they should start to get faster each time. A good way to test a new process would be to take the same data with the new process and compare it to this scatter diagram to see if the puppets could be manufactured faster.

Fishbone (Cause and Effect) Diagram

The fishbone diagram shows the causes of quality-related issues that we observed during the manufacturing process. Each cause is separated into a higher category that can then be addressed and contribute to fixing the quality errors. This diagram specifically is a great tool to visualize the specific areas that have the most problems and can be targeted. Quite a few of our recommendations were made based off the environmental, human, and material-related causes.

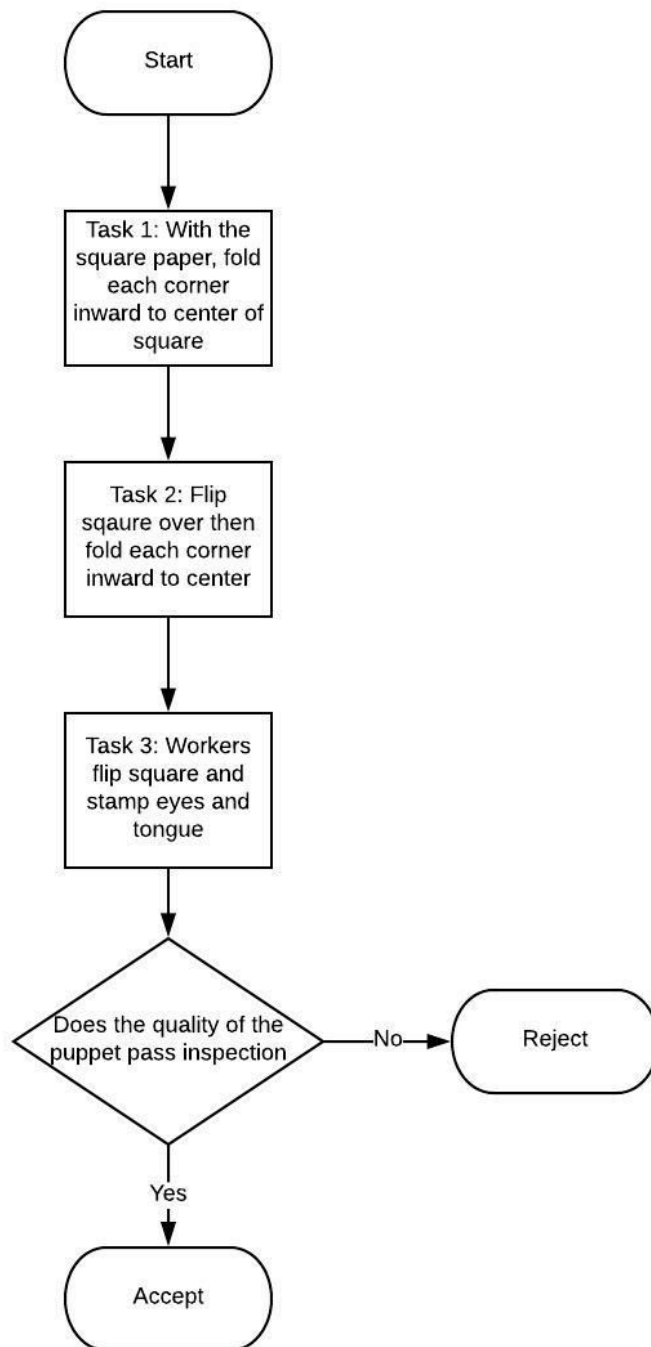
Recommendations

A list of clearly stated recommendations for process improvements resulting from the brainstorming session and analysis of the data. Show direct linkage between the recommendations and the data/observations. Items must be actionable.

1. The workers would benefit from a work space with more room to work freely. There was a lot of scrap build up that occurred during the production process. Adding in waste depositories near the work stations would prevent this build up from happening and give workers more space to work effectively.
2. Management needs to take a different approach in order to fix quality and process issues. They would need to establish an environment where employees can propose process improvements and be taken seriously.
3. Management would need to change the way employees are compensated. The workers were driven by fear and worked to complete as many puppets as possible at the cost of quality.

Management would need to instill a quality over quantity ideology into the employees to fix the quality issue.

4. Management should also look into dropping the pink paper supplier as they supplied materials that directly contributed to a faulty product. Management should also ensure that employees have access to working equipment in order to effectively produce high quality products.
5. Management should also establish clear guidelines for what is expected of each finished product. From observing the process, the quality inspector often times chose to toss the products into a bad pile without giving the workers the reasoning.
6. The main reason most finished products were rejected was due to poor folds. We recommend that you implement some type of technology that will autonomize the folding process and decrease the likelihood of human-related-folding errors.
7. Tasks 2 and 5 took the most time per unit to complete, according to our histogram and run chart, and should be redesigned.

Revised Process Flow Chart

We wanted to make the process as efficient as possible in order streamline the process. By buying square paper it eliminates the first process. The first task is then to fold the edges and to fold each corner in. The second is to flip it over and do the second set of folds. The third task is then the original fourth and fifth combine but in order to save time our worker will use stamps instead of drawing with marker so they are able to save time and keep all the designs uniform.