

Pen Design and Realization Design Brief

Did you know?

Much design goes into the development of a commercial ink pen. Ergonomics are a consideration as many consumers know what fits their hand and many others are willing to try something new.



Challenge

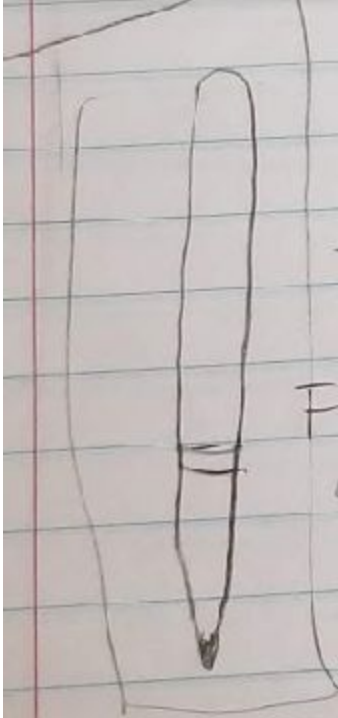
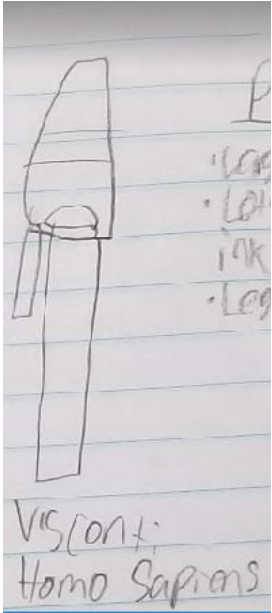
Create a design for an ink pen kit. The design of the pen is to fit your personal desires for ergonomic feel and fit. After designing of the pen you are to utilize a pen kit and make the pen to match your design, then evaluate your work.

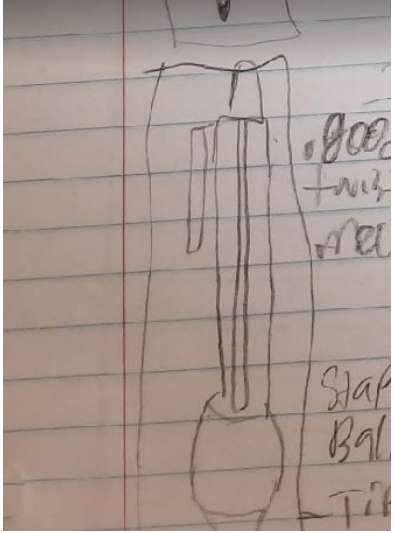
Procedure

Utilize/document the parts of the Engineering Design Process, as seen below to complete the challenge.

- 1) Sketch at least five (5) different store bought (commercial) pens.
- 2) Create a comparison chart and list the attributes and drawbacks of each pen.
- 3) Utilize the comparison chart and create a list of desires for what you would want in a pen.

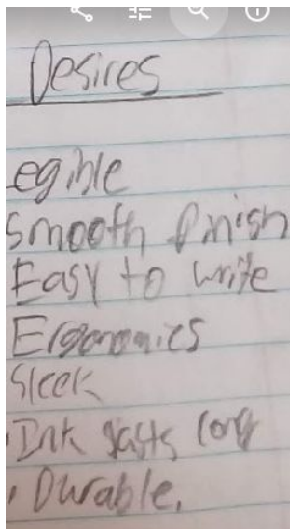
 <p>Pilot G2</p>	<p>Pros:</p> <ul style="list-style-type: none">• Large• Nice to Hold• Smooth	<p>Cons</p> <ul style="list-style-type: none">• Basic Design• Rubber grip is cheap
<p>Bic Crystal</p> 	<ul style="list-style-type: none">• Ink is dark	<ul style="list-style-type: none">• Cheap• Not Unique• Very Basic• Plastic feels hard

<p>Fisher Space Pen</p> 	<ul style="list-style-type: none">• Sleek Design• Variety of Colors• Smooth Finish• Shiny	<ul style="list-style-type: none">• Bulky• Expensive• Heavy
<p>Visconti Homo Sapiens</p> 	<ul style="list-style-type: none">• Large• Lot of Ink• Long lasting• Legible	<ul style="list-style-type: none">• Weight Balance• Can become too heavy• Cap feels plastic

	<ul style="list-style-type: none"> • Allows for precise writing • Bold ink • Light • Grip is big 	<ul style="list-style-type: none"> • Tip feels cheap
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4) Describe the ergonomic features in writing to defend your list.

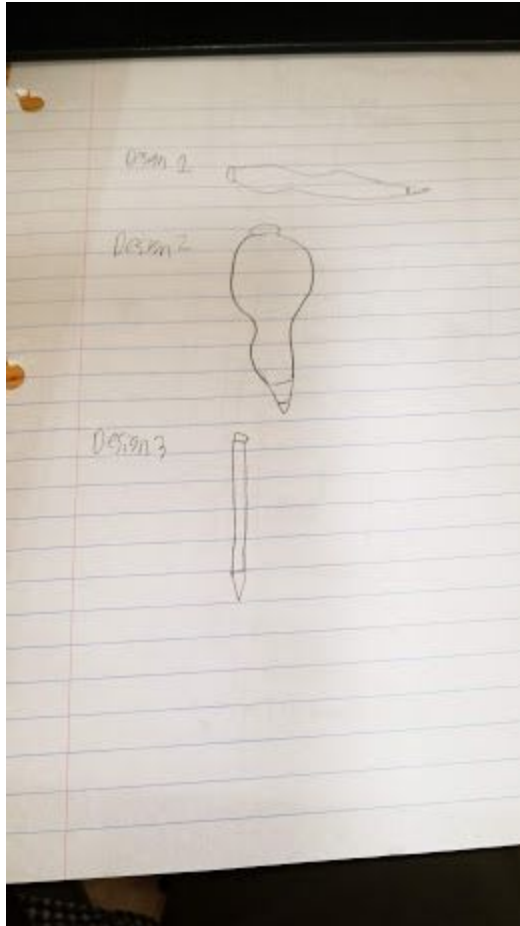
I like pens that are long, balanced, and thick. They should be light enough to hold comfortably, but heavy enough so that it doesn't require too much pressure to write. It needs a good grip and ink flow.



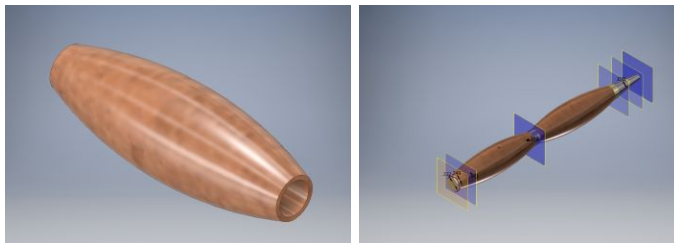
5) Sketch at least three (3) designs that include most or all of your desires.

Desires:

- It should feel good.
- Thick
- Have a shine to the wood
- Write well
- Ink Should last a long time.



6) Choose your design and draw your pen actual size with AutoCad or Inventor.



7) Follow the directions found on Canvas -- Week 1 and make the pen per your design.

8) Evaluate your result through peer & self-evaluation to recognize how well you emulated and realized your design, the pen for ergonomic fit and feel as compared individually and to peer's pens, and for craftsmanship.

9) Use your pen and report how you are proud of your work!

Things to think about

1) Where can you go to sample five (5) different styles of pens?

I can go to my house or a classroom to find 5 different styles of pens.

2) How will you describe attributes and drawbacks?

By Ergonomics, Features, Ink lifetime, and value for money.

3) How will you sketch three (3) separate designs that will work with the kit but still be markedly different?

Trace and modify three pens to be shaped different.

4) How do you make the pen match your design exactly?

Organize my desires in a list and draw a prototype model.

5) What would an instrument look like to collect data about the match of design, ergonomics, and craftsmanship of the pen? (This instrument is to be developed by the class in a timely fashion so it can be utilized for peer evaluations.)

The usage of AutoCad to design a standard pen for the use of a control group to be compared to the pens of the other students.

6) How do you finish your pen so it indicates a level of craftsmanship that you will want to pass the pen to progeny or friend?

I will finish the pen by adding polish and sanding the wood, I will coat it with super glue and ensure the ink flows smoothly and pen is operable.

Pen Design and Realization Design Brief Grading Rubric

Pen Design Planning (Class Work Grade)

Five (5) different commercial pens are sketched 12 15	0	3	6	9
Five (5) comparison charts are completed for each pen 12 15	0	3	6	9
Comparison charts are utilized to create a list of desires in a pen. 15		0	5	10
Ergonomic features are described in writing to defend your list. 15 20		0	5	10
Three (3) unique designs are sketched for the pen kit 15			0	5 10

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2

A design is chosen and drawn with AutoCad or Inventor
15 20

0 5 10

Total _____

Pen Design Make and Evaluate (Project Grade)

The pen is made (Pen and Picture)
20

0 5 10 15

Evaluate: Three (3) peers utilize an evaluation instrument
60

0 20 40

to evaluate the following:

Match of design.

Ergonomic (fit and feel based upon comparison of cohort).

Craftsmanship (e.g., turned surface free of marks, finish is smooth).

Proof of pride in work narrative: Write your personal
15 20

0 5 10

Evaluation of the experience and your work. Include
What you learned from the experience and from
peer evaluations. Include what you would do different
Next time. This writing is to be 100 words minimum.

Total _____

Research Sketches

Comparison Charts

Comparison Chart Pen 1

Comparison Chart Pen 2

etc...

Attributes

Drawbacks

Attributes

Drawbacks

List of Desires for Pen Developed from Comparison Charts

Sketches of Pen Designs (Three (3) minimum)

Technical Drawings (via AutoCad/Inventor, accurate, dimensioned)

Teacher approval to begin build. _____

The pen is made and finished per the instructions. _____

Evaluations (are performed and data are collected.)

Match of design

Ergonomic (fit and feel based upon comparison of cohort)

Craftsmanship Include a timeline for the work and needed resources and costs.

Pride in Work Narrative