



<https://tiktok.wordpress.com/tag/weird-shoes/>

FANCY FEET ACTIVITY WORKBOOK

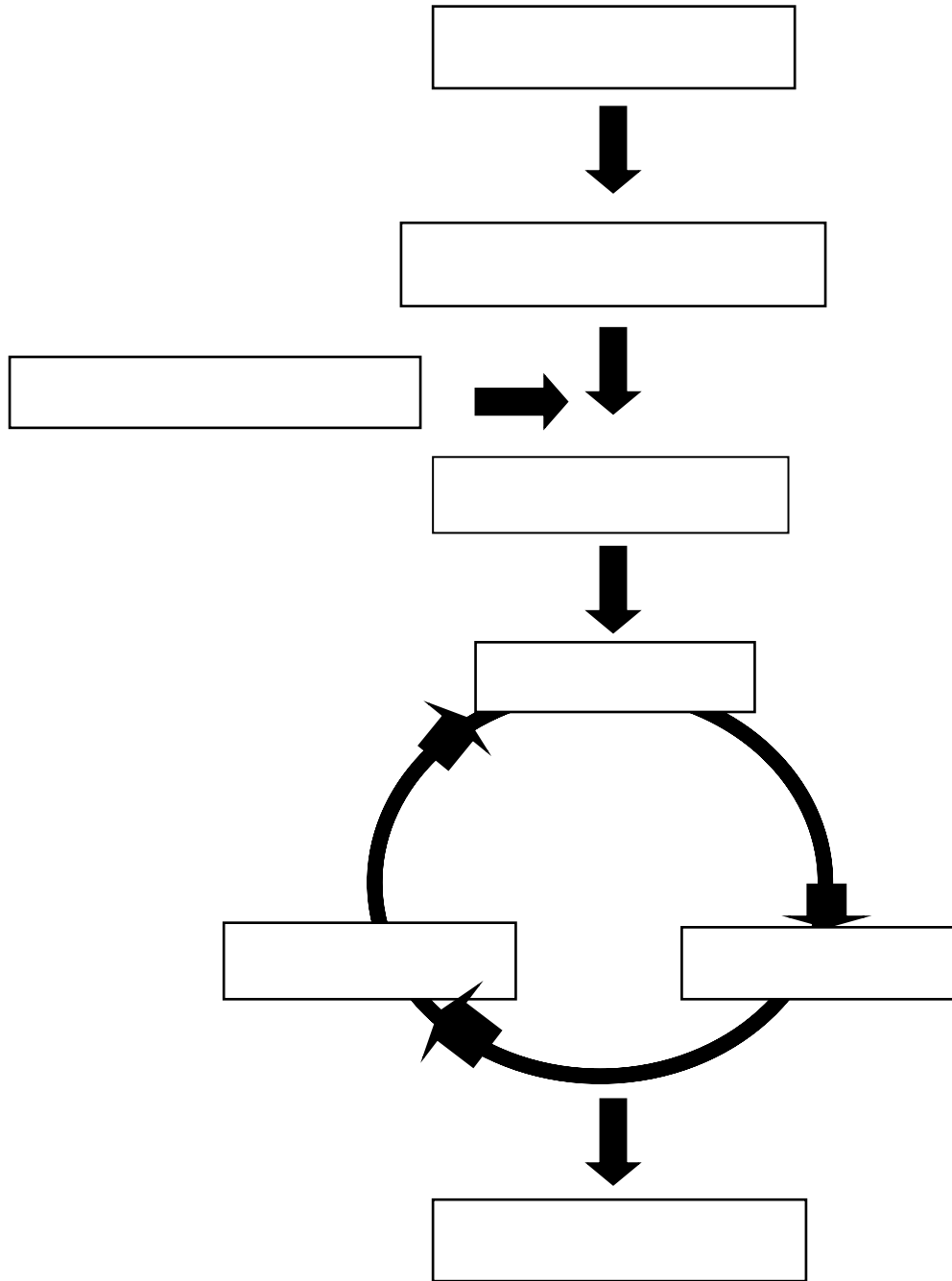
- PART 2

Name: _____

Other group members: _____

Group Number: _____ Class: _____

ENGINEERING DESIGN MODEL



Model adapted from pbs.org model



Engineering steps for designing and making shoes.

1. What shoe problem/need has your group identified?

2. List 3 things that your group would like your shoe design to achieve.

Aim 1: _____

Aim 2: _____

Aim 3: _____



3. How will you test how well your design meets each of these aims?

Aim 1 Test: _____

How will you know if it passes the test? _____

Aim 2 Test: _____

How will you know if it passes the test? _____

Aim 3 Test: _____

How will you know if it passes the test? _____



5. Tick the materials in the 1st column below that your group has chosen to use.
 Use the 2nd column in the table to record the property that the material has.
 Complete the 3rd column by recording what part of the shoe you will use that material for.
 Use the last column to add up the cost of your shoe.
 Remember to keep to your budget of \$10!

| Material | Property | Part of shoe | Cost per item | Cost |
|------------------|----------|--------------|---------------|------|
| cardboard sole | | | \$1.50 | |
| sponge | | | \$1.75 | |
| fabric | | | \$1.25 | |
| sandpaper | | | \$2.00 | |
| bubblewrap | | | \$1.75 | |
| plastic - thin | | | \$1.00 | |
| plastic - thick | | | \$1.50 | |
| foam sheeting | | | \$1.25 | |
| non slip matting | | | \$2.00 | |
| cardboard | | | \$1.75 | |
| cottonballs | | | 4 for \$2.00 | |
| ribbon | | | \$1.25 | |
| string | | | \$1.00 | |
| velcro dots | | | 2 for \$2.00 | |
| glue | | | \$1.50 | |
| | | | Total cost | |

6. Use the space below to draw your group's design. Make sure you label your design indicating the materials you have chosen for each part of the shoe and *all* the measurements you have taken.

1st design

7. Now you can begin to build your shoe. Once it's built, we will need to allow time for the materials to dry.





8. Use your testing criteria (recorded on pg 4) to test your 1st shoe design to determine if your design, measurements, and the materials chosen enabled you to meet your aims.

Circle the *rating* you would give your shoe for each of the following criteria and *record your reasons* for your rating on the lines below.

| | | | | | |
|--------------|----------|----------|----------|----------|----------|
| Aim 1 | 1 | 2 | 3 | 4 | 5 |
| | (Low) | | | | (High) |

| | | | | | |
|--------------|----------|----------|----------|----------|----------|
| Aim 2 | 1 | 2 | 3 | 4 | 5 |
|--------------|----------|----------|----------|----------|----------|

| | | | | | |
|--------------|----------|----------|----------|----------|----------|
| Aim 3 | 1 | 2 | 3 | 4 | 5 |
|--------------|----------|----------|----------|----------|----------|



Keep going, remember 1 is low and 5 is high.

| Design | 1 (Low) | 2 | 3 | 4 | 5 (High) |
|---------------|--------------------------|----------|----------|----------|---------------------------|
|---------------|--------------------------|----------|----------|----------|---------------------------|

| Measurements | 1 | 2 | 3 | 4 | 5 |
|---------------------|----------|----------|----------|----------|----------|
|---------------------|----------|----------|----------|----------|----------|

| Materials | 1 | 2 | 3 | 4 | 5 |
|------------------|----------|----------|----------|----------|----------|
|------------------|----------|----------|----------|----------|----------|



- 9. Think about your ratings above and how you could improve your shoe. Draw your new shoe design below. Ensure you label all parts of the shoe with the materials you have chosen for each part of the shoe and *all* the measurements you have taken. Record on your drawing how the changes will improve your design. Remember to keep to your \$10 budget!**

2nd design



10. 2nd design

| Material | Property | Part of shoe | Cost per item | Cost |
|------------------|----------|--------------|---------------|------|
| cardboard sole | | | \$1.50 | |
| sponge | | | \$1.75 | |
| fabric | | | \$1.25 | |
| sandpaper | | | \$2.00 | |
| bubblewrap | | | \$1.75 | |
| plastic - thin | | | \$1.00 | |
| plastic - thick | | | \$1.50 | |
| foam sheeting | | | \$1.25 | |
| non slip matting | | | \$2.00 | |
| cardboard | | | \$1.75 | |
| cottonballs | | | 4 for \$2.00 | |
| ribbon | | | \$1.25 | |
| string | | | \$1.00 | |
| velcro dots | | | 2 for \$2.00 | |
| glue | | | \$1.50 | |
| | | | Total cost | |

Build your second shoe. Remember not to destroy your first shoe.

Once it's built, we will need to allow time for the materials to dry.





11. Test your 2nd shoe to determine if the design, your measurements, and the materials chosen enabled you to meet your aims.

Circle the *rating* you would give your shoe for each of the following criteria and *record your reasons* for your rating on the lines below.

Aim 1

1
(Low)

2

3

4

5
(High)

Aim 2

1

2

3

4

5

Aim 3

1

2

3

4

5



12. Complete the information below in preparation for the *Fancy Feet Parade*.

Shoe Design No. _____ (1 or 2?)

Aim 1: _____

Aim 2: _____

Aim 3: _____

Materials used _____

Why did you choose those materials? What properties did they provide?



How did you test your shoe design? _____

What overall rating would you give your shoe design and why?





13. Just a few final questions

How could you further *improve* your group's design?

How does your pair of shoes *vary* from others that you have seen in the Fancy Feet Parade?

What type of shoe was the *most popular* in the Fancy Feet Parade? Why do you think this was the most popular?

Do you think your shoes would be *typical* of those that the Year 4 students in Hobart might design and create? How might they *vary*?

