Learning by Making

"Education is something that other people do to you. Learning is something you do for yourself."

- Joi Ito, Director, MIT Media Lab

Making is…

Making is

- Putting yourself in Noisy, messy, and sometimes dangerous situations
- Using Familiar Materials in Unfamiliar Ways
- Being Comfortable with Not knowing
- Embracing your tools
- Merging Art, Science and Technology

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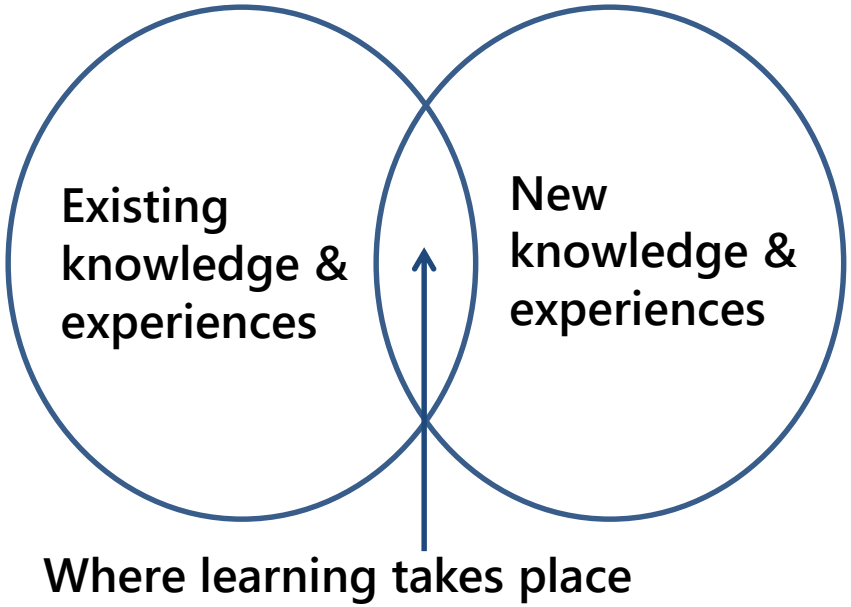
How do we learn?



How? By making *tangible objects*

Constructivism

- John Dewey
- Jean Piaget
- David Kolb

Constructionism

- Seymour Papert
- Mitch Resnick

Defining Success

Defining Success

What is success?

Measurable outcome

Optimised solution
Stop at one solution
"Engineering"

Non-measurable outcome

No "correct" solution
Many solutions
"Art"

The Power of Experience

The *more experiences* you have, the *more connections* you can make

Methods

Materials

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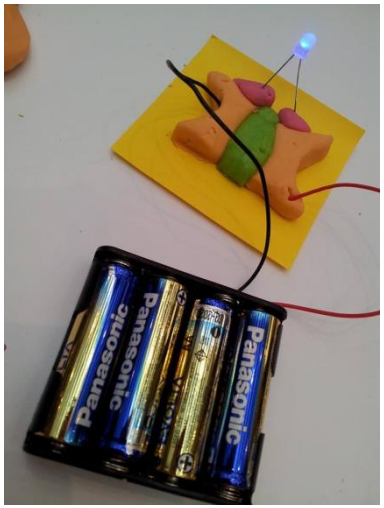
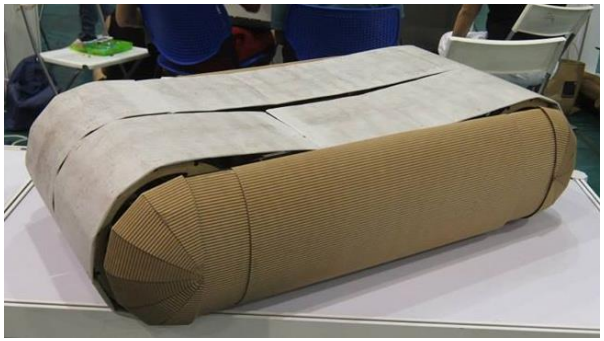
Combinations

LED + paper

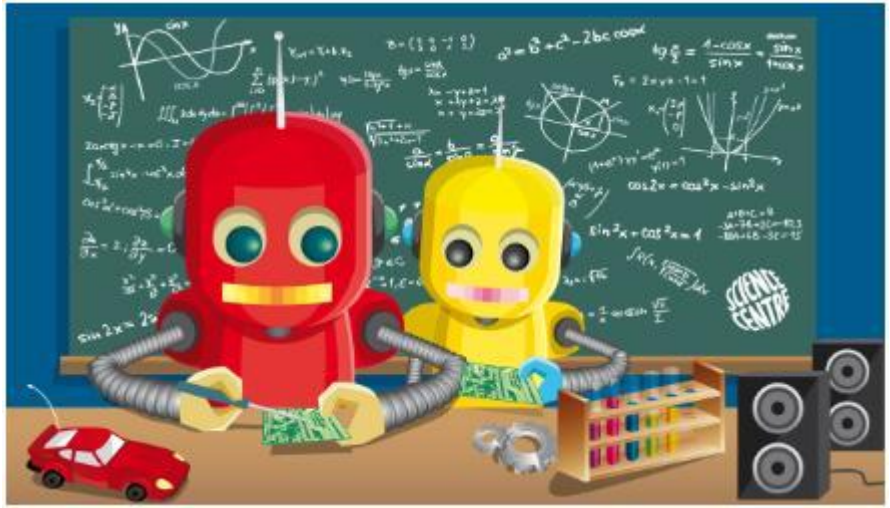


LED + clay



Motor + cardboard

Fabric + electronics + coding



Enjoy the Making Process

To cultivate curiosity and the willingness to try, fail and learn

http://makerfaires

Making is…
Being comfortable with not knowing

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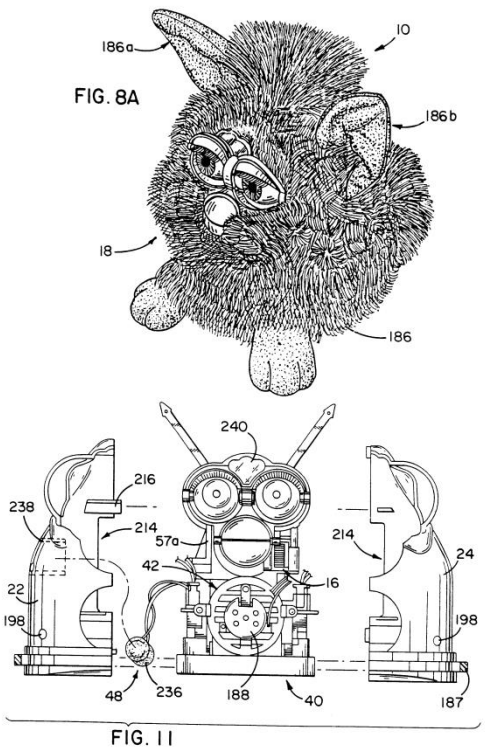
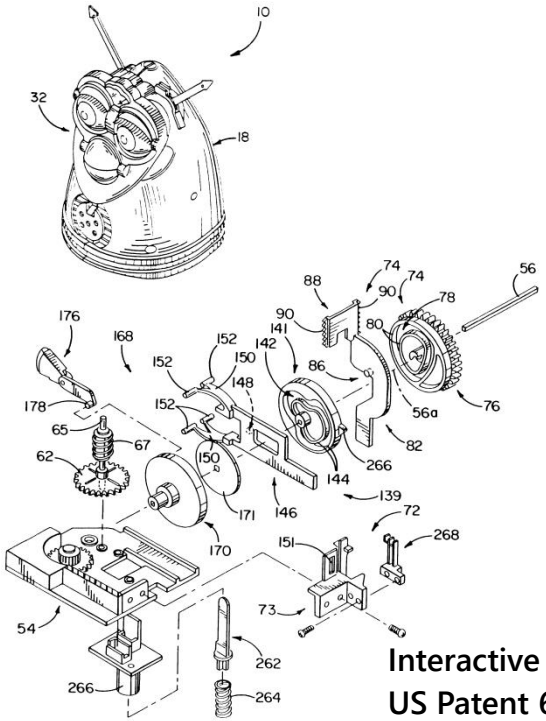
Deconstruction

Let's Take Apart a Toy!





Interactive toy
US Patent 6514117 B1

But let's do it *scientifically*

Predict – Observe – Explain

Don't take apart the toy yet!

(10 minutes)
Discuss with your group and record your answers:

- How do you think the toy works?
- What can you see/hear/touch?
- What parts are decorative?
- What parts are functional?

Predict – Observe – Explain

Take apart the toy

(20 minutes)
Keep the toy alive for as long as you can while taking it apart

- How do your assumptions change while you took your toy apart.

Predict – Observe – Explain

(15 minutes)

Group Presentations and Thoughts:

- Explain how the toy works
- Compare your predictions & observations
- Any surprises?

Let's plan a party!
Image by Conxa Rodà on flickr.

Yes but….

Let's plan a party!
Image by Conxa Rodà on flickr.

Yes and….

Tea break (15 min)

http://makerfairesingapore.com/

Making is… Putting yourself into messy, noisy and sometimes dangerous situations

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Making is… Being Comfortable with your tools

Now Build It!

(60 minutes)

Lets move the chicken!!

AND

Your moving chicken must

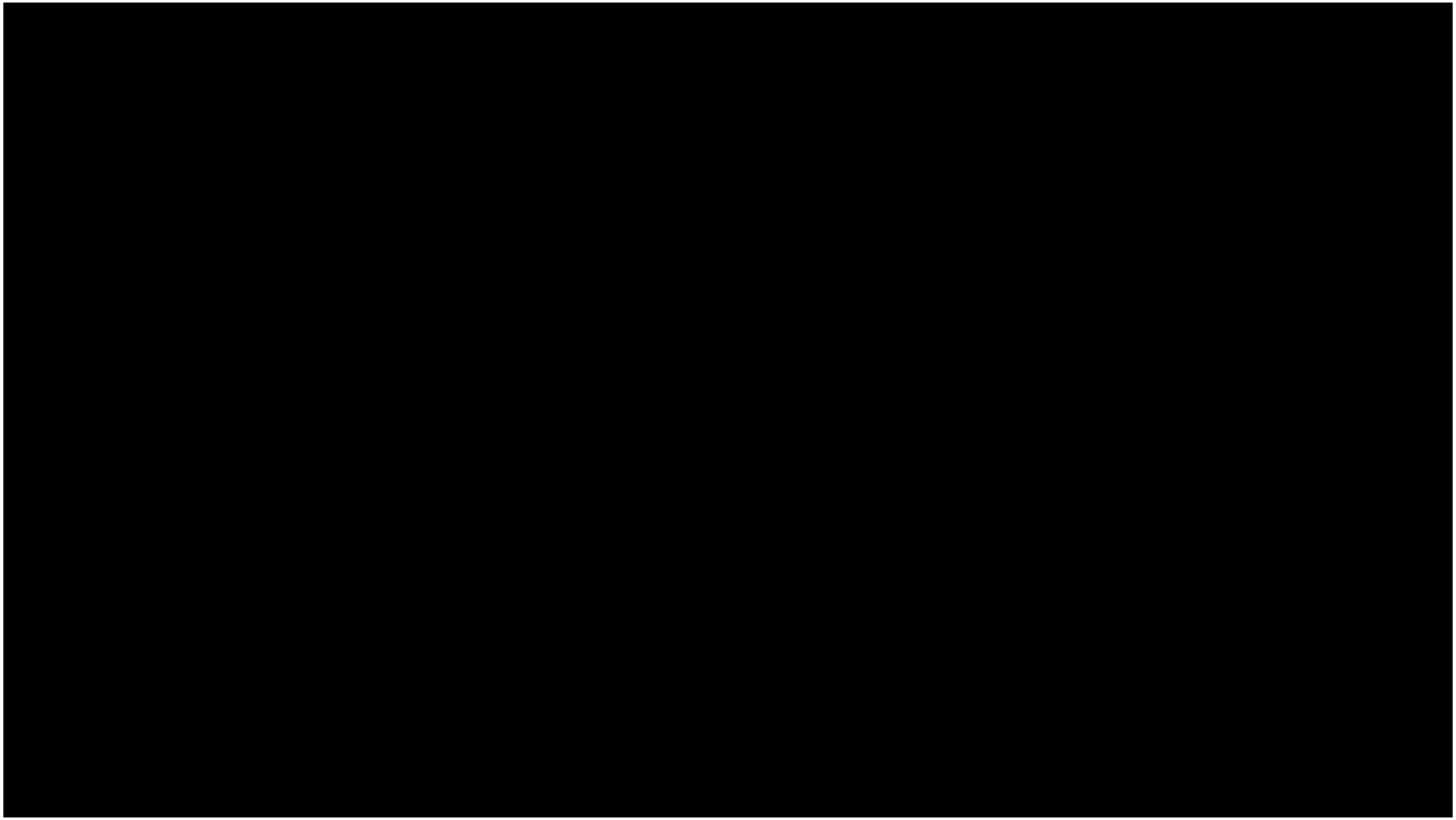
1. Use a part from your toy
2. Look good
3. Be robust

Now Build It!

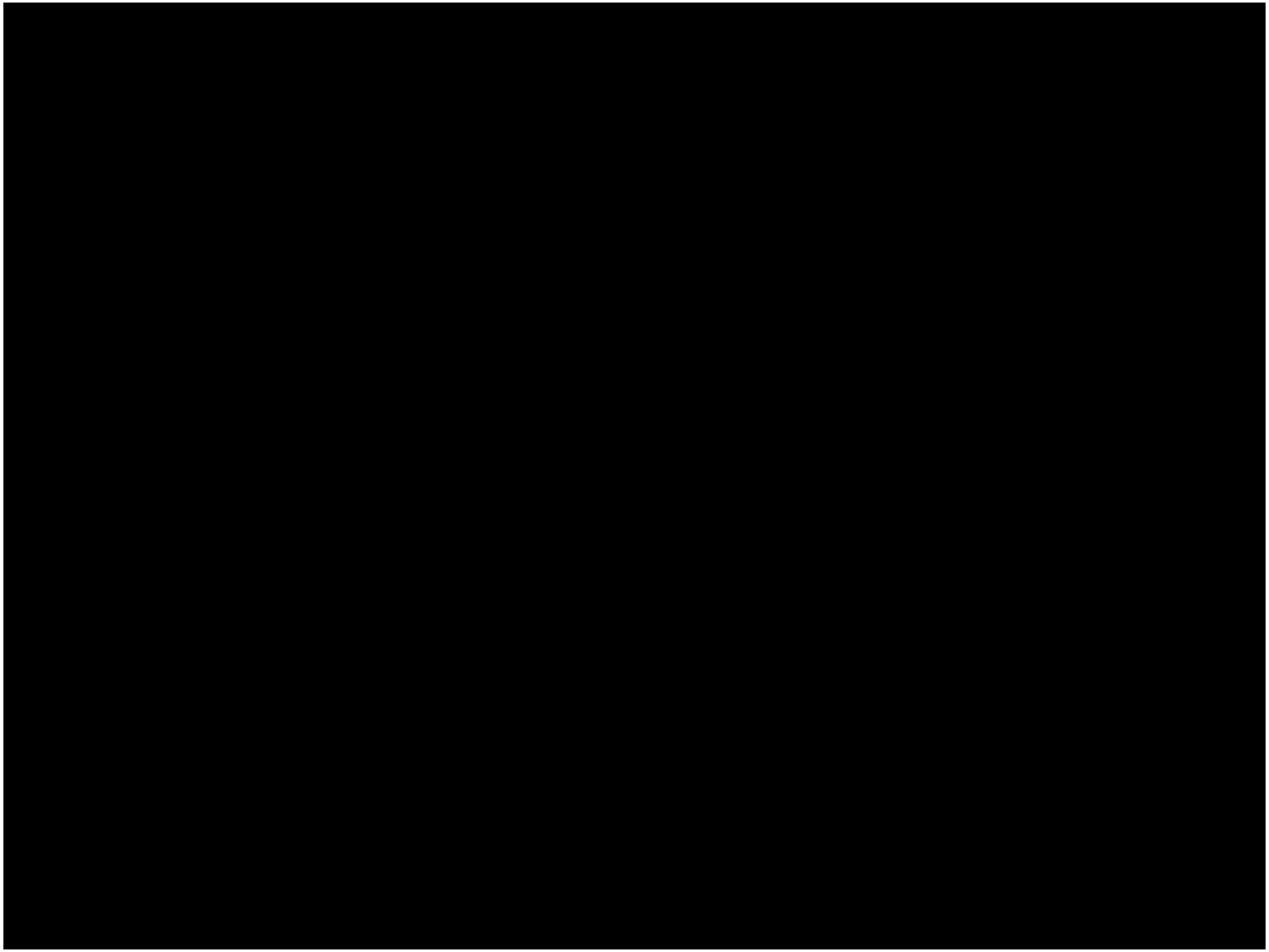
(60 minutes)

Lets move the chicken!!

Now Build It!



Now Build It!



Now Build It!

(60 minutes)

Lets move the chicken!!

AND

Your moving chicken must

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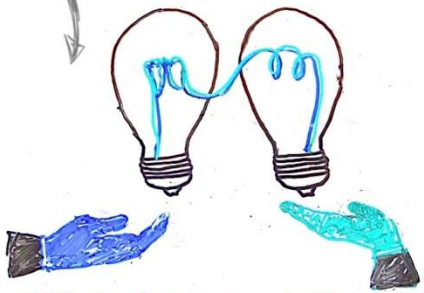
Recap

- Making is a way of learning
- Activities must be carefully crafted – "Low walls, high ceilings"
- Take apart things
- Combine materials and methods
- Collaborate, share and have fun!

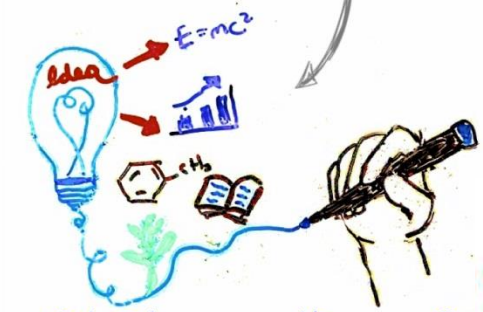
A Making Reflection

Was I resourceful in terms of finding information, resources, and materials?

Did I ask other people for feedback and information; to collaborate?

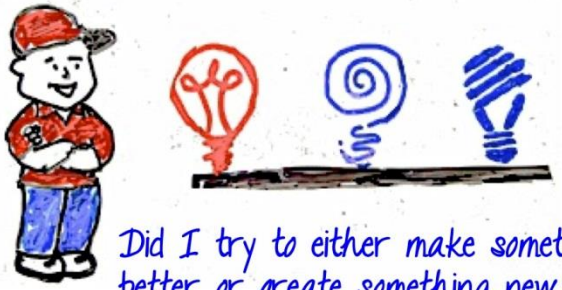


Did I share my work and findings with others?



Did I learn something new?

Did I play and have fun?



Did I try to either make something better or create something new rather than just copy something that already exists?

Did I approach learning as an open-ended process; open to new & all possibilities?

Did I accept failure as part of the process and use it to inform my learning?

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Jac
Use

What next

- Workshops for teachers and students
- Visit the tinkering space (opening December 2015)
- Start a makerspace in your school, setup a school maker faire
- Volunteer for programmes (encourage students to volunteer)
- Follow http://makerfairesingapore.com or MakerFaire Singapore on facebook

Thank You

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