MODULE	2
TITLE	**Design Thinking Part 2: Product Design and Prototyping**
TIME (approx.)	90-120 minutes to develop and test prototype (recommended over a couple of sessions)
OUTCOMES	**Students will:** • Learn the importance of market research to meet the wants and needs of the target market • Understand good design principles to produce high quality products • Develop and understanding of sustainable design and production • Decide the best product design to use for the products • Understand what a prototype is • Apply knowledge and understanding to their products to develop a prototype and plan for packaging
KEYWORDS	PRODUCT; PROTOTYPE; MARKET RESEARCH; PACKAGING
VIDEO	**MODULE | 2 – CREATING COOL PRODUCTS** **Presented by: Rowan Wagner, Moose Toys**
ADDITIONAL RESOURCES	• A range of product packaging or show a range of online packaging ideas • Raw materials to make their prototype or look at some examples online • **Worksheets:** Market Research – Prototype; Packaging Concepts; Our Product packaging • **Internet research on**: Recycle and Re-purpose; Products that solve problems.

KIDPRENEUR ACTIVITY	EDUCATOR NOTES
WATCH VIDEO **MODULE | 2 – CREATING COOL PRODUCTS** **Presented by: Rowan Wagner, Moose Toys**	**DISCUSSION NOTES** **Product Design** Product Design is a critical part of the business building process. Good product planning helps to produce a high-quality product, which is attractive or engaging, works well and meets the needs and wants of the target market. Product design always starts with the customer's needs, wants or a problem they face. Business must first identify the problem or need the product will address and then design backwards from there to design a product that the end customers want to buy because it will benefit them. **Resources** https://www.marketing91.com/product-design/ http://wonderfulengineering.com/30-innovative-products-you-did-not-know-exist-but-are-too-awesome-to-miss/ https://interestingengineering.com/20-innovative-products-you-did-not-know-exist-but-are-too-awesome-to-miss

	Note: If there are students who need additional support with ideas for cool products they can produce we have provided a few to get them started in the Supplementary Resources
1. PRODUCT DEVELOPMENT PROCESS **THINK, PAIR, SHARE ACTIVITY** **Why do you think the following steps are important when designing your product?** **Step 1:** Listening to Feedback **Step 2:** Turning feedback into new ideas **Step 3:** Prototyping -developing a small-scale cost-effective model to explain what your product is **Step Four:** Production / Manufacturing (developing your produce to sell)	**ACTIVITY NOTES** **Preparation** **Write the four steps up on a board for discussion.** For Kidpreneurs we have simplified the Product Design process into the following four key steps: **Step One: Listening to Feedback – We covered empathising in Module 1** **Step Two: Turning feedback into new ideas – Ideating we covered in Module 1** There are many parts to the ideation stage in a real business, and Kidpreneurs should focus on: 1. **Ideate**. This involves getting ideas from crowdsourcing, brainstorming, and the feedback you've gathered. Then you evaluate and choose the best idea. 2. **Refine the Idea**. Using the team's unique talents and the feedback from others, refine the idea until it makes the most sense for your customers and your organisation. 3. **Review**. Before you finalize the idea, conduct a final review. **Step Three: Prototyping** Before jumping full-scale into production and distribution, create a series of prototypes. A prototype has two major advantages. 1. It lets you to determine how much raw material and budget you will need to produce your product line. 2. Prototyping allows you to do a limited release to test not only the demand in the market, but also allows you to test the functionality, receive feedback on the product and work out bugs early in the design. **Step Four: Production / Manufacturing** After all the testing and prototyping is done, it's time to manufacture and release the final product.
2. WHAT SHOULD WE THINK ABOUT WHEN DESIGNING OUR PRODUCT? **INTERACTIVE ACTIVITY 1** **Recycle and Re-Purpose** **INTERACTIVE ACTIVITY 2** **Products that Solve Problems**	**ACTIVITY NOTES** **Use these activities to encourage Kidpreneurs to think more deeply about product design and development and packaging.** **Activity 1:** Visit the link below to an activity challenging Kidpreneurs to consider ways to repurpose materials and invent an environmentally friendly beverage can holder. In the process, they consider what it means to be "green," identify low-impact alternatives for common items, and use the design process to devise a "green" packaging system for beverage cans. http://pbskids.org/designsquad/parentseducators/lesson-plans/green_design.html

- Discuss how we can reuse or repurpose some of our recycling products to make something useful and sustainable.

- Discuss some of the products they may have seen to improve people's lives.

- Can you apply this to the product you are designing with your group?

- Does this pose challenges to the shortlisted ideas to had as a group?

Activity 2:

Visit the link below to an activity where Kidpreneurs learn how product design is used to solve problems to help improve people's lives and make the world a better place.

http://pbskids.org/designsquad/parentseducators/lesson-plans/helping_others.html

Designing for Social & Environmental Impact

It is important that product design aligns with the mission statement and the values of the business & its owners. It's not just where the profits are donated to that makes you a social entrepreneur, it is about how the entrepreneur builds their business from scratch with social and environmental considerations. Every business decision needs to reflect these values.

When designing a product, it is important to think about:

- How can you use recycled or up-cycled materials to produce your product?
- How can you make sure your product is environmentally friendly?
- Think about where your materials come from. Purchasing materials from local suppliers is better for the environment because it takes less carbon miles to deliver the product. It also supports the economy of your local area and helps provide jobs etc.
- Ensure you pay a fair price to support the people who made your materials. Are you purchasing from businesses that share your values, treat their employees and the environment well?

Consider your product packaging. Packaging produces 32% of the waste in our environment. How will you package it up to sell? How can you use sustainable and 'green' materials for this? How can you make your packaging look good and be good for the environment? Try to use natural or recycled materials for your packaging instead of plastic. Materials like paper, raffia and recycled fabric are sustainable options.

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3. **MAKING OUR PRODUCT PROTOTYPE**

INTERACTIVE ACTIVITY

Make a prototype of your product

Reminders:

- Do not to use too many raw materials on your prototype. You don't want to run out before making all your products for sale.

- How many products do you think you will need to make? (Recommended 20-30 items). You should spread your raw materials between this number of products.

- The products need to be simple to make quickly and efficiently in a production line process. Imagine if you were paying their friends by the hour to make the products, the

ACTIVITY NOTES

Now it is time to build ONE prototype (example) product based on the best design solution from the ideate stage.

A Prototype …

- Is an example of the product a business will sell.
- Is produced in the design phase to show potential customers to get feedback on the design.
- Helps ensure the product features best meet the wants and needs of the target market, and that the mass-produced product will be of high quality.

Also helps the business understand what sort of materials and tools it will need to make the product and what steps are needed for their production line.

http://intellicagroup.com/how-not-having-a-prototype-can-ruin-a-startup/

longer it takes to make, the more expensive the cost of the product will be.

- The finished products need to be high quality, so they don't fall apart soon after the customer buys them.

4. TEST YOUR PROTOTYPE

INTERACTIVE ACTIVITY

Test your prototype

Kidpreneurs show their prototype to potential customers and ask for feedback.

Reminders:

- Look for critical friends, not just those that will say "it looks great".
- Think about the type of questions you would ask to get the best feedback.
- What modifications should you make from the feedback?

KIDPRENEUR WORKSHEET ACTIVITY

ACTIVITY NOTES

After producing a prototype, Kidpreneurs can now show it to potential customers (target market) to obtain feedback on their design. Once again, this is Market Research.

- If Kidpreneurs don't have access to people in their target market, they can ask Educators/family/ friends/ classmates for feedback.
- If they have time they could make one more new and improved prototype before moving on to mass production.
- An optional activity is to have Kidpreneurs sit in a circle and one-by-one present their prototype. The Educator and other Kidpreneurs can then say what they like about it and what might be improved.

Note: It is important to reinforce that testing a prototype is often essential to them having success as entrepreneurs.

Encourage the Kidpreneurs to keep an open mind and listen carefully to feedback on their prototype. They should also ask as many questions about their testers specific comments about their prototype as possible, so they understand the feedback better and can apply it to their production line.

They should look at this as a chance to make their prototype better and to ensure they have better success when they are selling their final products to real customers because they will have created something they know people have reviewed and would like to buy.

5. HOW WILL OUR BUSINESS BE PRESENTED TO OUR CUSTOMERS?

Discuss:

- what the Kidpreneurs like / dislike,
- find attractive or appealing, or
- think works best in terms of communicating to them about the product inside.

ACTIVITY NOTES

Preparation

Display a range of product packaging in the classroom for discussion or use online packaging design for this session.

https://www.canva.com/learn/packaging-design/

Packaging

Packaging is a very important aspect of developing your product as it is the first thing that your customer will be attracted to when they are looking at a range of products

THINK, PAIR, SHARE ACTIVITY

What things you need to consider when packaging your product?

KIDPRENEUR WORKSHEET ACTIVITY

Write down the structural and graphic components of your packaging and draw or describe what your product will look like packaged up.

on supermarket shelf, department store display, or at a market/showcase day stall etc.

Package design is composed of two separate components:

1. **Structural** - the technical and physical requirements of the package e.g. bottle / box shape, closures, materials.
2. **Graphic** – design features and characteristics that attract the consumer into making a purchasing decision e.g. imagery, logos and branding, messages, product information

Prior to designing the package, attention should be focused on the product itself by anticipating end user wants and needs.

Tips

• Remember the goal of packaging is to sell the product
• You need to know your target audience and create packaging that will be appealing to them
• Let the product inspire you
• Keep practicality in mind and always leverage a strong brand.

This will not only help your packaging designs be more attractive, but more importantly, more effective.

The Kidpreneurs should not forget that commercial package design should not be just an 'art' project but as a marketing challenge aimed at appealing to their target market and inspiring them to purchase the products.

Creating excellent packaging is a very specialised creative design discipline but Kidpreneurs can still follow the simple guidelines below to start thinking about how they can make their packaging appealing to customers.

• What kind of packaging design / decoration will catch their target market's eye?
• How will they communicate their product name and important information about their product to customers?
• Will it include their business logo and use their business colours? (this will be determined in upcoming modules)
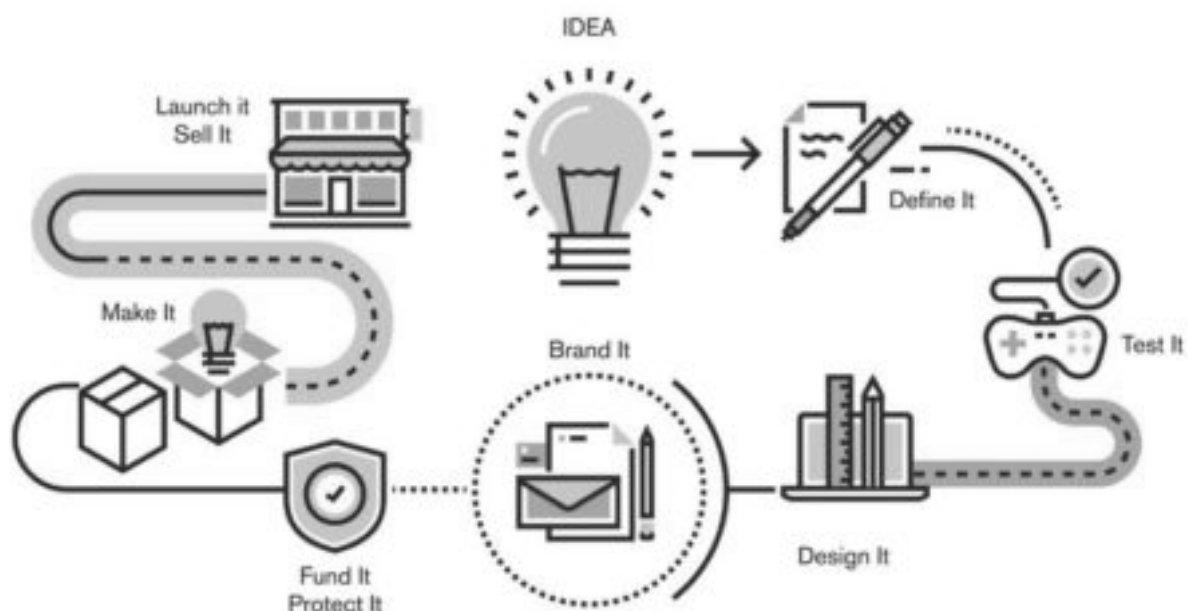
Additional resources on packaging products:

https://99designs.com.au/blog/tips/6-rules-of-great-packaging-design/

https://landor.com/thinking/the-five-fundamentals-of-great-package-design

https://designshack.net/articles/graphics/effective-package-design-does-more-than-look-good-on-the-shelf/

	TIPS AND SUPPLEMENTARY EDUCATOR RESOURCES

The Process

If there are students who need additional support with ideas here are a few to get them started:

Gift basket service	Coding business
Dog walking including feeding, turning lights on and off, bringing in mail.	Event/Party planning
Bicycle repairer	Interior design
Car detailer – washing, polishing and vacuuming	Jewellery making
Boat cleaning	Used book sales
Cleaning service	Computer trainer
Computer repair	PowerPoint /Desktop Publisher
Illustrator	Artist
Face Painter	Greeting card maker
Entertainers: Juggler, Balloon artist, Musician	Gift wrapping service operator
Elderly Care provider	Gift Basket Deliverer
Lawn care provider/ Gardener	Colouring book designer
Soap maker	Computer set up provider