Technology

Technological Practice, Knowledge and Nature of Technology

Introduction

We are problem solvers by nature. When faced with a problem our instincts kicks in, and we often want to solve it. People (and kids like yourself) who have ideas which don't leave their brain and then decide to do something about it change the world or make life better for themselves and a handful of others. You can be one of them.

So, what are you going to do with your idea? Keep it to yourself. Hide it and don't talk about it? Try to act like everything will be the same as it was before your idea showed up? There is something magical about your idea. You will be happier if you get the chance to explore and develop it!

The frameworks below will help you get started. You may find that not all the frameworks flow with your idea and it's okay to use what works for you.

First Framework

Hazy impressions and Questions

This is where you will kickstart and explore the problem and describe it.

Think about a potential problem which has bugged you for some time, and you want to solve. It could be environmental, physical, social or cultural.

Maybe it could be a problem with storing toys, how to feed your cat while you are away on holiday or finding a faster way of making your bed in the morning. It could be anything which will make people's, animals, or the environment better.

Tasks

Researching and talking about the problem

You could write your answers to the following questions into YouPlanIt Classroom or upload your answers from a brainstorm.

- What exactly is the problem?
- What do you know about this problem already? Why has it happened?
- Who has the problem?

- Find out if there are other people in your class, school, and community who feel the same way.
- Where is it happening? Is it important to your school or community?
- So you already think you have a solution in mind? What are they?
- Talk about your ideas with a group to get some different ideas and opinions.

You will get the chance to keep building on your ideas throughout this project.

Second Framework

Exploring the Problem
Speculating and Exploring the problem

Tasks

You will think about

- **Is there a real need** to solve this problem?
- **Complete a brainstorm** on what you know about the problem
- **Research your problem** and find out what are the most important things you need to solve
- **Write a list** of all your ideas on how to solve this problem
- **Draw a picture** of what you think will solve the problem

Remember without a need, the purpose of your design will not be of much value.

Processing your idea

- **Look** at how other people have tried to solve the problem. Can you do a better job? What has worked well, or not so well, for people with the same problem or need?
- **Think** about how you can solve the problem in a better way**.** Remember to trust your instincts, your ideas are probably original but will also be a result of seeing something that already exists. Using the ideas of others is not bad, but your job is to reinvent or create something completely new.
- **Brainstorm** your ideas and describe how your ideas will solve the problem.
- **List** the type of resources you will need**.**
- **Think** about the ethical needs of your ideas (check with your learning coach what this means).

- **Think** about the moral needs of your ideas (check with your learning coach what this means). It is important to become aware of the impact of your ideas and that it does not harm others and that your outcome caters to the needs of many, rather than a few.
- **Talk** to people in your community, school, or family. Visit your library to find information and talk about what you are learning about your problem to others. This way you will improve on your thinking.

Learning in technology is all about trying and testing new ideas!

Third Framework

Actively Seeking a Solution
Develop your idea

So far so good!

It is important to build on your ideas because it means that you are thinking about all of the different areas of your problem and will help you to solve the problem in a real way.

Tasks

- **Use a graphic organiser** - this will show you how one idea can lead to another and will give you more inspiration. Ask your learning coach or teacher to give you a graphic organiser for a technology task.
- **Talk** with others to find the best solution to your problem
- **Make** a list of all the positive and negative parts of your idea and solution. These could be social, physical, environmental or cultural.
- How can you change your model so that it fits right into a particular group or environment? It means your idea becomes adaptable and flexible:
- What are the best resources for you to use to meet the need?
- **Think** about durability and environmentally-friendly resources that won't cost too much.
- **Collaborate** with peers, teachers, the community, local iwi, and the experts!
- **Ask** for feedback and then make changes that you think are good to improve your ideas.

Fourth Framework

Designing and functional modeling
At this stage, your ideas are coming to life!

Tasks

- Sketch a model

Refining, Sketching, and Graphing:

- Your sketch should be realistic, accurate, reliable and show what type of materials you will be using
- Find out how much it would cost to build
- What are the most important parts of your model?
- What do these parts do?

Make a 3D model

- The model should show obvious consideration of feedback and thorough research into your idea.
- Your 3D model should show that you have listened to the feedback of others
- Your 3D model should show the most important parts and make a difference in some way, even if its to have more fun!
- Try and test different ways of improving your model and try different materials. Find out what works and what doesn't work. **Trial and error is an important part of learning in technology.**
- Make improvements and justify why you have made these improvements.

Fifth Framework

Making Judgements and Reflections
What has been working well for you so far?

It's time for you to look back and reflect on your learning.

Tasks

Toy around with the following questions

- **What** has worked so far, and what has been difficult?
- **What** improvements have you made to your model?
- **Can you** describe how your model will help?
- **What** could you change or improve?
- Does your model do what you had hoped it would do?
- **What it's limitations** - what can your design “not do” that perhaps it could or should do?

These reflections are helpful in making your brain think of other possibilities which could make your idea even better.

Sixth Framework

The Final Development

Reflection is awesome when you are honest about your work and yourself. It shows that your final work is original, useful and shows a lot of teamwork!

Your final model should show

- Effort and reflection,
- Changes of your original brainstorms,
- Acknowledging and changing other's ideas,
- Sketches, data and most importantly, TEAMWORK!
- Be visually pleasing
- The resources, materials, and design are the best fit for the purpose.
- It should aim to make life easier for whomever it is you have designed it.

Tasks

- What are your thoughts on the whole project?

Key Competencies for reflection, evaluation or assessment

Key Competencies – Thinking – Planning for practice

4th Level

I have made clear decisions along the way as a result of identifying and understanding the key stages in my project. I have responded to feedback from others which has improved my final product.

3rd Level

I have made some clear decisions along the way as a result of identifying and understanding the key stages in my project. I have responded to feedback from others which has improved my final product.

2nd Level

I have made a few meaningful decisions along the way, I have struggled to identify and understand the key stages in my project. I have responded to feedback from others which has improved my final product.

1st Level

I relied mostly on others to help me make decisions along the way and have struggled to identify and understand the key stages in my project. I have responded to feedback from others which has improved my final product.

Key Competencies – Thinking - Brief development

4th Level

I have thought carefully about the intended outcome of my technological project and was able to explain in detail the need and opportunity. I have a clear understanding of the problem, made purposeful decisions, drew on personal intuitions, asked questions and requested feedback.

3rd Level

I have thought about the intended outcome of my technological project and was able to explain in some detail the need and opportunity. I have a reasonable understanding of the problem, made purposeful decisions, drew on personal intuitions, asked questions and requested feedback.

2nd Level

I didn't think much about the intended outcome of my technological project and had difficulty explaining the need and opportunity. I have some understanding of the problem, made some decisions, drew on personal intuitions, asked questions and requested feedback.

1st Level
I didn't think much about the intended outcome of my technological project and had difficulty explaining the need and opportunity. I have didn't understanding the problem properly and had trouble making decisions, I did ask for feedback.

Key Competencies – Managing self - Outcome development and evaluation

4th Level
I have set a high standard for myself, shown resilience and a "can-do" attitude as I thought about how my project could address a need or opportunity in my family, community or the world.

3rd Level
I set a good standard for myself, shown resilience and a "can-do" attitude as I thought about how my project could address a need or opportunity in my family, community or the world.

2nd Level
I set a low standard for myself, shown some resilience and an average "can-do" attitude. However, I did think about how my project could address a need or opportunity in my family, community or the world.

1st Level
I set a low standard for myself, showed little resilience and had a poor "can-do" attitude. However, I did think about how my project could address a need or opportunity in my family, community or the world.

Key Competencies – Managing self - Technological products

4th Level
I successfully met the challenge of understanding the relationship between the materials I used and how effective they were in performing the outcomes I needed within my technological product by knowing when to lead, when to follow the advice of others and when to act upon my better judgment.

3rd Level
I met the challenge of understanding the relationship between the materials I used and how effective they were in performing the outcomes I needed within my technological product by knowing when to lead, when to follow the advice of others and when to act upon my better judgment.

2nd Level
I struggled to meet the challenge of understanding the relationship between the materials I used and how effective they were in performing the outcomes I needed within my technological product. I struggled to know when to lead, when to follow the advice of others and when to act upon my better judgment.

1st Level
I didn't meet the challenge of understanding the relationship between the materials I used and how effective they were in performing the outcomes I needed within my technological product. I didn't know when to lead, when to follow the advice of others and when to act upon my better judgment.

Key Competencies – Relating to others - Technological modeling

4th Level
I listened actively to others, their ideas and different points of views to help me evaluate the fitness of use of my technological product. I understand that technological possibilities and prototypes can be used to evaluate the fitness of use.

3rd Level
I listened to others, their ideas and different points of views to help me evaluate the fitness of use of my technological product. I have some understanding that technological possibilities and prototypes can be used to evaluate the fitness of use.

2nd Level
I listened a little to others, their ideas and different points of views to help me evaluate the fitness of use of my technological product. I have little understanding of technological possibilities and prototypes and how they can be used to evaluate the fitness of use.

1st Level
I didn't listen to ideas and different points of views to help me evaluate the fitness of use of my technological product. I have no understanding of technological possibilities and prototypes and don't know how they can be used to evaluate the fitness of use.

Key Competencies – Using language, symbols, and texts - Technological systems

4th Level

I have a strong understanding of technological systems, how they are represented by symbolic language and understand the role played by the "black box" in technological systems.

3rd Level

I have some understanding of technological systems, how they are represented by symbolic language and understand the role played by the "black box" in technological systems.

2nd Level

I have a little understanding of technological systems, how they are represented by symbolic language and understand a little about the role played by the "black box" in technological systems.

1st Level

I have no understanding of technological systems, how they are represented by symbolic language and don't understand about the role played by the "black box" in technological systems.

Key Competencies – Using language, symbols, and texts – Characteristics of technological outcomes

4th Level

I have a clear understanding of what "fit for purpose" means and can show in detail that my product is physically pleasing and explaining in detail how its functions meet a need or problem.

3rd Level

I have a reasonable understanding of what "fit for purpose" means and can show in some detail that my product is physically pleasing and explain in some detail how its functions meet a need or problem.

2nd Level

I have a little understanding of what "fit for purpose" means and can show in some detail that my product is physically pleasing and explain in some detail how its functions meet a need or problem.

1st Level

I have no understanding of what "fit for purpose" means regarding my technological product and struggle to explain how its functions meet a need or problem.

Key Competencies – Participating and contributing –

Characteristics of technology

4th Level

I have a clear understanding of how people and places from the past and present change through the development of new technologies and also understand how people and places change technology.

3rd Level

I have some understanding of how people and places from the past and present change through the development of new technologies and also have some understanding of how people and places change technology.

2nd Level

I have little understanding of how people and places from the past and present change through the development of new technologies and also have little understanding of how people and places change technology.

1st Level

I have no understanding of how people and places from the past and present change through the development of new technologies and also have no understanding of how people and places change technology.

Please adopt your flair for writing and modify to suit your needs! We hope this will be helpful.