Name: _____

An tSraith Shóisearach do Mhúinteoirí

Junior**CYCLE**
for teachers

Cluster Delivery 2018/19

Applied Technology
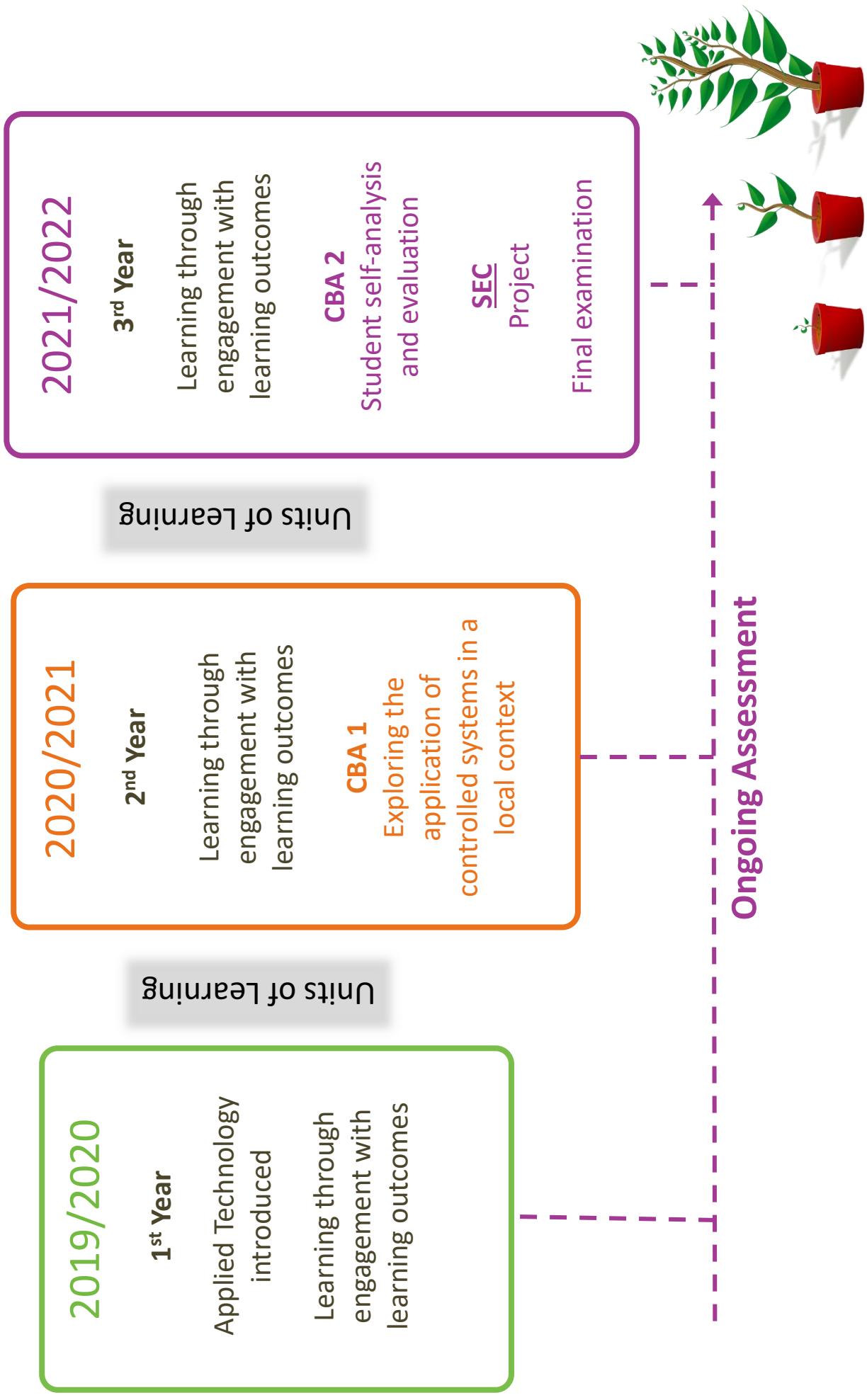
Glossary of Key Terms

Term	Description
Learning Outcomes **Learning Intentions** (NCCA Glossary of Terms)	Learning Outcomes: Learning outcomes are statements in curriculum specifications to describe the knowledge, understanding, skills and values students should be able to demonstrate after a period of learning. Learning Intention: A learning intention for a lesson or series of lessons is a statement, created by the teacher, which describes clearly what the teacher wants the students to know, understand and be able to do as a result of the learning and teaching activities.
Subject Learning Assessment Review (SLAR)	In Subject Learning and Assessment Review meetings, teachers will share and discuss samples of their assessments of student work and build a common understanding about the quality of student learning. Each Subject Learning and Assessment Review meeting will be subject-specific and will focus on the Classroom-Based Assessment undertaken by the particular year group.
Unit of Learning	A unit of learning links learning outcomes which clearly set out what the students should know, understand and be able to do as a result of the learning and teaching activities within that unit.
Classroom-Based Assessment (CBA) (Framework p. 46)	Classroom-Based Assessments are best described as the occasions when the teacher assesses the students using the specific tasks set out in the subject specification. The tasks are clearly described, as are the criteria for assessment to support teacher judgement. The criteria are found in the Features of Quality linked to each Classroom-Based Assessment. Although the assessment is similar to the formative assessment that occurs every day in class, in the case of classroom-based assessment the teachers' judgement is recorded for Subject Learning and Assessment Review and is used in the schools reporting to parents and students.
Formative Assessment (Framework p. 35-36)	The Junior Cycle will be underpinned by the further integration of formative assessment as a normal part of teaching and learning in classrooms. Formative assessment involves teachers and students reflecting on how learning is progressing and deciding next steps to ensure successful outcomes. A vital part of formative assessment is the feedback that teachers provide to their students. Through a range of assessment activities, the teacher helps the student to identify what has been achieved and where there is room for further learning and development. To facilitate the type of learning envisaged above, the role of the teacher and the dynamics of the teacher-student relationship will evolve. Teachers will place a greater emphasis on integrating assessment into their teaching, so they can better monitor students' progress in learning and identify how they can support students to reflect on and critically analyse their own learning.
Features of Quality (NCCA Glossary of Terms)	Features of quality are the statements in the short course/subject specifications that support teachers in making judgements about the quality of student work for the purpose of awarding achievement grades for certification. As success criteria are closely linked to learning intentions and based on the day-to-day processes in the classroom, student learning will gradually come to reflect the requirements set out in the features of quality which are used for certification purposes.
Junior Cycle Profile of Achievement (Framework p. 46)	The JCPA will reward achievement across all areas of learning as applicable: Subjects, Short Courses, Wellbeing, Priority Learning Units, Other areas of learning. The JCPA will draw upon and report on achievement across all elements of assessment including ongoing, formative assessment; Classroom-Based Assessments; and SEC grades which include results from the state-certified examinations and the Assessment Tasks.
Summative Assessment (NCCA Glossary of Terms)	Assessment is summative when it is used to evaluate student learning at the end of the instructional process or of a period of learning. The purpose is to summarise the students' achievements and to determine whether and to what degree the students have demonstrated understanding of that learning by comparing it against agreed success criteria or features of quality.
Success Criteria	Success criteria are linked to learning intentions. They are developed by the teacher and/or the student and describe what success looks like. They help the teacher and student to make judgements about the quality of student learning.
Control System	A control system is where components are used to modify the behaviour of a system, so it behaves in a specific way.

A Student's Learning Journey

2019/2020

1st Year

Applied Technology introduced

Learning through engagement with learning outcomes

Units of Learning

2020/2021

2nd Year

Learning through engagement with learning outcomes

CBA 1
Exploring the application of controlled systems in a local context

Units of Learning

2021/2022

3rd Year

Learning through engagement with learning outcomes

CBA 2
Student self-analysis and evaluation

SEC
Project

Final examination

Ongoing Assessment

Rationale

Each subject of the technology suite offers the student different experiences which contribute towards their education in technology education. As a result, preparing students for learning in the technology subjects is not just about teaching towards the technology but towards the skills that are fundamental to the technology subjects and are transferable into other areas of their learning. Skills that encourage the student to solve problems through creativity, innovation, communication, collaboration and exploration, all of which are developed in an active learning environment where students can advance their ideas from conception to realisation.

Applied Technology addresses the modifications of the natural world made to fulfil human needs or desires. This subject offers students a lens through which to view the role and impact of technology within their classroom, their community and the world.

Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world, even when the materials are not themselves natural. New technologies can impact on society and the environment. Students will analyse expected benefits and impacts as they make decisions about their design solutions, while considering the end user, the environmental impact and the functionality of their designs.

Through the study of Applied Technology, students will have the opportunity to develop technological capability and literacy by engaging with a broad range of materials and systems. Students will develop an understanding of the principles of energy and control to resolve practical problems. Students will have the freedom to explore design and systems thinking through an iterative process to conceive, refine, realise and evaluate ideas.

Aim

The study of Applied Technology at junior cycle aims to:

- o enable students to develop the necessary conceptual understanding, disciplinary skills and subject knowledge to investigate and solve real-life problems
- o promote the enjoyment of the study of the subject while developing a curiosity about the technological world
- o develop the ability of students to generate and evolve their ideas through an iterative process and communicate through appropriate media
- o develop students' resilience through constructive critique and support their learning in a 'safe failure' environment
- o encourage a disposition of enquiry, innovation, creativity, and self-efficacy

Applied Technology Specification p.4 & 5

Elevator Pitch

Develop a 30 second elevator pitch to promote Applied Technology (based on the rationale and aim).

Circle your audience:

Sixth-class student   Parents at open night   Principal introducing a new subject

Possible points:

Applied Technology - what is it? What makes it unique? Why should the chosen audience consider it? Where could Applied Technology take you beyond Junior Cycle? Consider the chosen audience's interests when developing your pitch. Developing a visual aid may assist your pitch.

APPLIED TECHNOLOGY

Needs & desires

Idea
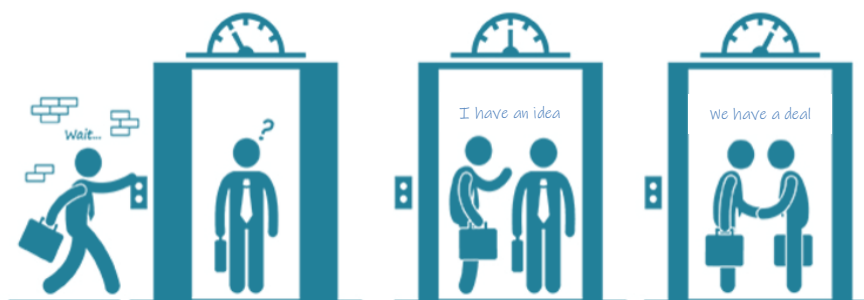
Conception

Freedom to Explore

LENS

to view the role and impact of technology

World

Community

Classroom

'safe failure environment'

CONSIDERATIONS

- End User
- Environmental Impact
- Functionality

TOOLKIT

- Materials and Systems
- Energy and Control

Realisation

Statements of Learning

Applied Technology supports a wide range of learning objectives at junior cycle. The table below shows some of the links between Junior Cycle Applied Technology and the statements of learning.

Statement of Learning	Examples of relevant learning
SOL 15: The student recognises the potential uses of mathematical knowledge, skills and understanding in all areas of learning.	Students will be able to apply numerical reasoning through marking out exercises from given dimensions.
SOL 19: The student values the role and contribution of science and technology to society, and their personal, social and global importance.	Students will evaluate the impact of technologies on their lives, society and the environment.
SOL 20: The student uses appropriate technologies in meeting a design challenge.	Students will determine the most suitable technologies available to them and apply them to fulfil the criteria of a given design challenge.
SOL 21: The student applies practical skills as she/he develops models and products using a variety of materials and technologies.	Students will create solutions through modelling and projects that encourage the development of their practical skills while working with a range of materials and equipment.
SOL 23: The student brings an idea from conception to realisation.	Students will individually develop a concept to address a problem and create a solution using appropriate materials and skills they have developed.
SOL 24: The student uses technology and digital media tools to learn, work and think collaboratively and creatively in a responsible and ethical manner.	Students will select appropriate digital media tools to research, explore and present design ideas.

Junior Cycle Key Skills and their Elements

- Developing my understanding and enjoyment of words and language
- Reading for enjoyment and with critical understanding
- Writing for different purposes
- Expressing ideas clearly and accurately
- Developing my spoken language
- Exploring and creating a variety of texts, including multi-modal texts

- Knowing myself
- Making considered decisions
- Setting and achieving personal goals
- Being able to reflect on my own learning
- Using digital technology to manage myself and my learning

- Using language
- Using numbers
- Listening and expressing myself
- Performing and presenting
- Discussing and debating
- Using digital technology to communicate

BEING LITERATE

COMMUNICATING

MANAGING MYSELF

- Being healthy and physically active
- Being social
- Being safe
- Being spiritual
- Being confident
- Being positive about learning
- Being responsible, safe and ethical in using digital technology

KEY SKILLS

WORKING WITH OTHERS

STAYING WELL

- Developing good relationships and dealing with conflict
- Co-operating
- Respecting difference
- Contributing to making the world a better place
- Learning with others
- Working with others through digital technology

BEING CREATIVE

MANAGING INFORMATION & THINKING

BEING NUMERATE

- Being curious
- Gathering, recording, organising and evaluating information and data
- Thinking creatively and critically
- Reflecting on and evaluating my learning
- Using digital technology to access, manage and share content

- Imagining
- Exploring options and alternatives
- Implementing ideas and taking action
- Learning creatively
- Stimulating creativity using digital technology

- Expressing ideas mathematically
- Estimating, predicting and calculating
- Developing a positive disposition towards investigating, reasoning and problem-solving
- Seeing patterns, trends and relationships
- Gathering, interpreting and representing data
- Using digital technology to develop numeracy skills and understanding

Strands

STRAND 1: PRINCIPLES AND PRACTICES

In this strand, students will learn about, and employ, the fundamental principles and practices associated with the study of Applied Technology. Students will apply their knowledge of materials and equipment to create solutions that consider the end-user experience. The study of principles and practices facilitates the application of knowledge of existing and emerging technologies which will help students to decide the best means to creatively solve a real-world problem and realise a solution.
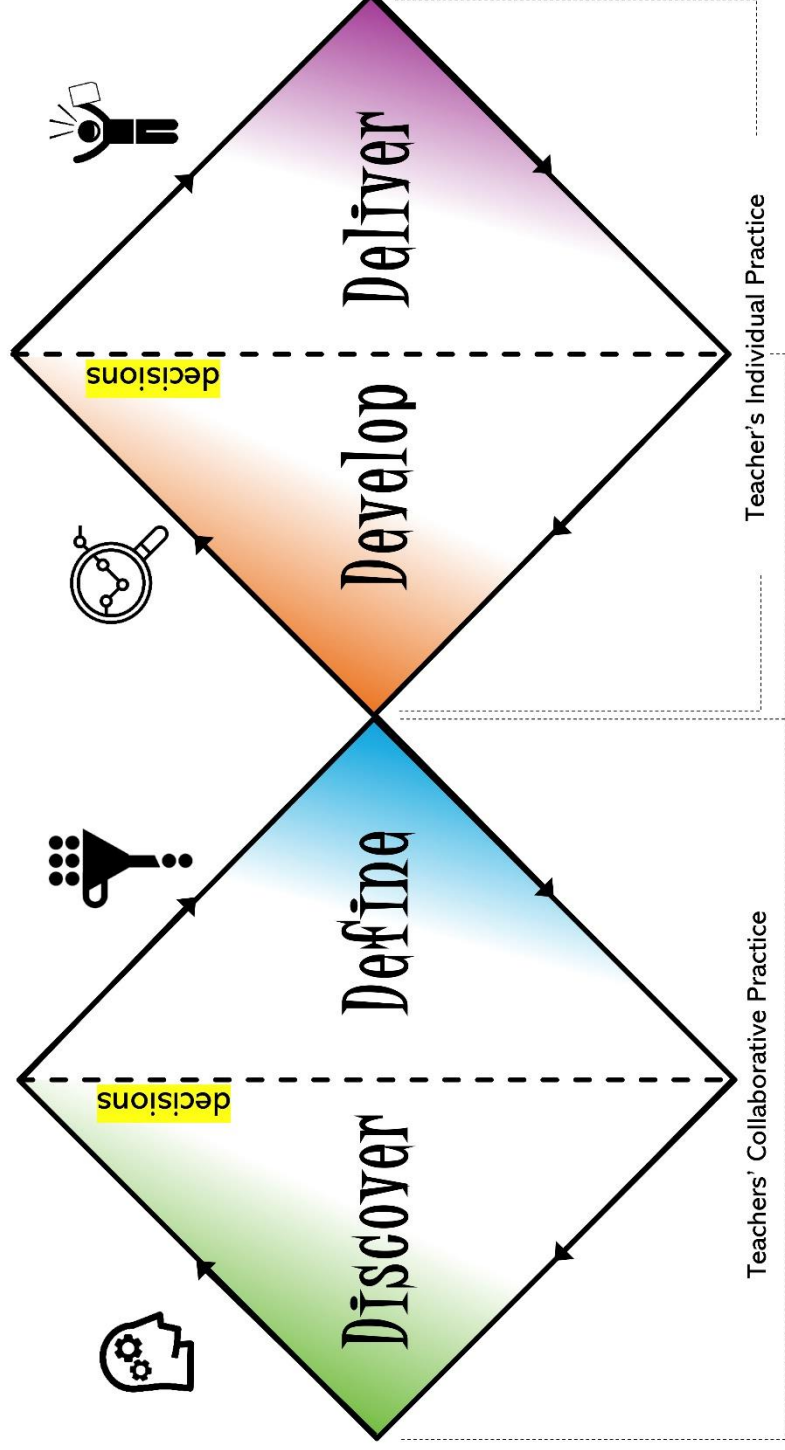
STRAND 2: ENERGY AND CONTROL

In this strand, students explore sources of energy which, when changed or controlled, enable devices to perform tasks safely and efficiently. Students are encouraged to recognise the need for economic and sustainable use of energy and materials.

Students will create controlled solutions using the skills, knowledge, values and attitudes developed through the study of the other strands.

STRAND 3: TECHNOLOGY AND SOCIETY

In this strand, students experience the interaction between technology and society. Students examine the environmental impacts of their design choices and consider user needs related to solutions. Students acquire a basic understanding of, and curiosity about, some of the issues which society faces as a result of technological developments and explore their potential use in society.

Double Diamond Design Process

Discover

Define

Develop

Deliver

decisions

decisions

Teachers' Collaborative Practice

Teacher's Individual Practice

Consider the age, stage and prior learning of the students.

What learning do we want to focus on?

Explore both the strands and elements when choosing learning outcomes.

Identify the learning outcomes for the unit of learning.

Identify the key learning for students using action verbs to support your thinking.

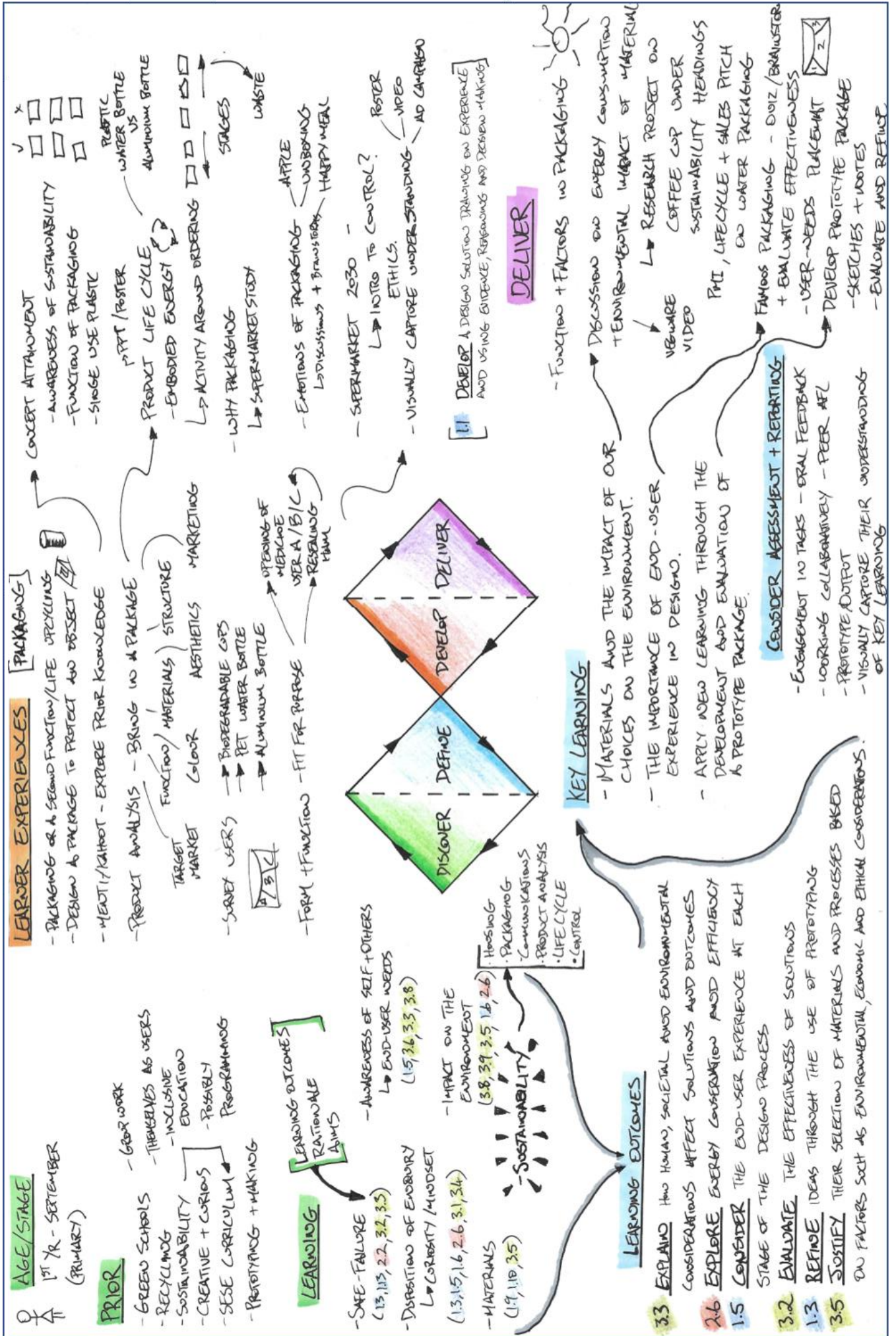Consider how we will assess and report evidence of learning.

Develop ideas for how students could experience this learning.

How will I know they are learning?

Using your own classroom context, what methodologies and resources will support students in experiencing the learning outcomes?

Ensure assessment aligns with the learning outcomes and their action verbs.

Double Diamond Design Process

LEARNER EXPERIENCES | PACKAGING

→ CONCEPT ATTACHMENT

- Packaging or a second function/life upcycling
- Design a package to protect and dissect
- Heat it/knead it - explore prior knowledge
- Product analysis - bring in a package
  - Function / Materials / Structure
  - Target market   Colour   Aesthetics   Marketing
- Survey users
  - Biodegradable cups
  - PET water bottle
  - Aluminium bottle
- Form + function - fit for purpose

- Awareness of sustainability
- Function of packaging
- Single use plastic
  - Plastic water bottle vs Aluminium bottle
  - PPT/Poster
- Product life cycle
  - Embodied energy
  - Activity around ordering
  - Stages → Waste
- Why packaging
  - Supermarket study
- Emotions of packaging — Apple, Unboxing, Happy meal
  - Discussions + Brainstorm
- Supermarket 2030 — Intro to control? Ethics
- Visually capture understanding
  - Poster / Video / Ad campaign

DELIVER

1.1 DEVELOP a design solution drawing on experience and using evidence, reasoning and decision-making

- Function + factors in packaging
- Discussion on energy consumption + environmental impact of material
  - Research project on coffee cup under sustainability headings
  - VG ware video
- PMI, lifecycle + sales pitch on water packaging
- Famous packaging - diag/brainstorm
  + Evaluate effectiveness
  - User needs placemat - Peer AFL
- Develop prototype package
  - Sketches + notes
  - Evaluate and refine

CONSIDER ASSESSMENT + REPORTING

- Engagement in tasks - oral feedback
- Working collaboratively - Peer AFL
- Prototype output
- Visually capture their understanding of key learning

KEY LEARNING

- Materials and the impact of our choices on the environment.
- The importance of end-user experience in design.
- Apply new learning through the development and evaluation of a prototype package

AGE/STAGE

1st Yr - September (primary)

PRIOR

- Group work
- Green schools
- Recycling
- Sustainability
- Creative + curious
- SESE curriculum
- Prototyping + making
  - Themselves as users
  - Inclusive education
  - Possibly programming

LEARNING

Learning outcomes / Rationale / Aims

- Safe failure (1.3, 1.5, 2.2, 3.2, 3.5)
- Disposition of endeavour (1.3, 1.5, 1.6, 2.6, 3.1, 3.4)
  - Curiosity / mindset
- Materials (1.9, 1.10, 3.5)
- Awareness of self + others
  - End-user needs (1.5, 3.6, 3.3, 3.8)
- Impact on the environment (3.8, 3.9, 3.5, 1.6, 2.6)

SUSTAINABILITY

- Housing
- Packaging
- Communications
- Product analysis
- Life cycle
- Control

LEARNING OUTCOMES

3.3 EXPLAIN how human, societal and environmental considerations affect solutions and outcomes

2.6 EXPLORE energy conservation and efficiency

1.5 CONSIDER the end-user experience at each stage of the design process

3.2 EVALUATE the effectiveness of solutions

1.3 REFINE ideas through the use of prototyping

3.5 JUSTIFY their selection of materials and processes based on factors such as environmental, economic and ethical considerations.

DISCOVER — DEFINE — DEVELOP — DELIVER

PNI – Positive, Negative, Interesting

Positive: _____

_____

Negative: _____

_____

Interesting: _____

_____

Positive: _____

_____

Negative: _____

_____

Interesting: _____

_____

Positive: _____

_____

Negative: _____

_____

Interesting: _____

_____

Prototyping activity

What makes a package effective in a retail space?

_____

_____

_____

_____

Design a packaging solution for one of the products to display in a retail space. (Draft work/sketches/Ideas/Notes)

Design a packaging solution for one of the products to display in a retail space. (Draft work/sketches/Ideas/Notes)

Assessment for the JCPA

CBA 1: Exploring the application of controlled systems in a local context	The teacher's judgement is recorded for the purpose of subject learning and assessment review, and for the school's reporting to parents and students. The CBA will be completed within a three-week period during term two of second year.
CBA 2: Student self-analysis and evaluation	The teacher's judgement is recorded for the purpose of subject learning and assessment review, and for the school's reporting to parents and students. The CBA will be completed within a three-week period during term one of third year. This CBA will inform the student's work on the project.

FINAL ASSESSMENTS	(SEC)	
Project	70%	Will be specified and marked by the State Examinations Commission annually.
Written examination	30%	Set and marked by the State Examinations Commission.

Classroom-Based Assessment 1: Exploring the application of controlled systems in a local context

This is an investigation-based project that will provide students with the opportunity to individually or collaboratively explore the role of controlled systems in their local environment such as their classroom, school, community, etc. Throughout this assessment, students will develop the knowledge, understanding and skills associated with the Energy and control strand and the Technology and Society strand, which are fundamental to the study of Applied Technology.

Through this process, students will investigate either:

- an identified control system that provides a defined function

or

- a potential controlled system that could be introduced to provide a defined function.

It is important to instil in students a curious disposition where they are free to experiment, encouraged to explore new and challenging opportunities and to reflect on the process.

The findings of the students' investigation can be presented through any appropriate media.

Further information will be set out in the Assessment Guidelines for Applied Technology.

Classroom-Based Assessment 2: Student Self-Analysis and Evaluation

For this Classroom-Based Assessment, the student, individually, will conduct an analysis of their coursework and skills to date in Applied Technology. Students will focus their analysis and evaluation on a range of completed tasks or on a specific task. Students are expected to critically review their progress and identify areas of strength and areas for improvement, with a view to informing their planning and decisions for the project. The formative assessment related to this process will be reported upon to the student and parent/guardian by the school as with all other Classroom-Based Assessments.

This Classroom-Based Assessment is designed to encourage the practice of self-evaluation throughout rather than only on completion of a task. Once the student conducts the self-analysis, they must interpret their analysis and evaluate their findings to offer constructive direction for the upcoming project.

The student can communicate the self-analysis and evaluation process through any appropriate media.

Further information will be set out in the Assessment Guidelines for Applied Technology.

What are my next steps?

Over the next couple of months…

What I must do…

What I could do…

What new strategies could I use in my classroom?

*Learning Experience B

Key Learning: The importance of end-user experience in design.
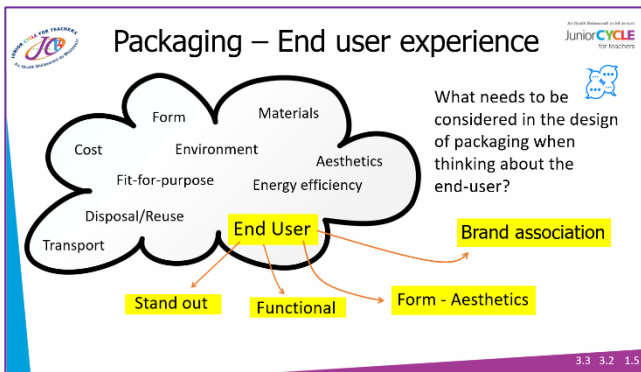
Group discussion:
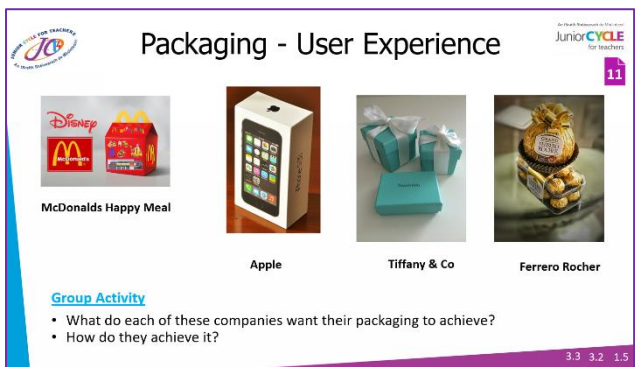- What needs to be considered in the design of packaging when thinking about the end-user?

Focus on Form

Identify the famous packaging.

Questions to consider:
- Why are they so recognisable?
- Are they effective packaging solutions? Why/Why not?
- What did each of these companies consider when designing their packaging?

Focus on end-user experience

Questions to consider:
- What do these companies want their packaging to achieve? Are there commonalities across the companies?
- What kind of feelings do the companies want to evoke?
- How do they achieve it?
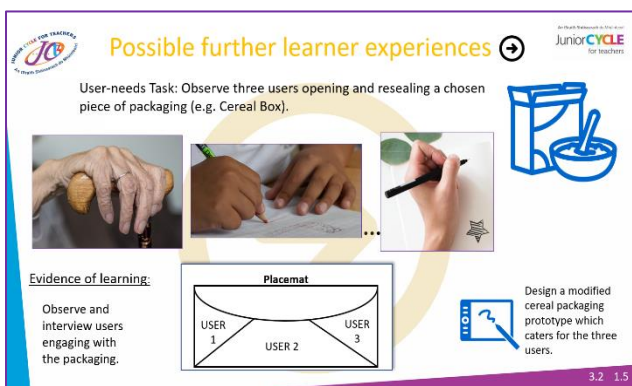
End-user – Specific needs
- Observe three different users (e.g. old person, child, left-handed person) opening and resealing a chosen piece of packaging (e.g. cereal box, ham, chocolate bar etc.)
- Record each users specific needs/experience on the placemat.
- Record common needs in the middle of the placemat.
- Design a modified solution to cater for the three users.

16

Notes

Notes

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