

YEAR 1 DESIGN & TECHNOLOGIES UNIT PLAN

Year / Level	Year 1 (Years 1–2 band)
Design & Technologies Context	Design & Technologies — Engineering principles and systems; Materials and technologies specialisations
Unit Title	Mrs McGregor’s Toy Factory — Spinning Toy Design Challenge
Duration	7 × 40-minute lessons
Unit Overview	Students become Junior Toy Designers at Mrs McGregor’s Toy Factory. They investigate familiar spinning toys and how users apply forces to create movement; identify users, purposes and features; generate and communicate an annotated design; safely construct and test a prototype; use peer feedback to evaluate and improve their idea; follow an improved plan to construct a final spinning toy; and communicate and evaluate their designed solution at Mrs McGregor’s Great Toy Expo.
Achievement Standard	Relevant Years 1–2 Design and Technologies achievement standard: By the end of Year 2 students identify the purpose of familiar products, services and environments. For each of the 2 prescribed technologies contexts they explore the features and uses of technologies and create designed solutions. Students evaluate their ideas based on their personal preferences. They communicate design ideas using models and simple drawings and follow sequenced steps to safely produce designed solutions.
Unit Rationale	This unit uses an authentic, story-based design challenge to make the design process visible and meaningful for Year 1 students. Learning progresses from investigating existing products and movement, to designing for a user, prototyping, testing, evaluating, improving, safely producing and communicating a final solution. Repeated use of the Design Journal provides a clear evidence trail of students’ developing design thinking.
Key Concepts	• Products are designed for users and purposes. • Technologies, materials and user-applied forces can affect movement in products. • Design ideas can be communicated through drawings, labels, models and explanations. • Prototypes, testing and feedback help designers evaluate and improve ideas. • Materials, components, tools and techniques are selected and used safely to make designed solutions. • Sequenced steps support successful production.
Australian Curriculum v9.0 — Design & Technologies Content Descriptors	Knowledge and understanding: • AC9TDE2K01 – identify how familiar products, services and environments are designed and produced by people to meet personal or local community needs and sustainability • AC9TDE2K02 – explore how technologies including materials affect movement in products
Processes & Production Skills	• AC9TDE2P01 – generate and communicate design ideas through describing, drawing or modelling, including using digital tools • AC9TDE2P02 – use materials, components, tools, equipment and techniques to safely make designed solutions • AC9TDE2P03 – evaluate the success of design ideas and solutions based on personal preferences and including sustainability • AC9TDE2P04 – sequence steps for making designed solutions cooperatively
General Capabilities	• Literacy — oral explanations, vocabulary, labels and design annotations • Numeracy — comparing spin time, sequencing and spatial reasoning • Critical and Creative Thinking — generating, testing, evaluating and improving ideas • Personal and Social Capability — feedback, cooperation, persistence and safe practice
Cross-curriculum Priorities	Sustainability — introduced through consideration of material choices, reuse/recycled construction materials and reducing unnecessary waste during prototyping and production.
Monitoring	Monitor progress through teacher observation, questioning, exit tickets, Design Journal entries, prototype testing, peer feedback, annotated design revisions, safe construction behaviours and oral explanations across all 7 lessons.
Formative Assessment	• Lesson 1 product investigation: user, purpose, movement and features • Lesson 2 Great Spin Test: force/movement observations and comparisons • Lesson 3 annotated design and reasons for design choices

	• Lesson 4 prototype construction, safe practice and first-test observations • Lesson 5 peer feedback, evaluation and improved design • Lesson 6 final construction and comparison with prototype/original design
Summative Assessment (Final Task)	Mrs McGregor's Great Toy Expo. Students present and demonstrate their final spinning toy, explain the intended user and purpose, describe how it spins, identify features and materials, explain a change made after prototype testing, evaluate how well the final solution works and identify an improvement for next time. Evidence is drawn from the final presentation, Toy Expo Assessment Worksheet, final toy and Design Journal.
Success Criteria	• I can explain who my toy is for and what it is designed to do. • I can explain how the user makes my toy spin. • I can communicate my design using drawings, labels, a model and oral explanation. • I can safely use materials, tools and techniques to make my toy. • I can follow steps in order. • I can explain what I changed after testing and why. • I can evaluate my final toy and suggest an improvement for next time.
Considerations for teaching and learning in this unit	Use story-based engagement, explicit vocabulary, teacher modelling and concrete examples before independent design work. Provide visual prompts, sentence stems, pre-cut or easier-to-join materials where needed, oral/scribed recording options and strategic peer support. Allow multiple valid toy solutions rather than one model to copy. Build in repeated opportunities to explain choices. Ensure adequate time and access to materials for students with fine-motor or communication needs.
Prior Knowledge Students Require	• Familiarity with simple toys and everyday materials • Basic understanding that objects can move when pushed or pulled • Ability to follow short classroom routines and simple sequenced instructions • Emerging drawing, labelling and oral explanation skills • Vocabulary can be developed within the unit; no specialist design vocabulary is assumed
Investigating Safely	• Explicitly teach and reinforce safe use of child-safe scissors, adhesives and approved tools. • Model safe carrying, sharing and storage of materials and tools. • Keep testing within designated spaces and away from faces/eyes. • Check recycled materials for sharp edges, contamination or small-part hazards. • Provide close supervision during construction and follow school/CARA risk-management requirements relevant to selected tools and materials.
Key Vocabulary	designer • design • product • user • purpose • feature • movement • force • push • pull • spin • twist • flick • materials • tool • annotated design • prototype • construct • test • feedback • evaluate • improve • sequence • designed solution
Resources to support knowing and engaging your learners	• Lesson 1–7 Mrs McGregor's Toy Factory stories/videos • Department posters/visuals: Research, Engineering, Design Studio, Prototype Workshop, Testing Laboratory, Construction Workshop and Toy Expo • Real spinning toys and teacher demonstration models • Design Journal and Toy Expo Assessment Worksheet • Timers/testing mats/feedback cards • Cardboard, paper, straws, bottle lids, paddle pop sticks and suitable recycled materials • Child-safe scissors, tape, glue, pencils, rulers and coloured pencils

Teaching and Learning Sequence

Lesson	Focus / Big Idea	Pedagogy	Curriculum Links	Learning Intentions	Success Criteria	Differentiation	Hands-On & Adventure Tasks	Design Journal Evidence (Portfolio)	Assessment Links / Evidence Collected	Materials & Resources
Lesson 1 The Invitation to Mrs McGregor's Toy Factory	Designers learn from existing products by investigating users, purposes, features and how they work.	Story hook; explicit vocabulary; teacher modelling; hands-on product investigation; compare/discuss; exit ticket.	AC9TDE2K01 AC9TDE2K02	We are learning to investigate existing toys to find out who uses them, what they are designed to do, how they spin and what makes them fun.	I can identify the user/purpose. I can describe how it spins. I can identify a useful/fun feature.	Support: real objects, picture prompts, sentence stems. Extension: compare two toys and justify which better suits a user. Adjustments: oral/scribed responses.	Investigate spinning toys; identify user, purpose, movement and features.	Journal investigation: toy, user, purpose, how it spins, feature, design idea.	Formative: observation, questioning, journal and exit ticket.	Story/video; spinning toys; investigation poster; journal; pencils.
Lesson 2 The Great Spin Test	A user applies a force to start movement; different toys use different pushes, pulls and actions.	Story; explicit teaching of force; demonstrations; comparative testing; evidence discussion.	AC9TDE2K02	We are learning that pushes and pulls can make toys move, and that spinning toys can be started in different ways.	I can identify a push/pull. I can describe how toys spin. I can compare methods using test results.	Support: fewer test stations, visual push/pull cues. Extension: explain why a method may suit a user. Adjustments: partner testing / teacher timer.	Great Spin Test: twist, flick, blow, pull, wind and push; compare ease and spin time.	Comparison chart: action, push/pull, ease of use, spin time; preferred method.	Formative: test observations, discussion, journal and exit ticket.	Story/video; spinning toys; timers; Engineering visual; journal.
Lesson 3 The Secret Design Studio	Designers communicate purposeful ideas for a user through annotated drawings and explanations.	Story; user/purpose modelling; annotated design model; think-aloud; partner "Why?" questioning.	AC9TDE2K01 AC9TDE2P01	We are learning to create and communicate a spinning-toy design that suits a user and purpose.	I can choose a user/purpose. I can draw and label my design. I can explain reasons for choices.	Support: design scaffold, material picture bank, sentence stems. Extension: justify several choices against user needs. Adjustments: oral annotations / adult scribing.	Create an annotated spinning-toy design showing user, purpose, materials, features and spinning method.	Annotated design plus "I chose ____ because ____."	Formative: annotated design, teacher conference and partner explanation.	Story/video; Design Studio/materials visuals; model design; journal; drawing tools.
Lesson 4 Prototype Trouble!	Prototypes turn ideas into testable first versions and reveal what works and what needs changing.	Story; explicit prototype concept; safety modelling; construction; first testing; notice/wonder reflection.	AC9TDE2P01 AC9TDE2P02 AC9TDE2P04	We are learning to safely build and test a prototype so we can discover what works and what may need to change.	I can follow my design. I can use tools safely. I can test my prototype and identify what worked/needs changing.	Support: pre-cut pieces, limited material choices, step cards. Extension: independently troubleshoot a problem. Adjustments: adapted tools / partner assistance.	Construct first prototype; test spin, wobble, ease of use and function.	Prototype Test: worked well; needs checking; I notice; I wonder.	Formative: safe production, prototype, observations and exit ticket.	Story/video; Safe Designers poster; designs; construction materials/tools; journal.
Lesson 5 The Great Toy Testing Lab	Testing and user feedback provide evidence for evaluating and improving a design.	Story; evaluation modelling; feedback sentence stems; peer testing; design revision.	AC9TDE2P01 AC9TDE2P03	We are learning to use testing and feedback to evaluate a prototype and improve our design.	I can test carefully. I can give helpful feedback. I can evaluate and update my design with a reason.	Support: checklist icons and feedback stems. Extension: compare multiple improvement options. Adjustments: teacher/peer scribe or oral feedback.	Peer Toy Tester Checklist; evaluate own prototype; revise design.	Feedback card; evaluation; revised annotated design showing change and reason.	Formative: peer feedback, evaluation and improved design; key assessment evidence.	Story/video; prototypes; testing mats/timers; checklist; feedback cards; journal.
Lesson 6 Factory Production Day	Designers use improved plans, safe processes and ordered steps to construct a final designed solution.	Story; review design journey; sequencing/safety modelling; final construction; test and compare.	AC9TDE2P02 AC9TDE2P04	We are learning to follow an improved design and use tools and materials safely to construct our final spinning toy.	I can follow steps in order. I can use tools safely. I can explain how my final toy improved.	Support: numbered step cards, check-ins, prepared materials. Extension: independently refine quality/function. Adjustments: adapted tools and additional construction time.	Construct final spinning toy from improved design; test and compare with prototype.	Final toy drawing/reflection: what changed, why, and effect of the change.	Formative + product evidence: safe production, sequencing, final solution and reflection.	Story/video; Construction Rules; improved designs; materials/tools; journal.
Lesson 7 Mrs McGregor's Great Toy Expo	Designers communicate and evaluate how well a final solution meets its purpose and suits its user.	Story; model presentation; oral rehearsal; authentic Toy Expo; final evaluation and celebration.	AC9TDE2K01 AC9TDE2K02 AC9TDE2P01 AC9TDE2P02 AC9TDE2P03 AC9TDE2P04	We are learning to explain our design decisions and evaluate how well our final spinning toy meets its purpose and suits its user.	I can explain user, purpose and spin. I can explain features/materials and a change. I can evaluate and suggest a next improvement.	Support: presentation cue card, rehearsal, teacher prompts. Extension: justify evaluation with multiple pieces of evidence. Adjustments: small-group/1:1 presentation, scribed evaluation.	Toy Expo presentation and demonstration; explain design journey; evaluate final toy.	Toy Expo Assessment Worksheet; final labelled solution; evaluation and reflection.	Summative: final toy + journal/design evidence + oral presentation/evaluation.	Story/video; Expo display; final toys; journals/designs; assessment worksheet; badges.