Sample Unit – Design and Technology Life Skills

Sample for implementation from 2019

Technology context	Project	Length of unit
Material Technologies	Everyday Storage Solutions	10 weeks

Overview

This unit provides opportunities for students to explore the design process used to create household storage solutions. Students participate in the production and evaluation of their own storage product. Students may develop their own designs, individualise a design provided by the teacher or embellish a completed storage solution. A range of technologies may be used in constructing and/or embellishing the storage product. Students will have opportunities to identify and apply safe work practices in the responsible use of materials, tools and techniques through practical activities.

Assessment	Key skills
Evidence of student learning may be gathered through: ▪ participation in practical activities ▪ communication of design ideas and solutions ▪ self and peer evaluation ▪ selection and/or application of safe practices when producing design solutions ▪ following routines to care for and store materials, tools and equipment	▪ identify factors that influence design ▪ identify a storage need or opportunity ▪ follow a sequence in a project plan ▪ use safe work practices in the context of a design project ▪ develop strategies to communicate ideas

Outcomes
A student: **DTLS-1** identifies that a process is used to develop design solutions **DTLS-2** considers factors that influence design **DTLS-4** explores the work of designers in terms of benefits to the individual, society and environments **DTLS-5** participates in developing creative, innovative and/or enterprising design solutions **DTLS-6** gathers and uses information to generate design solutions **DTLS-7** uses a variety of techniques to present design solutions **DTLS-8** selects and uses appropriate processes and techniques in the context of producing design projects **DTLS-9** participates in producing design projects **DTLS-10** demonstrates safe practices in the use of equipment and the implementation of techniques **DTLS-11** cares for materials, tools and equipment
Related outcomes: DT4-1, DT4-2, DT4-4, DT4-5, DT4-6, DT4-7, DT4-8, DT4-9, DT4-10, DT5-1, DT5-2, DT5-4, DT5-5, DT5-6, DT5-7, DT5-8, DT5-9, DT5-10

Content	Suggested teaching, learning and assessment
A Holistic Approach **Factors affecting a holistic approach to design and production** Students: ▪ investigate factors that influence a design solution, for example: – function and purpose – materials – appearance and appeal **Influence of design on the individual, society and environments** Students: ▪ explore the role of design in meeting the needs of individuals and groups	**Exploring storage solutions and factors that influence design** **Teacher:** ▪ displays a variety of common storage products, eg bags, baskets, boxes, bottles, containers, folders ▪ displays a variety of everyday items to be stored, eg hot and cold drinks/food, clothes, stationery ▪ facilitates discussion of the function and purpose of storage solutions ▪ coordinates a visit to a retail outlet marketing different storage solutions ▪ assists students to record their involvement at each step of the storage design project in a folio **Students:** ▪ identify storage solutions that are commonly used in the home and the items that are often stored in them, eg refrigerators, cupboards, wardrobes, tubs, canisters, jewellery boxes ▪ identify storage solutions that are commonly used in the community, school and/or workplace and the items that are stored in them, eg lockers, bags, cupboards, storerooms, filing cabinets ▪ experiment with storing and carrying different items in a range of storage solutions. This may involve: – placing and carrying items in a range of products – recording the number/volume of items able to be stored in a variety of products – choosing appropriate solutions to store and carry a range of items – considering the differences between a range of storage products. ▪ explore factors such as safety, security and privacy that influence the way people store items. These may include: – safety, eg chemicals and medication in childproof containers, knives in knife blocks, food in a refrigerator or cool pack – security, eg cash and valuables in lockable cash box or safe – privacy, eg personal documents in a lockable drawer.

Content	Suggested teaching, learning and assessment
Design Process **Communication and presentation techniques** Students: ▪ select from a range of strategies to present design solutions, for example: – digital images – multimedia presentations – sketches – portfolios – animations – annotations or notes	▪ establish and maintain a record of their involvement at each step of the design process in a folio. Items in the folio may include: – photographs and/or digital media of their participation at various steps in the process – descriptions of their activities at each step of the project – personal observations – data and information relevant to the project – personalised step-by-step plan for producing the project – evaluation of the project. **Suggested resources** Software for the creation of a digital folio may include: Evernote Google Sites
A Holistic Approach **The concepts of design** Students: ▪ explore the steps in a design process used to create projects **Influence of design on the individual, society and environments** Students: ▪ explore the role of design in meeting the needs of individuals and groups	**Identifying needs and opportunities for storage solutions** **Teacher:** ▪ provides a wide range of examples of common, creative, innovative and/or enterprising storage solutions such as: – bags made from natural materials or recycled textiles – prefabricated projects such as magazine holders – commercially produced kits and gift bags. ▪ assists students in the identification and selection of a possible need or opportunity in relation to a storage design project

Content	Suggested teaching, learning and assessment
Design Process **Identification of needs and opportunities** Students: ▪ explore the relationship between design and function ▪ identify the requirements of end users in relation to a design project ▪ investigate factors that influence the design process	**Students:** ▪ explore the examples of common, creative, innovative and/or enterprising storage solutions and consider the needs of potential end users, eg a toy tub for a young child versus a secure storage product for medicines ▪ identify and/or select a user need or opportunity to create a storage design solution. For example: – a student who needs to store their stationery items for use in different classrooms – an adult who needs to carry items from a grocery store – a teacher needing to store school bags securely to avoid trip hazards – a tradesperson requiring a method to store and transport small tools. ▪ consider the requirements of the end users in relation to their identified need/opportunity. This may include consideration of: – Who will use the product? – What will end users need the product to do? – How will end users operate or use the product? **Suggested resources** Tayenebe
A Holistic Approach **The concepts of design** Students: ▪ identify and communicate ideas about elements and principles of design **Design Process** **Identification of needs and**	**Researching features of existing designs and generating ideas** **Teacher:** ▪ provides examples, images and diagrams of a range of storage solutions, eg packaging for food products, school bags, wallets, cable storage, toothbrush holders, toolboxes ▪ facilitates discussion around the elements of design present in different storage solutions such as: – size, eg large versus small carry bags – space, eg different compartments in a toolbox – colour, eg, light or transparent storage material for visibility

Content	Suggested teaching, learning and assessment
opportunities Students: ▪ explore the relationship between design and function ▪ investigate factors that influence the design process **Creative and innovative idea-generation** Students: ▪ select from a range of strategies to communicate ideas about potential design solutions, for example: – collect images – sketches – digital scrapbooks – portfolios – multimedia presentations **Skills in research and experimenting** Students: ▪ collect information from a range of sources to communicate ideas about design ideas ▪ explore existing design solutions within a local context	– shape, eg round versus square food containers – texture, eg smooth versus rough surfaces. ▪ facilitates discussion of the features of different storage solutions such as: – function – aesthetics – portability – durability – sustainability – cost. ▪ assists students to collect information from different sources to explore storage solution designs **Students:** ▪ explore the features of a range of storage solutions. Activities may include: – organising or categorising based on size, shape or colour – indicating the purpose – identifying materials used in the construction of each product from lists provided by the teacher – describing the advantages and disadvantages of the construction materials used – commenting on ease of use – experimenting with the durability. ▪ collect information from a range of sources to record potential ideas for storage solution designs in their folio. Activities may include: – accessing print images from magazines – accessing digital images from online catalogues and/or databases – creating original sketches or line drawings – annotating existing design solutions – comparing existing storage solutions from local retailers.

Content	Suggested teaching, learning and assessment
▪ work collaboratively to undertake tests and experiments to develop design ideas	▪ communicate ideas about potential design solutions **Suggested resources** Elements of design quick reference sheet Tayenebe
A Holistic Approach **The concepts of design** Students: ▪ explore the steps in a design process used to create projects **Design Process** **Management** Students: ▪ explore factors of the design process in the preparation of a selected project, for example: – key actions in the design and production of a project ▪ select and use technology to communicate design planning ideas, for example: – graphic organisers – electronic project schedules, eg Gantt charts	**Management of the design process** **Teacher:** ▪ assists students to select a design solution project that meets the previously identified storage needs or opportunity ▪ assists students in the development of a step-by-step plan for the production of a design solution **Students:** ▪ select a storage solution design project that meets the previously identified storage need or opportunity. This may include: – personalising an existing storage solution, eg using colour, stencils, decoupage, adding handles, adding material to stabilise an object such as Velcro, attaching a lock or catch, changing the surface texture of a container; and/or – selecting an appropriate construction kit or prefabricated storage solution; and/or – producing a storage design project from personal research. ▪ explore key actions in the production process. This may involve: – identifying and/or selecting materials, tools and equipment to be used – considering time allocations required for each step – considering the order in which action/step takes place. ▪ develop a step-by-step plan to manage the production of the storage solution product. This may involve the use of: – graphic organisers

Content	Suggested teaching, learning and assessment
▪ identify tools, materials and equipment appropriate to the production of a design project	– project schedules – checklists.
Design Process **Management** Students: ▪ identify features of tools, materials and equipment that make them hazardous, for example: – sharpness – toxicity – temperature – movement ▪ identify potential risks in the production of a design project and suggest ways to improve safety, for example: – the use of personal protective equipment (PPE) – identifying and responding to warning and safety signage – adhering to exclusion zones in workshops ▪ identify safe working practices in the handling, maintaining and	**Safe work practices in the production of the storage solution** **Teacher:** ▪ explicitly teaches and models safe work practices when using materials, tools and equipment ▪ provides opportunities for supervised practice ▪ explicitly teaches and demonstrates routines to care for and store materials, tools and equipment ▪ assists students to identify potential risks when completing practical activities and to take action to minimise risks and improve safety **Students:** ▪ identify potential risks in the production of a storage solution. Activities may include: – identification of hazards in real or simulated environments – recognising and responding to warning and safety signals, symbols or signage – matching personal protective equipment to its intended use, eg safety goggles are for protecting eyes. ▪ select and use personal protective equipment during practical activities ▪ apply safe work practices when handling and using tools, materials and equipment in the context of the project. This may include: – describing the rules for the safe use of materials, tools and equipment – identifying features of tools, materials and equipment that can be dangerous – using materials, tools and equipment safely and appropriately under supervision.

Content	Suggested teaching, learning and assessment
storing of materials, tools and equipment	▪ follow routines to care for and store tools, materials and equipment during the production process. This may include: – responding to instructions from staff – returning tools, materials and equipment to their storage space after use – reporting or responding to trip or spill hazards – keeping the work area tidy.
Design Process **Realisation of design ideas** Students: ▪ follow a sequence in the production of a design project ▪ select and apply a variety of techniques to produce a design project ▪ select and safely use materials, tools and equipment appropriate to the production of a design project ▪ select and apply safe working practices during the development of a project	**Producing a storage design project** **Teacher:** ▪ reviews students' step-by-step plan and models each step in the plan as required ▪ provides pre-cut pieces and kits for the project where required ▪ models and facilitates safe working practices ▪ demonstrates the specific skills and techniques appropriate to individual projects ▪ assists students to modify the plan and/or design project as required **Students:** ▪ participate in the process to produce a storage solution by following the personalised step-by-step plan. This may include selecting and/or using appropriate processes and techniques in: – constructing a storage product; and/or – personalising an existing storage product; and/or – assembling a construction kit or prefabricated storage product. ▪ make adjustments or modifications to the plan and/or design project as required. This may include consideration of: – available resources – time constraints.

Content	Suggested teaching, learning and assessment
Design Process **Communication and presentation techniques** Students: ▪ select from a range of strategies to present design solutions **Evaluating** Students: ▪ reflect on a design solution, for example: – appeal and aesthetics – fit for purpose – impact of a design solution on the individual, society and environments – sustainability ▪ collect information from a range of sources to evaluate a design solution ▪ evaluate their design and production skills	**Presenting and evaluating the storage solution** **Teacher:** ▪ provides feedback to students about their design solution and participation in the design process ▪ assists students to present their design solution ▪ assists students to design a method to collect feedback about the effectiveness of their design solution ▪ assists students to evaluate their participation in the design process and their project's suitability for intended use **Students:** ▪ present their design solution and/or folio to others, eg the teacher, small group, class or wider audience. Activities may include: – displaying the folio and storage design project in a prominent place in the school – using images to showcase stages of the design production – describing material and tool selection choices – using animations or digital recordings to show the function of the storage solution – answering questions about the product. ▪ create a survey to collect feedback about their design solution ▪ evaluate their participation in the design process and the storage design solution in terms of function, aesthetics, portability, durability and sustainability. Activities may include: – using the storage product for its designated purpose – commenting on the usefulness of the product – suggesting ways that the design could be improved – considering feedback from others – considering time-management skills – reflecting on the use of safe working practices – describing the design process to others.

Reflection and evaluation
Questions to guide reflection: ▪ To what level did students achieve the learning outcomes? ▪ How effective were the activities in helping students to understand the design process and achieve the learning outcomes? ▪ Did teaching strategies and activities facilitate high levels of student engagement? Why/why not? ▪ How could the unit be improved to enhance student engagement and learning? ▪ How well did the activities enable students to use their design thinking skills? ▪ Were the teaching and learning activities accessible to all students?