

K to 6 Scaffolding for Future Digital Efficacy

Rationale

Everything that underpins digital technology can be found in the ingenuity of the “unplugged” human being.

It is internationally accepted practice that Steiner Schools scaffold towards digital efficacy during the primary years. The formal integration of digital technologies in high school is strongly supported by this primary school experience. Following their uniquely human and richly choreographed primary education, students enter high school and embrace digital technologies effectively, creatively and ethically.

Steiner primary education provides a natural and human environment where children learn to observe, question and express themselves fully. An important underpinning philosophy of Steiner education is that young children need to communicate and to learn deeply without the mediation of complex technology. This ‘unplugged’ experience is seen as crucial for children to develop an uncluttered self-image as well as the most valuable form of efficacy – self efficacy.

On the basis of their rich communication skills and ability to produce a wide range of original creative work, students are well placed to master mechanised and digital technologies in high school.

Why Scaffold?

Whole body learning in the early years

Steiner primary education focuses on learning with the whole body. Children might dance mathematics learning for example. There is also an element of living and learning with purposeful spontaneity. This way of learning is the antithesis of learning from screens, which tends to support algorithmic thinking. And yet almost everything

children do in a natural way, prepares them (scaffolds them) for a future understanding of the lock-step, fixed-solution world of algorithmic thinking. Scaffolding, nevertheless, is important because an algorithm is an essential step in the development of effective machine instructions. It is highly appropriate in high school for students to become adept in algorithmic thinking, since a well thought out algorithm underpins any good computer code.

Learning through story

Steiner primary teaching is based of rich human to human interaction including story telling (not story reading or watching video). The *mood* of a Steiner primary school is one of natural and real. Digital learning presents a virtual experience out of place in a Steiner primary school.

Parental support for screen-free early years

Many Steiner K6 Parents want their children to learn in a holistic, whole body way. This includes having their children learn in a screen-free environment. These parents are protective of their children in relation to the Internet and child safety. This includes not having inappropriate cyber-safety conversations with young children. This group of parents support the *content* of curricula in a general sense, but would be incensed if their young children were required to use screen technology to learn this *content*.

Framing digital technology in primary school

Political framing of digital learning in the primary school years, including word processing and coding skills, is focussed on educational success and future employability of the child. An alternative framing of digital education in the primary school years identifies other drivers of the digital push, such as supporting teacher in the collection of child performance data and the data-mining of child and school performance by governments and others (eg. NAPLAN). Steiner school communities see the political focus on digital learning being *all about the child* as less than honest.

Transferable skills

Many of the skills children learn holistically are transferable to digital technology. For example; handwriting transfers to word processing, watercolour painting transfers to understanding colour-space in digital graphics manipulators. Children might create a “world” in the sandpit complete with roads, houses, rivers and rules for playing (living). The working of this ‘world’ is immediately accessible (not virtual) to the children as they experience it in a holistic way. The reverse is not true - these digital skills do not transfer to handwriting, watercolour painting or living in a ‘real’ world. Furthermore, handwriting, for example, takes much longer and more effort to learn and can be undermined by the more entertaining keyboard skill.

Early memory development

Digital learning does not support early memory development. The advent of calculators, spell-check and Google search have all been implicated in developing skills at the expense of memory.

Learning social skills Children learn social nous in an eye to eye, child to child naturally way though modelled behaviour in all aspects of school life, including creative play. This holistic child to child social learning is also transferable to the digital world in the future.

ASCF Digital Strands K to 6

1. How Digital Technologies Work
2. Creative use of Digital Technologies
3. Research and Analysis

1. How Digital Technologies Work

- Follow sequential steps
- Work with algorithms
- Choose and make appropriate tools
- Evaluate tools for a task
- Recognise different ways data can be represented
- Analyse situations, record and use data for predictions and communicate results

2. Creative use of Digital Technologies

- Initiate plans, ideas and activities to meet challenges
- Collaborate with peers to manage complex technological tasks
- Use structure and presentation in communicating ideas e.g. title, layout, illustration, contents page
- Work safely in technological environments
- Communicate completed work with others with empathy and respect

3. Research and Analysis

- Explore and create complex patterns and represent using pictures, charts, diagrams
- Collect information and present to others
- Understand how numbers and symbols can represent data
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Examples of Digital Scaffolding

1. How Digital Technologies Work

Children follow sequential steps

Kindergarten Bread making. (Design and Technology ASCF 2.1.1). Children learn that sometimes something has to come before something else, for example, children follow sequential steps to learn bread making from mixing, forming, proving dough, reforming, baking and eating.

Class 1 Counting and addition. (Mathematics ASCF 1.8 and 1.11). Counting the Natural numbers is a sequential process. For example; children use a bag of counters such as pebbles or gumnut caps the count the sequence of Natural numbers.

Class 2 Hop Scotch. (Overarching Theme ASCF 2-B) Children invent and mark out a hopping trail, where hops and jumps must follow sequential steps. Physically hopping the game reinforces the sequential nature of the activity and is a good example of whole body learning.

Class 3 Making and drying mudbricks (Geography ASCF 3.6) Making mud bricks to build a playground hut, pizza oven or farm shed requires sequential process. This is especially the case where bricks from each week's work are laid out in sequence in accordance with how ready the bricks are for building.

Class 4 Knitting Fair Isle (Design and Technology ASCF 4.4.2). Children follow complex sequential steps to learn Fair Isle knitting. In Fair Isle where two colours are interknitted, there is a sequence of colour changes nested within a sequence of stitches.

Class 5 Ancient Cultures (History ASCF 5.1, 5.2) History is a sequential study of culture and the understanding of sequential events in time is also the basis of most technology, consider farming or computer programming for example.

Class 6 Geology (Science ASCF 6.5A) When children visit a geological sequence in time and space whilst on an excursion, they experience the living world of minerals as nested sequences in and beneath the landscape. For example, the layering around Perth WA consists of an upper sequence, the Kwinana group, with layers of sand, limestone and clay. Below this sequence there are others and so on.

Children work with algorithms - an algorithm is a fixed sequence of steps where decisions are made along the way

Kindergarten Handcrafts. (Kindergarten Overarching Theme ASCF K-C)

Finger knitting implied algorithm. (Hold the end of a ball of wool between your thumb and pointing finger, loop the wool around your pointing finger and weave it toward your little finger, make a full loop around your fingers, then slip the bottom row over the top row, from little finger to pointing finger. Repeat. Do I want to change colour now? Repeat. Is my knitting long enough now? Stop.).

Class 1 Gardening. (Overarching Theme ASCF 1-B) Gardening implied algorithm (Go to the school garden, check some vegetables, are they ready to pick? If yes pick enough for the class to make soup, if no check some other vegetables, then pick, safely make soup, clean and cut vegetables, make soup, eat soup. Stop).

Class 2 Vertical Subtraction (Mathematics ASCF 2.11) Subtraction using the following algorithm will involve a story involving shelves or bags of numbers that can be borrowed or traded (A number is placed above the other number according to whether it is a hundred, ten or ones, the numbers are subtracted vertically in each column in turn starting with the ones, is the upper number too small? trade if yes, subtract if no, etc, Stop).

Class 3 Cutting a wooden rectangle. (Overarching Theme ASCF 3-C) Use simple equipment to construct a wooden rectangle as part of a project. Here the implied algorithm follows several steps. (select the timber, mark out the rectangle using a ruler and set square, secure the timber and cut with a saw, sand the finished cut, re check the measurements, are the measurements correct? If yes, continue with the project, if no, redesign the project to account for the actual measurement, and so on).

Class 4 Making ink for writing (English ASCF 4.2) (Lightly whisk one egg yolk, mix in a teaspoon of gum Arabic, and half a cup of honey, stir in half a teaspoon of lamp black (activated carbon), is the result a thick paste? If yes, store in a tight jar for later use as ink by adding water, if no, add a little more gum Arabic and lamp black, and so on).

Class 5 Long Division (Mathematics ASCF 5.9) Long division as an algorithm. (write the divisor to the left and the dividend to the right for example $7 \overline{)238}$, seven won't divide into two, write the next step keeping the tableau aligned vertically, seven divides into 23 three times with two remaining and so on, sometimes children will create a 'subroutine' in the margin, by calculating how many times seven goes into 23 if they couldn't work it out mentally).

Class 6 Woodcarving (Design and Technology ASCF 6.2.3). There are several steps and decision points in the implied algorithm of carving a wooden bowl or spoon. (select timber blank, select appropriate hand gouge, establish timber grain alignment, secure timber, using a balance between dominant and non-dominant hands start carving, is the carving deep enough? If yes, turn the timber blank over, if no continue carving, and so on).

Children choose and make appropriate tools

Kindergarten Nature Craft (Design and Technology ASCF 2.1.2) Children collect bushcraft objects such as leaves, sticks, and plant fragments, as materials and tools to create imaginative worlds using a table, painting board or sandpit as a canvas.

Class 1 Song Sticks (Overarching Theme ASCF 1-B) Children use a length stick, 2 to 3cm diameter, and cut two pieces 15 to 20cm in length for use as song sticks (clapping sticks). A hardwood branch, or a length of dowel can be used to make a suitable ringing sound when the sticks are struck together. The sticks can be sanded and decorated.

Class 2 Knitting (Design and Technology ASCF 2.2.2). Children make knitting needles using two lengths of wooden dowel, a pencil sharpener, sandpaper, two dry gumnuts (*Angophora costata* gumnuts are a good choice), and some craft glue.

Class 3 Churning Butter (Design and Technology ASCF 4.1.3) Children use a hand cranked butter churn to make butter from fresh cream. They also learn that they can make their own butter churn by shaking cream in a glass jar with a screw top lid. They experience that after 5 to 8 minutes the churn (or jar) has whipped the cream, after a further 2 to 4 minutes the churn handle gets harder to turn as the whipped cream thickens. All of a sudden, the churn handle spins easily - stop at this point. Butter is in now the churn - along with buttermilk.

Class 4 Making a reed dip pen (English ASCF 4.2) Having made paper in conjunction with their History of Writing Main lesson and perhaps even including papyrus paper, using the pith from *Cyperus papyrus*, children shape a reed pen from a piece of the small papyrus *Cyperus alternifolius*.

Class 5 Make a musical instrument (Design and Technology ASCF 6.3.3)

Children make a *Murrumbidgee rattler* percussive instrument using an appropriately size branch, metal bottle tops, nails or screws, a small board can also be screwed to

the stick. Another shorter stick is cut with a serrated (sawtooth) edge to be used as the *striker*.

Class 6 Making a Dibber (ASCF Science 6.5B) Children use a saw, wood rasp and sandpaper to create a dibber (planting hole stick) for their work in the school garden. They experience that 30cm is a good length for a dibber and that the smoother they can make the rounded pointy end, the less soil will stick to the dibber when they pull it out of the ground.

Children evaluate tools for a task

Kindergarten Nature Craft (Design and Technology ASCF 2.1.2). Children decide if the bushcraft objects they have collected are suitable for what they want to make. This may result in modifying their ideas or in further collecting from nature.

Class 1 Testing Song Sticks (Overarching Theme ASCF 1-B) Children use percussive sticks they made from dowel or a hardwood stick to support a story or song. Children will know by the ease of grip and the quality of the 'ring' when struck how good the sticks are. Sticks could be remade using different wood if the sound is too dull.

Class 2 Knitting with Home-made Needles (Design and Technology ASCF 2.2.2). Children use the needles they made to knit a recorder bag. There is an implied evaluation in the quality of their knitting experience. For example, if the ends of the wooden needles weren't sanded smooth enough, wool may catch as the needles are inserted under the yarn.

Class 3 Compare Butter Making Tools (Design and Technology ASCF 4.1.3) Children made butter using a hand cranked butter churn and also by using a glass jar with lid (shaken vigorously). The butter churn is a little quicker and you can tell more easily when the butter is ready but glass jars are easy to find so you can always make butter even if you don't have a churn.

Class 4 Evaluating ink writing implements (English ASCF 4.2) Children experience several ink writing implements including; a reed pen, a quill pen and a steel dip nib pen. The children then compare how these pens work on various papers including any paper they made themselves.

Class 5 Evaluate a musical instrument (Design and Technology ASCF 6.3.3)

Children play percussively in support of folk music on their homemade *Murrumbidgee rattlers* and *strikers*. Children evaluate the effectiveness of their work in terms of striker function, ease of holding the staff and overall sound.

Class 6 Gardening (Science ASCF 6.5B) Children assess their school garden soil health using and evaluating a range of garden implements and basic knowledge. For example, by checking with a fine fork for earthworms and by digging below the surface to assess the soil *tilth* in their hands - is the soil granular, cloddy or powdery?

Children recognise different ways “data” can be represented

Kindergarten Counting Freely (Mathematics ASCF K.8) Children learn to count freely and in doing so they naturally see the correspondence between sets of the same size. For example, they experience that four can be a set of four stones, four wooden blocks or four bread rolls.

Class 1 Mathematics (Mathematics ASCF 1.8) Children create large number patterns in sandpit and on the pathway using nature objects. They experience that numbers can be represented in many different ways.

Class 2 Times Tables (Mathematics ASCF 2.8) Children learn their times tables through song, rhythm and movement. They experience that numbers (as data) can be expressed in different ways. For example, $12 = 6 \times 2$ and $12 = 3 \times 4$ also $12 = 12 \times 1$ or 1×12 and so on, there being many ways to express ‘12’.

Class 3 Measuring Length (Mathematics ASCF 3.9) Children measure the length of their class garden bed using stepped paces and their feet to measure. They find that the garden is about 12 of their feet in length or around four and a half paces. Using their home-made 12-inch ruler they find the garden is about 160 inches. They use metric measure to find it is around 4 metres, or 400 centimetres, or 4000 millimetres. There are many ways of expressing the length of their garden.

Class 4 Synonyms (English ASCF 4.3) Children learn that a thing or idea can often be expressed by different words. They experience through their writing that most words have synonyms, for example to *fly* is also to *soar*, *hover*, *flit*, *waft*, or *glide*.

Class 5 Weather (Science/Geography ASCF 5.4) Children record the weather at school or on a camp demonstrating pictorial and numerical data representations. For example, rain data can be written as millimetres of rain or it can be expressed in a graph, or it can be expressed qualitatively as to whether or not the school garden needs watering after the rain.

Class 6 Number Expression (Mathematics ASCF 6.9) Children learn to express numerical data in several ways. For example, children may plan a small business enterprise and use tables, graphs and numbers to express data. They learn that a 10% improvement in sales is the same as a $1/10^{\text{th}}$ or a 0.1 improvement in sales.

Children “analyse” situations, record and use data for predictions and communicate results

Kindergarten Animals (Design and Technology ASCF 2.1.3) Children collect and count eggs when they determine eggs are laid by the time of day and the sounds the chickens make. They communicate the results to their teacher and predict how many eggs might be there tomorrow.

Class 1 Class Herb Garden (Design and Technology ASCF 2.1.2) Children and their teacher determine when herbs are ready to pick to take home. Herbs are

selected, cut, washed and sorted. Children predict how big their individual bunches will be, finally the herbs are divided out and tied in bunches, children take them home for use in the kitchen.

Class 2 Origami (Design and Technology ASCF 2.2.1) Children make origami gifts for sale at the school fair. They experimented with several designs and predicted which ones would be most popular. Collectively they produced a box of origami gifts. After the fair the children assessed how the sale went and came up with ideas for origami gifts at next year's fair.

Class 3 Measuring Capacity (Mathematics ASCF 3.9) Children use a range of liquid container shapes and working in litres and millilitres, predict how much water fits into various containers. Measure and confirm the capacity, record the results. Repeat with even more unusual container shapes to predict and then check their capacities.

Class 4 Beeswax Dip Candles (Design and Technology ASCF 4.3.4) Children make a beeswax candle by dipping a wick into melted beeswax of various colours. They experiment with the colours of melted wax and slowly build their candle. Children predict if their candle has reached the maximum weight allowed, say 80 grams, they then predict how much more dipping it will take to reach that weight.

Class 5 (Mathematics ASCF 5.9) Children gather data about the frequency of vehicles driving past the school on the main road, including type of vehicle, number of passengers, time of day. They do this for two separate half hours periods per day for one week and analyse the results. Predictions are made about traffic flow at other times. These predictions can be tested.

Class 6 Static Electricity (Science ASCF 6.8) Children experiment with rods of rubber, glass, wood, copper and rubber balloons, rubbed by cloths made of silk, wool, fur, cotton, and by the children's hair. The effects on the materials mentioned fit

into a series (triboelectric series) depending on their relative electrostatic attraction. Children record, make predictions and communicate results through written reports.

2. Creative use of Digital Technologies

Children initiate plans, ideas and activities to meet challenges

Kindergarten Unstructured Play (Design and Technology ASCF 2.2.3) Children engage in informal planning, collecting sticks and branches and overcome obstacles to build a structure in an imaginative play scenario.

Class 1 (Overarching Theme ASCF B) K-2.2 Creatively question the possibilities for adventurous projects, communicate ideas about them, predict better methods and amend their projects for better results.

Class 2 Unstructured Play (Design and Technology ASCF 2.2.3) Children engage in informal planning, collecting natural and made items to build and operate a playground sand-pie shop.

Class 3 Building (Science ASCF 3.6) Children design a simple stone hut, log cabin or a family home. They draw detailed plans to scale and build a model of their house design.

Class 4 Festivals (Overarching Theme A ASCF) Children plan, MC and lead performance aspects and speeches for festivals and gatherings.

Class 5 Cooking with Fire (Design and Technology ASCF 6.1.1) Children research simple fire cooking methods, then plan and conduct an outdoors cooking lesson which may include , damper, baked potatoes, soup or billy tea.

Class 6 Camp (Geography Camp ASCF 6.12) Children are involved in researching, planning and ideas and activities for a geography camp.

Children collaborate with peers to manage complex technological tasks

Kindergarten Bread baking (Design and technology ASCF 2.1.1) Children work as a group on the communal process of making and baking bread. Tasks include; hand washing, workspace preparation, setting out equipment, sharing out ingredients and so on.

Class 1 Cooking (Overarching Theme ASCF B) Children work collaboratively to make a class vegetable soup. Tasks will include a jobs list, hygiene, preparation cooking and sharing a meal.

Class 2 Festivals (Overarching Theme ASCF A) Children collaborate to prepare for festivals- harvesting produce, baking soups, cakes, bread; decorating, making gifts for farewells and birthdays; dressing in e.g. spring flower wreaths.

Class 3 Building (Science ASCF 3.6) Children use mud brick cementing tools safely and clean up after completion, when making and building with mud bricks to build a playground hut, pizza oven or farm shed.

Class 4 Gardening (Design and Technology ASCF 4.1.2) Children collaborate to create gardens, managing and sharing tasks, which may include; layout, soil type, plant selection and future maintenance jobs.

Class 5 Topic: 5.4 .12 The Local Region / State : History of Australia / Geography / Science Develop appropriate Geographical questions e.g. about the camp, sustainable practices or Aboriginal bush foods, use a range of oral, written and visual sources, following protocols for consultation with local Aboriginal community and/or Torres Strait Islander communities, investigate, collect and record data and observations in tables, drawings, graphs and journals and use maps.

Elaborations - Plan, prepare and write provision lists. Research, investigate and gather materials for shelter, bedding, food, cooking materials and waste

management. Travel the explorers' routes, camp, use cooking and/or shelter building equipment safely and appropriately.

Class 6 Geography 6.12.16 : Australia and the World Beyond Represent data in plans, graphs, tables, sketches and diagrams and identify spatial distributions, patterns and trends to infer relationships to draw conclusions. Communicate findings in a variety of forms using geographical vocabulary and tools and reflect on their learning to propose an individual or group response to a Geographical issue and the expected benefits on different groups of people.

Children use structure and presentation in communicating ideas

Kindergarten Story Time (Story Time ASCF K.1) Children playing out stories with props or in dramatised form, using imitated speech, gesture and narrative elements. Elaborating and creatively developing story material based on prior experiences. Communicating and cooperating with other children in story development and play-based enactment.

Class 1 Story Play (History/English ASCF 1.5) Children use free dramatisation to recreate stories in play using story props and/or puppet plays for example, to communicate their ideas.

Class 2 World Legends (English ASCF 2.4). Children write and illustrate their own self-created book from the stories in their lesson.

Class 3 Reading (English ASCF 3.4) Children make short presentations giving synopses of various texts and discuss with others the plot, character and setting of fiction texts including what characters might or might not do in certain situations.

Class 4 Festivals (Overarching Theme A ASCF) Children communicate their ideas formally and informally as they plan, MC and lead performance aspects and speeches for festivals and gatherings.

Class 5 History (History ASCF 5.2) Children make a presentation to their class on an aspect of their history lesson.

Class 6 Performance (Speech and drama ASCF 5-6 13.4) Children choose props, costumes, instruments and available technologies to enhance the dramatic tension and create a theatrical effect such as using masks or percussion to communicate ideas.

Children work safely in technological environments

Kindergarten Cooking (Design and technology ASCF 2.1.1) Children learn to work safely with cooking apparatus as well as working hygienically with food.

Class 1 Gardening (Overarching Theme ASCF B). Children use garden tools safely and complete hand-washing after their garden tasks.

Class 2 Sewing (Overarching Theme ASCF C) Children sew safely using a sharp needle on fine fabric, over stitching seams and sewing on buttons.

Class 3 Building (Science ASCF 3.6) Children design a simple stone hut, log cabin or a family home. They draw detailed plans to scale and build a model of their house design. They make mud bricks and use them to build a playground hut, pizza oven or farm shed.

Class 4 Woodwork (Overarching Theme ASCF C) Children use tools in a safe manner as they design, rasp, file, sand and polish well-finished items out of wood such as, egg forms, spoons and bowls.

Class 5 Outdoor Cooking (Design and Technology ASCF 6.1.1) Children learn to work safely with outdoor cooking apparatus including camp fires. They also work hygienically with the food they are preparing for themselves and others.

Class 6 Lanterns (Design and Technology ASCF 6.3.4) Children work safely with materials, tools and fire when they make candles and lanterns for a festival using beeswax, waxed paper and bamboo slats.

Children communicate completed work with others with empathy and respect

Kindergarten Story Time (Story Time ASCF K.1) Children communicate empathetically as they play out stories with props, using imitated speech, gesture and narrative elements. Elaborating and creatively developing story material based on prior experiences.

Class 1 Story Play (History/English ASCF 1.5) Children share their work with empathy and respect. In Story Play they use free dramatisation to recreate stories in play using story props and/or puppet plays for example, to communicate their ideas.

Class 2 Class 2 English (English ASCF 2.4). Children communicate their creative work with each other empathetically when they write, illustrate and share their own self-created book from the stories in their lesson.

Class 3 Class Shop (Mathematics ASCF 3.10) Children run a small shop selling food or other items they have made. They learn how to work with customers.

Class 4 Festivals (Overarching Theme ASCF A) Children communicate their ideas with empathy when they lead performance aspects and speeches for festivals and gatherings.

Class 5 Performance (English ASCF 5.2) Children share their dramatic work with others in an appropriate way.

Class 6 Performance (Speech and drama ASCF 5-6 13) Children rehearse and perform devised and scripted drama for their classmates and others showing empathy and respect.

3. Research and Analysis

Children explore and create complex patterns and represent them using pictures, charts, diagrams

Kindergarten Self Directed Play (Kindergarten ASCF K3) Children create a “world” in the sandpit complete with roads, houses, rivers and rules for playing. The working of this ‘real world’ is immediately accessible to the children as they experience it in a holistic way.

Class 1 Drawing the Complexity of Nature (Science/Geography ASCF 1.6).

Children draw the world of the World of Nature story – day and night, sun and moon, stars, clouds, streams, hills, stones, trees and flowers, grains, vegetables and as well as nearby animals.

Class 2 Number Patterns (Mathematics ASCF 2.8) Children make class circles of

different numbers of children standing and throw wool to illustrate geometric forms created by counting by 1s, 2s, 3s, 4s. They create these patterns on a wooden circle with nails around the edge and wool wrapped around and they experience the patterns on a number line by jumping the number sequences.

Class 3 Building (Science/Geography ASCF 3.6) Children outline the materials

used for building and their project building, including the role of the foundations, joists, floorboards, beams, cross braces, roofing, windows, and doors, they discuss the contribution and complex network of the many tradespeople involved in a building project.

Class 4 Making a Map of the School (Geography/Mathematics ASCF 4.5)

Children draw the features and buildings of the school and the surroundings and transpose this into a map of the school They observe and discuss the use of estimation for measurement and scale.

Class 5 Botany (Science/Geography ASCF 5.5) Children observe the complex web of nature, in particular, the patterns within the plant world. They draw each plant group in their habitat and they draw the structures of each and their differing leaves (parallel-veined and net-veined), root systems, seedlings and fruits.

Class 6 Geology (Science ASCF 6.5A) Children visit a geological rock formation whilst on an excursion, they experience complex pattern of a geological formation. They create diagrams and charts to show the complex patterns.

Children collect information and present to others

Kindergarten (Kindergarten Overarching Themes ASCF). Children collect their completed school craft projects and help prepare for an open day presentation.

Class 1 Counting objects (Mathematics ASCF 1.9). Children collect natural objects to show counting to others. They explore more complex groupings and regroupings of a number with the objects they found.

Class 2 Nature Items (Traditional Handcrafts ASCF Overarching Theme C)
Children gather bush or beach items such as leaves, seedpods, shells and driftwood to show others and make bush and beach crafts for the classroom and home.

Class 3 Gardening (Geography/Science ASCF 3.5). Children collect, clean and sort vegetables and flowers from their class garden for showing and sharing with others.

Class 4 Animal Kingdom (Science ASCF 4.7). Children research information about animals in a specific environment, including features, behaviours and habitat, for presentation to others in the class.

Class 5 Performance (English ASCF 5.2). Children collect information about a play they are about to perform so that they can produce a play flyer and program for the audience.

Class 6 Business Mathematics (Mathematics ASCF 6.9). Children collect information in order to plan and run a simulated small business, they calculate percentages in terms of discount, profit, loss, taxation, GST etc, analyse their businesses' profitability and present their findings.

Children understand how numbers and symbols can represent data

Kindergarten Number Play (ASCF Number K.8) Children collect, count, manipulate play objects such as pebbles. They also allocate symbolic representations to the objects such as, three pebbles symbolise three cakes.

Class 1 Counting (ASCF 1.9). Children formally learn to count, by intuitively allocating, for example, the symbol '7' to a row of seven gumnuts. If they then add another three gumnuts to the row, they have intuited the symbol '+' to make a ten row of gumnuts.

Class 2 Knitting (ASCF Overarching Theme C). Children intuitively work with symbolic representation when they knit rows using a set number of stitches, the number of stitches may then be increased by casting on or reduced by casting off.

Class 3 Measurement (ASCF Mathematics 3.9). Children learn the history of measurement and the metric system of measurement. They learn the symbols relating to the human body, such as, feet yard, pace, inch, also pint, gallon which are compared to the metric centimetre, metre, millilitre and litre.

Class 4 Knitting (Design and Technology ASCF 4.2.2). Children learn more complex patterning. Knit and purl knitting are explained as such whether or not the coding is used, for example, K1, P1, K1, P1 (a binary code).

Class 5 Decimals (Mathematics ASCF 5.8). Children learn/revise and use historical number symbolic representation such as finger notation, cuneiform, Egyptian, Greek and Roman.

Class 6 Business Mathematics (Mathematics ASCF 6.9). Children use symbols and numbers to run a simulated small business in which they calculate percentages in terms of discount, profit, loss, taxation, GST etc, analyse their businesses' profitability and present their findings.