Early years curriculum materials

Developing technology understandings

This case study examines how one preparatory setting used technology in their community

Queensland Government

Queensland Studies Authority
Partnership and innovation

 295 Ann St Brisbane Queensland. PO Box 307 Spring Hill Qld 4004
Phone: (07) 3864 0299 **Fax:** (07) 3221 2553 **Email:** office@qsa.qld.edu.au **Website:** www.qsa.qld.edu.au

Links to *Early Years Curriculum Guidelines*	**Children's learning experiences**	**Reflection and monitoring**
Active learning processes — Investigating technology Investigating technology and considering how it affects everyday life.	**Background** At the end of Term 3, the children had developed strategies for riding tricycles and scooters through obstacle courses. They had also taken an interest in tricycle safety. To extend the children's thinking and knowledge about how tricycles were used in our community, I thought we could add other structures to the outdoor environment, in particular, to the areas where they ride their tricycles and scooters. I obtained boxes from the local electrical store and fruit boxes from Woolworths to allow the children to develop their ideas on a large scale. My plan was to negotiate with the children how they wanted to use the boxes.	
Investigating technology ***Planning*** Investigate ways technology is used in their local areas.	**Day 1: Negotiating the project** On the first day back, I showed the children the supermarket boxes and asked: "How could we include boxes in our scooter and trike play?" Hayden and Chloe said, "We could make a town." We began the process of creating the town from their suggestion. It was raining so we began to plan together what we would make for our town. I put a large piece of butcher's paper on the easel and wrote down the children's suggestions. Someone suggested that we could call the town "Happy Town". At the beginning of the year, the children had planned that the dramatic area would be "Happy Street" and each area had a name, e.g. Happy Street Police Station, Happy Street Bakery, Happy Street State School. This discussion reminded the children of that successful project so they decided to use the same name for our outdoor project.	*H showed a thorough understanding of the town environment. He was able to describe main landmarks in detail. Is able to identify features of environments.*

Links to *Early Years Curriculum Guidelines*	**Children's learning experiences**	**Reflection and monitoring**
Investigating technology ***Planning*** Identify technology as products or ways of doing things.	I explained to the children that I had six refrigeration boxes. "Would they be useful for making different buildings?" "What types of buildings should I write down?" Hayden suggested we needed a police station, Steven said we needed the town clock like the one on the post office at Stanthorpe. David suggested we needed a service station, Naomi said we needed a restaurant, Serayah suggested we needed a bank so that we could get money out to buy petrol at the service station and Georgia said we needed a supermarket to buy groceries. I wrote all of these suggestions down on our list on the butcher's paper. I suggested that the children take time during the day to think about their project so that they could add any other thoughts to our list for the following day.	*D could identify the parts of a service station. S explained how her Mum uses an ATM.* *Is able to identify some technologies and the way they work.*
	Day 2: Outdoor learning — making the clock Steaven, James and Samantha decided to make the clock on the post office first. Steaven suggested we use the large bin to trace around on cardboard to make the clock face. He and James did the tracing and Samantha did the cutting out.  	*S said "curved" when describing a circle shape.* *Identifies characteristics of a shape.* *It's going to need a hole in it for a window.*

Links to *Early Years Curriculum Guidelines*	**Children's learning experiences**	**Reflection and monitoring**
Investigating technology ***Monitoring and assessing*** Talks about and creates own products and systems from their observations and use of technology, asking for help when needed.	Steaven got the clock from indoors to use as a reference. He cut out numbers from a number sheet and the three of them glued the numbers on. Samantha went to the collage trolley and chose three paddlepop sticks for the hands of the clock. Steaven decided to glue two together to make the long hand of the clock. With my guidance we decided to use split pins to attach the paddlepop sticks. The box was very tall and the children worked together to glue the clock on the box. They had to work out who the tallest person was so that the top of the clock could be reached. Remembering that the post office was near the town clock, Samantha said we needed to make a hole to post letters in. I cut a slot in the side of the box and cut a door. Samantha was concerned that the letters would just drop onto the wet ground, so she found a meat tray from the box collection and taped it inside the post office. Once the town clock and post office were constructed, the other children decided to join in. Children went indoors and got pens, paper and envelopes to write letters. Samantha wanted to make sure she had the right names on the envelopes, so she went and got the nametags to copy. Chloe decided we needed a mailman and a bag to put the letters in. A postage bag was found in our bag collection and the letters were put inside. Because there were so many children who wanted to go in the post office, Samantha and Chloe worked out that only five children could be in the post office at the one time.	*S was able to arrange the numbers in correct order by matching them to the clock. What other clocks are there?* *Identifies and describes similar characteristics and attributes when matching.* *Use internet to look at town clock examples.* *A understood what "tallest" meant and used this word to describe M.* *Uses comparative language when comparing two objects.* *S independently gathered materials to solve a problem.* *S identified beginning sounds in Hayden's, Steaven's and Chloe's names* *Put envelopes and post cards on the writing table.*

Links to *Early Years Curriculum Guidelines*	**Children's learning experiences**	**Reflection and monitoring**
Active learning processes — Thinking ***Monitoring and assessing*** Makes simple plans and chooses materials and actions, asking for help when needed.	Steaven suggested we make the petrol bowser the following day. He said, We'll need to find a shorter box. David said, "We'll need to find some pipe and a gun-shaped nozzle." Chloe said she had had a good look at a petrol bowser the previous day, and so she gave instructions on what we needed. Steaven found a hose from the water play equipment and said we needed a gun shaped nozzle. He went to the collage box and found two different-sized tubes and put them together to make the shape of the nozzle. James helped him tape the nozzle onto the hose. After making a hole to insert the hose on the box and securing it with masking tape, Steaven said that we needed to have a holder for the hose. He found another tube and cut it in half. He then secured it on the box so that the hose would fit in it.	*D was able to name the parts of a bowser — nozzle and hose.* *J made several suggestions about how to attach the nozzle to the bowser. Great problem solving.* *Place siphons and hoses in the water trough tomorrow and discuss siphoning and pumping.*
Investigating technology ***Monitoring and assessing*** Talks about and creates own products and systems from their observations and use of technology, asking for help when needed.	 Chloe said we needed a screen on the bowser to tell how much petrol was used and how much it cost. Steaven glued a square piece of paper on the box and asked Miss Allison to write down $12 per litre. Miss Allison helped him to write the numerals and attempt sounding out the words.	*Fill me up please!* *C understands that there is a "cost" involved in buying petrol. She knew that it was measured in litres. How much is a litre of petrol? Get Chloe to ring BP. Follow up on C's understanding of what a "litre" is.*

Links to ***Early Years Curriculum Guidelines***	**Day 3: Outdoor learning — using the bowser**	Links to ***Early Years Curriculum Guidelines***
	Tricycles and scooters lined up for petrol and Steaven discovered he had run out of petrol. Georgia and Naomi had a trike with a trailer on it, so they said they would be the petrol tanker. They found a long rope and pretended that it was the hose to put the petrol in the bowser. Steaven suggested he get the mobile phone to ring the tanker when he needed petrol.	*S used the word "empty". He dialled 000 to ring the tanker. Follow up on understanding of 000 calls. Help children to make mobile phones using their suggestions for materials.*
	Allan came with his tricycle and said he needed air, so he found thinner rope and secured it to the sandpit near the petrol bowser. Corey and Allan went through the motions of taking the caps off their tyres and making hissing sounds as the air went into the tyres.	*C and A talked to each other about what they understood an air compressor to be. Make suggestion that C and A could make an air compressor. Bring in an air compressor.*
	Meanwhile, Mrs Finlay's group was making the bank so that children could get money out to pay for their petrol. While all this was happening Mrs Finlay's group joined us to write letters to post at the post office. Hayden suggested that the following day we could make houses for people to live in. He said, "What sort of house can I make?"	*Obtain posters and images of houses. Share with H. What sort of house do you want to make tomorrow?* *Inquires about topics relating to environments.*
		*Friends came to join in.*

<table>
<tr><td rowspan="2">Links to Early Years Curriculum Guidelines</td><td>Day 4: Making the houses</td><td>Reflection and monitoring</td></tr>
<tr><td>Steaven was eager to continue developing the town when we went outdoors. He suggested we needed houses. Because the boxes left were very tall and narrow, Steaven said we needed to join two houses together to make more room.
 
</td><td>I brainstormed the parts of a house as a focused teaching experience with Steaven.

Townhouses side by side.</td></tr>
<tr><td>Active learning processes — Imagining and responding

Monitoring and assessing

With some prompts, experiments with using different ways to imaginatively represent ideas and designs, usually with enjoyment.</td><td>Miss Allison helped by cutting the door and windows. Sarah and Samantha said, “We want curtains in the house.” After finding some lace from the material box, they taped the lace to make the curtains. The cardboard that was cut from the boxes was used for their beds.

Meanwhile, David put on the police outfit to catch the robber that had stolen money from the bank! Both the Prep children and Mrs McCormick’s children continued using the petrol station to fill up their tricycles and scooters. Naomi and Georgia continued being the petrol tanker drivers to fill up the petrol bowser.</td><td>S used “too long” to describe one piece of fabric.

Uses comparative language when comparing two objects.

When discussing 000 mention the roles of police officers. Georgia used words “full” and “empty”.

Identifies and describes attributes.</td></tr>
</table>

Links to ***Early Years Curriculum Guidelines***	**Day 5: Signage**	Reflection and monitoring
	The children decided they did not want to do any more constructing, so they set up the boxes and played with the constructions. Steaven, Jayden, James and Samantha made Stop, Go, Give Way and other road signs on cardboard, and glued them onto long cylinders for the tricycles and scooters to use. I wrote some traffic sign words on pieces of paper and other children painted over them. Later, some children wrote their own signs by copying from the models we had made together.	*J labelled 6 and 0 as '60'.* *J wrote STOP independently.* *S copied GO from my sign.* *Experiments with letters, words, symbols, and drawings to write or shape simple texts.*
	Day 6: Transport	
	Steaven and Hayden decided we needed more cars, planes and other transport to use in the town, so they decided to use the fruit boxes to make the cars at indoor time.  	*Lots of different car designs and detailing.*

Links to *Early Years Curriculum Guidelines*		*Reflection and monitoring*
Investigating technology ***Interacting*** Gives children opportunity and encouragement to use different technologies.	The whole room was set up for the children to access whatever they needed to make their own transport. Children shared ideas, giving suggestions and helping others when needed. The adults asked questions and helped them with the more difficult physical activities, e.g. cutting out doors.	*Is able to manage a task independently.*
Health & physical learning — Fine motor ***Monitoring and assessing*** Use familiar equipment, materials, tools and objects with increasing coordination, strength and control.	Children made drawings, measured, looked for pictures in books, cut, glued, taped, wrote and problem solved. The children's play and investigations continued for the entire morning.	*Uses different combinations of fine-motor movements.*

Links to *Early Years Curriculum Guidelines*		**Reflection and monitoring**
Investigating technology ***Interacting*** Question and challenge children's thinking about technologies, and the use of those technologies in their everyday life.	**Days 6 and 7: Using the transport** All children used their vehicles outside, using the petrol station and obeying the road signs. David, Hayden and Jordan decided they needed a pit stop for their cars. They placed a large box on the cement for cars to pull up on if they were having trouble.  	*We made a list of safety rules and went to the Gold Coast Indy website to look at images before we made the pit stop.* *Checking lights and tyres at the pit stop.* *Pulling in to the pit stop.*

<table>
<tr><td rowspan="2">Links to Early Years Curriculum Guidelines</td><td>Days 8 and 9: Representing ideas</td><td rowspan="2">Reflection and monitoring</td></tr>
<tr><td>Because it was raining on these days, the children asked if they could continue making their town indoors.

Naomi, Chloe, Madison, Samantha and Sarah painted the road onto large sheets of construction paper and joined the sheets together to fit in the block play area.</td></tr>
<tr><td>Painting the indoor track.

Investigating technology

Monitoring and assessing

In discussions, identifies ways in which technology helps people in everyday life.</td><td> 

After the road dried, children discussed what they needed in their town. They decided that roads were needed, along with a river, a park and a roundabout.

When the children looked at the intersections they decided they needed road signs, otherwise the cars might crash!

Box constructions were made to represent houses, garages and shops. Sarah made a streetlight and Chloe made bins. Samantha found some traffic signs in a magazine and glued them onto skewers, which were then stuck into plastic lids so they would stand up. She also discovered the pointy parts of egg cartons made good people and others followed suit. A great deal of discussion took place about what the representations would look like. Would they be like the bins in our main street? What does a streetlight look like? Are streetlights taller than cars? How many streetlights are in the main street? How many signs? What would happen if the lights and signs weren't there?</td><td>M chose the colours we needed for the track. She worked well with C. Encourage this relationship. Encourage the relationship between M and C

Demonstrates peaceable and considerate ways of interacting with others.

S mentioned that streetlights in her street came on without a switch when it gets dark. S showed good research strategies when finding pictures of traffic lights. Reads and views for personal purposes. Investigate how streetlights work. Support S to email the council to ask.</td></tr>
</table>

Links to ***Early Years Curriculum Guidelines***	 Nic, Jordan, Anthony and Steaven then wanted to use the cars and trucks to drive on the roads using the signs. Alongside this activity, James and Alesia built a town out of blocks. They built a railway with a bridge over the river. James made a boat and a barge and was able to differentiate between the two.	*Reflection and monitoring* *Using the indoor track.* *A repeated continuous elements in a pattern to make the railway. He explained the shapes and order in the pattern.* *Copies, creates and explains patterns represented.* *Find more information on barges.*
	Day 10: New interests The children completed their investigations that had used the box constructions and most of them chose to play in the sand pit, ride the wooden horses, play on the swings, and create their own imaginative dramatic play using other props. However, Georgia, Naomi and Brooke made a tent by using the roof and walls of the house. They had a lovely time gathering everything they needed for a camping adventure. For 10 days the children were absorbed by, and engaged in, creating their town. Even though the town the children had built had been blown down in the wind and wet by the rain, the children found alternative uses for the remnants before they were taken to the recycling depot. The shapes and forms of the objects the children had been using inspired them to follow another interest. It seemed that our next project we would be camping!	*Get children to bring in camping artefacts.*

Summary

The children enjoyed this project and investigating the technology in the environment around them. While constructing the town, the children were using their fine-motor skills and social strategies. They had constructed a special environment that had given them an opportunity to develop their gross-motor skills. After observing the children's interactions the teacher was able to plan for the future. She planned to develop the children's understandings and capabilities further by following their interest in camping and outdoor adventures.

Special thanks the teacher, Sue-ann Gilmour, teacher aide, Ann Taylor, Miss Allison and children of the Prep Year class at Stanthorpe State School.

Further reading

Refer to Technology on the *Early years curriculum materials Teacher's CD-ROM*.

To examine links with the Technology key learning area syllabus, go to: *Queensland Studies Authority* (online) 2005, www.qsa.qld.edu.au and follow the links to years 1 to 10 Technology [accessed 5 December 2005].

For information on developing children's physical health and wellbeing using outdoor environments, see: Sanders, S. W. 2002. *Active for life: developmentally appropriate movement programs for young children*, NAEYC, Washington DC.