

# Skills and Capabilities

## Case Study

### Snowy Solution

Year Group: Year Two

Theme: Winter

Learning area: Play Based Learning – Design and Construction

## **Promoting 'Thinking Skills and Personal Capabilities'**

In this case study you will see evidence of the teacher promoting TS &PC by:

- using interests of the children as a starting point;
- setting the children a challenge;
- asking open ended questions;
- allowing children to select resources and materials;
- allowing children freedom to use their imagination; and
- allowing children to group themselves.

## **Find 'Thinking Skills and Personal Capabilities'**

In this case study you will see evidence of pupils:

Managing Information:

- select, with help, information and resources; and
- follow directions – begin to plan.

Thinking, Problem Solving, Decision making:

- give reasons and opinions.

Being Creative:

- show curiosity and ask questions; and
- be willing to take on new challenges.

Working with Others:

- work and Play Cooperatively;
- develop routines of listening, turn taking, sharing, cooperating; and
- develop confidence with adults and other children.

Self Management:

- talk about what they are doing and what they have learned;
- develop ability to focus, sustain attention, and persist with tasks;
- be able to make choices and decisions about their work; and
- ask an adult or friend for help.

Establish the focus  
as problem-solving

During a series of Play Based Learning activities, the teacher wanted the children to plan, design and make vehicles that could be used to clear snowy roads in Winter.

## Our Starting Point

As the children were already enthusiastic about snow, and had spoken in detail about their own experiences, the teacher decided to encourage their interest by finding out about the effects of heavy snowfall in Northern Ireland and in other climates. The children enthusiastically searched through information books to find the extremes of snowy weather e.g. avalanches, snow drifts, blizzards and snow sports. After a class discussion the children were already agreed unanimously that specialist equipment would be required to clear snowy roads.

Recognition of  
problem to solve

## Initial challenge

The children were well aware of the need for roads to be passable and so decided that they needed to make a vehicle to clear snowy roads. They were asked how they would begin to plan their work and Shea suggested, 'Look at a book of bulldozers and other big trucks.' Odhran suggested 'You could draw a picture of it first,' and Aoife suggested, 'You would have to have a wee think about it, what parts it would need to have'. After this initial discussion the teacher encouraged the children to think about why these suggestions were good ways to plan. Odhran said that by drawing a plan you, 'Will not forget what it will look like and what bits you will need,' while Shea said that looking at books 'Give you lots of ideas about how to make a really big strong machine'. Armed with these ideas and those which had been shared with the class, the children selected construction kits (all accessible in the classroom), fiction and non-fiction books (from a vehicles and big machines' topic pack) and writing materials of their choice (or from the planning box) to begin. At the conclusion of this session, some children had the opportunity to tell the class about their work. The suggestions made by the children demonstrated that they were beginning to think about the special features the vehicle needed to have

Thinking  
about  
planning

Aoife has a metacognitive moment. She thinks strategically about her plan.

Evaluating the  
plan

Odhran identifies why planning is important

Drawing  
together and  
taking stock of  
what has been  
learned

Shea recognises importance of stimulus materials to generate ideas

however, as the teacher was keen to see a progression in the skills being used, she decided to extend the challenge.

## Extending the challenge

Rather than making suggestions, the teacher wanted to extend the children's thinking about the parts and special features a vehicle to clear snowy roads would need to have. At the beginning of the next session as she recapped on the previous work, children were asked open ended questions, such as, 'How could a vehicle move the snow?' 'What would it do to the snow?' 'Where would the snow go?' As a class, the children came up with the words 'push', 'suck', 'blow', 'melt', 'spread', 'brush' and 'sweep' some of which were surprising and had not been considered by the teacher! With the key words displayed and the collection of books chosen by the children (mostly non-fiction), they began to work, this time with more of their own ideas becoming apparent, and fewer 'traditional' snow ploughs. It was also obvious that children wanted to share these ideas with their peers in smaller group situations, and they subsequently worked in these groups. Some of their descriptions included

'it will suck the snow up at the front and blow it out this big pipe over the hedge, like a silage cutter', (Luke)

'it has lots of sweepers underneath that brush the snow up inside into a big trailer.' (Aoife)

'This machine drops hot water out of hoses on the bottom and it melts the snow and sucks the water up into another tank' (Shea and Jack)

'the two big things at the front can push the snow to the side'... 'then they can lift up slide to the side and push it away from the side' (Matthew and Odhran)

Luke models his creation on something he is familiar with- exhibiting analogical thinking

Generating possible solutions

Using questions to stimulate creative thinking

Experimenting with ideas. Sharing and explaining ideas to each other

During the concluding plenary session, the teacher was delighted that children who had worked together were able to talk to class about their work, explaining their individual input and design features on the vehicle

Introducing a further design feature to extend thinking – a form of cognitive conflict

they had created. Children were challenged to think about whether or not the design features would be suitable if vehicles had to be moved when there was no snow. Children had inventive ideas about how the vehicles could be adapted for both situations – ‘the hoses can be rolled up inside the lorry’, ‘the brushes stay in a trap door under the truck and when the door opens they come out’, ‘you can put the big metal bit down or lift them up with a lever’.

Children make inventive responses

## Completion

Valuing the work

At the end of each session throughout this process, each piece of work was taken and stored carefully in the ‘Work Under Construction’ area. As work was completed, the vehicles were displayed with the plans, books and equipment used. By the end of the series of activities, children were so enthusiastic about their work, that they wanted to show them to other teachers and classes. Some children chose to use their vehicles during further play sessions, for example, in the sand, to test their strength. Others took parents in at home time to tell about their clever designs!

Evaluation of product

Reflection on product and process

## What the teacher said

Teacher self reflection

These lessons began from a topic that particularly interested the children. It offered them a challenge that was real, but allowed them the flexibility to be as creative and imaginative as they wished. The fact that I directed the activities only through providing materials and questioning the children, allowed them the freedom to plan their own work, explore their own ideas and those of their peers, and improve on these. The children put great thought into their planning, design and construction, and this resulted in a real sense of pride and achievement in their work. I felt that by allowing them the independence to think for themselves rather than guiding the process too rigidly, we both benefited. The children had a real sense of achievement in their work, and I have the confidence to allow them opportunities like this much more often.