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## **Life saving science: English four-year olds' understanding of injuries and the appropriate first aid treatment**

### **Summary**

This small study conducted by an experienced First aid instructor and science educator sought to establish a baseline pilot study of what actions were observed and identified as injuries and subsequent first aid. A class of 29 four-year-old children were shown 8 nine inch tall Teddy Bears, dressed as World War I pilots. Each Teddy Bear with a simulated injury was shown by the researcher to the child and asked, what could be done to help each injured Teddy. Their responses were recorded by writing and analysed by a read and re-read process with a goal to establish the categories of the child's rationale for their responses for reason of injuries and actions. A simple appropriate approach was then discussed with each child. The data indicated that children's main solution to treatment was to 'put on a band-aid'. The results showed that children had little comprehension of further treatment.

**Keywords:** science curriculum, first aid knowledge, young children, health education

### **Introduction**

Science curriculum is an appropriate place to introduce pupils of all ages to the basic concepts of first aid. The sciences are the obvious subject in which to incorporate the learning of first aid while the pertinent science concept is taught, such as gravity in the treatment of a haemorrhage, or forces in the cause of fractures (Tunnicliffe 2007). First aid has been taught traditionally by the voluntary societies as a mixture of theoretical instruction with basic human anatomy and physiology to explain causes and treatment of injuries. The model of instruction has been of lecture and demonstration with trainees involved in role-play and simulations as realistic as possible, "All work must actually be carried out as in real life, so far as is practicable..." (the Order of St John, 1992). Simulations such as those presented by the Casualties Union have provided realism.

Little is known when children begin to understand the importance of safety and keeping the body healthy, and what people can do to relieve symptoms of injuries as well as prevent them. We know that young children entering preschool at 4 years old have limited knowledge of the internal anatomy of organisms, knowing that there are a few organs, particularly the heart, brain, stomach and bones (Reiss and Tunnicliffe 1992). We also know that, as children mature, many of them acquire a greater knowledge of anatomy but understanding of systems and how they interrelate is lacking. However, there is little work

on the knowledge of first aid amongst young people. As children develop, they likewise acquire more first aid knowledge as described by the progression of first aid manuals. However, if first aid is to be incorporated within the formal curriculum in relevant subject areas, particularly science, it is thus a necessity to elicit the knowledge and beliefs that young children hold.

## **Rationale**

Children think and reason largely in the same way as adults but lack experience (Goswami and Bryant 2007) and respond at exhibits, to narrative, hands-on involvement and adults providing support (Russell 1999). Moreover, role-play is regarded as a leading learning activity between young children and adults (Rogers and Evans 2006) as well as being an important tool in science teaching (Parkinson 2002). Furthermore, 'pretending' is more effective when carried out with, and scaffolded by, an adult (Goswami and Bryant 2007). There is an overlap between experiences in the early years and the traditional teaching of first aid because of the ways in which children at this stage experience the world and learn best by role-play, simulation, and make believe as they act out ideas and fantasies, often based on something they have experienced in their life. Thus, I investigated young children's knowledge of some usual injuries illustrated by injury simulations on these familiar soft toys, and the actions they thought to be effective, through role-play and simulation, with an adult, and focused on 'injured' Teddy Bears.

## **Method**

From my observations over many years, I consider there to be an overlap between experiences in their early years and the traditional teaching of first aid. This small study sought young children's knowledge of first aid by investigation and simulation of role-play by an adult, and focused on injured Teddy Bears. Eight identical toy bears, in flying jackets, flying helmets and goggles were purchased from an Air Ambulance Charity and used in the simulations. Each of these 'Teddies' was 'treated' to simulate commonly occurring injuries, one per toy bear, such as a red streak of lipstick on a fore paw to represent a cut, and the injury was identified in words by the researcher as the start of the observation. Each bear toy was placed at a separate appropriate location within the Foundation Area. For example the 'unconscious' Teddy was placed outside play area at the foot of slide ladder.

The work was undertaken in the Foundation (Early years, 4–5 yr. olds) of a Community School in South East England. Attainment on entry in this school, as evidenced by the foundation stage profile published on the internet, was below average, particularly in language skills, incomes and education (Acorn 2007). All children attending preschool during this year had parents or guardians who signed a permission slip informing them of the research taking part in the study as the subjects of this investigation. No child was withdrawn. All children in the year were 'seen' individually during regular school sessions.



Photo. Teddy First Aid

Initial interviews were in the adjacent family room where some 'injured' teddies were positioned. The child was invited to hold and carry round a 'real' Teddy as we looked at the injured and asked what we could do to help. To engage the children and to encourage them to talk, a 'Teddy' was introduced to the child and asked by the adult if they would like to hold it and whether they had a Teddy at home. Once the child talked they were asked what Teddy could do to keep healthy and then with the researcher, looked at the injured teddies and talked about what we could do to help. Thus, the scenarios involved role-play and simulation, as in traditional first aid instruction. Responses were written on separate prepared sheets at the time. There were eight scenarios. The injuries were based on those in a questionnaire designed to elicit an existing understanding of first aid by the British Red Cross as a preliminary exercise before pupils follow their Life live it programme for secondary pupils (BRCS 2006). The injuries simulated were: a burnt paw, a bleeding paw, a piece of glass embedded in paw, the bear had fallen to the floor with a seizure, the bear had been knocked by a car, a bear being unwell having drunk some poison near the sink, an unconscious bear, the condition caused from a fall from the slide, and a leg fractured in a fall. A verbal scenario, supported by the 'injured Teddy bear' in an appropriate position, was used to put the injury into context was given at each 'casualty', such as 'Teddy has fallen over on a piece of glass which has stuck into his fore paw which is bleeding'. The injuries were simulated using everyday materials. For example; a burn was simulated with fixing a piece of small bubble wrap smeared with Vaseline and lipstick onto the paw of a bear. Twenty nine children were interviewed over a term. However, one child was an elective mute. She joined in the activity but did not verbally respond hence only 28 responses were analysed. After each 'accident' the child was told the appropriate age related treatment that they could undertake. The children focused on the injury, recall-

ing their own relevant experiences. Few thought and worked out a course of action. One child explained that their kitchen had been set on fire and another how they had been burnt and taken to hospital. The researcher checked the authenticity of the reported incidents. They were true. The children carried the teddy and fiddled with it whilst talking. The transcripts were read and re-read and categories of responses emerged. Four themes emerged from an identification of the categories of responses given by the children and transcribed to the injured incidents. The theme which emerged for treating the injury by the child at the injury, from the read re-read process, were not mutually exclusive. They were: Don't Know; Tell an adult, (usually Mother or doctor); Care for Teddy; Treat the injury/situation with an imaginary solution, or, most often, from their experience of their own injuries, usually applying a band-aid!

## Results

After analysis of the contents of the transcripts the data for each injury were recorded in Table 1. Those regarding the burn showed most information. The bleeding paw was treated by putting on a band-aid over the cut. When asked the children, they did not know how to use the telephone to call for help but the response, 'call the doctor' or 'take to doctor' was almost a mantra. Not all children answered the question about a source of treatment for each injury.

Table 1. Children's Sources of information about treating injuries

Injury	Family	TV	Just know	Dr/ hospital	Experience	Friend	School	Other	Total
Burn	7	1	1		1	1	2		13
Cut	16	1	1		2		1		21
Glass	16	1	1		1				19
Poison	6	3	4				1		14
Seizure	6		3		1	1			11
Unconscious-ness	7		3		1			1	12
Road Traffic Accident	9		1						10
Fracture	7		3	2					12

The detailed summary of responses from each child for the burn injury are shown in Table 2.

Table 2. These are example of responses of children's for the questions of treatments for a burn and their source of information

Ref no	Male or Female	Action	Responses to researcher's Statement	Treatment Suggested	Action comment	Other	Source
18	F		Confirmed	Put band aid			x
25	F	Picked up pencil	Help him			My nightie burnt	Just know
23	m				Help him		x
24	f			Put band aid			Mum
22	m				Take to doctor	Will give medicine, Mum give some to get better	Mum
21	f	Fiddled with the bear's clothes	None	None	None		D/K
3	f		Look, it's hot	None			D/K
2	f		D/know			Dad has been burnt. Skin came off. There was more skin under	
1	m		Got to save him		Call mum call doctor		Don't know, teacher
17	f			Get paper (why?) to cover and stop bleeding			My house
20	m			Put on band-aid. Feel his heart	To see if needs doctor, so put something in mouth (thermometer)		Mum
19	f				Go to doctor		Mum
18	f	Nods	How has he burnt?				x
16	m	Does he wear a wrist band		Have wrist band	Helps get your skin back		Teacher

Table 2. cont.

Ref no	Male or Female	Action	Responses to researcher's Statement	Treatment Suggested	Action comment	Other	Source
15	f		He burnt on kettle		Have to take to Dr	I put my finger on kettle, It was hot, I thought it cold had to put plaster on finger	Home
15.2		Action	Statement	Treatment Bandage	Action	Other	Source Had bandage fell over
12	m		He got burnt	Put bandage round not take it off		We got burnt on head, I put my head forward and fell in the fire & got burnt – on electric fire I was burnt on head chest, chin Showed my Granny ambulance came and took to hospital. I might have got dead	Experience – the child's teacher affirmed story
13	m		When you have a fire you go to hospital			How? Take your car, mum and dad drove	Home
14	m		Skin will rip off		Get an ambulance	Just phone and it will come (How mobile – don't know)	Saw on TV get an ambulance
11	f	Explained burn to burn. “Will he die? I said, no it hurts”	Teddy will help – fly and get him and pick him up			Our kitchen burnt down	Don't know
4	F			Put a plaster			Susie (friend)
5	F	I cannot remember	Take it off (polythene)				x

This simulated burn injury was the one to which more children provided personal information. Some children thought about the treatment. One sturdy little boy reasoned that best treatment for the fractured leg was, 'Cut it off'. He was of the opinion that the unconscious casualty should be 'left to die'. The reference to wear a wristband reflects this child's experience at home where a relative wore a medic alert bracelet.

The content of responses to all the simulated fell into four main themes:

1. Don't know – no experience or did not comprehend.
2. Tell an adult:
  - a. Mother/ teacher occasionally.
  - b. Call doctor.
  - c. Take to doctor.
  - d. Call an ambulance.
3. Care for teddy:
  - a. Give him a cuddle.
  - b. Make him better.
  - c. Give him a cake.
  - d. Give him another teddy.
4. Treat injury/situation:
  - a. An imaginary response.
  - b. No knowledge.
  - c. Experiential. The children have had some first hand experience of an accident to themselves – cuts and a few children knew about burns. Treatment most often was 'put on plaster', occasionally a bandage.
  - d. Instructional knowledge was evident from some children who had been told what to do, such as tell an adult.
  - e. Pragmatic. Few and far between. One boy in particular were very pragmatic and for example, the broken leg incident remarked 'Cut it off'.

## Conclusions

The findings were discussed with the Head teacher and the teacher in charge of the foundation stage curriculum. These findings provide a base on which effective teaching could develop for life skills and language as well as science, first aid and health education. These children did not know how to use the telephone and the school is now going to ensure that this is taught. Children who experienced the injury knew more about treatment. Language was an impediment. Unless children had experience of an injury they did not understand some words like 'burn', 'unconscious'. These had to be explained first. However, the data demonstrated that young children are aware of injuries and the need for treatment for them and are capable of reasoning within their experience and common sense. If helping children to feel safe but able to help in cases of accident is part of their educational entitlement, action in emergencies can be incorporated in a developmental sequence across the

curriculum to provide them with fundamental first aid knowledge and competencies which can contribute to the wellbeing of society.

## References

- Acorn <http://www.caci.co.uk/acorn/>).
- BRCS (2006), *Life. Live it. The case for First Aid Education in UK Schools*. British Red Cross Society, London.
- Goswami U., Bryant P. (2007), *Children's Cognitive Development and Learning Report 2/1a*. "Primary Review". Faculty of Education, University of Cambridge.
- Order of St John (1992), *General Regulations of the St John Ambulance Brigade*. Order of St John, London.
- Parkinson J. (2002), *Reflective Teaching of Science* 11–18. London, Continuum, 81.
- Reiss M.J., Tunnicliffe S.D. (2001), *Students' Understandings of Human Organs and Organ Systems*. "Research in Science Education", 31.
- Rogers S., Evans J. (2006), *Playing the game? Exploring role-play from children's perspectives*. "European Early childhood Education Research Journal", 14(1).
- Russell R.L. (1999), *Project Explore: Please Touch Museum and Harvard University's Project Zoo*. "Informal Learning", 37(1).
- Tunnicliffe S.D. (2007), *No time to teach life saving skills? Essential first aid within biology lessons*. "Journal of Biological Education", 42(1).