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Survey of Primary Schools Across Australia: An Examination of Key Water Safety Issues

Amy Elizabeth Peden, Richard C. Franklin, and Penny Larsen

Water safety education in Australia (including learn-to-swim) is mainly taught at the primary school level. There is increasing concern that water safety education is decreasing. This study aimed to gain a greater understanding of the barriers to providing water safety education in Australia. We surveyed a random sample of primary schools stratified by location, region, and school type. This qualitative survey collected information on activities, qualifications, safety issues and measures, and demographics. The four key issues that impacted on the provision and safety of school based water safety education were access to qualified staff, facility access, use of alternative aquatic environments, and the need for a best practice risk management approach. Improving the provision of targeted water safety information and increasing the number of people with aquatic qualifications both have the potential to increase the provision and safety of aquatic activity.

Children 6–12 years in Australia have traditionally received their water safety education (including as part of learn-to-swim programs) while at primary school (Morgan, 2005). Water safety education, in addition to being a drowning prevention measure, also potentially provides health benefits and physical fitness (Ntoumanis, 2001). Water safety advocacy groups in Australia are increasingly concerned that access to aquatic activity and water safety education is becoming restricted due to legal liability concerns, time, and cost constraints, increasing workloads, staff/student ratios, difficulties coping with varied skill levels, and a lack of adequately qualified staff (Australian Water Safety Council, 2008a; Cross, 1996; Whipp & Taggart, 2003).

Primary schooling in Australia is generally 6 or 7 years in duration (Pink, 2002). There are three categories of schools in Australia: public (run by the government), Catholic (run by the Catholic Church and administered by the Catholic Education Board), and independent (run as separate entities, often under a religious authority). There are eight key learning areas for primary school children in Australia: The Arts, English, Health and Physical Education (HAPE), Languages other than English, Mathematics, Science, Studies of Society and Environment, and Technology. The curricula for these areas are based on national guidelines, implemented by State and Territory Departments of Education (Curriculum Corporation, 1995). Water safety is located within the HAPE curricula. HAPE has

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been found to have broad health and social benefits such as improving learning speed and enhancing public health (Ntoumanis, 2001). HAPE also has the potential to improve self-esteem, social, psychological, and physical well-being in children as well as assist in the development of fundamental motor skills (Morgan, 2005).

Undertaking aquatic activities while at primary school in Australia is not without risk, although this risk is quite low. In Australia there have been only five drowning deaths during primary school-based aquatic activity within the last 48 years (Brookes, 2003). When the risks associated with school-based aquatic activity are compared with the lifelong benefits of improved health and fitness, motor skill development and knowledge of water safety, and survival skills, it is difficult to argue against its provision in school curricula.

While the risk of death is low, a number of issues have been identified that may pose barriers to student participation in, and school provision of, water safety education. These barriers include increasing teacher workloads, legal liability concerns, time and cost constraints, and difficulties in providing adequate numbers of appropriately trained staff, student/staff ratios, and coping with varied swimming skill levels (Cross, 1996; Whipp & Taggart, 2003). To determine if the issues identified by previous studies remain relevant today and to gauge if State-based research reflects concerns on a national scale, a pilot survey of primary schools across Australia was conducted.

The aims of this survey were to

- Gather information on the types of aquatic activities being undertaken by Australian primary school students,
- Gather information on the aquatic locations being used for school based aquatic activities,
- Explore safety and risk issues,
- Identify barriers to participation for both supervisors and students, and
- Identify measures employed by schools to address safety issues and/or barriers to participation.

Method

Participating Schools

All primary schools in Australia were identified through the Australian schools database developed by The Write Response and purchased in November 2007. The database of 10,042 schools throughout Australia contained school name, address, State/Territory, postal code, school level, school type, affiliation, department or private system code, region, telephone and fax numbers, e-mail address, principal's name, sex of students (girls, boys or coed), and socioeconomic status (The Write Response, 2007).

There were 7,837 schools with primary school aged students in attendance. Combined schools (that is schools that have both a primary and secondary school on the one campus) were excluded ($n = 1,076$), leaving a group of 6,761 primary schools. A random selection of 91 primary schools, stratified by location (State

and Territory), region (metropolitan or country), and type (public or private) to ensure a representative sample of schools was generated (Table 1). School type in this study was divided into two categories, public and private (which included both Catholic and independent schools).

Instrumentation

A qualitative telephone survey was conducted over a period of 3 weeks during November of 2007. Each of the 91 schools were contacted via telephone and invited to participate in the survey. All questions were open ended to allow for a range of responses from the school; discussions were transcribed verbatim and then coded by the authors into categories for analysis purposes. Schools that did not respond initially were contacted a second time. Schools that did not participate in a survey on the second attempt were contacted for a third time. After the third attempt, there remained 26 schools (28.6%) that had not participated in a survey within the timeframe of this project. Responses were primarily sought from a Personal Development, Health and Physical Education (PD/HAPE) teacher, principal or assistant principal, or teacher from the school that had experience with the school's aquatic program. Respondents were initially asked if their school conducted any aquatic activity. If no aquatic activity was undertaken at the school, a reason was sought. Demographic information on the respondent was collected (sex and position at the school). The respondent was then thanked for their participation and the survey was terminated ($n = 4$).

Respondents whose school did conduct aquatic activity were then asked a series of qualitative questions exploring a number of different areas. These areas

Table 1 Breakdown of Schools Contacted for Survey (N = 6,761)

	Original	Selected	%	Surveyed	% Selected Surveyed
ACT	88	2	2.3	2	100.0
NSW	2204	33	1.5	21	63.6
NT	117	2	1.7	2	100.0
QLD	1219	9	0.7	7	77.8
SA	556	6	1.1	4	66.7
TAS	181	2	1.1	2	100.0
VIC	1698	25	1.5	19	76.0
WA	698	12	1.7	6	50.0
Public	5073	66	1.3	47	71.2
Private	1688	25	1.5	16	64.0
Catholic	1259	19	1.5	12	63.2
Independent	429	6	1.4	4	66.7
Country	3638	42	1.2	33	78.6
Metro	3123	49	1.6	30	61.2
Total	6761	91	1.3	63	69.2

included types and extent of aquatic activity, types of aquatic locations, safety issues (qualifications held and whether teaching was outsourced), safety measures (measures employed to address safety concerns and sources of safety information commonly accessed), and demographic information. A set of standard questions was used for each survey conducted and responses were classified into themes. If greater detail on an individual school's experiences or additional relevant information was offered by the respondent during their participation in the survey, this information was recorded in a Word document. The information gathered from each survey was entered into an Access database, coded, and the data were analyzed using SPSS (SPSS, 2005). The specific statistical tests included Pearson Chi-Square and Fisher's Exact Test. As this survey was designed as a pilot to determine responses, no initial power calculations were undertaken. However, based upon the sample ($N = 59$) and effect size (population proportion = 0.60, tested against a constant of 0.50) and alpha < 0.05), we had the statistical power to detect a difference of 0.340 (Power and Precision, 2007).

Limitations

As a pilot, this survey identified issues that should be considered in the design of future studies. For example, school policies were an example of a commonly employed safety measure in the schools surveyed. Detailed information about the policies, how they were communicated, and if the school was complying with the policy was not collected. Similarly, information on staff qualifications relevant to school based aquatic activity did not determine whether the qualifications were current. It also became clear during the study that many of the respondents were unaware of the qualifications held by other teachers. While a representative sample was used, and trends were identified within the sample, the numbers were not statistically significant and the results of the pilot survey would need to be further tested in a larger scale study. This survey was also undertaken by RLSSA and this may have biased the results as the respondents may have known about the organization and its aims. It should be noted that the findings of this survey represent the views of the individual respondents and are not necessarily indicative of the views of the school or the Education Department in the respondent's State or Territory.

Results

Of the 91 schools contacted, 63 participated (69.2%), two schools refused to participate, and 26 (28.6%) schools failed to provide the appropriate person to interview (Table 1). The majority of respondents (74.6%) were from public schools and most had the dual role of Class Teacher and HAPE Coordinator (22.2%), followed by Deputy Principals (4.3%; Table 2).

Of the 63 completed surveys, four (6.3%) did not conduct any aquatic activity. Reasons for this were lack of access to aquatic facilities, lack of interest in school based aquatic activity among students, insufficient funds, and lack of qualified staff. Of these four schools, three were located in a rural location. Two of the schools were private schools (Western Australia and New South Wales) and two were public schools (Queensland and New South Wales). Of the 59 schools (93.7%) that conducted aquatic activity, the most commonly used aquatic location

Table 2 Position Held by Respondents (by School Type and Region; N = 63)

	Public (n = 47)		Private (n = 16)		Country (n = 33)		Metro (n = 30)		Total (n = 63)	
	N	%	N	%	N	%	N	%	N	%
Principal or deputy principal	18	38.3	2	12.5	11	33.3	9	30.0	20	31.7
Class teacher with HAPE responsibilities	14	29.8	5	31.3	11	33.3	8	26.7	19	30.2
HAPE teacher and/or HAPE coordinator	12	25.5	6	37.5	8	24.2	10	33.3	18	28.6
Administration	3	6.4	3	18.8	3	9.1	3	10.0	6	9.5

Table 3 Aquatic Locations Utilized (by School Type and Region; N = 59)

	Public (n = 46)		Private (n = 13)		Country (n = 32)		Metro (n = 27)		Total (n = 59)	
	N	%	N	%	N	%	N	%	N	%
Public pool	42	91.3	11	84.6	29	90.6	24	88.9	53	89.8
Beach	11	23.9	4	30.8	10	31.3	5	18.5	15	25.4
Lake	8	17.4	0	0	4	12.5	4	14.8	8	13.6
River	6	13.0	1	7.7	6	18.8	1	3.7	7	11.9
Private pool	4	8.7	1	7.7	2	6.3	3	11.1	5	8.5
Dam	2	4.3	0	0	2	6.3	0	0	2	3.4
School pool	1	2.2	1	7.7	2	6.3	0	0	2	3.4
Other *	7	15.2	2	15.4	6	18.8	3	11.1	9	15.3

*Other includes aquatic locations used by respondents included creeks, harbors and mangrove swamps.

Note. Schools could utilize more than one aquatic location.

was the public pool (89.8%), followed by the beach (25.4%) and a lake (13.6%). Public schools were more likely to use lakes for aquatic activity while rural country schools were more likely to use a river (Table 3).

The learn-to-swim program was the most commonly undertaken aquatic activity at Australian primary schools (93.2%), and a majority of respondents (81.8%) believed it was curriculum-based. Excursions that included aquatic activity (66.1%) and swimming carnivals (61.0%) were also common aquatic activities

(Table 4). Canoeing was conducted by both public and private schools and in both rural and metropolitan areas. Only one respondent believed the canoeing and water carnival activities were curriculum based.

Aquatic activity was outsourced at 88.1% of schools surveyed, with a significant difference when stratified by school type ($p < .05$, $p = 0.017$), but not by region ($p = .869$). Aquatic activities were most commonly outsourced to commercial learn-to-swim teachers (36.5%), followed by Education Department appointed swim teachers (21.2%), and teachers from the community (19.2%), all who were required to hold approved water safety qualifications. AUSTSWIM and the Bronze Medallion are nationally recognized swimming and water safety qualifications in Australia (Australian Council for the Teaching of Swimming and Water Safety, 2005; Royal Life Saving Society Australia, 2006).

Of the schools where aquatic activity was outsourced, 40.4% checked the qualifications of those who provided instruction. Reasons provided for not verifying qualifications included that the respondents believed that the pool facility used had checked their staff's qualifications (45.2%) or that the Education Department had checked (32.3%).

Respondents were also surveyed to determine the water safety qualifications held by staff at their school. The most common qualification held was first aid (96.6%), followed by cardiopulmonary resuscitation (CPR; 89.8%) and AUSTSWIM credentials (47.5%). There were no statistically significant differences when stratified by school type and region; however, AUSTSWIM qualifications were more likely to be held by teachers employed at public schools (Table 5).

There were a number of safety issues respondents believed were associated with undertaking primary school based aquatic activity. The most common safety issue identified was a lack of qualifications among staff (25.4%), followed by large class sizes (18.6%) and a lack of resources (16.9%). With respect to school type, public schools cited a lack of resources and a lack of equipment as key issues in delivering aquatic activity, as did schools in a metropolitan region (Table 5).

Respondents were also asked to identify measures employed by the school to improve the safety of aquatic activity. Of the 48 (81.4%) schools, the most common measures employed were risk assessments (42.9%), adopting the pool's safety policies (26.5%), and the use of emergency action plans (22.4%). Public schools were more likely to employ a risk assessment as a safety measure, whereas smaller instructor-student ratios were more likely to be employed by private schools. Other safety measures adopted included medical checks, instructor-student ratios, classroom based water safety, emergency action plans, and pool safety policies (Table 6).

Respondents accessed important water safety information from the Royal Life Saving Society Australia (RLSSA; 47.5%), the Education Department (39.0%), and the Internet (37.3%). Public schools were more likely to consult the Education Department for water safety information, while private schools commonly used RLSSA and the Internet. When stratified by region, metropolitan schools were more likely to use the Education Department for information, while rural country schools were more likely to access alternative sources of information compared with schools from metropolitan locations (Table 5).

Table 4 Activity Conducted and Curriculum Based (N = 59)

	Public (n = 46)			Private (n = 13)			Country (n = 32)			Metro (n = 27)			Total (n = 59)		
	N	CB	% CB	N	CB	% CB	N	CB	% CB	N	CB	% CB	N	CB	% CB
Learn to swim	44	37	84.1	11	8	72.7	32	25	78.1	23	20	87.0	55	45	81.8
Excursions	32	16	50.0	7	3	42.9	22	11	50.0	17	8	47.1	39	19	48.7
Swimming carnivals	26	14	53.8	10	1	10.0	22	9	40.9	14	6	42.9	36	15	41.7
Recreation	23	7	30.4	4	2	50.0	13	3	23.1	14	6	42.9	27	9	33.3
Competitive swimming	18	7	38.9	4	2	50.0	16	7	43.8	6	2	33.3	22	9	40.9
Canoeing	8	1	12.5	2	0	0.0	6	0	0.0	4	1	25.0	10	1	10.0
Other *	9	5	55.6	4	2	50.0	8	5	62.5	5	2	40.0	17	9	52.9

CB= Curriculum Based, * Other activities conducted included: diving, rowing, water polo, marine ranger program, surf education course, water safety (rescue skills), boat safety, surfing, sailing and windsurfing.

Note: respondents could conduct more than one activity at their school.

Table 5 Qualifications Held by Respondents, Safety Issues, and Sources of Water Safety Information Accessed (N = 59)

	Public (n = 46)		Private (n = 13)		Country (n = 32)		Metro (n = 27)		Total (n = 59)	
	N	%	N	%	N	%	N	%	N	%
<i>Qualifications</i>										
First Aid	45	97.8	12	92.3	31	96.9	26	96.3	57	96.6
Resuscitation	41	89.1	12	92.3	31	96.9	22	81.5	53	89.8
AUSTSWIM	25	54.3	3	23.1	19	59.4	9	33.3	28	47.5
Bronze Medallion	18	39.1	6	46.2	18	56.3	6	22.2	24	40.7
Pool Lifeguard	1	2.2	0	0	1	3.1	0	0	1	1.7
<i>Safety Issues</i>										
Qualification issues	10	21.7	5	38.5	8	25	7	25.9	15	25.4
Large class sizes	6	13.0	5	38.5	5	15.6	6	22.2	11	18.6
Lack of resources	10	21.7	0	0	4	12.5	6	22.2	10	16.9
Supervision ratios	4	8.7	4	30.8	4	12.5	4	14.8	8	13.6
Lack of equipment	7	15.2	0	0	2	6.3	5	18.5	7	11.9
Other *	3	6.5	0	0	1	3.1	2	7.4	3	5.1
<i>Sources of Water Safety Information</i>										
Royal Life Saving Education department	24	52.2	4	30.8	14	43.8	14	51.9	28	47.5
Internet	19	41.3	3	23.1	12	37.5	10	37.0	22	37.3
AUSTSWIM	10	21.7	1	7.7	6	18.8	5	18.5	11	18.6
Own school resources	7	15.2	1	7.7	4	12.5	4	14.8	8	13.6
Surf Life Saving	4	8.7	0	0	2	6.3	2	7.4	4	6.8
Other #	5	10.9	2	15.4	5	15.6	2	7.4	7	11.9

* Other safety issues included cost and a lack of interest, a lack of staff knowledge about aquatic locations used and students with disabilities and allergies (sea lice). # Other sources of water safety information accessed by respondents included public library, Boating Victoria, locally employed lifeguards presenting talks, local pool water safety information, city councils, sport and recreation organizations and boating safety groups.

Discussion

Swimming and aquatic activity in Australia are part of the social makeup of the country (Australian Water Safety Council, 2008b). To maximize the safety of people in, on, and around the water, water safety education needs to be widespread and widely available (Australian Water Safety Council, 2004). This survey identified a number of issues that may have an impact on the provision of aquatic activity at Australian primary schools and the safety of that activity. The issues

Table 6 Safety Measures (N = 49)

	Public (n = 37)		Private (n = 12)		Country (n = 26)		Metro (n = 23)		Total (n = 49)	
	N	%	N	%	N	%	N	%	N	%
Risk assessment	17	45.9	4	33.3	11	42.3	10	43.5	21	42.9
Pool policy	9	24.3	4	33.3	8	30.8	5	21.7	13	26.5
Emergency action plans	8	21.6	3	25	7	26.9	4	17.4	11	22.4
School's safety policy	8	21.6	2	16.7	6	23.1	4	17.4	10	20.4
Departmental policies	7	18.9	2	16.7	5	19.2	4	17.4	9	18.4
Supervision ratios	3	8.1	2	16.7	2	7.7	3	13.0	5	10.2
Other #	1	2.7	1	8.3	1	3.8	1	4.3	2	4.1

* Some respondents used more than one safety measure at their school. # Others include medical checks and classroom based water safety measures.

included qualified staff, facility access, the use of nonpool aquatic environments, and the need for a best practice risk management approach to school based aquatic activity.

Lack of Qualified Staff

The lack of qualified staff at primary schools who are both able and willing to undertake instruction of aquatic activity, in particular conducting learn-to-swim programs, was a key issue identified. This was one of the reasons why schools outsource their learn-to-swim program. Reasons for the lack of qualified staff included the small number of people with qualifications, difficulty in accessing training, and difficulty in maintaining currency of qualifications. Some of the difficulties in maintaining the currency of qualifications relate to the workloads of teachers.

Respondents also noted that teachers and supervisors who did not hold water safety qualifications were less confident in instructing or even getting in the water. Several respondents stated that qualified graduates holding water safety qualifications would be highly regarded. An increase in trained staff might allow a school to offer more aquatic programs with confidence. Some schools use appropriately qualified volunteers to support their water safety programs. The use of volunteers who had experience in aquatics and who held appropriate water safety qualifications, provided important assistance in maintaining safe supervision ratios. As a means of addressing qualification issues, greater focus should be given to incorporating water safety education into the curricula of prospective teachers and providing support for student teachers to attain and maintain their water safety qualifications. Further work needs to be undertaken to determine if an increase in the number of graduate teachers (or teachers more generally) with water safety

qualifications and experience would facilitate an increase in the number of primary schools conducting aquatic activity and how volunteers can also be used effectively to increase aquatic programs.

Lack of Facility Access

Swimming pools (89.8%) were most commonly used for school-based water safety programs. Ability to access aquatic facilities was identified as a barrier to participation in water safety programs. This included the identification of appropriate venues, travel to and from the venues, the need to undertake risk assessments, and costs (including entry and transportation). The survey identified that few schools (3.4%) had a pool on their grounds. Venue choice was often conducted based on the proximity of the facility to the school to reduce time and costs associated with transporting students. Travel to aquatic venues away from the school was also a health and safety issue. Travel off school grounds was considered an excursion (New South Wales Department of Education and Training, 2004), and as such a risk assessment had to be conducted which added to the already high workload of teachers.

To maximize participation rates, school based aquatic activity should be made accessible to all students, regardless of socioeconomic background (Cross, 1996). Therefore, costs associated with transport and entry to the venue should be minimized or subsidized to ensure all students can afford to participate. Increasing the number of aquatic facilities on school grounds may help to increase participation. Public-private partnerships may be one method of increasing the number of aquatic facilities at schools. A partnership might allow a pool to be built on school grounds and the facility shared between the students and staff and the wider local community (Social Responsibilities Committee, 2006). The school might negotiate access during school hours, with the daily operations of the pool being managed by a private body. Further research into existing models may maximize successful implementation within specific contexts.

Use of Other Aquatic Environments

The use of different aquatic environments affords students the opportunity to broaden their water safety education by undertaking practical experiences in varied water bodies. Hazards and risks are different at each aquatic environment and a tailored risk management assessment should be conducted before undertaking any activity. Beaches, lakes, rivers, and dammed up streams were all different aquatic environments used for school based aquatic activity according to this survey. Rivers were a common environment for water safety education at rural country schools (18.8% compared with just 3.7% of metropolitan schools). As patterns of usage and environmental characteristics of rivers vary and they have been identified as high risk locations (Australian Water Safety Council, 2008a; Franklin, Simmonds, & Peden, 2008), the delivery of river-specific water safety information to rural schools is an important safety measure. RLSSA, as the most commonly accessed source of water safety information, is well placed to disperse this information through its regional branches.

Risk Management

It is important that risk management practices be incorporated into all aquatic based activities to reduce the risk of drowning and improve water safety. A variety of measures are currently used to ensure safety when undertaking school based aquatic activity. Though risk assessments were the most commonly used measure (42.9%), other safety measures were identified that included identifying and following pool safety policies, enforcing school based emergency actions plans, and school and departmental safety policies. Some schools employ a combination of measures to minimize safety risks to participants.

The variety of safety measures identified in this survey suggests that there is a lack of clarity about appropriate safety measures. There are a number of legislative documents and Department of Education policies and guidelines relevant to aquatic activity. These documents are in place to improve the safety of school based aquatic activity by addressing some of the issues identified in previous studies (Peden, Franklin, & Larsen, 2008). Safety measures should be employed within a broader risk management approach to health and safety. This approach should represent best practice and be used by all schools that conduct aquatic activity.

Conclusion

The provision of water safety education is considered an important aspect of health and physical education in Australian schools. While the number of drowning fatalities during primary school aquatic activity has been extremely low, a risk management approach to aquatic activities still needs to be undertaken. Improved water safety information, particularly targeting river safety at rural schools, is required. Support should also be provided to encourage school staff to gain and maintain current water safety qualifications as a means of improving the provision of and participation in school based aquatic activity for both students and supervisors.

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