

Swimming and water competence in children's books: A pathway to knowledge transfer?

MAILA VOGEL¹, ILKA STAUB², ROBERT KEIG STALLMAN³, TOBIAS VOGT⁴

^{1,2,4}Institute of Professional Sport Education and Sport Qualifications, German Sport University Cologne,
GERMANY

³Norwegian School of Sport Science, NORWAY

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Abstract:

Learning to swim promotes lifelong engagement in aquatic physical activity. Such engagement is defined as one of the six interventions identified by the World Health Organization (WHO, 2017) and is frequently considered to be prominent among those (Brenner et al., 2006; Stallman et al., 2014; WHO, 2014). The WHO emphasizes the importance of swimming and water safety, highlighting the alarming statistics of 320,000 drowning deaths annually making it the '3rd leading cause of unintentional injury death worldwide' (WHO, 2020a). Experts, in fact, estimate that the real annual drowning incidence may be 2-3 times greater, or even more i.e., perhaps over one million (Peden et al., 2008), more than the annual burden of death by HIV related causes (WHO, 2020b) and nearly the same as the number of traffic deaths (WHO, 2018). Education is an integral part of learn-to-swim. Children's books in general share everyday knowledge and can, therefore, help to partly educate our children, since the connection between learning to swim and reading is greater than expected. Strouse et al. (2018, p. 4) suggest 'particular features of picture books [...] may influence children's tendency to learn and to transfer the educational content to real-world situations', which will be examined by this study. Learning to swim is a common subject of children's books. How the reader is influenced in what should be learned, is objective of this article. Thus, this pilot study aims (a) to assess to which extent children's books convey the chosen criterion (i.e., Water Competence (WC)), (b) to evaluate which of the essential elements are most and least often included in the selected books, (c) to explore how both text and illustrations are used and (d) an attempt to create a model from which future research may be more broadly and inclusively conducted. By means of a descriptive analysis, the content of children's books is compared with criteria from expert literature. The tentative results suggest that books show a great variation among criterion, if included, in text, illustrations and added material. The knowledge about swimming mediated by this genre may not be sufficient to educate safety and prevention to society.

Key Words: children's literature, learn to swim, content of learning, everyday knowledge, education

Introduction

Though Langendorfer (2011, p. 242) describes a 'dynamic and shifting nature of 'can swim'', previous research shows that the ability to swim primarily addresses water safety, including economic movement and knowledge of risk and drowning prevention (Moran, 2013; Stallman et al., 2008; Stemper & Kels, 2016). Since there is no standard definition or assessment to specify the moment to be defined as a swimmer (Brenner et al., 2006; Moran et al., 2012), the need for a standardized definition is emphasized by Quan et al. (2015, p. 14): 'For educational purposes we need to objectively understand when a swimmer is really a swimmer'. Moran et al. (2012) argues to avoid the complexity and variation of such definitions by simply asking what we should teach. Even though certain programs include similar components, the variety of skills found in aquatic education programs often presents challenges (Lepore et al., 2015). Among other things, one goal of the original Water Competence (WC) project (Stallman et al., 2017) was that by identifying research evidence-based water competencies, this great variety of educational content might be reduced (Fokken, Staub, & Vogt, 2023; Vogt & Staub, 2020). In order to have a fixed standard as our reference to expert opinion within this pilot study, the concept of WC as described by Stallman et al. (2017) is used as the criterion reference i.e., the standard against which children's literature is compared in this analysis.

This concept by Stallman et al. (2017) was selected because the water competencies finally recommended were first identified among those included by a number of national and international organizations. These water competencies were then screened in a comprehensive literature search for research evidence showing their protective value. The competencies include psychomotor, affective and cognitive aspects, all of which are considered of roughly equal 'protective' value. Whether these categories of water competencies are equally transferred by the selection of children's books is also part of the analysis. Table 1 shows an allocation of the 15 water competencies into the four categories of motor/physical skills, enhanced motor skills, affective skills, and cognitive skills.

Table I: Four Categories of Water Competencies

No	Water Competence	Category
1	Safe entry competence a. a) Entry into water b. b) Surface and level off	Motor/physical skill
2	Breath control competence Integrated and effective breathing	Motor/physical skill
3	Stationary surface competence a. a) Buoyancy control: floating b. b) Treading water	Motor/physical skill
4	Water orientation competence a. a) Roll from front to back, back to front b. b) Turn, L&R, on front & back	Motor/physical skill
5	Propulsion competence a. a) Swim on front b. b) Swim on back and/or side	Motor/physical skill
6	Underwater competence a. a) Surface dive b. b) Underwater swimming	Motor/physical skill
7	Safe exit competence	Motor/physical skill
8	Personal floatation device (PFD/lifejacket) competence	Enhanced motor skill
9	Clothed water competence	Enhanced motor skill
10	Open water competence	Enhanced motor skill
11	Knowledge of local hazard competence	Cognitive & affective skill
12	Coping with risk competence – Awareness, assessment, avoidance	Affective skill
13	Assess personal competence	Cognitive skill
14	Rescue competence a. a) Recognize a drowning person b. b) Assist a drowning person safely	Enhances motor & affective skill
15	Water safety competence a. a) Attitudes b. b) Values	Cognitive skill

Brenner et al. (2006) had previously argued that while skill is an important part of WC, it is often not enough on its own to prevent drowning. Quan et al. (2015, p. 14) described the concept of WC by stating that the authors had ‘argued eloquently for a goal-oriented learn-to-swim framework organized around the causes of drowning and focused on developing water competence’.

Khu et al. (2016, p. 74) suggest that ‘it is widely assumed that infants, like older children, learn about the world from [...] picture book interactions.’ This idea is the basis for the approach that children’s literature can generate an everyday knowledge on a particular topic. Consequently, we can then compare this everyday knowledge to the selected criterion standard. Some characteristics of this genre are ‘simplicity of form and theme’ (Hintz, 2020, p. 8), a ‘shorter, simpler structure’ (Hintz, 2020, p. 10), a ‘contrived vocabulary’ (Schneider, 2016, p. 9) and, according to Brookshire et al. (2002, p. 4), they contain pictures and ‘use fewer words and less difficult syntax’. Concerning their content, Hintz (2020, p. 14) states that it ‘best captures the physical, psychological, or existential experience of childhood’. A large subcategory of children’s books are picture books (Schneider, 2016), in which the images dominate, characterizing our understanding of the content (Kurwinkel, 2020; Pringle & Lamme, 2005). Khu et al. (2016, p. 74) point out that ‘in Western societies, picture books are amongst the most common symbolic media that infants and young children encounter in their daily lives’. Thus, they find that children’s literature influences our society and, therefore, this genre can be used to draw conclusions about the mediation of a certain subject. Weinkauff and Von Glasenapp (2014) as well as Schneider (2016) suggest that the socialization and civilization of children is possible through this genre and that their aim is to mediate expertise. Since children’s literature is often read together with parents, such knowledge is anchored in that society, across generations.

The aims of this pilot study are to compare the content of British children’s books to a standard criterion which has gained considerable professional acceptance since its publication in 2017, to adapt our framework to the original concept of WC to enhance descriptive analysis, and to construct a model which can be used for further research.

Material & methods

This study is based on empirical evidence which compares children’s literature with a criterion standard. This was selected from the pertinent literature. To assist in the selection of children’s books which are eligible for analysis, elements of the PRISMA Statement are used (Moher et al., 2009). Table 2 identifies the essential

elements of the concept of WC. This is the criterion against which the contents of the children's books are compared.

The search of children's books explored three online databases: Powell's, The British Library and Simon & Schuster. Additional sources included one representative British family and various websites. The British family lives in London with a two-year-old son. Among the four websites used as additional sources there are three which publish lists and rankings of the best books to help children to learn how to swim. Most of the results are found by using the fourth website, Amazon UK. During the search of all databases, the same four combinations of keywords are employed. They are linked by the Boolean operator 'and' since the genre of children's literature and the subject of swimming are included. The keywords used are children's books and swim, swimming, or learn-to-swim. The fourth combination is expanded by the placeholder '*', which includes all forms of a word in a more advanced search. During the search, Amazon is treated equally with the above-mentioned databases. Note that the Amazon algorithm automatically reduces the number of results displayed. By including all results of the databases and the additional sources the literature search yields a total of 625 books.

Inclusion Criteria

To further refine the selection process, all records are sorted by individual criteria, which implement the remaining phases of the PRISMA Statement. Of collectively 625 English language books, 11 books are taken into consideration for the analysis. With the help of the following criteria – shown in Figure 1 – the selection of the children's literature is further refined in six excluding steps.

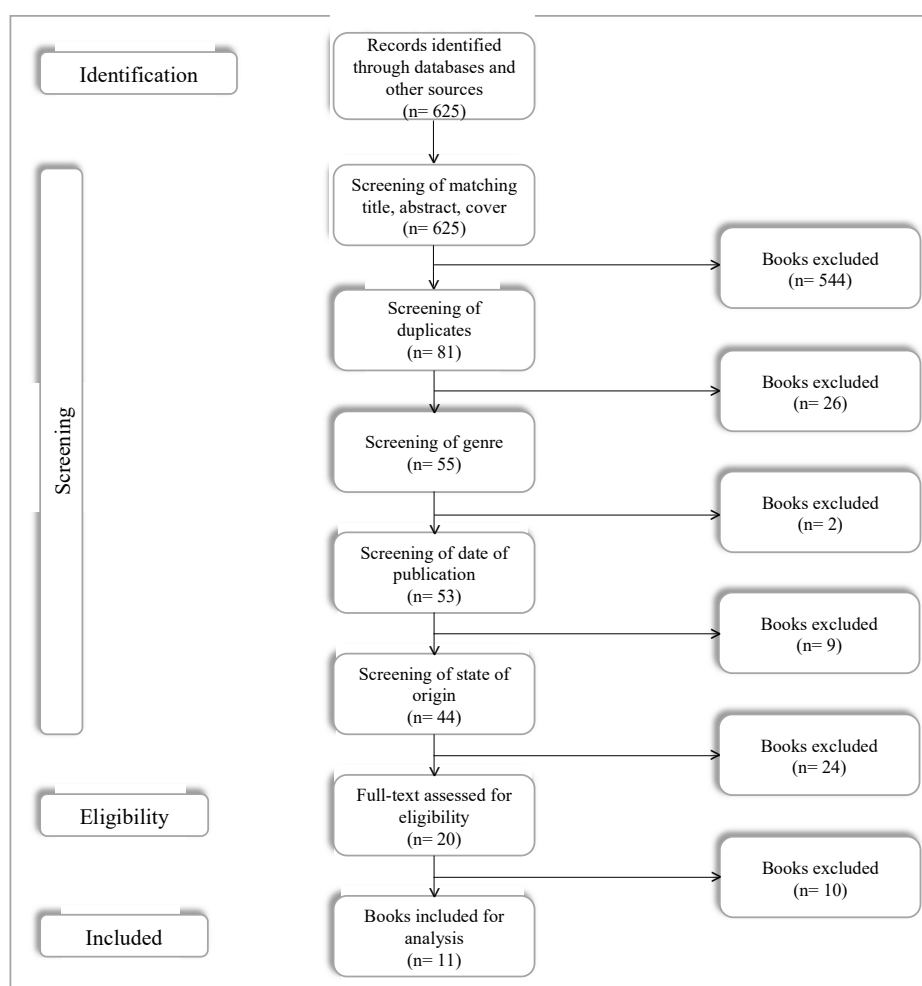


Figure 1: Flowchart of selection process of children's books

As the first step (1), the titles, covers and short abstracts of each children's book were examined. In a next step (2), all duplicates were removed, as the 81 books result from different databases. Next (3), the genre of children's literature was tested. The fourth step (4) considered the date of publication. All books, which are published before 1997 were eliminated as they are compared to expert literature from 2017 and should not be older than 20 years for that comparison. Next (5), the nation of origin of each book was taken into consideration. British literature only was included. Finally (6), those books remaining were assessed by their full text for eligibility. Books which did not include specific water competencies allowing analysis, were excluded.

Scoring System

In addition to recording the frequency with which the analyzed books have conveyed the 15 water competencies, a scoring system has been constructed. The scoring system is based on the notion that as described by Stallman et al. (2017), all of the 15 water competencies are of roughly equal value. The scoring system had to be adapted to the original list of 15 water competencies given that the original list was not designed to be used for this purpose. Several water competencies have three sub-competencies, others have two and some have no sub-competencies (i.e., there is a single descriptive phrase). In Table 2 there are, thus, a total of 27 instead of 15 water competencies.

Table II: The expanded elements of Water Competence

No	Water Competence	Sub-Competencies
1	Safe entry competence	
	1.1 Entry into water	1
	1.2 Surface and level off	2
2	Breath control competence	
	2.1 Controlled inhalation	3
	2.2 Controlled exhalation	4
	2.3 Rhythmic breathing	5
3	Stationary surface competence	
	3.1 Floating on front	6
	3.2 Floating on back	7
	3.3 Treading water	8
4	Water orientation competence	
	4.1 Roll from front to back, back to front	9
	4.2 Turn, L&R, on front & back	10
5	Propulsion competence	
	5.1 Swim on front	11
	5.2 Swim on back	12
	5.3 Swim on side	13
6	Underwater competence	
	6.1 Surface dive	14
	6.2 Underwater swimming	15
7	Safe exit competence	
8	Personal floatation device (PFD/lifejacket) competence	
9	Clothed water competence	
10	Open water competence	
11	Knowledge of local hazard competence	
12	Coping with risk competence –	
	12.1 Awareness & assessment	16
	12.2 Avoidance	17
13	Assess personal competence	
14	Rescue competence	
	14.1 Recognize a drowning person	18
	14.2 Assist a drowning person safely	19
15	Water safety competence	
	15.1 Attitudes	20
	15.2 Values	21
	15 – Water Competencies	
	21 – Sub-Competencies	
		27 – Total

For example, WC 1, Safe Entry, includes the entry itself as well as surfacing and levelling off. WC 2, Breath control competencies, includes controlled inhalation, controlled exhalation, and rhythmic breathing. WC 8, Use of personal floatation devices has no sub-competence and, thus, has only a single descriptive phrase.

In addition to the starting point described, in this article we also wish to further refine the analysis by recording whether the books analyzed included text, pictures, both or neither, when referring to each of the water competencies. We also recorded whether additional relevant material was included in the form of an appendix or attachment (some included e.g. a list of safety rules in the appendix, not as part of the text). Whether a given competence or sub-competence has been included in each book is noted by a text (T), picture (P), or additional material (M) – or some combination of these. On the right side of the table, the first column of findings lists the number of books (of the 11 analyzed) in which each of these water competencies or sub-competencies have been represented (from 0 to 11). The second column on the right lists the total only for each of the 15 water competencies. To equate the 15 water competencies numerically each was assigned the value of nine points. A WC with no sub-competencies can receive a maximum score of nine. A WC with two sub-competencies can receive

4.5 points for each = 9. A WC with three sub-competencies can receive a maximum of 3 for each, times 3 = 9 – times 11 books = 99 (maximum total score).

We recorded the number of books which included each of the sources of information (T, P, M) as well as the number of water competencies which were included in each book. For example, WC 1, having two sub-competencies, has a maximum score of 4.5 for each sub-competence if all of T, P and M are present. In the case of WC1.1 only two of the three sources convey this competence and, thus, the score is 3 ($4.5 \times 2/3$).

Methods for statistical evaluation

In addition to the descriptive analysis of the data by using the scoring system, some of the data can further be analyzed in more detail using various tests. Two types of chi square tests are used to statistically substantiate the data. First, the chi square test is used as an adaption test to determine whether the distribution of the books corresponds to the assumed uniform distribution. Second, the chi square test is used for correlation analysis.

Results

Frequency of inclusion of the 15 Water Competencies among the 11 books and use of T, P and M

The frequency of inclusion of the 15 water competencies in the books analyzed, varies considerably. Those water competencies most frequently included are No. 5 – Swimming on the front, or back or side; ten books include at least one of these. No. 2 – Breath control, is included in nine of the 11 books. No. 1, Entry, and No. 12, Coping with risk, are included in seven of the 11 books.

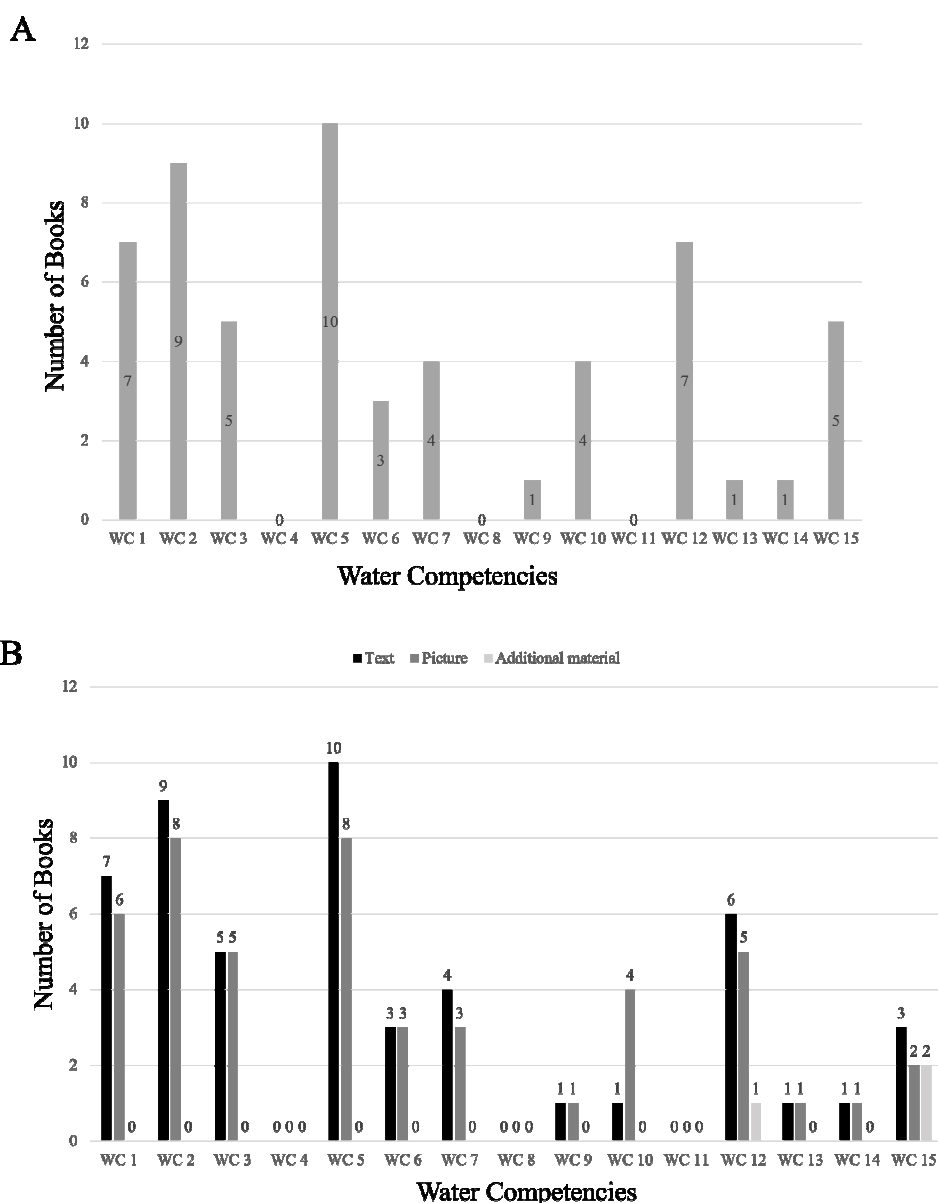


Figure II: Frequency of books including the various Water Competencies and the use of T, P and M

As can be seen in Figure 2, for six of the water competencies (WC's 1, 2, 5, 7, 12, and 15), text is more frequently used than pictures. In five cases, the number of books including both text and pictures are the same (WC's 3, 6, 9, 13, and 14). In only one case (WC 10) are pictures more frequently used than text. Water Competencies 4, 8 and 11 are not represented in any of the books. It also demonstrates that the use of text and pictures is quite similar even when not the same. For example, Entry (WC 1) is depicted by text in seven of the books while pictures are used in six of the books. Entry is also among those water competencies most frequently presented. Additionally, WC 12 and WC 15 are represented in one book and in two books, respectively, by additional material for example in the form of an appendix. Since the test conditions do not match here, firstly the category of additional material must be removed and only text and pictures are considered in this evaluation. Furthermore, the number of zero values is exceeded, so to meet the test requirements, the Fisher test is applied to correct the data. Picture and text representation did not depend on the water competencies (Chi-square (11) = 2.433, $p = .996$, $n = 98$).

Frequency of inclusion of the Sub-competencies among the 11 books and use of T, P, and M

As discussed, some of the water competencies (9 of the 15) are described by two or three descriptive phrases (the 21 sub-competencies). Figure 3 presents the number of books which include the various sub-competencies.

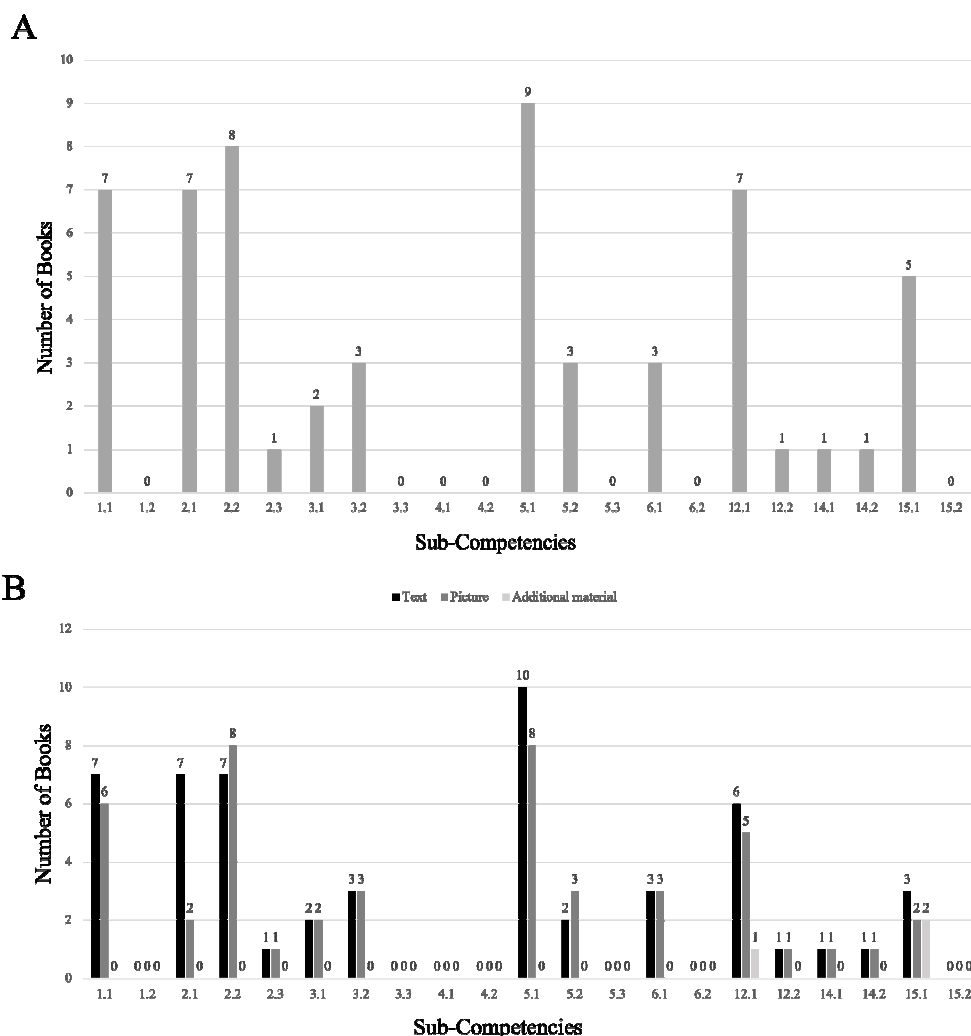


Figure III: Frequency of books including the Sub-competencies and the use of T, P and M

Again, we see that the use of T, P and M varies considerably. Disparity is revealed in several cases with some sub-competencies of a specific competence represented frequently and other sub-competencies of the same competence represented infrequently or not at all.

Frequency of the different categories of the Water Competencies

The four introduced categories of motor/physical skills, enhanced motor skills, affective skills, and cognitive skills should according to the authors be roughly equally important. The data of Figure 2 are added after the allocation in Table 1 and, thus, a value for the respective category is created. For those water competencies assigned to two categories, the number is halved and divided between the two. The physical/motor skills are displayed most

frequently while the other three categories all occur in almost equal numbers and, thus, together make up only one-third of the water competencies presented.

The score for each Water Competence across the 11 books

This calculated score indicates the extent to which and the quality with which T, P and M are used to depict each WC. Higher quality is considered to be the use of at least two of the three sources of information to depict the competence. None of the water competencies are portrayed using all three of the sources of information. We remind the reader that this score compensates for the fact that some of the water competencies are expressed by using sub-competencies and some are not. Thus, the water competencies, and sub-competencies as well as the use of T, P and M are included in the maximum score of 99 as described (max score of 9 for each WC times 11 books = 99).

The highest scores are recorded for Breath Control (WC 2), with 26/99 points, Propulsion (WC 5), 23/99, Exit (WC 7), 21/99, Recognize and assess Risk (WC 12), 21/99, and Entry (WC 1), 19.5/99. None of the water competencies score more than 26% of the possible total of 99 points. The lowest scores are recorded for WC's 4, 8 and 11 (Roll and/or turn, Use of personal flotation device, and Knowledge of local hazards), all scoring 0/99 points. Swimming with clothes (WC 9), Assessing one's own competence (WC 13) and Recognize and assist a person (WC 14) each score 6/99 points. Submerge and swim underwater (WC 6) scores 9/99 points. Floating and treading water (WC 3) scores 10/99 points, while Swimming in open water (WC 10) scores 15/99 points. They score less than 15% of the possible 99 points. Since the test conditions do not match here either, three of water competencies with zero value – not displayed in the books at all – must be removed to fulfill the test requirements. The empirical distribution of WC values deviates significantly from an expected uniform distribution (chi-square (11) = 41.310, $p < 0.001$, $n = 12$).

Discussion

The concept of WC (Stallman et al., 2017), selected as the criterion for this pilot study, explores the question 'What should we teach?' or, 'What should be learned in order to reduce the risk of an emergency scenario, in, on or around the water?'. This included a comprehensive survey of the literature to identify research evidence showing that certain water competencies have protective value. This concept of WC in a water safety perspective, was selected as the criterion against which the content of children's books is compared. We have attempted to explore the extent to which British children's books about swimming include the essential water competencies identified as those which should be taught.

General comments

In general, if we accept the selected criterion as valid, we suggest that the sample of books analyzed do not compare well to the criterion and, thus, do not adequately convey the essential water competencies. An essential aspect of the original concept of 'water competence in a water safety context' (Stallman et al., 2017), is that all the water competencies are required for any given individual to be optimally protected against risk, at their current level of development, of experience and of WC. Water competencies missing or weakly developed relative to the others, become weak links and are usually the trigger which initiates an emergency. The recommended water competencies are constantly influencing and either supporting one another or sometimes hindering one another. We frame our specific comments around these closely integrated relationships. Indirectly, the results of this comparison also reveal to some extent, the subjective beliefs of the authors of these children's books about what swimming really is, about the risks inherent in activities conducted in, on and around the water, and about what then necessarily should be taught. Here e.g., we cite the results shown in Figure 2, showing that eight of the 15 water competencies considered essential are included in fewer than half of the books and that three of the 15 water competencies are not included in any of the books.

Specific Comments on each Water Competence

In Figure 2 you see that seven books include Safe Entry (WC 1) though only four include Safe Exit (WC 7). This implies that only seven of the 11 authors consider safe entry as important and that three of these authors do not consider that after entry, one must also exit, not seeing the intimate relationships between entry and exit, which are of course, an inseparable pair. Also, regarding safe entry, you will see that while seven of the books refer to the entry itself, (WC 1.1) none of the books include surfacing or levelling off (WC 1.2). Again, a major oversight. If, after an unintentional entry one is submerged, resurfacing is obviously essential – another inseparable pair. Furthermore, it has been identified as a skill of its' own, as is levelling off if one must subsequently move toward safety or adopt a floating position. Breath control (WC 2) is obviously a critical competence once having entered the water, especially when involuntarily. Lanoue (1963) stated that people do not drown because they cannot swim but because they cannot breathe. The stationary surface competencies, floating and treading water (WC 3) are included in only five of the 11 books (Fig. 2). Assuming that after an unintentional entry and submersion one succeeds in resurfacing, the recommended next step is to 'float first' (Barwood et al., 2011; Connolly, 2011). Early attempts for the beginner at floating on the front and on the back are the foundation of the slightly more refined 'survival floating', front and back. 'Float first' enhances breath control (alleviating hyperventilation if cold water induces cold shock), reorientation, and relaxing, identifying the surface conditions and the direction of a safe exit – all in preparation for an informed decision about what to do next. While surface competencies (WC 3) are portrayed in five books, floating on front (WC 3.1) is portrayed in only two and on back

(WC 3.2) in only three (Fig. 3). None of these five books include both even though it is equally important and essential. Floating being obviously a foundational part of learning to swim as well as a survival skill, it is difficult to understand why it is so poorly represented in these children's books. Treading water may be considered as a) a form of 'stop and rest', b) a method allowing pursuit of some task requiring the hands (treading using legs only) and c) also a method of raising the head to better observe the surrounding situation and information. Nevertheless, it is not included in any book. Given that floating on the front and floating on the back are not both represented together in any of the books (see discussion of WC 3), it is no surprise that rolling over from front to back or back to front (WC 4.1) does not appear in any of the books. And considering the HMSO (1977), showed that 60% of all U.K. drowning occurs within four meters of safety, it is equally difficult to understand why changing direction/turning (WC 4.2) is also not described in any of the books.

Propulsive competencies in general seem to be those best represented. Propulsion on the front (WC 5.1) is represented in nine of the 11 books although propulsion on the back (WC 5.2) is presented in only three of the books. Given that floating on both front and back were poorly represented, it also is no surprise that propulsion both on front and back is inadequately presented. This disparity is greater than for any of the other water competencies and indirectly implies that for these authors, propulsion equals swimming (which it certainly does not) and that this propulsion should be primarily on the front. The importance of all-around development is overlooked. The underwater competencies (WC 6) appear in only three of the books (Fig. 2). All these three books cite only surface diving (WC 6.1) and ignore swimming under water (WC 6.2). That after submerging one might choose (or need) to swim under water does not seem to concern the authors.

There is also no reference to the intimate relationships between breath control, buoyancy control and submerging. The extent to which Safe Exit (WC 7) is not adequately presented has been discussed in connection with Safe Entry (WC 1). The intimate relationship between these two is overlooked. The 'enhanced' water competencies i.e., use of a personal flotation device, swimming with clothes and swimming in open water (WC's 8, 9, 10) are also not well represented (Fig. 2). None of the books present the use of a personal flotation device, only one book presents swimming with clothes and only four books present swimming in open water. Given that by far, most drowning occurs in open water (Chung et al., 2014), that a personal flotation device is recommended or in some cases required for various activities (Bennett et al., 1999; Quan et al., 2006), and that in an unexpected entry or submersion one is almost always clothed (Laakso et al., 2018; Moran, 2015), these outdoor competencies are essential. Their poor representation in children's books is regrettable. Knowledge of local hazards (WC 11) is surely an obviously logical necessity. Lack of such knowledge has been well argued to be a primary cause of the high drowning rate among tourists in popular holiday destinations (Connolly, 2011; Moran & Ferner, 2017; Stanley & Moran, 2016), or newcomers to any popular bathing area. Knowledge of local hazards is not mentioned in any of the books, another surprising and disappointing omission. Associated with this local knowledge or lack thereof is the ability to recognize risk (WC 12) and to avoid it or learn to cope with it. Assessing the level of risk (WC 12) that might be present in any given situation is also intimately related to assessing one's own competence (WC 13), see Moran et al. (2012). The level of risk is surely relative to one's level of competence.

That which is a risk for the beginner (e.g., deep water), other things being equal, may not be a risk for one more experienced. Being able to accurately assess one's own personal competence has been shown to be uncommon (Moran et al., 2012), but also essential (Stallman et al., 2017). It is mentioned in one book only. WC 14, recognizing a person in difficulty (WC 14.1) and if necessary, assisting that person in an appropriate way are also poorly represented, with both WC 14.1 and WC 14.2 appearing in one book only. Recognition of a person in difficulty is not as straight forward as it might seem and as originally and very well described by Pia (1974); it must be taught. Assisting must also be appropriate relative to the observer's level of competence. It may be as simple as calling for help and ringing the emergency number. Teaching this is also essential. Positive attitudes towards the ever-present risk and the need for safety (WC 15.1) is presented in five of the 11 books, less than half. This is not only inadequate, but it neglects the very foundation of the learning of swimming and water safety competencies. Also surprising is the total lack of mention of the value(s) of swimming. One would have thought that this would be the first and simplest message to deliver.

We have primarily discussed how well the whole sample of the 11 books analyzed helps us to teach WC. Addressing how well each book includes the various water competencies and sub-competencies we have seen that only one book includes more than half of the 15 water competencies (10/15 – 67%). Four of the books include less than 50%. Six books included only 33% or less of 'What should be taught?'. Thus, nine of 11 books include less than half of what should be taught. To interpret the results, we must have in mind that these 11 children's books are just a small selection and cannot stand for the whole genre. Nonetheless, it is shocking that these selected children's books, which are as a genre one major source for everyday knowledge, do not include many of the water competencies. However, not all the 15 water competencies can be conveyed by children's books properly. When we consider the sub-competencies, we see that none of the books includes more than half of the 21, the greatest representation being only one book at 43%. Seven of the books include fewer than 25% of the sub-competencies considered essential. That nine of 11 books analyzed offer less than half of what the expert literature considers essential is indeed discouraging.

Specific comments on different categories of Water Competencies

The portrayal of the four categories physical/motor, enhanced motor, affective and cognitive competencies is not

equal. The results show that the physical/motor competencies are displayed most with 38. The fact that the physical/motor skills most frequently appear in the children's books may be due to the medium we are analyzing. Children's books, as discussed, are mainly based on illustrations and simple descriptions and, therefore, it may be difficult to visualize and convey, for example, affective and cognitive competencies.

Specific comments on use of T, P and M

When examining the use of text and/or pictures or adding relevant information in an appendix we see no pattern. Text and pictures are roughly equally used without apparent regard for the perceived importance of the issue at hand. When we multiply the number of books (11) times the number of water competencies plus sub-competencies (27), we see that there are 297 opportunities to use T, P and M. Of these 297 opportunities, in 11 cases (4%) is text alone used, in six cases (2%) picture alone and in only two cases (0.67%) additional material is used to convey a WC. In 29 cases (10%) both text and pictures are used and in only one case (0.33%) text is combined with additional material. Thus, in only 49 of 297 possibilities (16%) are either T, P, M, or combinations of two of the three sources of information used to convey the message. In less than one quarter of all cases is the idea to be conveyed considered sufficiently important to describe it verbally, or to describe it by picture, or both.

If one accepts the scoring system used in this pilot study as valid, it should give us a higher level of precision when judging the books analyzed for the extent to which they match the criterion standard. This score then should reflect quality more precisely than simply recording the frequency of inclusion of the parameters examined. Upon reflection, these results tell us something about how the authors view swimming, the inherent risks of activity in, on, and/or around water, and what they believe should be taught. These scores confirm what we have already seen when examining the frequencies of inclusion. These books and their authors do not present a view which matches the expert literature. Finally, these scores demonstrate that most of the authors, being experts in children's literature, are surely not experts in learn-to-swim. Rather, the analysis has shown that there is still too little expert knowledge about learning to swim in our everyday knowledge, which is conveyed by children's literature and, therefore, could mislead children and their caregivers in what should be taught or learned. From the criticism about omissions and inaccuracies that became apparent through the presentation of results, the proposal for a book that meets both, the scientific requirements and the characteristics of children's literature, arises. The following proposal leads to a more uniform conveyance, which could then have a positive impact on the dissemination of the relevance and knowledge about the learn-to-swim process in a society. This idea is already partly implemented in some CBs by including parent notes or water safety rules. However, this still occurs too rarely and needs to be conveyed in a more holistic way. Such a merged book should include the following basic elements: (a) motor/physical, enhanced motor, cognitive, and affective competencies, (b) conveyance of fun and games, (c) realistic display of the learn-to-swim process, (d) instructions for parents, (e) information on water safety, drowning, and prevention, (f) tips for preparation of a first swimming lesson, (g) rules in a swimming pool hall, (h) further sources or links for parents, and (i) childlike design and language.

Of course, not everything can be realized within the story, as the scope is generally predetermined by the genre. The idea of a fusion, however, assumes that it can be divided into two parts, one for children and one for caregivers. Consequently, this idea may give an answer to the question of what a children's book should look like, which includes all requirements and WCs according to Stallman et al. (2017).

Conclusions

The analysis of children's books shows that the inconsistent presentation of water competencies may occur due to a lack of consensus in expert literature on the definition of the ability to swim. It is entirely possible that the authors of these children's books simply do not see their role as having anything to do with promoting safety. They may have had no intention of addressing the water safety aspect of learning to swim. It is more likely however, that they simply are inexperienced. They may represent a public who are naive about the omnipresent risks and need for safety in activity in, on, and around the water.

In summary, children's literature could be a possibility to better convey the analyzed water competencies. This genre can be recognized and used as a support for the learning process. It becomes apparent that the (psycho-)motor skills are clearly emphasized, while affective and cognitive competencies are neglected. It is entirely possible that when essential elements are missing, an incorrect perception of what swimming really is, is conveyed. When reflecting on our results, it is also important to bear in mind that the underlying water competencies should be considered in terms of drowning prevention and not determining swimming ability. To convey the meaningfulness of swimming the cognitive and affective competencies would also have to be integrated equally important. However, we praise the authors of these children's books in a certain sense. In most of the books, something is well presented either by T, P, or both. If we avoid considering these children's books as a source for learning to swim, we can still use some extract of a book as a teaching tool. This tool can assist us in the more comprehensive job of teaching WC. There may be a turn of phrase which you find appropriate in appealing to children, or a particularly illuminating illustration which a child would understand.

Above all, and firstly there should be consensus in the scientific discourse about what should be taught in the contexts of learn-to-swim and water safety. Secondly, the knowledge must be communicated clearly to a broader society. Otherwise, we continue to proliferate the historical misfortune of the dramatic variation of views on the learn-to-swim process, and, thus, not treating this vital topic appropriately.

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