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From local practice to global standards: A case study and evidence-based policy framework to reform primary school swimming education in Vietnam

Le Tran Nhat Hoang[1], Tran Ngoc Cuong[2]
[1] Faculty of Sport Science, To Duc Thang University, Ho Chi Minh City, Vietnam
[2] Faculty of National Defense Education of Physical Education Sai Gon University, Ho Chi Minh City, Vietnam

Abstract
Drowning is a leading cause of child mortality in Vietnam, with approximately 2,000 preventable deaths annually, a crisis exacerbated by climate change and urbanization. Despite national policies emphasizing swimming education, local implementation often lacks pedagogical rigor, failing to impart essential water safety competencies. This paper presents a qualitative case study of a community-based swimming program in Ho Chi Minh City to analyze the limitations of its traditional, technique-focused curriculum against international best practices, identify systemic barriers to effective implementation, and propose a comprehensive, evidence-based national curriculum framework for primary school water safety education. Employing a methodology informed by Yin and Stake, the study analyzed program documentation and interview data from the Van Don Club, contextualized by a systematic literature review of drowning epidemiology, swimming pedagogy, and implementation science. The findings reveal a significant "pedagogical dissonance", where the program's generic, one-size-fits-all curriculum is misaligned with the developmental needs of primary school students. Key deficiencies include an overemphasis on stroke mechanics at the expense of critical survival skills, the absence of a structured water safety component, and inadequate Pedagogical Content Knowledge (PCK) among instructors. These issues are symptomatic of broader systemic challenges, including resource constraints and the lack of a standardized national curriculum. A paradigm shift from basic swimming instruction to comprehensive water safety education is therefore imperative. This study concludes by presenting a detailed national curriculum framework for Vietnam that integrates water safety knowledge, survival skills, and swimming technique, benchmarked against global standards, and provides multilevel recommendations for policy, practice, and research to guide this vital educational reform.#

Keywords: Drowning Prevention, Swimming Education, Curriculum Reform, Pedagogical Content Knowledge, Water Safety.

Introduction

Drowning is a leading cause of death for children under 15 in Vietnam, claiming approximately 2,000 young lives each year (Bao Anh & Duong Lieu, 2025). This rate is among the highest in the Western Pacific and Southeast Asia, a region that accounts for over half of all global drowning fatalities (Shimizu, 2019) [15]. These alarming statistics represent not only a profound tragedy for countless families but also a preventable public health crisis—a "silent epidemic" demanding an urgent, evidence-based response (World Health Organization, 2014) [22]. The economic burden of this tragedy is immense, estimated to cost Vietnam approximately US$617 million annually in lost future human capital (GHAI, 2022) [7].

The risk of drowning in Vietnam is not static; it is being amplified by macro-environmental trends. As a nation highly vulnerable to climate change, Vietnam faces an increasing frequency and intensity of floods, storms, and sea-level rise, particularly in high-risk regions like the Mekong River Delta and the Central Coast (UNICEF, 2020) [19]. Notably, drowning accounts for up to 75% of fatalities during flood disasters (The George Institute for Global Health, 2025). Concurrently, rapid urbanization introduces new, often unregulated, water hazards such as construction sites, open canals, and reservoirs. This context elevates water safety education from a recreational activity to a core component of climate change adaptation and disaster risk reduction strategy (The Lancet Regional Health – Southeast Asia, 2025).

The Vietnamese government has recognized this crisis, issuing national strategies and directives aimed at drowning prevention, such as the National Action Plan for Child Injury Prevention 2021-2030 (Policy Win, 2021) [13]. These policies correctly identify swimming instruction as a key intervention. However, a significant gap persists between national policy and local implementation. The initial draft study of the Van Don Club's program serves as a prime example of this challenge, revealing how a mandated program can be rendered ineffective by a non-specialized curriculum and other systemic weaknesses. The problem is not a lack of policy-level awareness but a failure to translate policy into effective pedagogical practices at the grassroots level. The coexistence of national plans with a rudimentary local program indicates a critical breakdown in capacity, knowledge transfer, and quality control between central bodies and local implementers – a classic implementation science problem (Policy Win, 2021) [13].

This paper employs a case study methodology to conduct an in-depth analysis of the Van Don Club program. The objective is not merely to critique this specific program but to use it as a representative case to diagnose the systemic issues hindering effective water safety education in Vietnam. By juxtaposing this local reality with global evidence and best practices, this study aims to develop a comprehensive, scientifically grounded, and contextually appropriate curriculum framework to guide national curriculum reform and policy implementation. Ultimately, this research contributes to the realization of the UN General Assembly Resolution on Global Drowning

Prevention (A/RES/75/273) (Senisse-Pajares, Lukaszyk, & Pérez-Núñez, 2025) [14] and the Sustainable Development Goals (SDGs), particularly Target 3.2 (ending preventable deaths of children) (UNSDG, 2025) [20].

Material and Methods

This study employed a qualitative, descriptive case study design (Bogdan & Biklen, 2007) [3]. The case study methodology is particularly suited for this research as it allows for an in-depth, real-world investigation of a contemporary phenomenon—a community swim program—where the boundaries between the phenomenon and its context are not clearly evident (Merriam, 1998) [12]. The approaches of prominent methodologists Robert Yin and Robert Stake informed the design, emphasizing a rigorous and holistic analysis of a "bounded system" to generate rich, contextualized insights (Bogdan & Biklen, 2007) [3].

The selected case was the primary school swimming education program operated by the Van Don Club in District 4, Ho Chi Minh City, Vietnam. This program was chosen as a representative example of a local initiative implemented in response to national and municipal directives for drowning prevention. It represents a formal collaboration between the District 4 Education Department and the Van Don Club, serving all 13 primary schools within the district.

Data were collected through two primary methods. First, semi-structured interviews were conducted with the entire population of 20 program staff, including managers, coaches, and instructors. The interview protocol was designed to elicit information regarding the program's legal basis, available resources (facilities and personnel), curriculum content, pedagogical approaches, and perceived challenges. Second, a comprehensive analysis of program documentation was conducted, including the curriculum outline, lesson schedules, and administrative reports provided in the initial manuscript.

Data analysis was conducted thematically. Interview transcripts and program documents were coded to identify recurring themes and patterns related to the program's structure, content, and implementation. The analysis focused on evaluating the program's alignment with its stated public health goal of drowning prevention. To provide a robust analytical lens, the case study findings were contextualized and triangulated with evidence from a systematic review of international literature. This review covered key domains including: (1) global and regional drowning epidemiology; (2) international best-practice curriculum frameworks for water safety from countries such as Australia, the Netherlands, and Nordic nations (Willcox-Pidgeon, Leggat, Devine, & Franklin, 2025) [21]; (3) theories of motor skill acquisition and pedagogy, specifically Pedagogical Content Knowledge (PCK) (Shin & Kim, 2024) [16]; and (4) implementation science frameworks. This integrated approach allowed for a critical evaluation of the local case against established global standards and theoretical principles.

Results

The investigation into the swimming education program at the Van Don Club revealed key characteristics regarding its operational context, resources, and curriculum.

Program context and resources: The program operates as a formal collaboration between the District 4 Education Department and the Van Don Club, directly responding to directives from the Ho Chi Minh City Department of Education and Training and national policies on drowning prevention. All 13 primary schools in the district participate, demonstrating complete institutional buy-in at the local level. The program utilizes two swimming pool facilities to serve the student population, with specific schools assigned to each location as detailed in Table 1. However, the conclusion of the initial report noted that "physical facilities are still lacking", suggesting potential issues with capacity or quality.

Table 1: Distribution of primary school students at Van Don club swimming facilities

No.	Facility 1	Classes	Students	Facility 2	Classes	Students
1	Nguyen Van Troi	7	179	Dang Tran Con	4	153
2	Tang Bat Ho	4	137	Dong Da	3	81
3	Doan Thi Diem	7	194	Vinh Hoi	4	166
4	Ly Nhon	5	140	Nguyen Hue 3	3	104
5	Xom Chieu	6	157	Bach Dang	5	169
6	Nguyen Truong To	6	153	Nguyen Hue 1	3	189
7				Nguyen Thai Binh	2	179

Human resources: The instructional team (n=20) possesses strong formal academic qualifications, with 75% holding a bachelor's degree and 10% a master's degree (Table 2). The initial report assesses this team as adequate for meeting the practical teaching demands. However, it critically notes that the staff is "very lacking and weak in research to improve training quality", indicating a significant gap in specialized pedagogical knowledge and continuous professional development.

Table 2: Qualification profile of instructional staff (n = 20)

Qualification	Number	Percentage (%)
Master's Degree	2	10
Bachelor's Degree (Regular University)	15	75
College Diploma / Part-time University	3	15
Total	20	100

Curriculum and pedagogy: The program is structured into three levels: Universal (compulsory), Basic (elective), and Advanced (elective), with each level allocated 30-35 sessions. The analysis of the curriculum content, presented in Table 3, reveals a significant misalignment with the program's primary goal of drowning prevention. The

compulsory "Universal" class focuses heavily on the mechanics of the breaststroke, with "safety measures" listed as a single, undefined component. Critical survival skills, such as floating, survival strokes, and rescue techniques, are relegated to the elective "Basic" and "Advanced" levels. This structure ensures that the majority of students, who only complete the compulsory level, are not taught the most essential life-saving competencies. The initial report explicitly states that the program is a "general program for all non-swimmers" and lacks a "specialized universal swimming program for primary school students", confirming its generic, non-developmentally appropriate nature.

Table 3: Critical Analysis of the Van Don Club Curriculum against International Water Safety Competency Domains

Competency Domain (International Standard)	"Universal" Class Content (Compulsory)	"Basic" & "Advanced" Class Content (Elective)	Analysis & Gaps
1. Safety Awareness & Risk Assessment	- Safety measures (unspecified)	- Rescue, drowning; Swimming refereeing	Major Gap: No structured education on local hazards (canals, rivers, floods). Safety knowledge is not integrated but is a minor bullet point.
2. Entry/Exit Skills	- On-land and in-water training	- Swimming techniques	Unclear: No specific mention of recovering from an unexpected fall or varied safe exit methods.
3. Breath Control & Floating/Survival Sequence	- Water breathing, Treading water	- Hand-leg-breath coordination	Critical Deficiency: Fails to teach back floating for rest and energy conservation, a core survival skill. "Treading water" is more energy-intensive.
4. Propulsive Movement	- Arm, leg, Breaststroke	- Front crawl, Backstroke, Butterfly, Endurance swimming	Inappropriate Sequencing: Prioritizes the technically complex breaststroke over foundational survival strokes or simpler front/back crawl.
5. Rescue & Emergency Response Skills	None	- Rescue, drowning	High Risk: The most critical rescue skills are placed in elective classes, meaning most children will never learn them.

Discussion

The findings from the Van Don Club case study reveal a program operating with a significant "pedagogical dissonance" (Bradbury, 2022) [4] —a disconnect between its stated public health objective of drowning prevention and its actual pedagogical practice, which is focused on conventional sports technique. This dissonance is not unique; it is a common feature in educational reform efforts where new goals are adopted without fundamentally changing underlying beliefs and practices (Kern *et al*., 2021) [10]. The instructors at Van Don, despite their formal qualifications, appear to be teaching what they know (traditional physical education) rather than what is most needed (contextualized survival skills). This gap highlights a critical deficiency in Pedagogical Content Knowledge (PCK)—the specialized knowledge of how to represent content to make it comprehensible to learners (Shin & Kim, 2024) [16]. The lack of PCK prevents the translation of a public health goal into appropriate pedagogical actions.

The program's curriculum structure, which prioritizes the technically complex breaststroke over foundational survival skills like floating, is a direct inversion of priorities for drowning prevention. This approach is in stark contrast to global best practices. Modern curriculum frameworks from water-rich nations like Australia, the Netherlands, and the Nordic countries define success not by technical perfection but by the acquisition of a broad set of "water competencies". These frameworks emphasize survival-first skills such as floating, treading water for extended periods, and swimming while clothed to simulate real-life emergencies —elements entirely absent from the compulsory level at Van Don. The Dutch "Zwem-ABC" system, for instance, makes swimming with clothes mandatory, a practice highly relevant to flood-prone Vietnam. Similarly, the Australian National Swimming and Water Safety Framework sets a benchmark for 12-year-olds that includes swimming 50 meters and treading water for two minutes, focusing on functional ability over form (Willcox-Pidgeon *et al*., 2025) [21].

From a motor learning perspective, the Van Don curriculum also lacks a structured progression based on established principles. Gentile's Taxonomy of Motor Skills provides a framework for sequencing tasks from simple, stable environments (closed skills, e.g, floating) to complex, variable environments (open skills, e.g, navigating a current). The current program fails to build this foundation, instead introducing a complex stroke prematurely. Furthermore, its one-size-fits-all, teacher-centered approach contrasts with modern non-linear pedagogies that emphasize student-centered, play-based learning and guided discovery, which are proven to be more effective and engaging for children (Light & Wallian, 2008) [11].

These deficiencies are symptomatic of broader, multi-level systemic challenges, as revealed by a socio-ecological analysis (Cenderadewi, Franklin, Devine, 2020) [5]. At the *organizational level*, resource limitations and a lack of specialized instructor training (PCK) are major barriers. At the *community and policy level*, while high-level policy support exists, there is a lack of a standardized national curriculum to guide local implementation, and the "self-funded" model may create socioeconomic barriers to access for the most vulnerable families (Ito, 2014) [9].

To address these gaps, we propose a National Competency-Based Water Safety Education Framework for Vietnamese Primary Schools (Table 4). This framework is guided by principles of being student-centered, survival-first, and developmentally appropriate, aligning with the "FUNdamentals" and "Learn to Train" stages of the Long-Term Athlete Development (LTAD) model (Ford *et al*., 2011) [6]. It provides a clear, multi-year progression that integrates five core competency domains, contextualized for the specific risks present in Vietnam.

Table 4: Proposed national competency-based water safety education framework for Vietnamese primary schools (Ages 6-11)

Level (Grade)	1. Safety Knowledge & Risk Assessment	2. Entry/Exit & Orientation	3. Breath Control & Survival Skills	4. Propulsive Movement	5. Rescue & Emergency Response
Grades 1-2	- Identify local water hazards (ponds, rivers, canals). - Understand "Always go with an adult" rule. - Basic flood safety awareness.	- Safe entry using ladder/steps. - Practice rolling from front to back. - Orient towards the pool side.	- Blow bubbles (exhale). - Face submersion (breath hold). - Assisted back float ("starfish") for 10 sec. - Game: "Red light, green light."	- Kicking with a floatation aid. - Basic assisted glides.	- Learn to shout for help. - Identify lifeguards/rescuers.
Grades 3-4	- Understand danger signs. - Boat safety (wearing life jackets). - Recognize simple dangerous currents.	- Jump into deep water (supervised) and return to side. - Perform a 360-degree turn in water. - Exit water without a ladder.	- Rhythmic breathing. - Unassisted back float for 30 sec. - Basic treading water for 30 sec. - Swim in light clothing.	- Front crawl and backstroke for 15 meters. - Basic survival strokes (e.g., dog paddle).	- Land-based rescue: "Reach" and "Throw." - Understand "Throw, don't go" principle.
Grade 5	- Assess risk in natural water environments. - Plan for safe water activities. - Understand cold water shock.	- Practice recovery from an unexpected fall. - Swim over/around simple obstacles.	- Tread water for 2 minutes. - Survival sequence: jump in, float, swim 25 meters, exit. - Swim in clothes and shoes.	- Front crawl and backstroke for 50 meters with proper technique. - Survival breaststroke for 25 meters.	- Practice land-based rescue with a partner. - Introduction to basic CPR (theory).

Implementing this framework requires a supportive ecosystem. At the *practice level*, a mandatory national certification for instructors focusing on PCK is essential (ASCA, 2025) [1]. Resource gaps can be addressed with innovative solutions like portable swimming pools, which have proven effective in similar contexts. At the *policy level*, this framework must be formally integrated into the national primary school curriculum. To ensure equity, government subsidies or voucher programs should be considered to offset costs for low-income families, a key barrier to participation (Ito, 2014) [9]. A multi-sectoral task force (Education, Health, Sport, Disaster Management) should oversee implementation, guided by established frameworks like RE-AIM to ensure reach, effectiveness, adoption, implementation, and maintenance (Glasgow *et al*., 2010) [8].

Conclusion

This paper has illuminated the scale of the child drowning crisis in Vietnam, critically analyzed the pedagogical shortcomings of a representative local swimming program, and proposed a comprehensive, evidence-based framework for reform. The core contribution is not merely a critique but a constructive and detailed roadmap for change, moving from a narrow focus on swimming technique to a holistic, competency-based model of water safety education.

Significant challenges to implementing such reform must be acknowledged, including instructor resistance to pedagogical change, resource constraints, and the complexities of scaling up programs in a developing nation context. However, these are not insurmountable obstacles but predictable challenges that can be managed through strategic planning, stakeholder engagement, and sustained political will, drawing on successful public health scale-up models within Vietnam.

The solution to Vietnam's child drowning epidemic does not lie solely within sports clubs or physical education departments. It demands a coordinated, multi-sectoral, "all-of-government" approach that unites the Ministry of Education and Training, the Ministry of Health, local authorities, non-governmental organizations, and communities. By adopting a modern, evidence-based approach to water safety education, Vietnam can transform a source of tragedy into an opportunity for health, safety, and lifelong physical activity for all its children.

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