



Cross-cultural perspectives on aquatic competence in school-based swimming education

Perspectivas interculturales sobre la competencia acuática en la educación escolar

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Abstract

Background: Swimming has traditionally been framed as a technical component of physical education, yet emerging scholarship positions aquatic competence as a culturally embedded practice shaped by identity, community narratives, and historical relationships with water. **Objective:** This systematic review adopts a Cultural Studies lens to examine how sociocultural determinants, such as water identity, gendered aquatic norms, culturally transmitted fear of water, and colonial water histories, shape school-based swimming education across divergent cultural contexts.

Methods: Following PRISMA guidelines, 47 studies published between 2000 and 2024 were synthesized. Cultural context was coded along a three-point continuum from water-rich (Cx1) to water-distanced (Cx3) cultures.

Results: Four cross-cutting themes emerged: (1) water culture as a driver of aquatic competence; (2) cultural barriers limiting participation; (3) community cultural structures as key enablers; and (4) curriculum-culture mismatches that undermine program effectiveness. **Conclusions:** Aquatic competence is a culturally situated capability rather than purely physical skill. Findings highlight the need for culturally responsive curricula, community-based cultural intermediaries, and policy frameworks that address sociocultural inequities in aquatic safety and participation.

Keywords

Water culture; water identity; cultural barriers; school physical education; cross-cultural analysis; habits; drowning prevention; equity; cultural studies; cultural policy.

Resumen

Antecedentes: La enseñanza de la natación escolar constituye no solo una práctica educativa, sino también un fenómeno cultural profundamente influido por normas sociales, identidades comunitarias y relaciones históricas con el agua.

Objetivo: Este estudio realiza una revisión sistemática siguiendo las directrices PRISMA para analizar cómo los determinantes socioculturales incluyendo la identidad hídrica, las normas de género, el miedo al agua como construcción cultural y las desigualdades heredadas de la historia colonial influyen en los programas de educación acuática en contextos de altos (Cx1) y bajos recursos (Cx3).

Métodos: Se analizaron 47 estudios publicados entre 2000 y 2024 e identificados a través de seis bases de datos. El contexto cultural se codificó en un continuo de tres puntos: Cx1 (identidad cultural rica en agua), Cx2 (cultura del agua mixta o de transición) y Cx3 (entornos culturales distanciados del agua).

Resultados: Los resultados revelan cuatro temas centrales: (1) la cultura del agua como motor de la competencia acuática; (2) barreras culturales que limitan la participación escolar; (3) el papel de las estructuras comunitarias como mediadores culturales; y (4) desajustes entre currículo e identidad cultural. **Conclusiones:** Se concluye que la competencia acuática debe comprenderse como una capacidad culturalmente situada, lo que exige currículos culturalmente responsivos y políticas pública-cas que aborden las desigualdades socioculturales que afectan el aprendizaje acuático.

Palabras clave

Identidad hídrica; barreras culturales; estudios culturales; análisis intercultural; habitus; prevención del ahogamiento; equidad acuática.

Introduction

Swimming is routinely classified as a physical education competency measurable skill defined by stroke proficiency, water entry and exit, and survival capability. Yet this technical framing conceals a more fundamental truth: swimming is a cultural practice. The capacity and willingness to enter, navigates, and belong in aquatic environments is shaped as much by cultural inheritance, family narratives, community relationships with water, and socially constructed identity as by the availability of pools or the quality of instruction (Wiltse, 2022; Irwin et al., 2017). From a cultural studies perspective on sport and physical education, swimming can be conceptualized as a contested cultural space where race, gender, class, and colonial histories intersect (Andrews, 2008; Giulianotti, 2005). This review contributes to that body of work by demonstrating why treating swimming education as a purely pedagogical matter is to misdiagnose the source of one of the world's most persistent public health inequalities.

Globally, drowning causes approximately 236,000 deaths annually, with children and adolescents bearing the greatest burden, making basic swimming and water safety skills training a critical public health priority (Criel et al., 2025; Stallman et al., 2017; World Health Organization, 2021). This toll is not distributed randomly. It follows cultural fault lines. Children who grow up in communities where water is a natural and normalized part of daily life, where families swim together, where coastal and riverine environments are known and trusted, where aquatic identity is transmitted across generations, develop aquatic competence as a matter of cultural inheritance, not institutional intervention. By contrast, children in communities where water carries cultural threat, religious prohibition, gendered taboos, or the historical memory of exclusion face a fundamentally different and more formidable set of barriers (Love & Thrall, 2019; UNESCO, 2020). These are not resource barriers alone; they are cultural barriers, and they demand cultural responses.

This distinction is especially significant in school-based physical education. When schools in water-distanced communities introduce swimming programs, they are not merely teaching physical skills, they are enacting a cultural intervention, challenging existing community narratives about water, gender, risk, and belonging. The success or failure of such programs depends not only on the availability of facilities or trained teachers, but on the degree to which the curriculum acknowledges and engages the cultural context in which it operates (Chambers & Wood, 2021; Kirk, 2010; Pérez-Ordás et al., 2024). A curriculum designed in and for a culturally water-immersed context, such as Australia or New Zealand, where swimming is near-universal, nationally mandated, and culturally celebrated, cannot simply be transplanted into a water-distanced context such as Indonesia or Bangladesh without profound cultural modification. Exploring the cultural intersections of education and sport aligns with broader scholarly discourses on how pedagogical environments encode and transmit social values (Sánchez-Alcaraz et al., 2024).

From a Cultural Studies perspective, swimming operates as a socially constructed practice shaped by historical, political, and identity-based relationships with water. This positioning aligns the present review with a broader body of scholarship that interprets physical education not merely as skill transmission but as a cultural field in which power, representation, and community narratives define who is able, and permitted, to belong in aquatic spaces. By adopting this lens, the review advances cultural theory in aquatic education and provides a conceptual bridge between swimming competence and sociocultural inequality.

This review introduces a cultural context continuum to organize comparative evidence. We define three analytical positions: Cx1, or "water-rich cultural identity," characterizing countries like Australia, New Zealand, and Norway, where aquatic culture is deeply normalized; Cx2, a mixed or transitional cultural context; and Cx3, or "water-distanced cultural environments," characterizing countries like Indonesia, Bangladesh, and much of sub-Saharan Africa, where cultural water distance is a structural feature of community life. This framework provides a culturally grounded analytical lens that moves beyond crude resource-availability comparisons to illuminate the sociocultural mechanisms driving aquatic competence disparities worldwide.



Figure 1. Cultural context continuum (Cx1-Cx3)

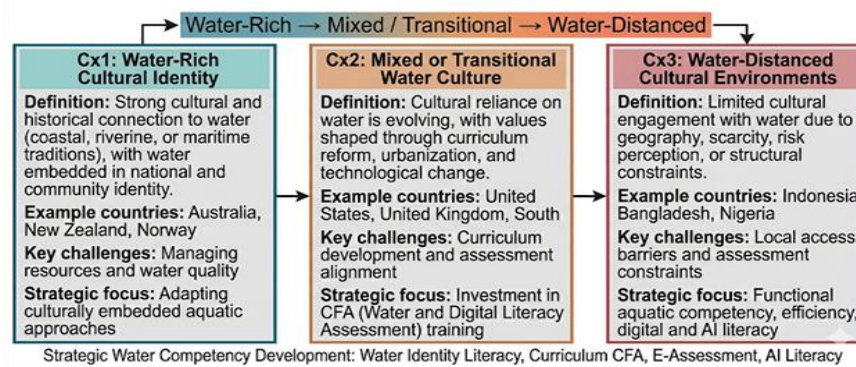


Figure 1 visualizes this cultural context continuum, anchoring the conceptual model that organizes the comparative evidence in this review.

The present systematic review is guided by three questions: 1. How are sociocultural determinants, particularly cultural water identity, gendered norms, fear of water, and aquatic cultural heritage, conceptualized and measured across the swimming education literature? 2. What patterns of cultural barriers and enablers emerge when comparing school-based swimming education across Cx1, Cx2, and Cx3 contexts? 3. What do findings apply for culturally responsive policy and pedagogy in school-based aquatic education?

Theoretical Framework

Bourdieu: Habitus and Cultural Capital in Aquatic Participation

Pierre Bourdieu's (1986) concepts of habitus and cultural capital provide a foundational lens for understanding why swimming competence is not uniformly distributed across populations. Habitus refers to the durable, socially acquired system of dispositions, ways of thinking, perceiving, and acting, that individuals develop through early socialization and that orient their engagement with the social world. In the aquatic domain, habitus manifests as the embodied ease or discomfort with water that children carry into school environments: the child who has grown up swimming with family at the beach or lake arrives at a school swimming lesson with an aquatic habitus, a natural orientation to water, while the child from a community where water is avoided, feared, or symbolically laden arrives carrying an entirely different set of dispositions.

Bourdieu's (1986) concept of cultural capital further illuminates the mechanisms of aquatic inequality. Embodied cultural capital, accumulated through family practice and community participation, is systematically higher in Cx1 contexts, where swimming is a normalized dimension of childhood socialization. This capital is convertible: it eases the acquisition of formal swimming skills, supports confident participation in school programs, and confers social recognition within peer communities. In Cx3 contexts, this capital deficit is not merely about never having learned to swim; it represents a deeper absence of aquatic habits that school programs rarely have the cultural bandwidth to address within their standard instructional frameworks (Wiltse, 2022).

The Social Ecological Model: Culture as a Determinant of Behaviors

Bronfenbrenner's (1979) social ecological model, applied to aquatic behavior, situates swimming participation within nested layers of environmental influence. At the microsystem level, family attitudes toward water, parental swimming ability, and early childhood water exposure constitute the most immediate cultural determinants of children's aquatic development. At the mesosystem level, the relationship between school swimming programs and community cultural norms determines whether formal instruction reinforces or conflicts with the cultural frameworks children bring from home. At the macrosystem level, national cultural values, historical relationships with aquatic environments, and societal norms about gender, risk, and the body create the structural conditions within which individual aquatic behavior unfolds. This model foregrounds culture, not merely resources, as the primary explanatory variable for aquatic competence disparities across contexts.

Cultural Safety and the Colonial History of Aquatic Exclusion

Cultural safety, a concept developed within New Zealand Māori health scholarship (Ramsden, 2002), offers a critical perspective on the power dynamics embedded in swimming education. A culturally safe swimming program is one that recognizes and respects the cultural beliefs, practices, and identities of learners, rather than implicitly requiring them to abandon or subordinate their cultural frameworks to participate. In the aquatic context, cultural safety demands that educators acknowledge the historical and ongoing conditions that have produced water-distanced communities, including: (a) colonial-era segregation of public pools by race, documented extensively in the United States and mirrored in various forms across British colonial territories; (b) the forced displacement of indigenous communities from their traditional aquatic environments; and (c) the imposition of Eurocentric aquatic norms, chlorinated pool swimming as the universal standard, onto communities with entirely different traditions of water engagement (Love & Thrall, 2019; Wiltse, 2022).

For children from communities shaped by these histories, school swimming programs that ignore this context are not culturally neutral; they are culturally imposing. They communicate, often unintentionally, that the aquatic culture of this community is absent, deficient, or invisible. Recognizing cultural safety as a pedagogical imperative is particularly urgent in multicultural Cx1 nations, such as Australia with its large Indigenous and migrant populations, where curricular assumptions of normalized water culture systematically disadvantage children, whose families carry different aquatic histories.

Gendered Aquatic Norms

Across both Cx1 and Cx3 contexts, though with distinct manifestations, gender functions as a powerful cultural organizer of aquatic participation. In Cx3 contexts, female participation in swimming is often constrained by religious modesty norms that prohibit mixed-gender water environments and impose dress codes incompatible with standard swimwear requirements; by family-level beliefs about female bodies and water as incompatible or dangerous; and by community-level taboos that frame female water immersion as socially transgressive (Irwin et al., 2017; UNESCO, 2020). These are not peripheral cultural residues; they are central structural features of the communities in which swimming education operates.

In Cx1 contexts, gender-based exclusion takes historically documented but often underacknowledged forms. Research has documented persistent racial-gender intersections in swimming participation in countries like the United States, where Black women report among the lowest rates of swimming ability nationally, a legacy of segregated pool access and cultural messaging that coded public swimming as a White and male domain (Love & Thrall, 2019). More broadly, body image norms, media representations of aquatic activity, and peer dynamics within mixed-gender school swimming environments continues to shape girls' participation in ways that are deeply culturally embedded.

Fear of Water as a Cultural Product

Fear of water is frequently positioned in the swimming education literature as an individual psychological phenomenon to be overcome through behavioral desensitization. A cultural studies perspective reframes this: fear of water is, in many communities, a culturally transmitted orientation, a rational response to a social environment in which water has historically signified danger, death, or transgressions (Wilder, 2020). Community narratives about drowning, spiritual beliefs about aquatic environments, and the absence of positive aquatic role models within the family and community all contribute to a cultural ecology of water fear that cannot be addressed through individual skill instruction alone. Effective aquatic programs in Cx3 contexts must therefore engage with fear of water as a cultural phenomenon, requiring community narrative change, family engagement, and the construction of culturally resonant positive aquatic identities—not merely as an instructional challenge to be managed within the pool.



Method

Design and Search Strategy and Eligibility Criteria

This study employed a systematic literature review (SLR) following PRISMA 2020 guidelines (Page et al., 2021), with cultural comparative analysis applied to synthesize findings across cultural contexts.

A systematic search was conducted in six electronic databases: Web of Science, Scopus, ERIC, SPORT Discus, PubMed, and Google Scholar (2000–2024). Search terms were organized around three concept clusters: (1) swimming education OR aquatic competence OR school swimming OR learn-to-swim; (2) culture OR sociocultural OR gender OR identity OR fear of water OR habitus; (3) school OR physical education OR curriculum OR pedagogy.

PICOS Framework

The parameters for literature inclusion and exclusion were structured using the PICOS (Population, Intervention, Comparison, Outcome, Study design) framework outlined below:

Table 1. PICOS Framework

Criterion	Specification
Population (P)	School-aged children and adolescents (5–18 years) in formal schooling contexts
Intervention (I)	School-based swimming or aquatic education programs
Comparison (C)	Comparison across cultural contexts (cross-cultural or multi-national studies); or studies explicitly examining cultural determinants within a single context
Outcomes (O)	Aquatic competence; swimming participation; water identity; cultural barriers or enablers to swimming education
Study designs (S)	Quantitative, qualitative, and mixed-methods studies; systematic reviews excluded from primary synthesis

This structured PICO framework on Table 1 ensured that only literature directly addressing the sociocultural dynamics of school-based aquatic education was retained for analysis.

Exclusion criteria: studies focused exclusively on competitive swimming without reference to education or cultural context; studies conducted in clinical or therapeutic rather than school-based settings; grey literature without peer review.

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Cultural Context Coding

Included studies were coded according to the Cultural Context Continuum developed for this review:

Table 2. Cultural Context Continuum

Code	Label	Characteristics	Example Countries
Cx1	Water-rich cultural identity	High normalized aquatic socialization: swimming culturally embedded across generations; national mandates; high pool density	Australia, New Zealand, Norway, Finland, Netherlands
Cx2	Mixed/transitional water culture	Partial cultural aquatic exposure; urban-rural divides; recent policy expansion of school swimming	United Kingdom, United States, South Africa, Brazil
Cx3	Water-distanced cultural environments	Low aquatic socialization; cultural water fear or taboo; gendered restrictions; limited historical relationship with formal swimming	Indonesia, Bangladesh, Nigeria, Ghana, Ethiopia

This three-tiered categorization provided the primary analytical matrix for comparing findings across diverse global settings provided in Table 2. Coding was performed independently by two researchers, with disagreements resolved by consensus. Intercoder reliability was $\kappa = .84$, indicating strong agreement.

Data Extraction and Synthesis

Data was extracted using a standardized form capturing study design, country, cultural context code, participant characteristics, cultural determinants examined, key findings, and quality assessment scores

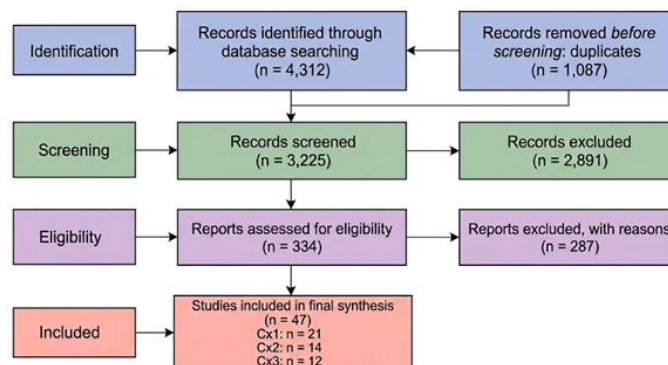


(using the MMAT; Hong et al., 2018, for mixed-methods studies; CASP checklists for qualitative studies). Thematic synthesis (Braun & Clarke, 2019; Thomas & Harden, 2008) was applied to qualitative and mixed-methods findings. Quantitative findings were narratively synthesized, with effect sizes reported where available.

Study Selection Results

The systematic search identified 4,312 records. After deduplication ($n = 1,087$ removed) and title/abstract screening ($n = 2,891$ excluded), 334 full texts were assessed for eligibility. Forty-seven studies met all inclusion criteria and were included in the final synthesis (Cx1: $n = 21$; Cx2: $n = 14$; Cx3: $n = 12$). The PRISMA flow diagram is presented in Figure 2.

Figure 2. PRISMA Flowchart Diagram



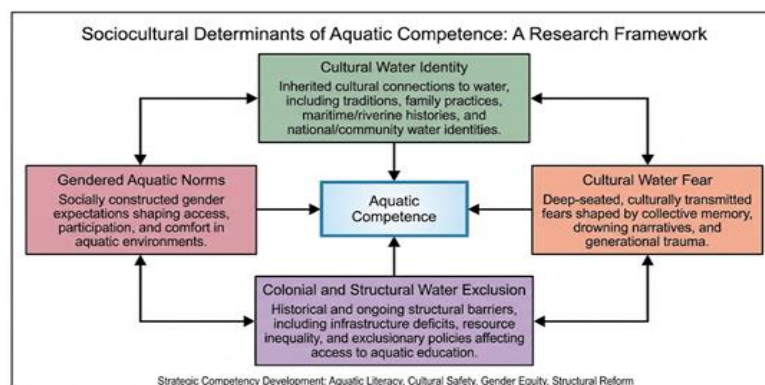
As detailed in the flow diagram, the rigorous screening process distilled an expansive initial literature base down to 47 highly relevant comparative and theoretically dense studies.

Results

Cultural Contexts and Aquatic Competence: The Cx1–Cx3 Divide

To understand the disparities in swimming capability, it is essential to trace the pathways from broad cultural traits to specific aquatic outcomes.

Figure 3. Sociocultural research framework illustrates key determinants shaping aquatic competence.



As depicted in Figure 3, the interaction between community cultural determinants and institutional structures dictates whether school aquatic programs encounter a naturally facilitated or profoundly resistant learning environment.

Cx1: Water-Rich Cultural Identity

In Cx1 contexts, swimming competence functions as a near-universal cultural expectation transmitted across family generations and institutionalized through national curriculum mandates. Studies from Australia (e.g., Moran et al., 2022; Petrass et al., 2025; Royal Life Saving Society Australia, 2021), New Zealand (Peden et al., 2021; Peden et al., 2025), and the Scandinavian countries (Kjendlie et al., 2021) consistently reported high baseline aquatic competence, with national data indicating that upwards of 80–90% of school-completing children demonstrate functional swimming ability.

The mechanisms underlying this competence are not limited to school programs. Family habits, beach trips, lake swimming, backyard pool play, constitute an informal but powerful pre-school curriculum that socializes children into normalized water contact from infancy. This early cultural immersion produces the aquatic habitus (Bourdieu, 1986; Wiltse, 2022) that school swimming programs then formalize and extend. School-based swimming in Cx1 contexts thus operates in a culturally facilitated environment: teachers can build on existing comfort and positive identity rather than first dismantling cultural barriers.

Notably, however, Cx1 contexts are not culturally uniform. Evidence from Australia and the United States consistently identified disadvantaged sub-populations, Indigenous communities, recent migrants, economically marginalized urban communities of color, who, despite living within nationally water-immersed cultural contexts, report vastly lower swimming competence (Irwin et al., 2017; Royal Life Saving Society Australia, 2021). This internal stratification within Cx1 highlights that national cultural averages can obscure significant cultural subnational variation, with migrant cultural shock, the experience of arriving in a water-immersed Cx1 culture without the aquatic habits that culture presupposes, emerging as a distinct and underdressed barrier (Willcox-Pidgeon et al., 2025).

Cx3: Water-Distanced Cultural Environments

Studies in Cx3 contexts revealed a strikingly different cultural landscape. In Indonesia, Bangladesh, Nigeria, and Ghana, school-based swimming programs operate against a backdrop of community-level cultural water distance: a systematic community orientation away from formal aquatic engagement shaped by the accumulated weight of cultural narratives, family beliefs, gendered norms, and the historical absence of aquatic infrastructure (Cenderadewi et al., 2025; UNESCO, 2020).

Family beliefs featured centrally. Qualitative studies from sub-Saharan African contexts (e.g., Chambers & Wood, 2021; Ekwueme et al., 2023) documented pervasive parental narratives framing open water as supernaturally dangerous, with drowning understood as punishment, fate, or spiritual retribution rather than preventable accident. These narratives were not dismissed by research participants as irrational; they were presented as coherent cultural knowledge systems that organized community behavior around water. Similarly, in Bangladeshi and Indonesian contexts, studies identified the absence of intergenerational aquatic transmission, parents who could not swim and did not conceive of swimming as a relevant or desirable skill, as a foundational cultural constraint on children's aquatic engagement (Rahman et al., 2021; Susanto et al., 2022).

Limited pre-school aquatic exposure in Cx3 settings meant that school swimming programs could not build on existing aquatic habits. Children arrived at their first school swimming lesson carrying not merely the absence of skill but the presence of culturally formed fear, a fundamentally different pedagogical starting point. Studies across Cx3 contexts reported that the first and most significant barrier teachers faced was not technique instruction but the management of deeply culturally embedded aquatic anxiety (Wilder, 2020).

An important nuance emerged from Indonesian studies: proximity to rivers or coastal environments did not automatically translate into aquatic competence. Children from riverside communities demonstrated familiarity with informal water contact, crossing, cooling, playing at river margins, but this was explicitly distinguished from formal swimming competence by both teachers and students. As one Indonesian study participant described: informal water exposure produced survival instinct, not swimming skill, and the cultural meaning attached to each was entirely distinct (Susanto et al., 2022). Disinclination has significant implications for curriculum design: if geographic water proximity confers cultural aquatic readiness risks systematically misreading the cultural landscape of Cx3 communities.

Cultural Barriers to School-Based Swimming Education and Gendered Aquatic Norms



Thematic synthesis across 47 included studies produced four cultural barrier themes that cross-cut contexts, with differential intensity across the Cx1–Cx3 continuum.

Gender emerged as the most consistently documented cultural barrier across all contexts, manifesting with intensity in Cx3 settings. In Indonesia and Bangladesh, religious dress requirements were identified as direct structural barriers to female swimming participation in mixed-gender school settings, with studies reporting female non-participation rates as high as 60–80% in schools lacking gender-separated facilities or appropriate swimwear alternatives (Rahman et al., 2021). In Nigeria and Ghana, community-level taboos about female water immersion, sometimes framed as affecting fertility, menstrual health, or moral standing, functioned as family-level vetoes on girls' participation, with parental withdrawal of daughters from swimming lessons documented across multiple studies (Chambers & Wood, 2021; Ekwueme et al., 2023).

Within Cx1 contexts, gendered barriers took less overt but equally consequential forms. Body image concerns, peer social dynamics in mixed-gender pool environments, and historical cultural messages equating swimming prowess with masculinity all contributed to lower rates of female swimming confidence, particularly among adolescent girls. Intersectional analyses from Australian and American studies revealed that Black and Indigenous adolescent girls reported the lowest swimming self-efficacy of any demographic group, reflecting the convergence of racial, gender, and cultural aquatic exclusions (Love & Thrall, 2019; Royal Life Saving Society Australia, 2021).

Fear of Water as a Cultural Construct

Across included studies, fear of water was consistently present as a barrier, but its character varied fundamentally by cultural context. In Cx1 settings, fear was primarily conceptualized in individual psychological terms, an anxiety response to novel aquatic stimuli, amenable to gradual exposure, coping strategies, and skill-based confidence building within a culturally water-positive environment (Lundhaug et al., 2025). In Cx3 settings, fear of water was documented as a culturally transmitted orientation, actively communicated to children through family warnings, community stories, and the absence of any positive aquatic modeling (Wilder, 2020). Children in these contexts did not merely fear the water; they had been culturally prepared to fear it.

This distinction has decisive pedagogical implications. Standard desensitization-based fear management strategies, effective in Cx1 contexts where fear is primarily individual and situational, are poorly matched to the collective, culturally transmitted fear structures of Cx3 communities. Studies reporting successful fear reduction in Cx3 settings consistently incorporated community-level narrative engagement: bringing parents into the pool environment, using culturally trusted instructors, hosting community water safety events, and explicitly naming and validating community fears before challenging them (Chambers & Wood, 2021; Peden et al., 2021).

Absence of Intergenerational Aquatic Transmission

In Cx1 contexts, intergenerational aquatic transmission, parents swimming with children, family beach and pool culture, aquatic recreation as a shared family activity, constitutes an invisible but powerful complement to formal school swimming programs. This cultural mechanism ensures that swimming exposure is not limited to curriculum time, and that positive aquatic identity is continuously reinforced outside the school environment.

In Cx3 contexts, this transmission chain is largely absent. Parents who cannot swim cannot model aquatic competence, normalize water exposure, or provide informal practice opportunities that consolidate school learning. Multiple studies documented a cultural transmission gap in which school swimming programs, however well-designed, operated as isolated cultural islands within communities where the surrounding cultural ecology actively counteracted the aquatic knowledge and identity the school was attempting to build (Rahman et al., 2021; Susanto et al., 2022; UNESCO, 2020). This gap explains the frequently documented rapid skill regression in Cx3 school swimmers following program completion, without cultural reinforcement outside school, newly acquired competence attenuates quickly (Rahman et al., 2025).

Curriculum-Culture Mismatch



A fourth barrier emerged from studies examining the design and delivery assumptions embedded in school swimming curricula. Curricula developed in and for Cx1 contexts carry cultural assumptions that are rarely made explicit: that children arrive with some prior water comfort; that swimwear is culturally unproblematic; that mixed-gender instruction is acceptable; that the pool environment is perceived as safe and desirable; that swimming is personally relevant to students. These assumptions are systematically violated in Cx3 contexts, yet curricula are frequently imported or adapted from Cx1 frameworks without the cultural recalibration these violations require.

Studies from Indonesia (Susanto et al., 2022) and Nigeria (Chambers & Wood, 2021) documented teachers navigating profound mismatches between national curriculum requirements, often modeled on international frameworks derived from Cx1 research, and the cultural realities of their classrooms. Teachers described spending most early swimming lessons on cultural ground-clearing: building trust, addressing fear, negotiating community concerns, and constructing minimal shared understanding of why water was safe and swimming was worthwhile, all work that Cx1 curricula assume has been done, by culture, before school begins.

Figure 4. Curriculum–Culture Mismatch in School-Based Swimming Education

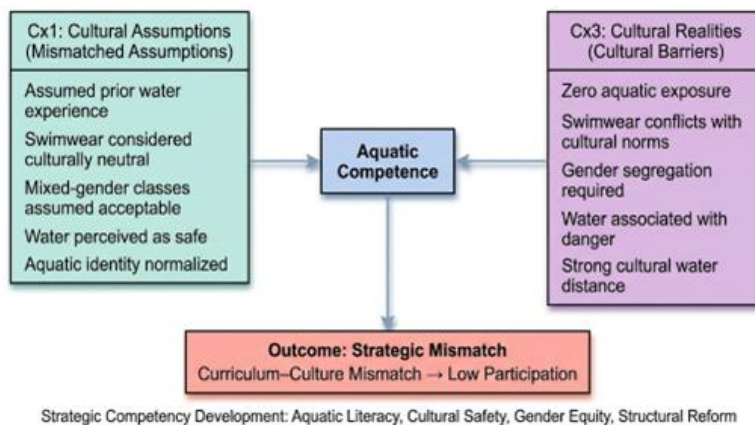


Figure 4 illustrates this structural friction, mapping how unmodified Cx1-calibrated curricula fail to engage the cultural realities of Cx3 learning environments.

Community Cultural Structures as Enablers

While cultural distance presents significant barriers, certain community-level frameworks function as critical pathways for aquatic engagement.

Figure 5. Community Cultural Intermediaries

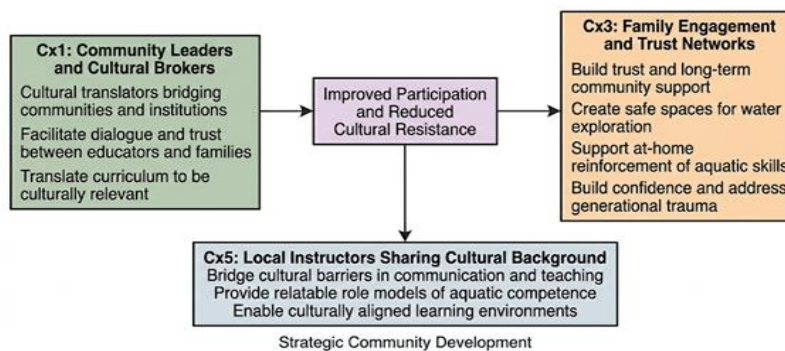


Figure 5 outlines the mediation model through which local instructors and community leaders can successfully bridge the gap between formal school curricula and community aquatic culture. Against this

landscape of cultural barriers, included studies also identified community cultural structures as decisive enablers of effective aquatic education, particularly in Cx3 contexts. Three mechanisms emerged prominently.

Local instructors as cultural intermediaries. Programs that employed instructors from within the target communities sharing cultural background, language, and social networks with families demonstrated consistently stronger engagement and participation than those delivered by culturally external instructors. The cultural intermediary role of local instructors extended beyond technical instruction to encompass community trust-building, family liaison, and culturally resonant framing of water safety messages (Chambers & Wood, 2021; Peden et al., 2021).

Block versus weekly program structures in Cx3 contexts. Several Cx3 studies found that intensive block swimming programs, concentrated daily sessions over a short period, produced superior outcomes compared to once-weekly sessions of equivalent total time. A cultural mechanism was proposed: block programs immerse children in the aquatic environment continuously enough to begin reshaping cultural orientations toward water, while weekly sessions are insufficient to overcome the cultural water distance that reasserts itself between lessons (Kjendlie et al., 2021; Rahman et al., 2021). In Cx1 contexts, where cultural water immersion is continuous outside school, weekly programs are sufficient because the school program complements ongoing cultural reinforcement.

Family and community engagement. Programs that explicitly engaged family and community cultural systems hosting parent swim days, conducting community water safety events, partnering with local religious and community leaders, consistently outperformed school-only programs in Cx3 contexts. Community leader endorsement was documented as significantly reducing family resistance to female participation (UNESCO, 2020). These findings reinforce the view that effective aquatic education in Cx3 contexts is a community cultural project, not merely a pedagogical one.

Discussion

These findings contribute directly to Cultural Studies scholarship by demonstrating that aquatic competence emerges not from pedagogical inputs alone, but from the cultural systems that regulate risk, participation, identity formation, and access to aquatic spaces. Interpreting school-based swimming programs through a Cultural Studies lens reveals how power, history, and cultural memory shape children's orientations to water, thereby reframing aquatic education as a culturally mediated practice rather than a neutral physical skill.

Swimming as a Cultural Artefact

The conceptualization of swimming as a cultural artefact, a human practice that encodes and transmits values, norms, identities, and social relationships, offers the most analytically productive framing of the evidence synthesized in this review. Across all cultural contexts, the acquisition of swimming skill is never a purely technical process. It is always also a cultural process: children learn not only how to swim but what swimming means, who it is for, what it says about them, and what relationship their community has with aquatic environments. The content of these cultural lessons varies profoundly across the Cx1–Cx3 continuum, and this variation, not merely variation in infrastructure or instruction quality, explains much of the global disparity in aquatic competence.

This reframing has practical implications for how we understand the effectiveness of school swimming programs. A program that successfully teaches freestyle stroke to a Cx1 cohort of children who arrive with positive aquatic identities, family swimming experience, and community water confidence is performing a fundamentally different task, and deserves credit for a fundamentally different achievement, than a program that successfully introduces water entry and floating to a Cx3 cohort whose students arrive with culturally transmitted fear, family resistance, and no prior positive experience of water. Both achievements are pedagogically significant, but they are not equivalent, and they should not be evaluated by the same cultural yardstick.

Drowning as Cultural Inequality



The persistent global disparity in drowning mortality, concentrated in Cx3 contexts and within culturally marginalized subpopulations of Cx1 nations, is most accurately understood as an expression of cultural inequality. This framing shifts the analytical and policy burden from individual deficit (the child who cannot swim) to structural cause (the cultural systems that have made swimming inaccessible, threatening, or irrelevant). It demands that drowning prevention be addressed not only through technical skill transmission but through the conditions, cultural, social, political, historical, that produce aquatic exclusion in the first place (Love & Thrall, 2019; Wiltse, 2022).

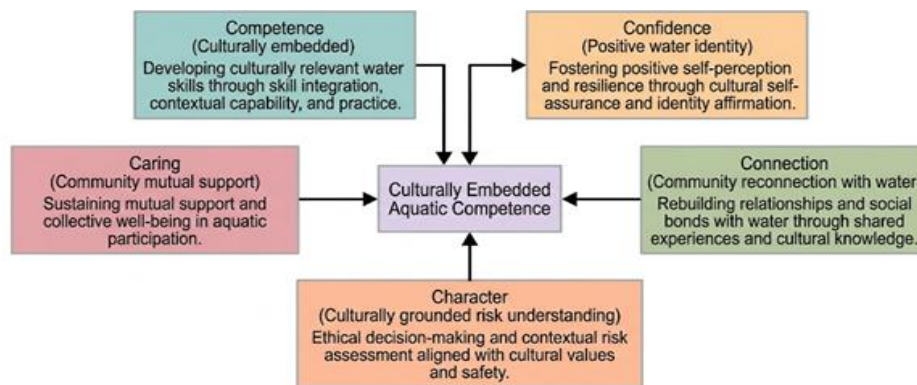
This interpretation aligns with contemporary Cultural Studies analyses that conceptualize sport and physical activity as culturally situated practices structured by inequality. Understanding drowning vulnerability as a cultural inequity, rather than simply a technical skill gap, extends theoretical discussions in the field and underscores the need for culturally grounded interventions in aquatic education.

Recognizing drowning as cultural inequality also reframes the role of school-based swimming education. In water-distanced communities, the school is the only institution with the regular child contact, institutional authority, and programmatic capacity to challenge and transform community aquatic culture. This is a profound responsibility, one that is, as this review documents, poorly supported by curricula, teacher training systems, and policy frameworks that remain largely calibrated to Cx1 cultural assumptions.

The 5C Framework, Culturally Reinterpreted

To operate these cultural insights into pedagogical practice, existing aquatic competency models require a profound theoretical expansion.

Figure 6. Cultural 5C Framework



The “5C” framework in Figure 6 provide for quality swimming education, Competence, Confidence, Connection, Character, and Caring (adapted from Kjendlie et al., 2021), provides a useful scaffold for understanding what culturally responsive aquatic practice looks like. Through a cultural studies lens, each dimension takes on expanded meaning in Table 3:

Table 3. 5C Framework, Culturally Reinterpreted

Dimension	Technical Interpretation	Cultural Interpretation
Competence	Technical swimming skill acquisition	Culturally embedded aquatic capability; recognizing diverse forms of aquatic knowledge
Confidence	Self-efficacy in water	Positive water identity; cultural permission to belong in aquatic spaces
Connection	Relationship with the aquatic environment	Community and family cultural reconnection with water; healing colonial water exclusions
Character	Responsibility and safety awareness	Culturally consonant risk frameworks; community-specific safety narratives
Caring	Care for others in water contexts	Community mutual responsibility; cultural transmission of aquatic knowledge across generations

This reinterpretation suggests for Table 3 that represent the 5C framework, understood culturally, provides a richer and more actionable guide for aquatic program design in Cx3 contexts than its conventional technical application permits.

Why Block Programs Succeed and Weekly Programs Fail: A Cultural Explanation

The evidence for block program superiority in Cx3 contexts, discussed in Section 4.3, warrants theoretical elaboration. Bourdieu's (1986) concept of habitus formation offers an explanation: habitus is acquired through repeated, sustained immersion in a social field, dispositions are only durably transformed through accumulated, continuous experience, not intermittent exposure. A block swimming program creates, for a concentrated period, the conditions for aquatic habitus formation: daily contact with water, progressive familiarity with pool environments, peer and instructor relationships that normalize aquatic participation, and the gradual embodied sense of belonging in a previously threatening environment. A once-weekly program, separated by six days of cultural water distance, provides insufficient continuity for this habitus transformation to take hold before the cultural ecology of the community reasserts itself.

This insight has direct implications for program scheduling policy in Cx3 contexts: block formats should be the structural default, not an optional variant, for school swimming education in water-distanced communities.

Limitations of the Study

This review carries several limitations. First, inclusion of only peer-reviewed, English-language studies may have underrepresented evidence from Cx3 contexts, where research is more likely to be published in local languages or in grey literature. Second, the cultural context coding (Cx1–Cx3) necessarily simplifies complex cultural landscapes; within each classification, significant subnational, urban-rural, and demographic variation exists. Third, the interpretive nature of cultural comparative analysis means that theoretical constructs applied across diverse contexts, habits, cultural safety, water identity, may not translate with full fidelity to all cultural settings represented in the included studies.

Implications for Cultural Policy Implications

Water Safety as Cultural Policy

The evidence presented in this review supports repositioning water safety from a public health technical issue to a cultural policy priority. This reframing requires engagement across government portfolios, education, health, culture, indigenous affairs, gender, and community development, rather than the siloed treatment it currently receives within physical education curriculum policy. National water safety strategies in Cx3 contexts should explicitly address cultural dimensions: mapping community-level water narratives, identifying culturally specific barriers to female participation, engaging religious and community leaders, and resourcing community cultural transformation alongside physical infrastructure.

Equity-Centered Aquatic Curriculum Design

School swimming curricula must be designed and evaluated through an equity lens that accounts for the cultural starting points of diverse learner populations. This requires: (a) community cultural needs assessments prior to program design; (b) curriculum frameworks that include explicit tools for addressing fear of water as a cultural phenomenon; (c) gender-inclusive program models, including appropriate swimwear provisions, single-gender lesson options, and female instructor availability in contexts where mixed-gender instruction is culturally contested; and (d) evaluation frameworks that recognize and credit culturally sensitive progress rather than measuring all learners against a Cx1-normalized competence standard.

Culturally Responsive Pedagogy and Teacher Training



Physical education teacher training programs must incorporate cultural competency as a core aquatic pedagogy component. Teachers in multicultural Cx1 nations require training to recognize and respond to the diverse aquatic cultural backgrounds their students bring, including migrant cultural shock, Indigenous water histories, and racialized experiences of aquatic exclusion. Teachers in Cx3 settings require training in community engagement strategies, culturally sensitive fear management, and the pedagogical skills to deliver culturally adapted curricula within locally resonant frameworks.

Community Cultural Intermediaries as Structural Assets

The evidence for local instructors as cultural intermediaries (Section 4.3) should be recognized as a structural asset, not an ad hoc workaround. National and regional swimming development programs in Cx3 contexts should invest systematically in the training and deployment of community-embedded aquatic instructors, individuals who share cultural, linguistic, and social capital with the communities they serve and who can function as bridges between school aquatic programs and community cultural systems. This model has demonstrated effectiveness across multiple Cx3 contexts and warrant policy-level institutionalization.

Involving Families and Community Cultural Structures

School swimming programs cannot achieve durable cultural transformation in isolation. Family engagement strategies, parent swim sessions, community water literacy workshops, and culturally tailored take-home materials, are not peripheral additions to aquatic programs but structural necessities for Cx3 contexts where the school program must compensate for the absence of intergenerational aquatic transmission. Policy frameworks should fund and mandate family engagement components as core elements of school swimming program delivery, particularly in communities where cultural water distance is identified as a primary barrier.

Conclusions

This systematic review has demonstrated that aquatic competence is not merely a physical skill, but a culturally embedded capability shaped by identity, exposure, and the societal norms that govern who belongs in water and on what terms. The Cx1–Cx3 cultural context continuum reveals a global landscape of profound aquatic inequality that, while materially expressed, is fundamentally cultural in origin and cultural in its necessary remedies.

School-based swimming education holds transformative potential as a cultural intervention, capable, when designed with cultural intelligence, of reshaping community relationships with water, building positive aquatic identities, and ultimately preventing the drowning deaths that disproportionately claim children from water-distanced communities. Realizing this potential requires the courage to recognize that curricula, training systems, and evaluation frameworks calibrated to Cx1 cultural assumptions are not neutral pedagogical tools. They are the products of a particular cultural relationship with water, and they carry that culture's invisible assumptions into every classroom and poolside they enter.

The pursuit of global swimming equity demands that we ask not only how we teach children to swim, but whose cultural understanding of swimming we are teaching, whose aquatic identity we are inviting children to inhabit, and whose cultural barriers we are willing to name, challenge, and dismantle. Only by centering these questions in policy and pedagogy can school-based swimming education fulfill its potential as both a life-saving skill and a vehicle for cultural healing.

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