

Teachers' Environmental Management Practices for Risk-Inclusive Play in Elementary Schools: A Systematic Review

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ABSTRACT

This study aims to explore teachers' environmental management practices in supporting risk-inclusive play in elementary school settings through a systematic literature review. It examines how teachers manage play environments to balance children's safety with meaningful developmental opportunities. By synthesizing selected studies, this research highlights the role of teachers as environmental managers who regulate risk through continuous assessment, spatial arrangement, and adaptive supervision. The findings indicate that flexible environmental management practices allow children to engage in manageable challenges that support physical, social, and emotional development. Teachers who move beyond risk avoidance toward risk management create learning environments that encourage autonomy while maintaining appropriate safeguards. The review also reveals that institutional policies, cultural norms, and parental expectations significantly influence how risk-inclusive play is implemented in schools. Supportive school policies and shared understanding among stakeholders strengthen teachers' confidence in facilitating challenging play experiences. This study contributes to the field of elementary education by positioning environmental management as a pedagogical strategy rather than merely a safety mechanism, offering insights for teacher education and school policy development aimed at fostering balanced and developmentally supportive play environments.

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Introduction

Play is a fundamental activity in children's lives and plays a crucial role in supporting their holistic development [1]. Through play, children explore their environment, develop physical coordination, enhance social interaction skills, regulate emotions, and construct cognitive understanding [2]. Play also provides children with opportunities to discover their interests and talents while fostering creativity and intrinsic motivation. As an essential component of early learning, play contributes significantly to children's long-term well-being and readiness for future learning [3].

Among the various forms of play, risk-inclusive play has received increasing attention in educational research for its potential to support children's independence, resilience, and decision-making skills [4]. Risk-inclusive play involves activities that contain elements of uncertainty and challenge, allowing children to experience excitement, tension, and manageable fear within developmentally appropriate boundaries [5]. In this context, risk is not merely danger but an opportunity for children to assess situations, consider consequences, and make autonomous choices [6].

A growing body of research indicates that risk-inclusive play supports children's physical, emotional, and social development when implemented in safe, supervised environments. [7] explain that risky play provides children with opportunities to face physical, mental, and social challenges appropriate to their developmental stages. [8] identifies several forms of risky play, including play at heights, high-speed play, play involving tools, rough-and-tumble play, hide-and-seek or disappearance play, and exploratory play in natural environments.

Children's engagement in free play and risk-inclusive play has been shown to offer long-term developmental benefits [9]. Such activities support emotional regulation, self-control, and cognitive flexibility while allowing children to learn from mistakes in relatively safe contexts [10]. Children who regularly engage in outdoor play and interact with natural environments also demonstrate higher levels of self-regulation and adaptive capacity compared to those with limited exposure to such experiences [11].

Despite these well-documented benefits, opportunities for children to engage in risk-inclusive play within school environments have become increasingly limited [12]. Heightened concerns regarding child safety, institutional accountability, and legal liability have contributed to the implementation of more restrictive play policies and excessive supervision

[13]. This situation reflects a growing societal intolerance toward risk in children's everyday experiences [14].

Contemporary social and educational practices further reinforce restrictions on children's play opportunities. Excessive adult supervision, tightly structured schedules, and the increasing use of digital devices have reduced children's opportunities to move freely and interact directly with their social and natural environments [15]. Research conducted in the Indonesian context indicates that limited opportunities for active play are associated with declines in motor skills and physical health indicators among young children, particularly in urban areas [16].

Within this context, teachers play a highly strategic role in shaping children's play experiences at school [17]. Teachers function not only as learning facilitators but also as environmental managers, responsible for organizing, supervising, and regulating play activities [18]. Teachers' environmental management practices—such as risk identification and assessment, spatial organization of play areas, supervision strategies, and rule-setting—significantly influence the extent to which risk-inclusive play can be implemented in elementary school settings [19].

Previous studies suggest that teachers' approaches to managing play environments are influenced by professional experience, institutional demands, and prevailing cultural norms [20]. Teachers' tolerance for risk and their ability to balance safety considerations with the meaningfulness of play determine how far children are allowed to engage in challenging play activities [21]. In some cases, overly cautious management practices may unintentionally restrict children's developmental opportunities [22].

Although research on risk-inclusive play and the role of teachers has continued to expand, existing findings remain fragmented and have not yet been systematically integrated [23]. Many studies focus either on the developmental benefits of risky play or on teachers' beliefs and attitudes toward risk, without providing a comprehensive understanding of how teachers' environmental management practices are enacted in elementary school contexts [24]. This lack of synthesis limits a holistic understanding of effective environmental management strategies that support both safety and meaningful play experiences [25].

Moreover, much of the existing empirical research has been conducted in Western educational contexts, which may limit the generalizability of current findings to the diversity of social, cultural, and policy environments in other regions, including developing countries [26]. Differences in safety norms, parental expectations, and school policies may shape how teachers manage play environments and interpret risk in children's play [27]. These conditions highlight the need to review and integrate research findings across contexts to develop more inclusive and applicable insights [28].

Given these gaps, a systematic literature review is necessary to identify, categorize, and synthesize teachers' environmental management practices that support risk-inclusive play in elementary schools. Using a PRISMA-guided systematic review approach, this study seeks to map forms of environmental management practices, supervision strategies, and safety considerations employed by teachers to facilitate challenging yet safe play experiences. The synthesis is expected to contribute conceptually to the field of environmental management in elementary education and provide practical guidance for teachers, school leaders, and policymakers in creating play environments that balance protection with children's freedom of exploration.

Material and Methods

This study employed a systematic literature review (SLR) using a descriptive qualitative approach to synthesize empirical evidence on teachers' environmental management practices in supporting risk-inclusive play in elementary school settings. The qualitative SLR approach was chosen to enable an in-depth interpretation of how teachers conceptualize, manage, and balance environmental risks and learning opportunities within school-based play contexts [29].

The review process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, methodological rigor, and reproducibility [30]. PRISMA guided the sequential stages of identification, screening, eligibility assessment, and final inclusion of studies relevant to the research focus [31].

Literature research was conducted using the Publish or Perish (PoP) software, sourcing publications indexed in the Dimensions database. The search was limited to studies published between 2015 and 2025 to capture contemporary research on risk-inclusive play, environmental management, and elementary education. Only peer-reviewed journal articles and conference proceedings published in English were considered.

The search strategy was designed to ensure both breadth and conceptual precision in identifying relevant literature. Three primary keywords ("*risk-inclusive play*" OR "*risky play*," "*environmental management*," and "*elementary school*") were systematically combined using Boolean operators. These keywords were applied to titles, abstracts, and author-designated keywords to maximize retrieval of studies that explicitly addressed the intersection of play, risk, and environmental management within elementary education contexts. This approach allowed for a comprehensive yet focused corpus while minimizing the inclusion of conceptually peripheral studies.

During the identification stage, the initial database search yielded 1,392 records. After removing 178 duplicate entries, a total of 1,214 unique articles remained for further

consideration. This initial pool reflected a broad range of scholarly discussions, including children's play and development, school safety, learning environment design, teacher practices, and educational management. While many studies addressed play or safety independently, only a subset explicitly engaged with pedagogical and environmental dimensions of risk-inclusive play.

The screening stage involved a systematic review of titles and abstracts to assess their alignment with the study's objectives. At this stage, 1,034 articles were excluded for several reasons. Many studies focused on early childhood or secondary education rather than elementary school settings, examined play in non-school environments such as homes or public playgrounds, or emphasized safety and injury prevention without considering pedagogical intent or environmental management. Additionally, studies that did not position teachers as central actors in managing play environments were excluded. Following this process, 180 articles progressed to full-text review.

In the eligibility stage, the remaining articles underwent an in-depth full-text assessment based on predefined inclusion criteria. These criteria required studies to: (1) be situated in elementary or primary school contexts; (2) explicitly address teachers' roles in managing play environments and associated risks; (3) employ empirical qualitative, mixed-methods, or rigorous observational research designs; and (4) demonstrate sufficient methodological transparency and analytical depth. As a result of this appraisal, 173 articles were excluded due to limited methodological rigor, superficial treatment of environmental management practices, or conceptual misalignment with the principles of risk-inclusive play.

Ultimately, seven studies met all inclusion criteria and were included in the final qualitative synthesis. Data from these articles were analyzed using a thematic synthesis approach. This process involved inductive coding to identify recurring patterns and themes related to teachers' risk assessment strategies, organization of physical environments, supervision practices, pedagogical decision-making, and contextual factors influencing the management of risk-inclusive play in elementary schools.

This study did not involve human participants, as it exclusively analyzed previously published research, and therefore did not require ethical approval [32]. While the systematic approach strengthened the review's credibility, limitations include reliance on a single database and variability in the conceptual definitions of risk-inclusive play across studies. Nevertheless, the seven included studies were deemed sufficiently robust to support meaningful thematic interpretation and conceptual advancement in the field.

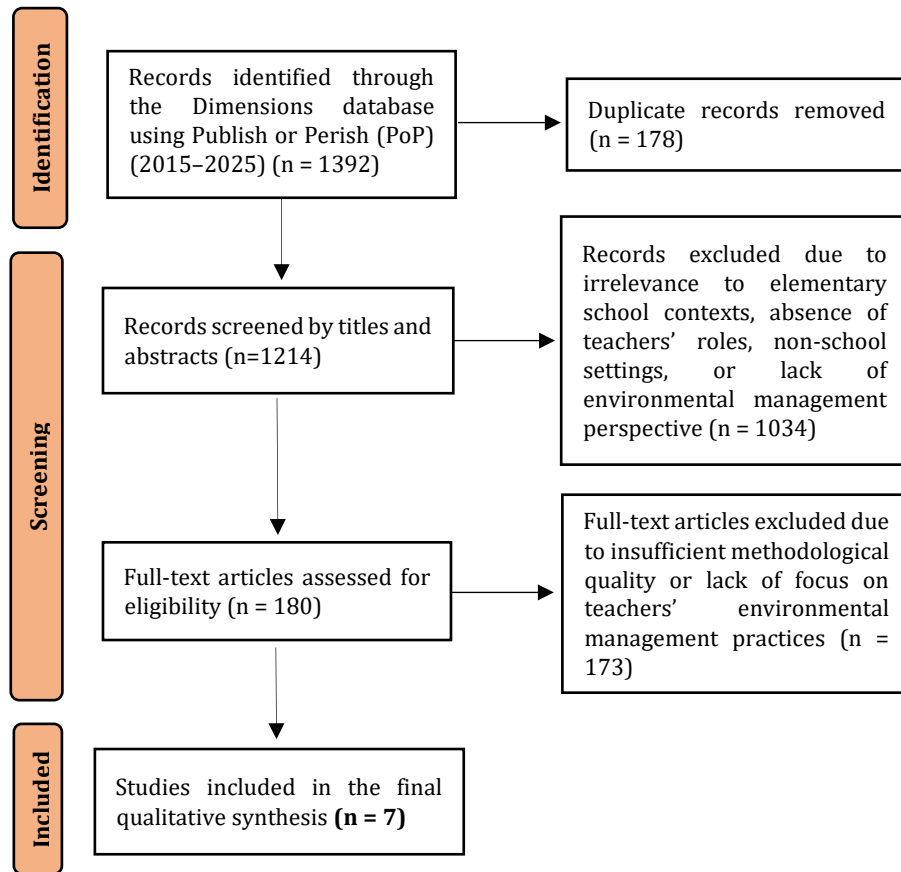


Fig. 1. PRISMA flow diagram of the study selection process [33]

Fig. 1 illustrates the systematic identification, screening, eligibility assessment, and inclusion of studies examining teachers' environmental management practices that support risk-inclusive play in elementary school settings. The literature search covered publications from 2015 to 2025. After removing duplicates and applying predefined inclusion and exclusion criteria, seven studies were included in the final qualitative synthesis.

Results and Discussions

The synthesis of the seven selected studies confirms that teachers' environmental management practices play a decisive role in enabling risk-inclusive play in elementary school settings. Rather than conceptualizing risk as an element that must be eliminated, teachers increasingly function as environmental managers who regulate, adapt, and negotiate play conditions to balance children's safety with meaningful developmental opportunities[34]. The included studies represent diverse national contexts and methodological approaches, offering a comprehensive understanding of how environmental management practices are enacted across educational settings. The characteristics of the included studies are summarized in Table 1.

Table 1. Selected Paper

Author(s)	Year	Country/C ontext	Educational Level	Research Focus
Liu & Birkeland [35]	2022	Norway & China	Early Childhood/ Elementary Context	Teachers' perceptions of risky play, definitions of risk, protective strategies, and cultural differences in practice.
Spencer et al. [36]	2021	Canada	Early Childhood Education	Educators' perceptions and strategies related to risky play in outdoor loose parts interventions.
Eager et al. [37]	2025	Australia/ Global	Educational and Play Settings	Development of a benefit-risk assessment tool for outdoor playgrounds and educational environments.
Sandseter & Kennair [38]	2011	Norway/ Internation al	Early Childhood Education	Theoretical framework of children's risky play from an evolutionary perspective.
Sandseter et al. [8]	2021	Norway	Early Childhood Education	Prevalence and forms of risky play in indoor and outdoor free-play settings.
Tsujitani [39]	2024	Japan	Early Childhood Education	Practitioners' perceptions of children's risky play within local policy and cultural contexts.
Little [40]	2022	Australia	Early Childhood Education	Influence of redesigned outdoor environments on risky play and educators' responses.

Table 1 presents the characteristics of the seven studies included in this systematic review. The studies span diverse national contexts and examine teachers' and practitioners' roles in managing play environments, assessing risk, and supporting risk-inclusive play across early childhood and elementary educational settings.

A. Risk Assessment as a Core Environmental Management Practice

According to reviewed studies, teachers consistently engage in ongoing risk assessment as a fundamental component of managing play environments. This assessment is rarely formalized through standardized protocols; instead, it operates as a continuous and situational judgment process. Teachers evaluate potential risks by considering children's physical capabilities, emotional maturity, familiarity with play materials, and social interactions. This approach reflects the understanding that risk-inclusive play does not involve exposing children to danger but rather allowing developmentally appropriate challenges that promote learning and resilience.

The findings further indicate a clear shift from a risk-avoidance paradigm toward a risk-management approach. Teachers who demonstrate a higher tolerance for uncertainty tend to provide children with greater autonomy in navigating play-related challenges. Such practices support previous arguments that eliminating all risks may restrict children's opportunities to develop decision-making skills, confidence, and self-regulation. In this context, environmental

management becomes a pedagogical practice through which risk is intentionally calibrated rather than suppressed.

B. Spatial Arrangement and Material Management in Play Environments

Another prominent theme concerns teachers' management of physical space and play materials to support risk-inclusive play. The reviewed studies reveal that environmental management extends beyond supervision to include deliberate decisions regarding playground layout, the availability of loose parts, the integration of natural elements, and the use of adaptable equipment. Teachers who intentionally design flexible play spaces create environments that allow children to explore height, speed, and movement within controlled and supervised boundaries.

These findings highlight that the physical environment functions as an active pedagogical tool rather than a neutral backdrop for play. Natural features such as uneven terrain, trees, or open-ended materials are often managed to encourage exploration while still enabling timely teacher intervention. Such practices demonstrate that environmental management moves beyond compliance with safety standards and becomes integral to facilitating meaningful and challenging play experiences.

C. Supervision Strategies and the Balance Between Control and Autonomy

The synthesis also emphasizes that supervision strategies constitute a critical element of teachers' environmental management practices. Teachers employ varying levels of supervision depending on the perceived risk associated with specific play activities. Rather than maintaining constant direct control, many teachers adopt a "watchful presence" approach, remaining physically close and attentive while allowing children to direct their own play.

This approach reflects an awareness that excessive supervision may undermine the developmental value of risk-inclusive play. Teachers who successfully balance oversight and autonomy enable children to experience manageable failure, problem-solving, and self-regulation, thereby fostering independence and resilience. The findings suggest that effective environmental management requires teachers to continuously adjust their supervisory practices in response to children's actions and changing environmental conditions.

D. Institutional, Cultural, and Policy Influences on Environmental Management

The reviewed studies further indicate that teachers' environmental management practices are shaped by broader institutional, cultural, and policy contexts. School regulations, safety policies, parental expectations, and legal considerations frequently constrain teachers' willingness to permit risk-inclusive play. In some educational contexts, strict safety guidelines contribute to highly sanitized play environments that limit opportunities for meaningful risk engagement.

Conversely, when schools adopt supportive policies and promote shared understandings among teachers, administrators, and parents, teachers demonstrate greater confidence in implementing environmental management practices that support challenging play. These findings underscore the importance of systemic support in enabling teachers to move beyond individual beliefs and to adopt sustainable approaches that balance protection with children's need for exploration.

E. Synthesis of Findings

Collectively, the findings indicate that teachers' environmental management practices are central to the successful implementation of risk-inclusive play in elementary school settings. Effective environmental management encompasses continuous risk assessment, intentional spatial design, adaptive supervision strategies, and alignment with institutional norms. Rather than serving as a peripheral concern, environmental management emerges as a core pedagogical responsibility that directly shapes children's play experiences and developmental outcomes.

Conclusion

This systematic literature review demonstrates that teachers' environmental management practices are central to supporting risk-inclusive play in elementary school settings. Based on the synthesis of seven selected studies, teachers emerge not merely as safety supervisors but as active managers of learning environments who continuously assess risk, organize play spaces and materials, and apply adaptive supervision strategies. These practices enable children to engage in manageable challenges that promote physical, social, emotional, and decision-making development, positioning risk as a pedagogical resource rather than a hazard to be eliminated.

Furthermore, teachers' environmental management practices are strongly shaped by institutional, cultural, and policy contexts. Supportive school policies and shared understanding among teachers, parents, and administrators enhance teachers' confidence in facilitating risk-inclusive play, while overly restrictive safety regulations tend to limit meaningful play opportunities. These findings highlight the need to conceptualize environmental management as an integral pedagogical strategy in elementary education, with important implications for teacher education, school policy development, and future research on play-based learning environments.

Limitations and Future Research

Despite its contributions, this systematic review has several limitations. First, the number of included studies was limited to seven articles, which may restrict the generalizability of the findings across diverse educational systems. Second, most of the

reviewed studies were conducted in Western and high-income countries, with limited representation from developing or non-Western contexts. As a result, variations in cultural norms, policy frameworks, and institutional practices related to risk and play may not be fully captured.

Future research should expand empirical investigations into teachers' environmental management practices in a wider range of cultural and educational contexts, particularly in elementary school settings within developing countries. Additionally, further studies could explore the development of explicit frameworks or assessment tools to support teachers in managing risk-inclusive play environments. Longitudinal and mixed-methods research designs may also provide deeper insights into how environmental management practices influence children's developmental outcomes over time.

Conflict of Interest

The authors declare no conflict of interest.

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