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Handouts for Keynote Address & Symposium

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Shanghai Normal University

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Pacific Early Childhood Education Research Association Annual Conference 2025 (PECERA)

Shanghai Intitute of Early Childhood Education

Shanghai Normal University

100 Guilin Road, Shanghai, China

Keynote 1

AI in Action: Transforming Early Childhood Education in China

Professor, Jiaxiong Zhu, China

AI in Action: Transforming Early Childhood Education in China

AI在中国幼儿教育中的运用

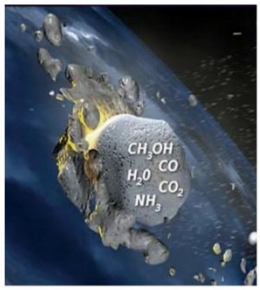
Jiaxiong Zhu

Tenured professor at East China Normal University

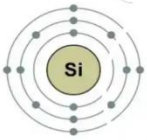
The advent of artificial intelligence (AI) has brought about a transformative, even revolutionary, change. Created by human ingenuity, these "silicon-based minds" hold the potential for both immense benefit and destroy consequences.

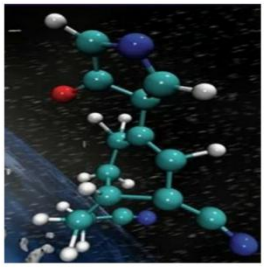
人工智能 (AI) 的出现给人类带来了颠覆性的变革，堪称一场技术革命。人类的“碳基大脑”创造了机器的“硅基大脑”，AI 不仅仅是机器，更是能够进行思考的“硅基人”。AI 既能造福人类，也可能带来毁灭性的灾难。

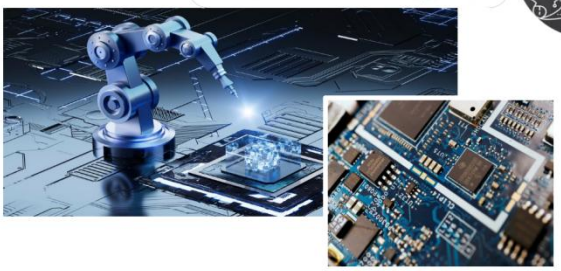
carbon-based minds 碳基脑(C)



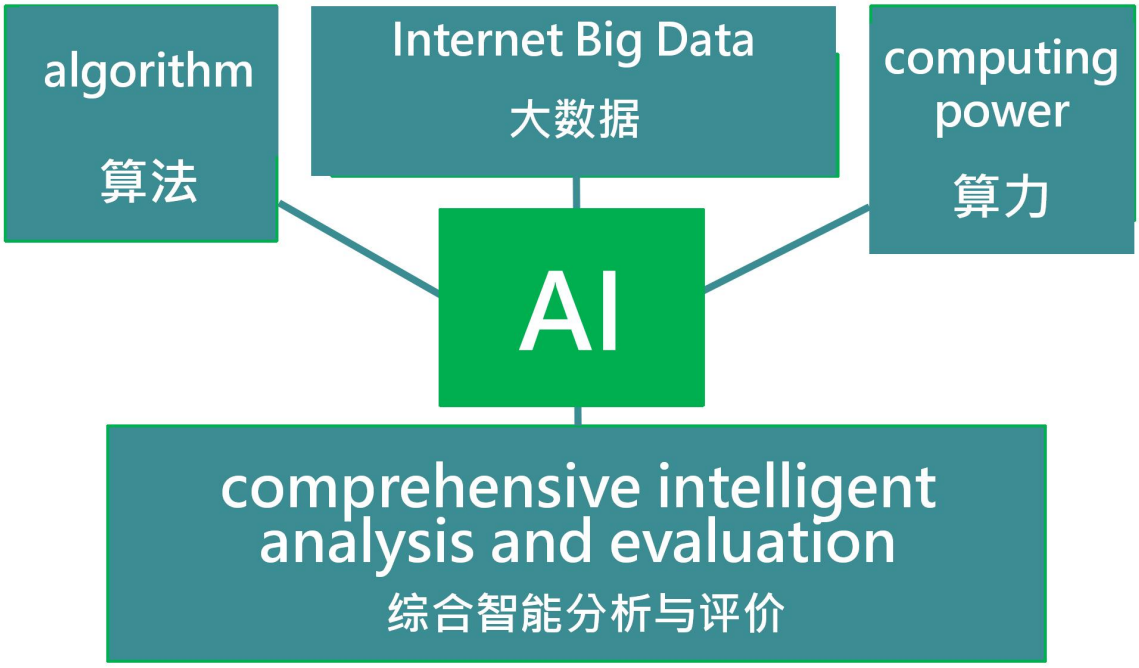
silicon-based minds 硅基脑(Si)







Three foundations of AI



In the era of the Fourth Industrial Revolution,China's AI development has advanced at a remarkable pace. A lot of large AI models, such as Doubao, Kimi，and DeepSeek, have been developed and widely applied across multiple sectors, with the education sector being a prominent example.

在第四次工业革命的年代里，中国的AI发展是十分迅速的，一大批AI的大模型（如豆包、kimi、DeepSeek等）被开发出来的，被社会各界广泛运用，教育界并不例外。

In recent years, the Ministry of Education of China has proposed cultivating a large number of teachers with digital literacy to address educational transformations. Education authorities *across the country have responded to this initiative by rolling out concrete implementation plans.*

Currently, ECE professionals in China are actively exploring and implementing AI applications in numerous kindergartens.

近年来教育部提出，要培养一大批具备数字素养的教师以应对教育的变革，各地的教育职能部门纷纷响应，先后提出了实施方案。

目前，中国大陆幼儿教育工作者正积极探索 AI 在幼儿教育中的应用，并在许多幼儿园开展了实践。

Minister of Education Huai Jinpeng:

We need to cultivate a large number of teachers with digital literacy.

教育部部长怀进鹏：要培养一大批具备数智素养的教师

Two years ago, AI apps specifically trained for early childhood education was introduced into kindergartens in Shanghai. Based on the accumulated experience, these apps have gradually been implemented in some other regions, including Chongqing, Beijing, Guangdong, and Zhejiang. The most crucial aspect in deploying AI apps lies in training kindergarten teachers and directors, that is, how to empower AI.

两年前，经过训练的为学前教育专用的AI app 已经进入了上海的幼儿园，并在总结经验的基础上逐渐在重庆、北京、广东和浙江等一些地区推行。AI app的运用，最为重要的问题是教师和园长的培训问题，即如何为AI赋能。

Firstly,we need to understand what AI apps can do for early childhood education, including what they can do for young children, teachers, and kindergarten administrators.

Secondly, we need to know how to select pre-trained AI apps to avoid AI hallucinations that could mislead education.

Thirdly, we need to know how to navigate the interactive relationship among teachers, children, and AI apps.

首先，要明白 AI app能为幼儿教育做些什么，包括在幼儿、幼儿教师以及幼儿园管理人员三个层面上能做些什么。

第二，要懂得如何选择经由训练的AI app，避免AI产生幻觉，从而误导教育。

第三，要懂得如何处理好教师、幼儿与AI app三者之间的互动关系。

What can AI apps do for early childhood education

AI 能为幼儿教育做什么

What can AI apps do for young children

维度	幼儿		for children
内容生成	根据幼儿需求和兴趣，生成学习内容	Content generation	Generating learning materials according to the needs & interests of children
数据采集	实时自动记录幼儿真实行为的数据	Data acquisition	Automatically documenting children's authentic behavioral data in real time
自评他评	自动评估儿童的发展水平和学习进度	Assessment & evaluation	Automatically assessing children's developmental levels and learning progress
形成文档	及时报告儿童的自主学习和探索	Formulate documents	Timely reporting children's autonomous learning and exploration

What can AI apps do for teachers

维度	教师		for teachers
内容生成	为教师生成个性化教学方案	Content generation	Generating personalized teaching plans for teachers
数据采集	解读儿童的活动数据以深入了解每个幼儿	Data acquisition	Interpreting children's activity data, gaining deep insights into individual young child
自评他评	分析和评估儿童的发展水平和学习状态	Assessment & evaluation	Analyzing and assessing children's developmental levels and learning status
形成文档	制定儿童的学习和教学进展的计划	Formulate documents	Formulate a report on children's learning & instructional progression

What can AI apps do for directors

维度	园长		for directors
内容生成	形成园所教育方案和幼儿园发展规划	Content generation	Formulating institution-specific educational plans and kindergarten development plans
数据采集	幼儿、教师状况存档 人事、事务管理档案	Data acquisition	Archiving children's developmental records and teachers' professional profiles, Managing personnel & administrative archives
自评他评	幼儿园自评、他评	Assessment & evaluation	Self-evaluation and external evaluation of kindergarten
形成文档	对上级部门的汇报	Formulate documents	Report to higher-Level departments

How to choose pre-trained AI apps

如何选择经由训练的AI apps

Using seven tons of ingredients to train robots in stir-frying techniques, enabling them to rival the skill level of Hunan cuisine masters

投入7吨菜训练炒菜机器人，使之与湘菜大师的水平相当

China’ s first training facility for humanoid robots in Shanghai
在上海启用的中国首个机器人训练场

- 它只是机器（玩具）
- 它没有智慧

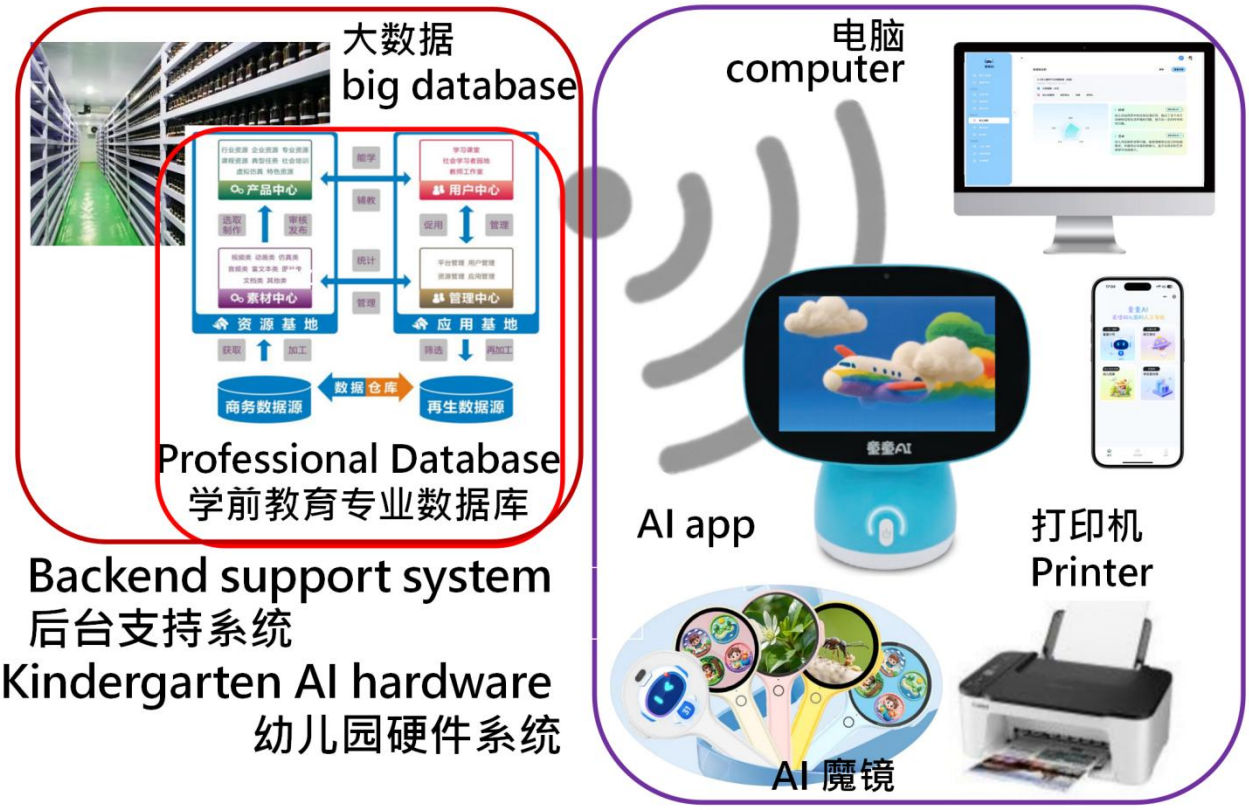
- It is just a machine (toy);
- It has no wisdom.

Implanted into large models

Big data 大数据

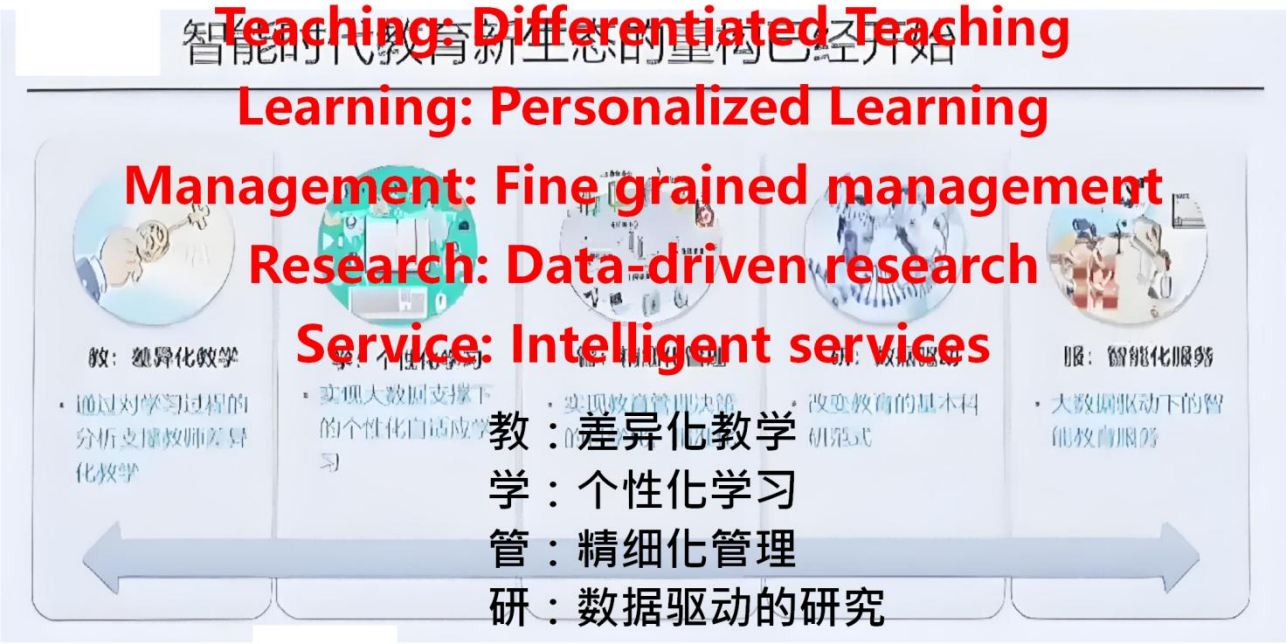
- 它是机器人
- 但没有经由过训练
- 不能被用于专业

- It is a AI robot.
- It has not received professional training.
- It cannot be used for professional purposes.



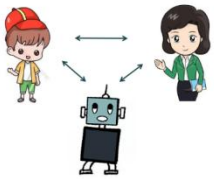
Reconstructing the new ecology of early childhood education in the era of AI

AI时代，重构幼儿教育的新生态



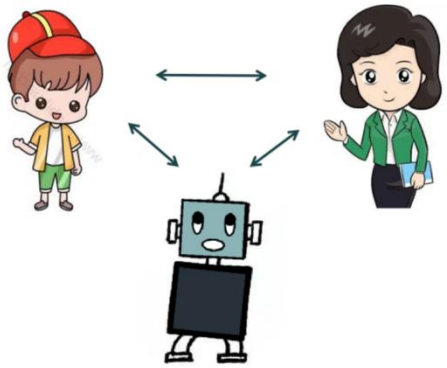
The relationship among children, teachers and AI

幼儿、教师和AI之间的关系



How to navigate the relationships among children, teachers and AI

如何处理关系三者之间的关系



Analysis of Factors Affecting the Quality of Human vs. AI.

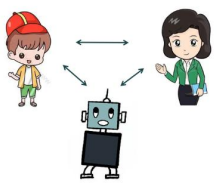
影响人类与AI质量的因素分析

70% of users' influence empowering input quality

70%受运用者赋能的影响

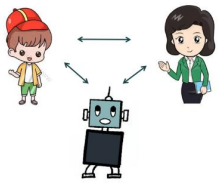
90% of human's influence update by AI creator & users

90%受AI创作者和运用者影响



90% of AI's influence the quality of AIapp

90% AI App 的质量



Keynote 2

Ensuring Universality, Equity and Quality: Changes and Challenges of Early Childhood Education Policies and Practices in China

Xiumin Hong, Ph.D., China

Ensuring Universality, Equity and Quality: Changes and Challenges of Early Childhood Education Policies and Practices in China

Xiumin Hong

Institute (Department) of Early Childhood Education, Faculty of Education, Beijing Normal University

Extended Abstract:

1. Basic Background of the Development of Early Childhood Education (ECE) in China

1.1 Three Stages of Changes in the Positioning of ECE Supply Attributes

·Unit Welfare stage (1949–1992): ECE was provided as an employee benefit.

·Educational Industry stage(1993–2009): Socialized ECE.

·Public Service stage (2010–Present): Part of inclusive non-basic public service.

1.2 Overall Development of ECE before 2010

·Issues of Universality

·Issues of Equity

·Issues of Quality

1.3 2010: A Milestone in the Reform and Development of ECE in China

2. Major Achievements of China's ECE Policies and Practices

2.1 Legal System: Initial Establishment of a Legal System for ECE

The introduction of the *Preschool Education Law of the People's Republic of China* has clarified educational objectives, management systems, funding guarantees, etc., providing a basis for promoting universal access, equity, and quality in ECE.

2.2 Finance: Increased Investment and Gradual Institutional Advancement

·Policy Achievements: *Administrative Measures for Preschool Education Fiscal Funds*; *Opinions on Improving the Preschool Education Funding System*, etc.

·Practical Achievements: Steady growth in fiscal funding; expanded coverage of per-student allocation and inclusive subsidies; strengthened protection for vulnerable children.

2.3 Universality: Resource Expansion and Coverage Enhancement

·Policy Achievements: *Several Opinions on Current Development of Preschool Education*; *Three-Year Action Plans for Preschool Education*, etc.

·Practical Achievements: Growth in the number of kindergartens and enrolled children; improved enrollment rates.

2.4 Equity: Expansion of Inclusiveness and Narrowing Gaps

·Policy Achievements: *Several Opinions on Deepening Reform and Standardizing Development of Preschool Education*; *Measures for Identification and Management of Inclusive Private Kindergartens*; *14th Five-Year Action Plan for Preschool Education Development and Improvement*, etc.

·Practical Achievements: Sustained improvement in facilities and teaching staff conditions in disadvantaged areas; expanded coverage of inclusive kindergartens.

2.5 Quality: Improved Kindergarten Quality and Gradually Sound Evaluation Mechanisms

·Policy Achievements: *Opinions on Implementing the New Era Basic Education Expansion and Quality Improvement Action Plan*; *Guidelines for Quality Evaluation of Kindergarten Care and Education*; *Measures for Supervision and Evaluation of Kindergarten Operations*; *Notice on Implementing the National Training Plan for Kindergarten Teachers*; *Opinions on Accelerating Educational Digitalization*, etc.

·Practical Achievements: Overall improvement in care and education quality; increasingly standardized kindergarten evaluation mechanisms; initial establishment of a support system for teacher professional development; advancement of digitalization.

3. Current Issues and Challenges in China's ECE Policies and Practices

3.1 Incomplete Supporting and Guarantee Mechanisms for Law Implementation

3.2 Unsound Financial Guarantee Mechanism and Mismatched Investment with Development Needs

3.3 Demographic Changes Posing New Challenges to ECE Resources Allocation

4. Key Focus Areas for Future ECE Policies and Practices in China

Keynote 3

Global Childhoods in Asia Pacific: Key Issues, Emerging Trends, and Future Opportunities for Early Years

Marek Tesar, Ph.D., New Zealand

Global Childhoods in Asia Pacific: Key Issues, Emerging Trends, and Future Opportunities for Early Years

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SLIDE 1

1. Welcome and Acknowledgements

Good morning / Kia ora / Ni hao/ Selamat pagi
I begin by acknowledging the Traditional Owners of the land we gather on today, and I conduct my research on. I pay my respects to Elders past and present and recognise their ongoing connection to Country, knowledge, and culture. I also want to extend my respect to all Indigenous peoples here, and indigenous philosophies and pedagogies whose work informs and challenges us to reimagine childhoods in more socially just and grounded ways.

My name is Professor Marek Tesar, I am currently Dean of Education at the University of Melbourne, and Professor of Early Childhood. Much of my work centres on the politics and philosophies of childhood, particularly in contexts shaped by global and colonial forces. I am researching and working with curriculum theories and pedagagies, particularly interested in a deeper level of connecting theory and practice, and how macro-levels and educational policies shape and render practice and our everyday experiences.

I am so grateful for this invitation to deliver this keynote, and so sorry I cannot be with PECERA family in beautiful Shanghai due to my other commitments. PECERA is an amazing organisation that unites colleagues and friends from around Pacific rim, and I do hope that we will be able to re-connect next year, and hopefully also host colleagues in Melbourne, Australia.

Over the years, I've had the privilege of working with colleagues across the Asia-Pacific region, and the perspectives I'll share today are shaped by both research, collaboration, co-design and listening; to children, educators, communities, and scholars across different sites of our shared region. This presentation is shaped by the knowledges and experiences through my different roles as early childhood teacher, teacher educator, research centre director, international Dean and an academic administrator.

Yet, you may wonder why this topic and why this title. We are living in a moment of intensified uncertainty, climate disruptions, geopolitical shifts, ongoing pandemics, and global conflict. And children's lives are not only shaped by these dynamics, they are often the first to feel their impacts, and they are right at the centre of it. In the Asia-Pacific region, childhoods are incredibly diverse; but also deeply influenced by shared challenges: policy pressures, inequality, forced standardisation, and rapid digital transformation. My key

question that I want to ask the colleagues in this conference is: *What kinds of futures are we imagining for children? And whose voices shape those futures?*

SLIDE 2:

The talk will take us through four main sections:

1. A brief look at the major global and regional forces shaping childhoods.
2. A deep dive into key issues confronting early childhood education today.
3. An exploration of some emerging trends and hopeful practices.
4. And finally, some provocations about what kind of future we might co-create: one grounded in equity, sustainability, and local wisdoms.

I invite you to question the arguments critically, generously, and with imagination — and I look forward to continuing the conversation following, but also beyond this session.

"As I continue, I want to start by posting two deceptively simple but deeply consequential questions: **Whose childhoods are centred? Whose voices are heard?**

These questions speak to the heart of the early years field: not only in terms of policy and pedagogy, but in terms of values, ethics, and power. Across the Asia-Pacific, childhoods are shaped by enormous diversity — cultural, linguistic, geographic, economic, and political. And yet, in much of our work: whether it's research, curriculum development, teacher education, or international reporting - a narrow and often Western-centric image of the child continues to dominate.

I do think that we are at a **critical crossroads**. A point where decisions made now - in government departments, university lecture halls, curriculum committees, NGOs - will determine the kinds of early childhood systems that emerge in the coming decades. The Time is Now.

Will these systems reflect the complex realities of children's lives across villages, urban centres, coastal islands, and remote communities of Asia Pacific? Or will they impose uniform standards, expectations, and models that erase difference under the guise of 'best practice'?

Let me give you a concrete example. In a recent discussion with Bina, an early childhood educator in a coastal area of Indonesia, she shared: *"Our children know the sea better than they know the alphabet. But our curriculum doesn't recognise that knowledge."* That single comment encapsulates so much. It's a reminder that many children arrive at our learning settings with deep, situated knowledge — knowledge that may not be visible or valued within dominant frameworks of learning or development.

At this crossroads, I want to ask: what counts as knowledge? Whose ways of knowing are privileged? And how might we create educational spaces that honour children's identities, families, and cultural worlds?

Like you, I get often asked: what's the best early childhood centre in my neighbourhood, town or city?? My answer is intentionally quiet – as it is, like perhaps for many of you, an ordinary moment in a learning setting. Sometimes I say 'closest to your child's home?'.

Nothing flashy. No policy logo or promotional banner. Because the work of early childhood education is, most of the time, humble, intimate, and local. It happens in the small pedagogical gestures, under the guise of curriculum creativity: a teacher crouching to listen to a child's story; a caregiver adjusting a rhythm to support a child's emotional needs; a group of children building shared understanding through play.

And yet, these moments — foundational and relational — are often invisible to systems that prioritise metrics, benchmarks, and narrow definitions of success. At this critical juncture, we need a collective willingness to **listen differently** — to children, to families, and to educators on the ground. Not just to consult, but to **co-design**: to build systems and policies that are rooted in lived realities rather than imposed from abstract ideals. Becease, as Jessica, one of the teachers I work with shared with: **"Children are not only our future — they are our present."**

Such reframing shifts everything. It challenges us to stop seeing early childhood education only as preparation for something else — for school, for productivity, for citizenship. And instead, to recognise the significance of the here and now — the child as a full human being with rights, agency, imagination, and wisdom.

It invites us to **slow down**, to attend to the ethics of our work, and to notice what is already happening — the practices, relationships, and forms of resistance that educators and communities are already engaged in.

We know that young children are active participants in society. They are citizens of now. And when we make room for their voices — when we ask what matters to them, what they notice, what they care about — we begin to create educational futures that are not only more just, but also more joyful, more local, and more meaningful.

So as we move forward, I propose to keep these guiding questions close: **Whose childhoods are centred? Whose voices are heard?**

SLIDE 3 - **Global and Local Forces**

In this section, I want to step back and situate early childhood within the broader currents shaping the Asia-Pacific today.

Childhood doesn't exist in a vacuum — it is continually shaped by **economic flows**, **technological changes**, **environmental events**, and **political decisions** that often happen far beyond the communities in which children live.

I want to briefly consider a few of these forces:

First, globalisation and policy convergence.
There is increasing alignment across national systems, shaped by multilateral organisations and transnational policy discourses. While this can bring investment and shared focus, it often means importing one-size-fits-all metrics and developmentally sequenced curricula that may not align with local knowledge systems or community priorities.

Second, the digital turn.
Children today are growing up in media-saturated environments. From remote island villages to dense megacities, digital devices and platforms mediate how children grow up, learn, play, and interact. This brings both opportunities for connection and creativity, and real concerns around surveillance, addiction, and the commodification of childhood itself.

Third, climate change.
From rising sea levels in the Pacific to intensifying bushfires in Australia, the ecological crises we face are already reshaping the landscapes of childhood. They affect children's health, safety, and sense of belonging — and demand that we prepare early childhood systems that are environmentally just, resilient, and place-attuned.

Fourth, mobility.
Children in the Asia-Pacific are on the move — with families seeking work, fleeing conflict, or relocating for climate or economic reasons. Migration and displacement shape how children experience continuity, care, and cultural identity. We need systems that support transitions rather than punish movement.

And **finally, the geopolitical and economic pressures** — including growing inequality. Many countries in our region have expanding wealth gaps, affecting access to quality early childhood provision. And in many cases, funding is directed more toward monitoring or testing than toward deep relational care.

So when we talk about early years policy, we must keep this global-regional-local layering in view. These forces are not abstract, they enter early childhood classrooms, shape daily routines, and are absorbed into the textures of children's lives and their families.

In the face of this, I argue that early childhood educators are not simply service providers — they are cultural workers, mediators, and in many ways, first responders to the world's most pressing challenges. This framing matters, because it helps us ask not just *what* we do, but *why*, and *for whom*. What kind of world are we preparing children for? And what kind of world are we preparing through our work with children?"

Slide 4 - *"You can't measure a child's story with a developmental checklist."*

In this section, I name some of the **key issues and tensions** that are currently shaping early childhood education across the Asia-Pacific — many of which are not new, but are becoming more acute in this moment of intersecting crises and reforms.

The first is **equity**.
Despite growth in early childhood provision across many countries, there are still deep gaps in access, quality, and outcomes — particularly for Low Socio-economic bracket of society, for Indigenous children, migrant children, those in rural or remote areas, and children with disabilities. Equity is too often seen as an 'add-on' to policy, rather than as a foundational principle that must shape every decision.

Second, there's a growing **tension between global agendas and local practices**.
Global frameworks like the Sustainable Development Goals or OECD early learning benchmarks often guide funding and reform in local countries, states, provinces and

municipalities. But the risk is that these external pressures begin to override community-local driven approaches and erase culturally rooted ways of knowing, being, and learning.

We also see the effects of **standardisation**.
Standardised curricula, assessments, and 'school-readiness' targets are becoming increasingly dominant. While these may help with accountability, they can also narrow the scope of learning, restrict teacher autonomy, and marginalise the creative, relational, and place-based aspects of early years pedagogy.

Another critical issue is the ongoing impact of **colonial legacies**.
In many parts of the Asia-Pacific, early childhood systems have inherited structures that reflect Western, Eurocentric values. This often means local and Indigenous epistemologies are treated as supplementary — if they appear at all. The opportunity here is not just about adding in diverse perspectives, but rethinking what knowledge is, who holds it, and how it is taught.

We must also speak to the **precarity of the early childhood workforce**.
Educators are often underpaid, overworked, and undervalued — and this is particularly acute in early childhood. They are expected to implement complex reforms, manage family needs, and support children's wellbeing, all while receiving minimal systemic support or recognition as professionals. This is not sustainable — nor is it just.

We're also seeing a rise in what some call the **"datafication" of childhood**. Children are increasingly monitored, assessed, and quantified from earlier and earlier ages. While data can be a tool for equity, it can also reduce children to numbers — and lead to over-surveillance, loss of autonomy, and even harm, especially when used without cultural sensitivity or consent.

Finally, there are persistent **policy disconnects**. We often see early years education siloed from broader social services, health, and community wellbeing. This fragmentation means that children's and families' needs are not always addressed holistically. An early childhood system that operates in isolation cannot effectively respond to the complex social, cultural, and economic realities of the communities it serves.

All of these tensions — equity, standardisation, cultural erasure, workforce conditions, data control — they are interconnected. And they demand more than surface-level fixes. They call for bold rethinking. For listening to those who are too often excluded from decision-making: educators, families, children themselves.

I want to end this section with a quote from a teacher in Samoa, who said to me:

"You can't measure a child's story with a developmental checklist."
That one sentence says so much. It reminds us that every child comes to us with histories, identities, and relationships that exceed any framework we try to apply. And that our task is not to sort or streamline children — but to create systems that respond with care, complexity, and respect."

Slide 5 = Reimagining Early Childhood: Trends and Innovations

After outlining the challenges, I want to now shift to some of the **emerging trends and innovations** that give us reason to be hopeful — and more importantly, offer concrete ways to reimagine early years education across the Asia-Pacific.

Despite the tensions, we're seeing bold and creative practices emerge from within communities, classrooms, and centres — many of which challenge dominant models and offer alternatives grounded in cultural knowledge, relational care, and ecological sustainability.

One key trend is the renewed emphasis on **play-based and inquiry-led pedagogies**.
We know from decades of scientific research — and from Indigenous and local knowledges — that play is not trivial. It is how children make sense of the world, of each other, and of themselves. Across the region, educators are re-centering play not just as a method, but as a philosophy — one that values imagination, experimentation, and co-construction over transmission and compliance.

In places like Australia, New Zealand, Singapore, and parts of Indonesia and the Pacific Islands, we're seeing strong moves towards **culturally responsive pedagogies**.
This involves rethinking not just what we teach, but how and why. It means drawing from Indigenous stories, languages, and ways of knowing. It means placing relationships at the centre, and affirming children's identities rather than expecting them to assimilate into predefined norms. In many ways, this is a decolonising move; one that disrupts the idea of 'one right way' and reclaims the richness of multiple educational traditions.

We are also witnessing exciting **policy shifts** in some jurisdictions.
For instance, policies that extend early learning to include community and intergenerational learning — recognising the role of elders, caregivers, and kin networks in children's growth. There are moves to link early learning with sustainability education, with growing interest in 'bush kindy', outdoor classrooms, and eco-pedagogies that nurture children's relationship with place.

A number of promising **teacher education innovations** are also emerging. These focus on preparing educators not only with technical competencies, but with ethical, cultural, and political awareness. Programs that engage educators in action research, reflective practice, and community-led learning are equipping them to respond to complexity rather than apply fixed methods.

Across many of these trends is a common thread: **a shift from control to collaboration**.
We are moving — slowly, and unevenly — from systems that try to manage children's development, to systems that trust children as active, capable participants. And from systems that prescribe what educators must do, to systems that position educators as co-researchers, community leaders, and change agents.

Importantly, these innovations are not all coming from the centre — they are coming from the margins. From rural communities. From Indigenous collectives. From early career teachers questioning the systems they've inherited. From families resisting narratives of deficit and demanding joy, justice, and inclusion for their children.

If we want to scale these innovations, our job is not to extract or replicate them — but to **listen**, to support, and to learn how to adapt policy and funding structures in ways that are genuinely responsive to context.

So as we consider the future of early years education, I want to ask:

- Are we open to approaches that don't fit the mould?
- Are we investing in relationships as much as results?
- And are we willing to step aside, when necessary, to let other voices lead?

These are the kinds of questions that helps us, I argue, to move from reform to transformation."

Slide 6 - Reimagining Early Childhood: Trends and Innovations

The challenges I've discussed are real. They are systemic, structural, and often exhausting. But they are not immovable. Across the region, there are opportunities to build something better — not by starting from scratch, but by amplifying what already works and imagining boldly where we need to go.

The future of early years education in the Asia-Pacific must be **inclusive, sustainable, and adaptable** — able to respond to the diversity of children's lives, while also preparing them to live ethically and relationally in a rapidly changing world.

First, this means **designing systems that are grounded in context** — not imported blueprints. One-size-fits-all models don't serve diverse realities. We need systems that can flex and evolve alongside communities.

Second, we must keep **children's voices and rights at the centre**. Not just as rhetorical tools, but as drivers of how we design curriculum, assess quality, and set priorities. The most powerful learning emerges when children feel seen, safe, and empowered.

Third, this is about **cultural, ecological, and ethical responsibility**. We have a duty to future generations — not only to educate, but to model care, justice, and reciprocity. Early childhood settings can be sites of climate learning, cultural revitalisation, and social repair.

Fourth, we must **value the early years workforce**. This is not an add-on. No system will flourish if the educators at its heart are overworked, underpaid, and unheard. Dignifying their labour and professional status is foundational.

Fifth, the future depends on **supporting local leadership and Indigenous-led initiatives**. These are not niche innovations — they are models of the future. When we create space for Indigenous knowledge systems, community-based approaches, and multiple ways of knowing, we move toward equity not only in rhetoric, but in structure.

And finally, we must **reimagine accountability**. Instead of surveillance and audit cultures, what would it mean to build trust into our systems? To see educators as professionals, not technicians? To let relationships and reflection guide improvement?

This future — just, inclusive, and sustainable — won't happen by accident. It will take courage, collaboration, and a willingness to let go of inherited models that no longer serve us.

But, as I argues, we are not starting from zero. The seeds are already there — in classrooms, communities, and courageous conversations like this one."

Slide 7

I want to begin this next section by focusing on what is already strong in many parts of our region — the **richness of local and Indigenous knowledges** that have sustained childhoods for generations.

Too often, early childhood education is framed as something modern, institutional, and centrally governed. But of course, childhood has always been held and nurtured by families, communities, and lands — through deeply embedded ways of knowing and being.

Across the Asia-Pacific, I've encountered through my research extraordinary examples of **place-based pedagogies**:

- Children learning to weave, not just as a craft, but as a lesson in patience, care, and intergenerational connection.
- Storytelling practices that pass on not just moral lessons, but ecological knowledge and cultural memory.
- Sea-based literacies — reading tides, navigating weather, harvesting with respect — often dismissed by systems that only count phonics and numeracy.

These are not charming 'extras'. They are full, legitimate knowledge systems. And when we centre them, we begin to rethink what early childhood education is for.

Importantly, many of these practices are **community-led** — arising from within, not imposed from above. They often function as **forms of resistance**, keeping alive cultural identity in the face of colonisation, economic pressure, and policy erasure.

But I propose thatwe must be careful. Valuing Indigenous and local knowledges doesn't mean extracting them into standard curricula. The challenge is to support and honour without **appropriating** or diluting — to ensure the leadership stays with those to whom the knowledge belongs.

This philosophical point of departure urges us to ask:

- What would it mean to structure our systems around this knowledge, not just add it in?
- How might we measure learning differently?
- What kinds of professional development do educators need to work with deep cultural integrity?

Ultimately, valuing local knowledges is not about looking backward. It's about building **futures that are rooted** — in place, in culture, and in respect.

Slide 8

I want to now draw your attention on something that often goes unnoticed early childhood education settings: the **hidden curriculum** — that is, everything children learn that we don't explicitly teach.

While policy tends to focus on the visible curriculum — learning outcomes, developmental milestones, standards — children are also constantly learning from the **textures of practice**: how space is organised, how time is managed, how adults relate to them, and how power flows in a room.

Let me give you an example:
A centre might proudly promote creativity and play, but if children are constantly told to sit still, line up quietly, and speak only when asked — what are they really learning?
They are learning **compliance**.
They are learning which voices carry authority, and which are ignored.
They are learning the rules of power before they even reach primary school.

The physical **architecture of our settings** also teaches. Who gets to move freely? Who is always being monitored? Are there places for retreat, for reflection, for mess, for risk? Or only brightly coloured corners of control?

And then there are the **routines**:

- How do we handle transition times?
- Who decides when it's time to stop a child's play?
- What happens when a child resists or cries?

These micro-moments carry huge pedagogical weight. They teach children about autonomy, trust, safety, and belonging; or the absence of those things.

We also need to consider the **emotional curriculum**.
Children learn a great deal from how we respond to their emotional lives. Are feelings named and supported, or are they dismissed? Are children allowed to express frustration or sadness — or are we only comfortable with compliant joy?

All of this points to a central tension:
While we may speak the language of inclusion, creativity, and child-centred practice — our environments and habits can still reproduce systems of control, silence, and hierarchy.

So key provocations are;

- *What are children learning when we're not looking?*
- *What values are we unintentionally embedding?*
- *How do our daily actions either liberate or limit?*

This is not a call for perfection. It's a call for awareness. For noticing. For critically examining the small things — the things we take for granted — because these, too, are the curriculum."

Slide 9

One of the most persistent, yet under-examined concepts in our field is the idea of **'quality.'** It's a word we use all the time — in policy documents, funding proposals, programme evaluations — and thus, we must stop to ask: *Who defines what quality means?*

Across the Asia-Pacific, early childhood systems are increasingly shaped by **global frameworks** that come with their own assumptions about what high-quality early education looks like. These often include standards around literacy and numeracy, teacher-child ratios, readiness indicators, and physical infrastructure.

Now, let me be clear — standards and accountability are important. But the problem arises when these global indicators **override local meaning-making**. When they become the only lens through which value is judged.

For example:
In a rural Solomon Islands preschool, the most meaningful learning experiences may involve gardening with elders, speaking local dialects, or engaging in seasonal rituals.
Yet none of that would 'count' in a global quality rating tool.
Whose standards are those? And what are we missing when we reduce learning to a checklist?

We must move toward a broader understanding of **quality as a process**, not simply an outcome. Quality is relational. It's about the **ethics of care**, the strength of trust between child and teacher, the way children feel seen and heard.

Children themselves are powerful judges of quality — though we rarely ask them.
Parents too, especially those from marginalised communities, may define quality not by inspection reports, but by how their child is treated, whether their culture is respected, whether the teacher knows their child's name and story.

There's also a risk in international benchmarking and rankings. These can **create hierarchies between countries**, reinforce colonial dynamics, and put pressure on governments to adopt models that may not fit their context.

So I encourage us to ask:

- What does quality look and feel like — *here*, in *this* place?
- Who has the authority to define it?
- And how can we develop tools for reflection and evaluation that are **rooted in local values**, rather than imposed from outside?

When we rethink quality, we open up space for innovation — for diverse pedagogies, for cultural relevance, for deeper forms of justice.

I argue, that in Early childhood education, we have a different type of measurement for quality, apart from the Quality that is imposed. Quality is also something we **co-create** and co-design.

Slide 10

The COVID-19 pandemic was — and remains — a profound global disruption. And like all disruptions, it not only created crisis, but also revealed deeper truths and knowledges about our systems.

For early childhood education, the pandemic **pulled back the curtain** on several longstanding issues.

It exposed the fragility of access — for many children, education stopped entirely during lockdowns (and some are still recovering from that). It showed us that when systems rely too heavily on institutions, they often fail those on the margins: families without stable housing, access to devices, or language support.

But, on the other hand, it also revealed just how central **care** is to the work we do. What our research shown, ws , that Early childhood education was no longer seen as 'babysitting'. Suddenly, it was essential. Not just for economic reasons, but for **children's mental health, security, and wellbeing**.

And we saw something remarkable: **educators and families adapting with immense creativity and resilience**.

- Teachers made videos in their kitchens, read stories via WeChat, WhatsApp, delivered learning packs on bicycles.
- Parents became co-educators, often without formal training but with deep insight into their children's lives.
- Communities developed **home-based and hybrid learning spaces**, many of which offered models more flexible, local, and culturally responsive than traditional systems.

What emerged was not perfect. But it was rich with possibility.

The pandemic also **forced us to rethink what "school readiness" means**. Does it mean sitting still and following instructions? Or being emotionally supported, socially connected, and confident in one's identity? Many children returned to early years settings needing **care more than curriculum**, and that, too, is a lesson.

We are now, in many ways, at a decision point: Do we simply rebuild what we had before? Or do we use this moment to **reimagine**?

The pandemic has reminded us that change is possible; systems can adapt when they need to. So I want us to hold on onto that idea for a moment – of a flexibility, that imagination, and that deep sense of **shared responsibility**. Because the next disruption may not be viral; it may be ecological, political, or economic.

I want us to build systems that are **resilient not only to crisis, but to inequality. Systems that care, not just perform.**"

Slide 11

‘In many dominant discourses - and still in many policies - young children are spoken about primarily in **futures-oriented terms**. They are the ‘leaders of tomorrow,’ the ‘future workforce,’ the ‘next generation.’

While well-meaning, this framing often sidelines **who they are now**.

We must ask: what do we lose when we view children only through the lens of potential? We risk erasing their **current capacities**, their wisdom, and their ways of being.

The idea of **children as citizens of now** shifts this paradigm. It recognises that even the youngest children are participants in their families, communities, cultures, and ecologies. They have opinions, preferences, and insights; and these matter.

This is not just a philosophical stance; it has real implications for policy, curriculum, and pedagogy. It means valuing play not only as preparation, but as a way of being and knowing. It means **making room for children’s voices** in decisions that affect them: in classrooms, in communities, in research.

It also aligns with **rights-based approaches** that have gained traction globally, such as the UN Convention on the Rights of the Child. These approaches affirm that children are not the property of adults or the passive recipients of care, but **individuals with agency**.

At this point, it is prudent to draw on the work of **Erica Uprichard (2008)**, who critiqued the dominant developmental discourse that positions children solely as *becomings* — people not-yet-complete, always on the way to adulthood. In contrast, she argues that children must be recognised both as *beings* and *becomings*.

To see the child only as a becoming is to reduce their present to a means to an end.
It renders invisible their lived experiences, thoughts, relationships, and sense-making in the here and now. But the child as *being* is already social, already relational, already an actor in the world.
They laugh, struggle, create, question, and contribute meaningfully: not later, but now.

This dual framing is powerful. It allows us to value children’s current lives, without denying the care and preparation we also provide for their futures.

In practical terms, Uprichard’s argument challenges educators, policymakers, and researchers to reframe early childhood spaces: Are we simply preparing children for school, or are we also inviting them to shape their present communities?

Are we documenting development, or are we witnessing being? Are our assessments measuring potential, or are they honouring present voices?

Importantly, this also asks us to rethink how we engage with **difference**.
If children are citizens now, they are also diverse now:

- in ability
- in language
- in gender expression
- in cultural knowledge systems

Are our early years systems genuinely responsive to these diversities?
Or do we ask children to conform to narrow norms in order to be seen?

This is where pedagogy becomes political. Because **to value children as citizens now** is to challenge adultism. It is to challenge systems that **speak about children but not with them**.

One example from my research:

A group of preschoolers engaged in a project about their neighbourhood.
Rather than drawing what adults expected — parks or schools — they drew traffic lights, cracks in the pavement, and a neighbour's dog.

This was their world. Their lived experience.
And it mattered.

So when we ask, 'Whose childhoods are centred? Whose voices are heard?' — this is not a rhetorical question.

It is a call to action.

Let us build early childhood systems that don't just prepare children for life,
but **enable them to live it fully, right now** — as both beings and becomings.

Slide 12

Across the Asia-Pacific — and indeed globally — early childhoods unfold within vastly uneven terrains. These are not simply differences of geography or economy, but deep **structural inequities** that are patterned by colonial histories, racialised policies, gendered labour dynamics, and the entrenchment of neoliberal governance.

Nancy Fraser's (2008) triad of *redistribution, recognition, and representation* helps us interrogate justice beyond access. Many children may enter early childhood settings, but are they seen, heard, and valued in ways that affirm their identities and life worlds? Too often, funding structures prioritise quantity over quality, and diversity over justice — resulting in performative inclusion rather than transformative pedagogy.

This is where **Paulo Freire's (1970)** notion of education as liberation is instructive here. Freire reminds us that education should not be an act of depositing knowledge into passive recipients (the banking model), but a dialogic process rooted in the lived experiences of the oppressed. In many early childhood contexts, this dialogic pedagogy is hindered by regulatory regimes and standardised curricula that constrain educators' ability to respond ethically and politically to children's realities.

Sara Ruddick's feminist philosophy of maternal thinking also resonates here. Ruddick writes of the labour of "preserving, fostering growth, and accepting socialisation," pointing to the moral and political labour inherent in early childhood care. Yet this labour is rendered

invisible, poorly remunerated, and feminised — particularly in communities where early childhood workers are women of colour or from migrant backgrounds. This devaluation is not accidental but systemic, as **Silvia Federici** and others have shown, in how reproductive labour is extracted but not recognised.

From a **poststructural lens**, **Michel Foucault's** ideas about power, surveillance, and governmentality illuminate how early childhood education becomes a site of subtle regulation. Educators are not only caregivers and teachers but also bureaucratic agents — collecting data, producing documentation, and ensuring compliance. These regimes often discipline not just children but educators too, shaping what is speakable and doable in the classroom. This reduces the space for political agency and responsive pedagogy, particularly in marginalised communities.

We must also consider **postcolonial and Indigenous philosophies**. Scholars such as **Linda Tuhiwai Smith** and **Bagele Chilisa** challenge the dominance of Western developmental norms and call for epistemological pluralism. For many Indigenous communities in the region, childhood is not an individualised developmental phase but a relational, intergenerational becoming — a space where the child is embedded in land, kinship, and language. These worldviews are often erased or co-opted by early childhood systems structured around Eurocentric assumptions of child development, time, and autonomy.

A further layer of inequity lies in the **economisation of care**. Neoliberal policies have redefined early childhood not as a public good but as a private investment. This shift has created education marketplaces where quality is unevenly distributed. Parents become consumers, and children are positioned as future human capital. Under such logic, marginalised children — particularly those from low-income, rural, Indigenous, or refugee communities — are rendered 'at-risk' or 'deficient,' needing intervention rather than affirmation.

Judith Butler's concept of precarity is useful here: certain lives are rendered more vulnerable, more exposed to harm — and less grievable — by the structures we inhabit. In early childhood education, this means asking: *Whose childhoods are we planning for? Whose futures are being secured? And whose present realities are neglected, denied, or misrepresented?*

So all of these theories - While much of the global discourse celebrates progress in early childhood access and quality, we must confront the deeply uneven terrain on which childhoods unfold. Structural inequities — shaped by geography, ethnicity, gender, ability, class, and migration — significantly determine the kind of early education a child receives.

In many parts of the Asia-Pacific, rural and Indigenous communities continue to face underfunded services, teacher shortages, and limited infrastructure. Refugee and migrant families are frequently excluded from mainstream systems, or only partially included through temporary or low-resourced programs.

Even in urban centres, market-driven models of early childhood provision often benefit those who can afford it, exacerbating inequality. Teachers — especially women, and especially women of colour — often bear the burden of under-resourced systems while receiving inadequate recognition or compensation.

The digital divide compounds these injustices, with children in lower-income settings missing out on digital literacies that are becoming increasingly foundational.

Ultimately, the question: **Who are our early years reforms for? Who do they serve? And who continues to be marginalised despite our best intentions?**

Slide 13 Rethinking Theory and Method from the Asia-Pacific

If we are to reimagine childhoods in the Asia-Pacific, we must also rethink the theories and methods we use to understand them. For too long, dominant Western paradigms have been exported across the region, often marginalising or flattening local knowledges. But what we are now witnessing is a powerful theoretical resurgence: one that is rooted in place, language, kinship, and lived philosophy.

Indigenous and local Pacific epistemologies offer vibrant alternatives to Cartesian dualisms and colonial logics. These traditions emphasise interconnection — between human and more-than-human worlds, between ancestors and futures, between knowledge and ethics.

Here, we find deep resonance with some strands of Western posthumanism and new materialism — especially their challenge to human exceptionalism, and their reorientation towards affect, agency, and relationality. But rather than simply importing those theories, educators and researchers across the Pacific are asking: what happens when we read posthumanism through Country? Through Pacific genealogies of land, sea, and story?

In Aotearoa, for example, Māori concepts such as *whakapapa* (genealogy) and *manaakitanga* (relational care) reshape our understanding of agency and learning. In the Torres Strait, ontologies of tidal time and kinship complicate linear developmental frameworks. In Indonesia, *gotong royong* (communal labour and reciprocity) reframes what it means to learn and grow together.

These are not just cultural overlays. They are profound theoretical interventions. They remind us that new materialist thinking does not originate solely in the Global North — and that the Asia-Pacific is not just a site of application, but of innovation.

By taking seriously these intellectual offerings, we can move toward what Walter Mignolo calls a *pluriversal* education — one that allows many worlds, many childhoods, and many futures to coexist.

This is not about replacing one theory with another, but about creating new conversations, new solidarities, and new methodologies — grounded in context, animated by ethics, and open to the entangled vitality of life in the region.

To further expand our theorisation of early childhood education in the Asia-Pacific, we could also seriously engage with *Asia as Method*, as proposed by Kuan-Hsing Chen. Their proposition is not merely about privileging Asian content, but about shifting the epistemological and methodological centre of gravity. *Asia as Method* invites us to use the diverse intellectual, spiritual, and philosophical traditions within Asia as sources of critical

reflection and conceptual development — thereby disrupting the habit of always referencing the West as the theoretical anchor.

When we adopt *Asia as Method* in early childhood education, we reposition Asia-Pacific not as a recipient of theory, but as a producer of epistemologies, pedagogies, and worldviews. This reframing challenges the colonial inheritance of Western-centric curricula and research agendas that dominate much of global education discourse. It allows educators, scholars, and communities in the region to critically reframe questions, reclaim narratives, and reimagine futures from within their own histories, languages, and cultural continuities.

Importantly, this reorientation does not require a wholesale rejection of Western theoretical tools. Rather, it enables a decolonial strategy of *critical syncretism* — an approach that puts diverse traditions into dialogue without subsuming one under the other. This resonates with the pluralist and relational philosophies already embedded in many Asia-Pacific cultures, which do not depend on universalising binaries, but instead value fluidity, reciprocity, and co-existence.

For instance, when posthumanist theories draw on concepts like assemblages, relationality, or the more-than-human, we can trace striking parallels with Indigenous and local ontologies in the region. From the animist practices of Southeast Asia to the kincentric ecologies of the Pacific Islands, we encounter worldviews where rocks, rivers, winds, and ancestors are not metaphorical actors but real participants in children's lifeworlds. These are not pre-modern beliefs to be outgrown, but enduring intellectual frameworks that inform how children are taught, cared for, and known.

What *Asia as Method* does is allow us to read these frameworks *alongside* posthumanist thought, not as local colour or cultural context, but as robust theoretical interlocutors. This kind of epistemic engagement destabilises hierarchies of knowledge and disrupts the pipeline through which theories typically travel — from Euro-American centres to global peripheries.

Moreover, from a methodological standpoint, adopting *Asia as Method* can revitalise how we conduct research with and for children. It prompts us to consider approaches that are more circular, embodied, and communally anchored. For example, research rooted in *yarning*, *talanoa*, or *hikoi* can resist extractive paradigms and centre collective knowledge-making processes. These approaches are not only culturally appropriate but philosophically rich — offering alternative modes of relational ethics and temporality.

In early childhood education, such methodological reimaginings can reshape how we document learning, how we conceptualise development, and how we co-construct knowledge with children and communities. They encourage us, researchers and educators, to ask: What counts as data? Who is the knower? What does rigour look like when we are accountable to land, kin, and story?

Ultimately, the Asia-Pacific is not merely a region of difference — it is a region of theory. Embracing *Asia as Method* enables us to break open the boundaries of what counts as educational thought and to build a more pluriversal, respectful, and imaginative future for children; one that emerges not from the shadows of empire, but from the brightness of many interconnected worlds.

Slide 14 = The danger of a single story

Turning the page, recently, a disturbing case emerged from an early childhood education centre in Victoria, Australia, involving allegations of abuse by a male teacher. As one would expect, such a case drew widespread public attention; but the intensity of the media coverage and the framing of the story reignited a familiar and deeply troubling narrative: that male presence in early childhood settings is inherently risky.

What followed was swift and sector-wide fallout. Practicum placements for male early childhood teacher candidates were suddenly withdrawn by some centres. Questions were asked about 'safety', with the implication that gender alone might correlate with risk. Entire cohorts of future male educators - many of whom were passionate, skilled, and highly committed - faced mistrust.

This response did not occur in a vacuum. It reflects long-standing gendered tensions in early childhood education, a profession that is overwhelmingly feminised, yet constantly haunted by cultural anxieties around intimacy, care, and authority. Male teachers often find themselves either hyper-visible or invisible: caught between demands to 'normalise' male care and fears that their very presence might invite scrutiny.

This case also highlights what Chimamanda Ngozi Adichie calls "the danger of a single story." When one individual's horrific actions are allowed to define an entire profession, we miss the broader context: systemic vulnerabilities, underfunded services, and a media landscape hungry for outrage. It's a stark reminder of what Michel Foucault might frame as a 'regime of truth' — a particular story, told in a particular way, that becomes taken as natural and inevitable.

The effects ripple well beyond one centre, one case, or one individual. Trust in the sector is undermined. Recruitment suffers. A culture of suspicion replaces one of care.

In our efforts to make childhood safer, we must not do so at the expense of just, fair, and thoughtful treatment of educators — especially those from already marginalised or underrepresented groups. We must resist narratives that flatten complexity and hold space for nuanced, systems-informed conversations about accountability, ethics, and care.

Slide 15
Innovations and Possibilities in the Asia-Pacific

As you can see in my keynote, I argue that early childhood education in the Asia-Pacific is situated at a complex and often contradictory crossroads; shaped by global pressures, policy logics, and systemic inequities, yet also alive with possibility, resilience, and radical imagination.

What is emerging across the region are not just reforms but *transformations* — ways of rethinking what education is for, and who it is for. These are pedagogies and practices that push beyond technocratic fixes and towards deeper, more culturally rooted and ecologically attuned engagements with childhood.

In places like Aotearoa New Zealand, *Te Whāriki* remains a living document — a philosophy of weaving that recognises children as competent and connected beings. In parts of the

Pacific, Indigenous knowledges and kinship structures are not only being acknowledged but centred — reframing curricula through land, ancestry, and relational time. These are not nostalgic recoveries, but contemporary, situated epistemologies that ask: *what does it mean to learn in and with place, community, and culture?*

Educators across the region are also experimenting with digital storytelling, intergenerational learning, and multimodal approaches that honour children's meaning-making capacities. There is growing interest in climate-responsive and place-based pedagogies — where children are not just learning *about* the world but learning *with* it, entangled in more-than-human relations.

And here, I want to return briefly to Uprichard's (2008) framework of 'being and becoming'. These innovations refuse the linear model of childhood as only preparation for adulthood. They insist that children's *beings*: their agency, affect, and relations in the now matter. And they hold space for ethical *becomings* that are not universalised, but shaped by histories, communities, and hopes specific to each place.

Philosophically, this aligns with the work of Maxine Greene, who reminds us that imagination is not an escape but a responsibility: to see the world as if it could be otherwise. Or with Arendt, who challenges us to think politically with children's presence — their ability to renew, to interrupt, to act.

But let me be clear: these practices are often under-resourced, marginalised, or reliant on individual champions. Innovation cannot be a synonym for precariousness. If these possibilities are to endure, they must be embedded systemically: in policy, in teacher education, in governance, in funding.

We must support relational pedagogies not as side projects but as central to the future of early years education. And we must do so in ways that honour Indigenous sovereignty, ecological responsibility, and pedagogical integrity.

The future is not found. It is built. And these examples show us how it's already being shaped — not in distant policy rooms, but in kindergartens, on forest walks, in community language classes, and in the quiet acts of care and listening that educators undertake every day.

As we journey through the diverse educational landscapes of the Asia-Pacific, we witness a region marked by deep historical entanglements — where colonial pasts, global neoliberal logics, and Indigenous ways of knowing converge, clash, and reconfigure. Early childhood education here is not neutral. It is shaped by the legacies of empire, by ongoing cultural hegemony, and by the uneven flows of globalisation.

The tension between East and West is ever present. On one hand, we see Western developmental discourses — standardised assessments, school-readiness metrics, policy borrowing from the Global North — continuing to dominate. On the other, we witness a resurgence of local epistemologies, philosophies, and pedagogical traditions that disrupt these imposed universalisms. The Asia-Pacific becomes a space of negotiation: between global templates and local needs, between homogenising policies and plural ways of being.

In this context, innovation must be decolonial. It could begin by asking: *Whose futures are we imagining? Whose knowledge counts? Whose rhythms of time, care, and learning are legitimised in our systems?*

Across the region, there are powerful examples of educators and communities reclaiming pedagogical space. In Aotearoa New Zealand, the enduring strength of *Te Whāriki* resists linear, technocratic childhoods by positioning children within woven, relational, and bicultural frameworks. In parts of Southeast Asia, we see early years centres drawing on Buddhist, Confucian, or Islamic ethics of care and community — offering different orientations to time, learning, and authority. These are not merely cultural add-ons, but philosophical alternatives.

Here, the child is not only a 'learner' in a narrow cognitive sense, but a being-in-relation — with land, language, ancestors, and more-than-human worlds. These framings align with Karen Barad's notion of *intra-action*, where subjects and objects do not pre-exist but emerge through entangled relations. And with Arendt's call to attend to natality — to the child as one who brings something new into the world.

Importantly, these practices enact Uprichard's (2008) duality of *being and becoming* — seeing children not only as future citizens but as present subjects, with ethical and political presence now. This reframing helps challenge colonial teleologies that cast the Global South as always 'catching up' — always in a process of development toward a Western ideal.

From a postcolonial philosophical standpoint, we might also turn to thinkers like Gayatri Spivak, who cautions against the desire to simply 'give voice' to the subaltern without addressing structural silencing. In early childhood education, this means not just 'including' Indigenous or minority children in mainstream models, but transforming the very foundations of what counts as education, learning, and childhood.

Innovation, then, is not just about new programs or technologies: it's about epistemic justice. It's about unsettling the dominance of white, middle-class developmentalism, and making space for ontologies rooted in land, kinship, story, and resistance.

And let's be honest — these innovations often arise despite policy, not because of it. They are fragile, often underfunded, and reliant on committed educators. This speaks to a deeper issue: innovation without structural support is unsustainable. We need systems that protect, amplify, and embed these critical pedagogies into the fabric of early years education.

Slide 16 – Conclusion – Future of Childhoods

This is where I believe it is up to us to be brave. To imagine futures that are not simply better versions of the present, but qualitatively different. Futures that emerge from the South, not as mimicry, but as intellectual and pedagogical leadership. Futures that honour complexity, plurality, and justice: not as abstract values, but as daily practice in early childhood centres, kindergartens, and classrooms.

Let us not be satisfied with inclusion. Let us work toward transformation.

Slide 17

Thank you

Keynote 4

Conceptualizing quality in infant-toddler curriculum and pedagogy. Whose 'quality' are we talking about?

Sheila Degotardi, Ph.D. Australia

Conceptualizing quality in infant-toddler curriculum and pedagogy.

MACQUARIE University SYDNEY·AUSTRALIA

Whose 'quality' are we talking about?

Sheila Degotardi
Macquarie University Early Childhood Research Centre
Macquarie University Australia

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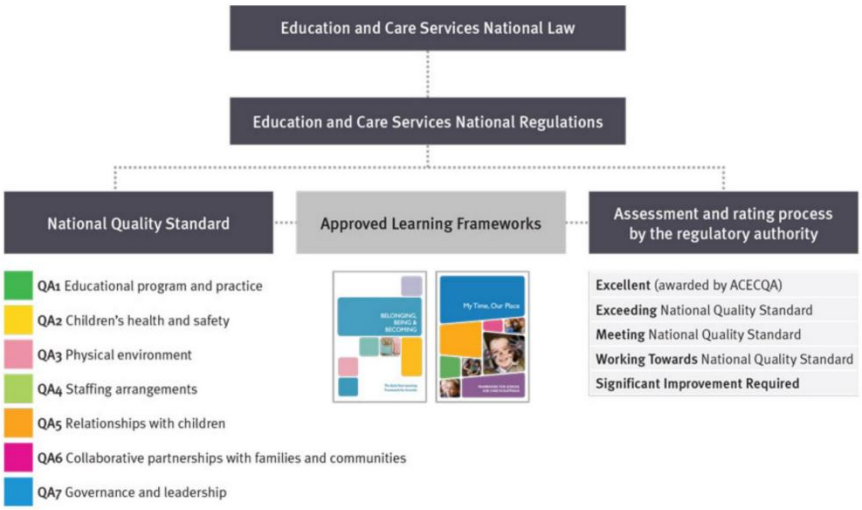
MACQUARIE University SYDNEY·AUSTRALIA

The discourse of quality

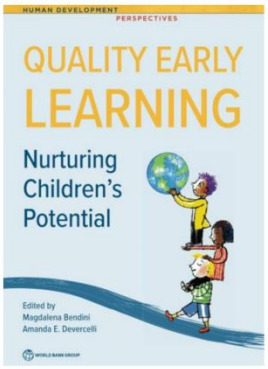
Over the last few decades, research advances and social changes have converged to increase policy attention on early childhood education and care (ECEC). Policymakers worldwide recognise how critical **quality** early education is for establishing self esteem, resilience, healthy growth and capacity to learn.

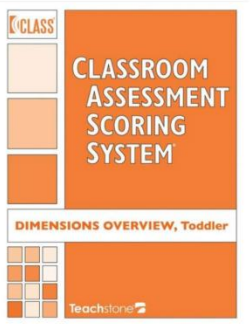
(Australian Children's Education and Care Quality Authority. (2023). The first decade of the NQF. https://www.acecqa.gov.au/sites/default/files/2022-07/occasional_paper_8_-_desktop_published_version_6_1.pdf)

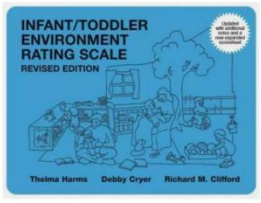
The quality agenda in Australia

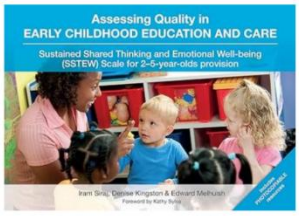


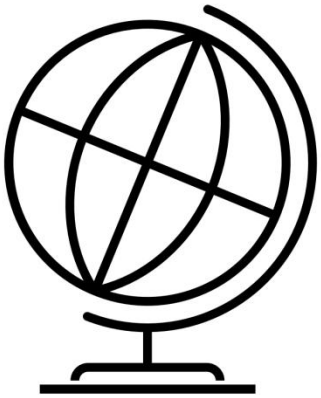
The 'quality' agenda











5

The dominant quality lens

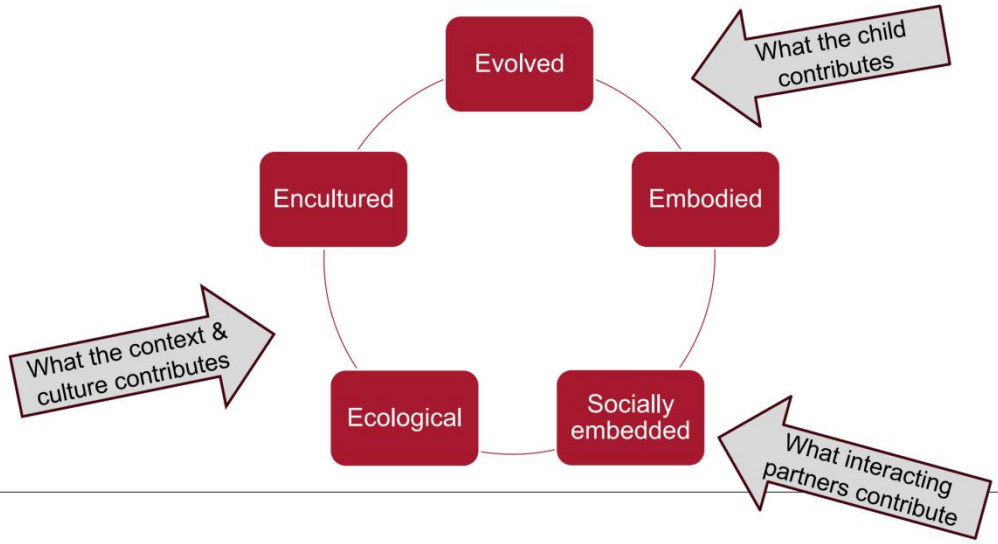
Top down perspective
Wide-angled attention on the efforts of the educator and the global quality of the room

‘Quality’ as an experience

Bottom up perspective
Focused attention on the individual experience of the child

“experience is basic to the analysis of the developing child because nothing psychological happens without it. Experience is a transaction of the person with aspects of the external world. It is pragmatic and local, oriented from the self and its concerns, dependent on motivation and attention” (Nelson, 2007, p.8)

What shapes experience? (Nelson, 2007)



Introducing MQ TaLK (Talk-Learn-Know):

- How does the language environment in infant-toddler long-day-care support the development of children's language development and learning-oriented talk?
- Multidisciplinary: early childhood education, educational & multimodal linguistics, speech and hearing sciences and developmental psychology
- Followed approx. 185 children from infancy to preschool

T1: 12-20 months
Video and audio recordings (Centre and home)
Language assessment
Audiological measures

→ **T2: 2.5 years**
Parent report language assessment

→ **T3: 3.5 years**
Parent report language assessment

→ **T4: 4 years**
Researcher language assessment

9

Assessing language interaction quality

ADAMSON, L.B., BAKEMAN, R., & SUMA, K. (2018). *THE JOINT ENGAGEMENT RATING INVENTORY* (TECHNICAL REPORT 25, 2ND ED.). GEORGIA STATE UNIVERSITY, ATLANTA, GA

Fluency & Connectedness	Level of shared attention & reciprocity
Language facilitation	Quantity and quality of language input
Sustainability & elaboration	Extent to which topics were sustained & built

- The language quality experience of each child was coded over a 45-minute period
- 9 x 5-minute episodes.

10

Example of scoring system

1-2	3-5	6-7
• Rare engagement in shared attention & interaction • Rare & fleeting language input, which shows limited vocabulary and very few language-enhancing strategies. Input may be non-contingent and non-responsive.	• Some shared attention. Interactions move past fleeting, but tend to be led by one partner. Communication bids may be missed. • Language input occurs several times and involves varied of vocabulary and strategies	• Frequent and sustained shared attention. Interactions are fluid and balanced. • High level of language input, showing diversity of vocabulary and strategies. Topics are built over several turns.

11

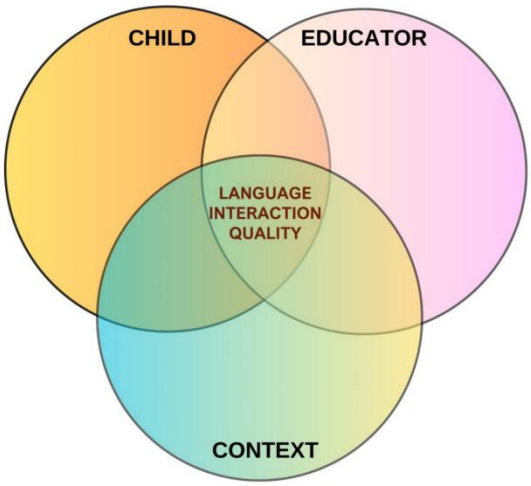
Data used in this analysis

- 16 children (aged 13 – 21 months) who attended the same room in one MQTaLK participating centre.
- Centre had been rated as 'Exceeding' the National Quality Standards
- Maximum number of children during observation = 16 (range 10 to 16)
- Normal number of educators = 4 (range 4 to 5)
- Child-educator ratio = 1:3.3 (range = 1:2 to 1:3.75)
- Space comprised an inside room and an outside play space. Children were largely able to move in and out of the room

12

Study questions

- How do individual children's experience language environment quality within this one early childhood centre?
  - Individual variations
  - Variations across time
- Which individual child, educator and contextual features shape the quality of the language environment as directly experienced by individual children?



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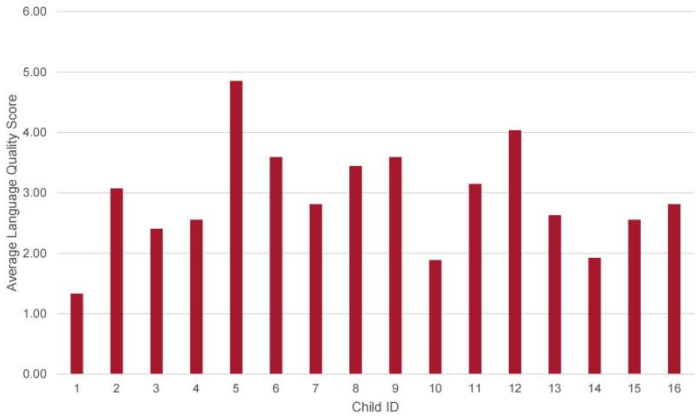
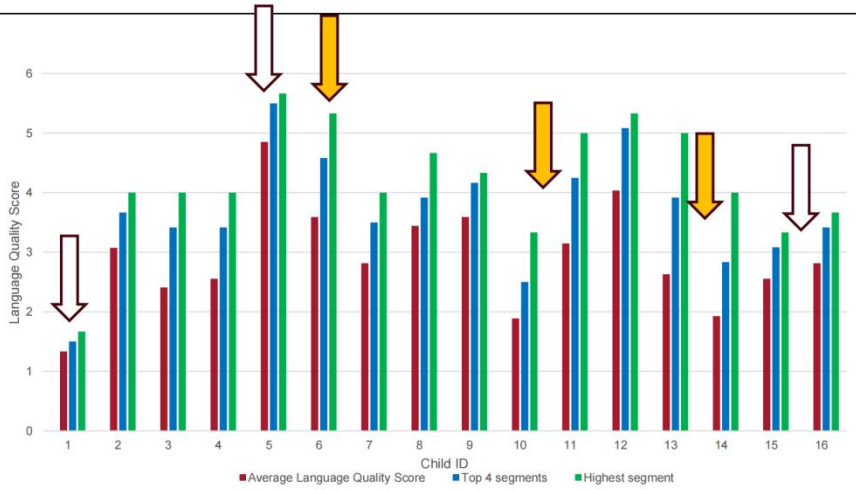
Some preliminary findings: Individual variations in children's experience of quality



Correlations with child factors?	
Infant age	Language development
r =.36 (ns)	*r* =.32 (ns)

Correlations with structural factors?		
# Educators	# Children	Ratio
r =.13 (ns)	*r* = -.72**	*r* = -.66**

Quality variation over the time period

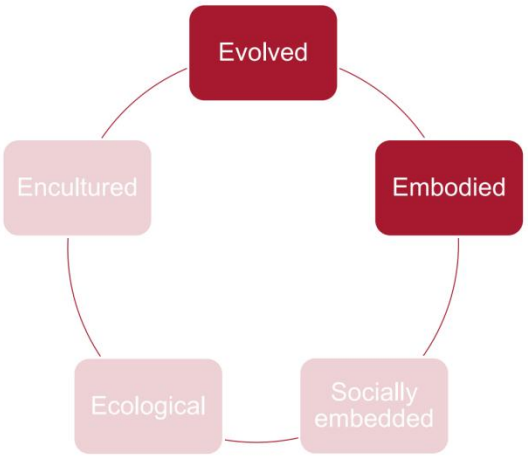


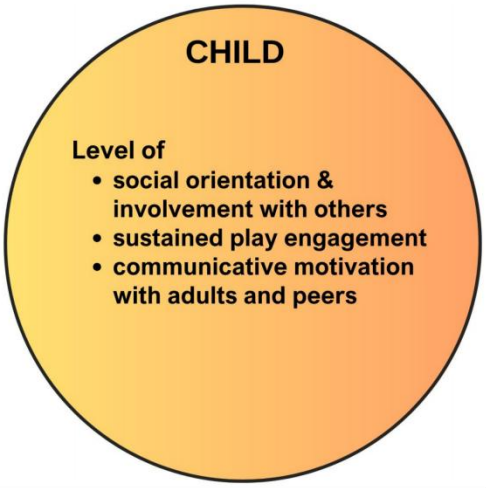
- Some children have little variation across time
- Some children have much more variation
- Highest segment score not correlated with any of the child or structural factors.

Evolved and Embodied

IN OR OUT OF QUALITY

What are the child's contributions to quality?





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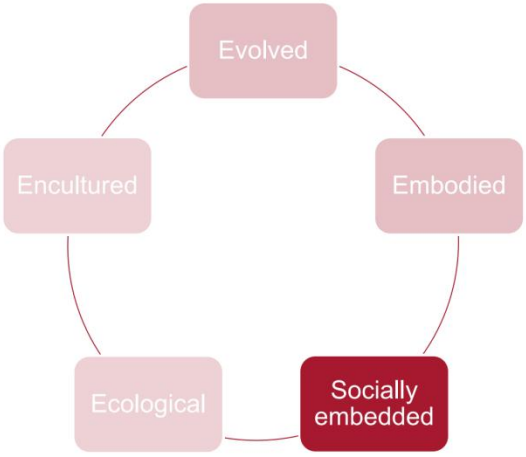
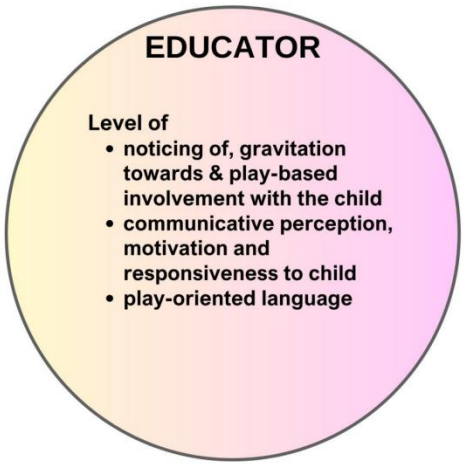
Socially embedded

IN AND OUT OF QUALITY

18

What are the educators' contributions?





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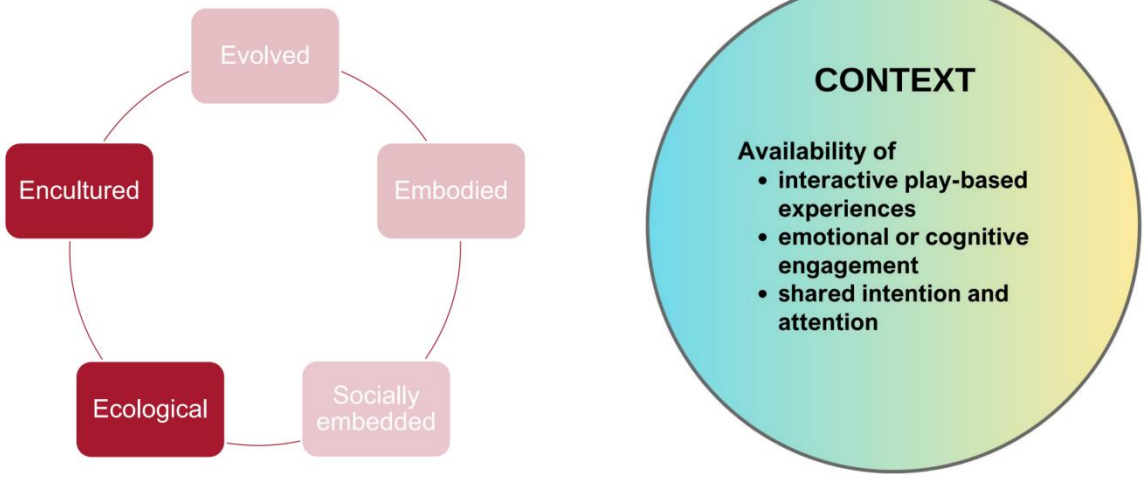
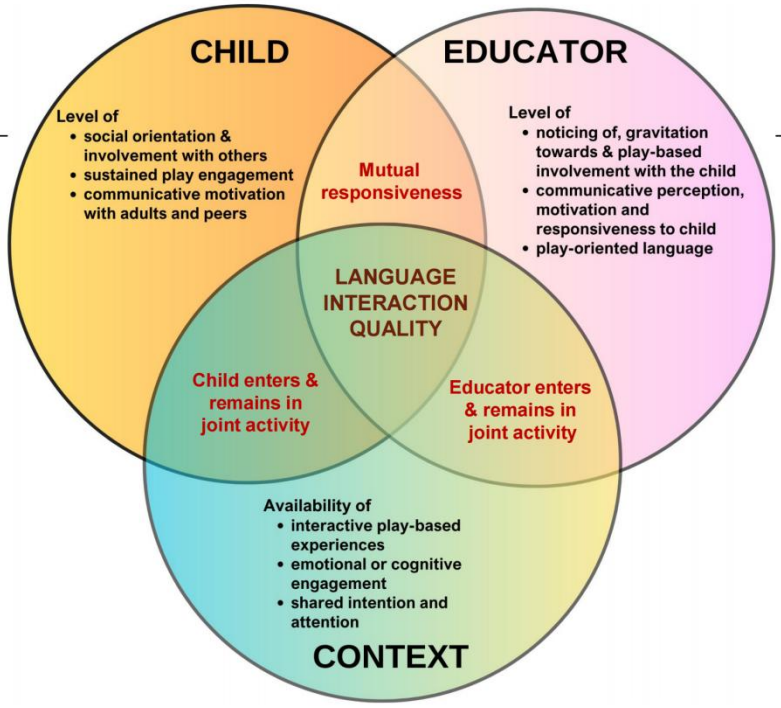
Ecological and Encultured


Evolved
Embodied
Socially embedded
Ecological
Encultured
CONTEXT
Availability of
• interactive play-based experiences
• emotional or cognitive engagement
• shared intention and attention

21


CHILD
Level of
• social orientation & involvement with others
• sustained play engagement
• communicative motivation with adults and peers
EDUCATOR
Level of
• noticing of, gravitation towards & play-based involvement with the child
• communicative perception, motivation and responsiveness to child
• play-oriented language
Mutual responsiveness
LANGUAGE INTERACTION QUALITY
Child enters & remains in joint activity
Educator enters & remains in joint activity
Availability of
• interactive play-based experiences
• emotional or cognitive engagement
• shared intention and attention
CONTEXT

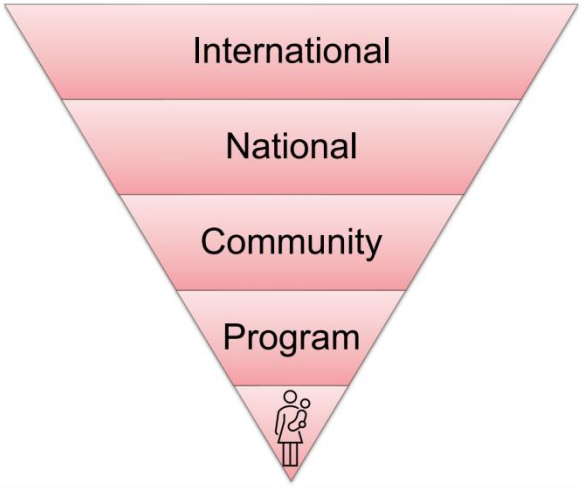
22

Quality is complicated!

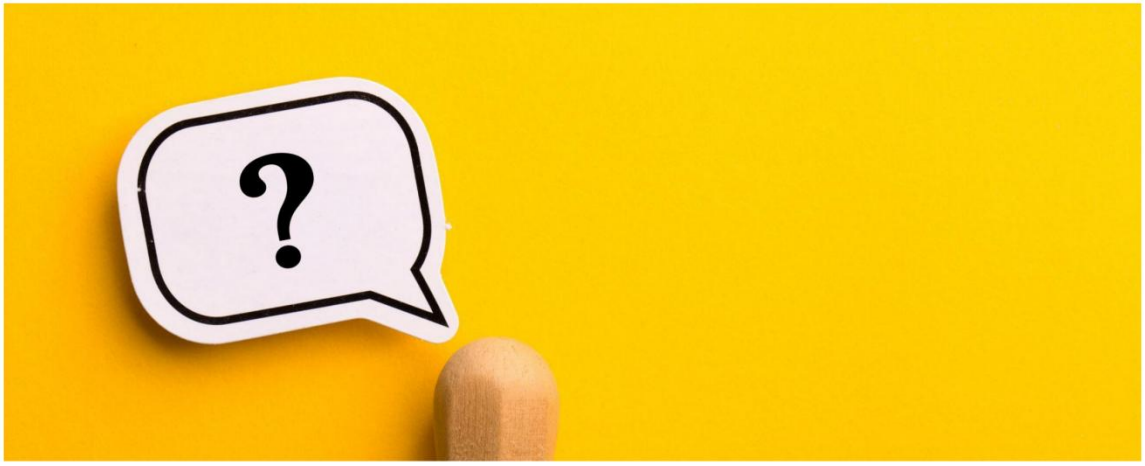
To use the word ‘quality’ implies that children are being well cared for and educated, and we are doing the best for them that we can.

In reality ‘quality’ is a layered concept which reflects a range of assumptions about childhood, and about provision for and practice with young children”

Penn, H. (2011). *Quality in early childhood services: An international perspective.* McGraw-Hill/Open University Press



Who decides what is quality?



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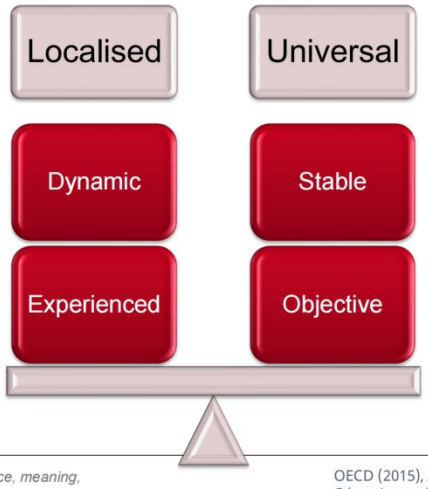
Some concluding thoughts

"Meaning resides in difference places. Meaning is in the mind and the brain; it is also in the body that recognizes familiar things and places. Meaning comes to reside in the child, but it also resides in the social world, in the affect-laden interactions with caretakers and others, in the symbols and artifacts of the culture, in the language spoken around the child" (Nelson, 2007, p.10)



"With increasing investments in ECEC, it has become critical to ensure that ECEC systems perform well and deliver services of high quality. Monitoring is not only important for accountability purposes, but also for policy design, as it suggests how quality can be improved" (OECD, 2015, p.50)

Nelson, K. (2007). *Young minds in social worlds : experience, meaning, and memory*. Harvard University Press.

OECD (2015), *Starting Strong IV: Monitoring Quality in Early Childhood Education and Care*, Starting Strong, OECD Publishing, Paris, https://doi.org/10.1787/9789264233515-en.

Symposium 1

Navigating School Transition: Parental Involvement in the Early Years

Eva Yi Hung Lau, Ph.D, HKSAR, China

Reseach Articles Highlighted in Eva Yi Hung Lau's talk

Lau, E. Y. H., Li, H., & Rao, N. (2011). Parental involvement and children's readiness for school in China. *Educational Research*, *53*(1), 95–113.

Lau, E. Y. H. (2016). A mixed-methods study of paternal involvement in Hong Kong. *British Educational Research Journal*, *42*(6), 1023–1040.

Lau, E. Y. H., & Power, T. G. (2018). Parental involvement during the transition to primary school: Examining bidirectional relations with school adjustment. *Children and Youth Services Review*, 88, 257–266.

Lau, E. Y. H., & Ng, M. L. (2019). Are they ready for home-school partnership? Perspectives of kindergarten principals, teachers and parents. *Children and Youth Services Review,* 99, 2019, 10-17

Lau, E. Y. H., Wu, X., Siu, C. T. S., Williams, K. E., & Bautista, A. (2025). Examining the effectiveness of a video-based parent–child program on executive functions for children 5 to 6 years old: A randomized controlled trial. *Child Development*, 96, 781–796.

Educational Research

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Parental involvement and children's readiness for school in China

Eva Y.H. Lau, Hui Li & Nirmala Rao

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To link to this article: https://doi.org/10.1080/00131881.2011.552243

Educational Research
Vol. 53, No. 1, March 2011, 95–113

Routledge
Taylor & Francis Group

Parental involvement and children's readiness for school in China

Eva Y.H. Lau*, Hui Li and Nirmala Rao

Faculty of Education, The University of Hong Kong, Hong Kong, China

(*Received 14 June 2010; final version received 5 November 2010*)

Background: The remarkable academic advancement of Asian students in cross-national studies has been attributed to numerous factors, including the value placed on education by Chinese parents. However, there is a dearth of research on how exactly Chinese parents are involved in children's early learning.
Purpose: This study has two major research questions: (1) How are Chinese parents involved in young children's learning?; and (2) What is the relationship between their involvement and children's readiness for school?
Sample: A total of 431 kindergarten students (194 girls) with a mean age of 72.24 months (SD = 4.34) from five kindergartens in Hong Kong and five kindergartens in Shenzhen and their parents participated in the study.
Design and methods: Children's Chinese literacy and cognitive readiness were assessed. Their parents were surveyed on their child's readiness for school and their own parental involvement with their children. Means across parental involvement dimensions were compared to explore the pattern of Chinese parental involvement in early childhood education, while correlational and regression analyses were conducted to examine the relationship between parental involvement and children's readiness for school.
Results: Chinese parents had a higher level of home-based involvement than school-based involvement during the early years. Parental involvement was highly correlated with overall readiness for school. *Parent Instruction, Language and Cognitive Activities* and *Homework Involvement* were the significant predictors of overall readiness for school, whereas home-based involvement predicted more variance of readiness for school than did school-based involvement. Only *Language and Cognitive Activities* and *Home–school Conferencing* were associated with children's Chinese literacy and cognitive readiness.
Conclusion: Cross-cultural studies are needed to explore the real reasons for Chinese parents to practise more home-based than school-based involvement. The importance of parental involvement during the early years for maximising children's readiness for school has also been emphasised. Nevertheless, the present study is limited in its lack of ability to be generalised to the whole of China and other cultural contexts. This study is also limited as it relied on parents' report for assessing parental involvement. Finally, the present study is limited in its lack of longitudinal assessment of parental involvement as well as its lack of examination of other dimensions of parental involvement, the quality of parental involvement activities, and other possible mediators or moderators (e.g. parent education) of parental involvement, which may have limited the understanding of Chinese parental involvement in the early years.

Keywords: parental involvement; readiness for school; early childhood education

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DOI: 10.1080/00131881.2011.552243
http://www.informaworld.com

Introduction

Cross-cultural comparisons have repeatedly shown that Chinese and Asian students outperform their European–American counterparts in major academic domains (Chen and Stevenson 1995; Mullis et al. 2007; Schneider and Lee 1990; Stevenson and Stigler 1992). These societal differences in academic achievement have always been attributed to differences in curriculum, student attitudes, teacher practices and parents' value towards education (Eng et al. 2008; S.J. Lee 1996; Lewis, Tsuchida, and Coleman 2002). Chinese parents, for instance, place a high premium on education and academic success and thus, are actively involved in children's learning (W.O. Lee 1996; Stevenson et al. 1993; White 1993). However, although Chinese parents are more involved and might contribute more to children's academic achievement than western parents, we know little about the nature of their involvement in the early years and its association with children's readiness for school. For instance, do parents support their children's early learning through hands-on activities with their children, by participating in school events, or both? Hence, the present study aimed to address this gap by exploring the pattern of parental involvement and the relationship between parental involvement and children's readiness for school in Hong Kong and Shenzhen, two somewhat comparable cities in southern China. Findings from these two cities will have implications for local schools as well as for schools in other countries for enhancing children's readiness for school by encouraging and facilitating parents' involvement.

Parental involvement in the Chinese context

Parental involvement is a multifaceted concept that encompasses a broad range of parenting practices, such as shared-book reading and communicating with the child's teacher (Fan 2001; Grolnick et al. 1997; Raffaele and Knoff 1999). Thus far, there has been no agreement on the dimensions of parental involvement. Greenwood and Hickman (1991) identified five different parental roles in children's education: parents as audiences, parents as learners, parents as teachers, parents as volunteers and parents as decision makers. However, this model neglects the influence of school on parents' involvement and thus, has been replaced by Epstein's model (1995, 2001), which focuses on the school's role in facilitating the home–school partnership: parenting, home–school communication, volunteering at school, home learning activities, decision making and collaborating with the community.

The above models were developed in western contexts and might not be acceptable to Chinese scholars. Therefore, Ho (1995) categorised parental involvement in the Chinese culture into four types: home discussion, home supervision, school communication and school participation. In particular, Ho (1995) proposed that parental involvement should be conceptualised by focusing on the locus of involvement (home vs school). School-based involvement refers to the practices that require parents to have actual contact with the school, such as attending parent–teacher conferences and school events, volunteering at school and participating in the school governance. On the other hand, home-based involvement are those practices related to children's development that usually take place at home, such as assisting with children's homework, talking with children about school issues, and engaging children in intellectual activities (Ho 1995).

It is found in the Chinese context that home-based involvement is strongly encouraged, whereas school-based involvement is not so welcome (Ho 1995). Chinese parents are less likely to be involved in the school than at home because both principals and teachers are very reluctant to get parents involved in the school management (Ng 1999). Chinese teachers do not believe that parents should be involved in the decision-making process, but they do wish to inform and consult parents about students' learning in order for them to assist learning at home (Ho 2003). These studies, however, just focused on the attitudes of parents of school-aged students, whereas the authentic practices of Chinese parental involvement in the early years have not been examined. The present study aimed at addressing this gap.

Parental involvement and readiness for school

Children's early learning outcomes influence their later school success (Gutman, Sameroff, and Cole 2003; Ladd 1990; Scott-Little, Kagan, and Frelow 2006); thus, the importance of getting young children ready for school has been well recognised worldwide. Researchers generally agree that school readiness is a multidimensional concept, which includes physical development, social/emotional development, approaches to learning, language development and cognitive development (Hair et al. 2006; La Paro and Pianta 2000; Pelletier and Brent 2002). In many western contexts, school readiness is aimed to aid in the transition from the home environment to the school context. However, because of the differences in the educational contexts, Chinese kindergartens provide children with different early formal learning experiences (e.g. instructions of literacy and numeracy skills) before the school years. Hence, the concept of 'school readiness' needs to be adapted to the Chinese context and the present study utilised the term 'readiness for school' to refer to children's readiness for the education in school. In order to capture the multidimensional nature of readiness for school, children's language development, cognitive readiness and parents' reports of overall readiness for school were utilised as the indicators of children's readiness for school in the present study.

Parental involvement is associated with a wide range of positive child outcomes in primary and high schools, such as academic skills, positive attitudes and social competence (Griffith 1996; Hill and Taylor 2004; Zellman and Waterman 1998), but its influence on young children's preschool learning outcome is less clear (see La Paro and Pianta 2000, for a review). Parental involvement in preschool years is supposed to be very important, as children are developing basic skills, adjusting themselves to the new school environment and realising their role as learners during this critical period (Pelletier and Brent 2002). Although studies have suggested a strong relationship between parental involvement and children's school readiness (Bates et al. 1994; Li and Rao 2000; Marcon 1999), more empirical evidence is needed in the Chinese context.

In addition, most of the research has only focused on the association between specific dimensions of parental involvement and child development. For example, in one study, home–school communication was associated with mathematics and reading achievement (Griffith 1996; Reynolds 1992), while in another study, parental involvement in home educational activities was related to children's school grades and literacy development (Li and Rao 2000; Li, Corrie, and Wong 2006). Very few

studies, however, have compared the association between home-based involvement and school-based involvement, as two broad dimensions, and child outcomes. Researchers have suggested that home-based involvement and school-based involvement could have different influences on children because of their nature. It has been suggested that school-based involvement increases parents' skills and knowledge to make them better equipped to assist children's learning activities (Hill and Taylor 2004), whereas home-based involvement improves the parent–child relationship and accordingly increases parents' warmth and encouragement of independence, which facilitates children's readiness for school (Parker et al. 1999). Western studies comparing the impact of home-based involvement and school-based involvement found that although they were both related to children's pro-social behaviours during peer play (Fantuzzo, Tighe, and Perry 1999), home-based involvement was found to be the strongest predictor of children's positive outcomes (Fantuzzo et al. 2004). This study aimed to compare further the influence of home-based involvement and school-based involvement on young children's readiness for school in the Chinese context.

Finally, there are many limitations in the existing studies of parental involvement and readiness for school. First, these studies (e.g. Marcon 1999; Reynolds 1992) have relied heavily on teacher reports of parental involvement in school and have failed to capture parents' involvement in the home context. Second, most existing studies have used very few items to assess one single dimension of parental involvement (e.g. Griffith 1996; Hill and Taylor 2004), which may not have been able to gauge the complicated associations between many parental involvement dimensions and children's outcomes. These limitations are also evident in some school readiness studies (see Meisels 1999, for a review). Teachers' and parents' reports are widely used to judge children's readiness for school, which might be biased as a result of teachers' and parents' recent interactions with the child or preservation of the children (La Paro and Pianta 2000; Meisels 1999). Therefore, a variety of measures (report, test, interview) and sources (child, parent, teacher) need to be used to assess children's readiness for school (Blair 2006; Fiorentino and Howe 2004; Forget-Dubois et al. 2007; Lemelin et al. 2007).

The present study

The present study explored the pattern of parental involvement as well as the relationship between parental involvement and children's readiness for school in the Chinese context. It attempted to move beyond teacher reports to focus primarily on parents' reports of their involvement both at home and in school. It utilised a parent rating that was developed to capture the distinct multidimensional nature of Chinese parental involvement in early childhood education. Both parents' reports of their children's readiness for school and child tests were employed to establish the triangulation of assessment. Two research questions guided this investigation:

(1) How are Chinese parents involved in young children's learning?
(2) What is the relationship between parental involvement and children's readiness for school? Are there differences between home-based involvement and school-based involvement in predicting children's readiness?

Methods

Research sites

Hong Kong and Shenzhen are the most similar of all the cities in China in terms of geography and economy, while having different educational policies and cultural backgrounds under the 'one country, two systems' policy.

Hong Kong

Hong Kong, with a population of 7 million, was a former British colony before it became a Special Administration Region of China in 1997. Hong Kong strives to be a trilingual (Cantonese, English and Putonghua) and biliterate (Chinese and English) society, and it is also one of the world's major centres of trade and finance. Unlike other cities in China, Hong Kong receives a high autonomy in developing and implementing contemporary educational policies because of the 'one country, two systems' policy. Although preschool education is not required by law in Hong Kong, almost every child goes to a kindergarten before entering primary school.

Shenzhen

Shenzhen is a sub-provincial city of China and has a population of 8 million. Putonghua is the official language in China, while simplified Chinese character is the written form of Chinese. Because Shenzhen was designated as a Special Economic Zone in the early 1980s, its living standard is higher than those in other Chinese cities and it is more comparable with Hong Kong. Similarly to preschool education in Hong Kong, preschool attendance is not mandatory in Shenzhen, yet most preschool-aged children in Shenzhen attend preschool before entering primary school.

Participants

In both Hong Kong and Shenzhen, one kindergarten with students coming from low SES families, two kindergartens serving middle SES families and two kindergartens with students from high SES families were purposefully sampled to represent different socioeconomic variations within each city. Altogether, 431 upper kindergarten class students who were entering primary school the following academic year as well as their parents were recruited. Of these students, 194 were girls and 237 were boys, with a mean age in months of 72.24 (SD = 4.34). The higher proportion of boys in Shenzhen reflects the one child policy in China against the background of preference for sons. There was a significant difference in children's ages between Hong Kong and Shenzhen ($F(1,\ 417) = 57.42,\ p < 0.001$), with Shenzhen children having a higher mean age than Hong Kong children. This significant difference was expected, as the minimum age of admission to primary school is higher in Shenzhen (six years and up) than in Hong Kong (five years and eight months). About 81% and 95.3% of the participating parents in Shenzhen and Hong Kong respectively were mothers and reported being married. The median age range of these parents was 31–40 years (77%), and their median education level was 'college'. A comparison between Hong Kong and Shenzhen children and their parents can be found in Table 1.

Table 1. A comparison between Hong Kong and Shenzhen children and parents.

Variable	Hong Kong	Shenzhen
Children		
Number of children	221	210
Distribution of children across SES classes	High SES: 115; middle SES: 88; low SES: 18	High SES: 66; middle SES: 115; low SES: 29
Girls	104 (47.1%)	90 (42.9%)
Boys	117 (52.9%)	120 (57.1%)
Child age (months)	70.78 (SD = 3.69)	73.81 (SD = 4.47)
Parents		
Percentage of fathers among parents	20.9%	17.4%
Age range (median level)	31 to 40 (50.7%)	31 to 40 (63.3%)
Marital status	Married: 96.8%; divorced:0.6%; remarried: 1.3%; others: 1.3%	Married: 93.8%; divorced: 5%; remarried: 0.6%; others: 0.6%
Parent education	Below high school; 3.8%; high school: 63.3%; college 26.6%; above college: 6.3%	High school: 24.8%; college: 60.1%; above college: 15%

Procedure

About two months before the end of the academic year, two questionnaires were sent to parents, who were asked to report their own parental involvement behaviours and to assess their children's readiness for school. At the same time, the first author and three student research assistants (majoring in psychology) visited each school to assess participating students.

Measures

Early Parental Involvement Scale (EPIS)

This scale was developed and validated using the focus group approach in another study as part of a larger project. The 26-item EPIS covers six parental involvement dimensions, and parents reported on their own involvement behaviours using a 5-point Likert scale. The first four dimensions concerned home-based involvement: *Parent Instruction*, consisting of items assessing parents' direct instruction to promote children's self-care ability and socio-emotional development; *Parent Discussion*, referring to parents' conversation with their children about issues related to primary school, such as teachers and routines in primary school; *Language and Cognitive Activities*, assessing parents' participation in home learning activities (e.g. reading stories to children and playing chess or card games with children); and *Homework Involvement*, examining parents' engagement in monitoring and assisting their children's completion of school work. The final two dimensions of parental involvement concerned school-based involvement: *Home–school Conferencing*, assessing parents' communication with the school, and *School Involvement*, examining parents' participation in school as volunteers and/or administrators. Cronbach's alphas for the six subscales of the EPIS ranged from

0.60 (*School Involvement*) to 0.90 (*Parent Discussion*). The mean of each dimension was computed for later analyses. It is necessary to note that school solely refers to the formal education beginning after the kindergarten year in most western contexts. However, 'school' was used in 'School Involvement' and 'school-based involvement' in the present study to refer to Chinese parents' involvement in the kindergarten context because of the formal instruction of academic skills in Chinese kindergartens. The use of 'school' can also help to better differentiate between parents' involvement in the informal home learning context and the formal kindergarten learning context.

Chinese Readiness for School Scale (CRSS)

Similarly to the development of the EPIS, CRSS is also a culturally appropriate scale developed using the focus group approach for assessing Chinese children's readiness for school. The CRSS contains 35 items making up six subscales: *General Preparedness for School*, *General Knowledge and Cognitive Development*, *Social Development*, *Behavioural and Emotional Development*, *Approaches to Learning*, and *Physical Development*. These dimensions were also regarded as important aspects of readiness for school by previous researchers (La Paro and Pianta 2000; Pelletier and Brent 2002). Cronbach's alphas for the six subscales ranged from 0.77 (*Approaches to Learning* and *Physical Development*) to 0.87 (*General Preparedness for School*). The total mean score of the CRSS was calculated and used as an indicator of children's overall readiness for school.

Preschool and Primary Chinese Literacy Scale (PPCLS)

This is a reliable and valid measure of young children's Chinese literacy widely used by different researchers (Li 1999; Li, Corrie, and Wong 2008; Li and Rao 2005; Chow and McBride-Chang 2003). The PPCLS consists of four subscales: picture–character matching (Character Identification), listen-and-point (Visual and Auditory Discrimination), point-and-read (Word Recognition) and read-and-say (Expressive Vocabulary). It has 200 items, and the total PPCLS score was regarded as the indicator of a child's Chinese literacy attainment and was used in the main analyses in the present study.

Bracken Basic Concept Scale-Revised (BBCS-R)

This revision of the Bracken Basic Concept Scale (BBCS; Bracken 1984) has 11 subtests, in which the first six subtests comprise the School Readiness Composite (SRC). The SRC has been shown to be a reliable and valid measure of children's early cognitive readiness (Bracken 1998). Because English is not the first language of Chinese children, and some participating kindergartens do not emphasise the teaching of English letters, the subtest of Letters was not administered to children in this study. Altogether, 72 test items making up five subtests were utilised: Colours, Numbers/Counting, Sizes, Comparison, and Shapes. The concepts were presented orally in complete sentences and visually in a multiple-choice format. The SRC score without the letter subtest was used in the main analyses to indicate a child's cognitive readiness.

Results

The purpose of this study was to investigate the pattern of Chinese parental involvement in the early years as well as the relationship between parental involvement and children's readiness for school. Multivariate analysis of variance (MANOVA) was first conducted to examine whether the levels of parents' participation in different parental involvement dimensions differed between Hong Kong and Shenzhen. Then, preliminary analyses were conducted to explore the pattern of Chinese parental involvement as well as to determine the association between different assessments of readiness for school. Finally, correlational and regression analyses were conducted to test the relationship between parental involvement and children's readiness for school as well as to compare the difference between home-based involvement and school-based involvement in predicting children's readiness for school.

The Chinese pattern of parental involvement

MANOVA results indicated that there was a city effect in *Parent Instruction* ($F(1, 298) = 12.11$, $p < 0.01$; $d = -0.40$) and *Homework Involvement* ($F(1, 298) = 40.47$, $p < 0.001$; $d = -0.73$). In particular, Hong Kong parents were found to have higher levels of involvement in both *Parent Instruction* and *Homework Involvement*. The differences in parents' practices of parental involvement between the two cities may be a function of school policies and cultural factors. For example, Hong Kong kindergarten children are given more homework than Shenzhen kindergarten children, which may have resulted in Hong Kong parents' higher level of *Homework Involvement*. On the other hand, the lack of city effect in other parental involvement dimensions might be related to similarities in contexts. For example, the low level of school-based involvement in both cities can be attributed to Chinese teachers' unwillingness to involve parents in school settings. Nevertheless, the finding that the two cities only differed in two dimensions of parental involvement indicated a common pattern of parental involvement shared by Hong Kong and Shenzhen parents. Therefore, participants in the two cities were combined to form a larger sample for all further analyses.

It was found that the levels of Chinese parents' participation varied across different parental involvement dimensions (Table 2). The highest level of parental involvement dimension reported by the participating Chinese parents was *Parent Instruction* (mean = 4.37; SD = 0.50), followed by *Homework Involvement* (mean 4.13; SD = 0.64), *Home–school Conferencing* (mean = 4.07; SD = 0.85), *Language and Cognitive Activities* (mean = 3.85; SD = 0.62), *Parent Discussion* (mean = 3.61; SD = 0.82) and *School Involvement* (mean = 3.27; SD = 0.74). A paired-samples *t*-test was also conducted and results indicated that there was a significant difference ($t(297) = 9.05$, $p < 0.001$) in the means for Chinese parents' home-based involvement (mean = 3.99; SD = 0.50) and school-based involvement (mean = 3.67; SD = 0.71).

Parental involvement and readiness for school

As shown in Table 3, all parental involvement dimensions were significantly correlated with each other, ranging from 0.33 (*Parent Discussion* and *Home–school*

Table 2. Mean and standard deviation of parental involvement variables and children's reported readiness for school.

Variable	No. of items	Alpha	Hong Kong	Shenzhen	Total
Home-based Involvement	19	0.77	4.09 (0.46)	3.90 (0.52)	3.99 (0.50)
Parent Instruction	7	0.87	4.47 (0.46)	4.27 (0.53)	4.37 (0.50)
Parent Discussion	5	0.90	3.68 (0.81)	3.54 (0.83)	3.61 (0.82)
Homework Involvement	2	0.70	4.35 (0.53)	3.91 (0.67)	4.13 (0.64)
Language and Cognitive Activities	5	0.76	3.86 (0.62)	3.83 (0.62)	3.85 (0.62)
School-based Involvement	7	0.75	3.70 (0.77)	3.64 (0.65)	3.67 (0.71)
Home–school Conferencing	3	0.71	4.05 (0.94)	4.09 (0.74)	4.07 (0.85)
School Involvement	4	0.60	3.35 (0.77)	3.19 (0.70)	3.27 (0.74)
Overall Readiness for School	35	0.88	4.12 (0.44)	4.05 (0.50)	4.08 (0.47)
General Preparedness	8	0.87	4.19 (0.52)	4.23 (0.54)	4.21 (0.53)
Language and Cognitive Development	7	0.86	4.17 (0.57)	3.96 (0.63)	4.07 (0.61)
Social Development	6	0.86	4.04 (0.53)	3.95 (0.62)	4.00 (0.58)
Emotional and Behavioural Development	5	0.84	3.96 (0.68)	3.93 (0.69)	3.95 (0.68)
Learning Approaches	3	0.77	3.82 (0.71)	3.65 (0.74)	3.74 (0.73)
Physical Development	6	0.77	4.23 (0.49)	4.28 (0.51)	4.25 (0.50)

Conferencing) to 0.60 (*Home–school Conferencing* and *School Involvement*). The significant correlations found confirmed that the six parental involvement dimensions shared some common characteristics of the parental involvement construct, whereas the moderate corrections indicated that each dimension could provide unique information about different aspects of parental involvement. The reliability of different measures of readiness for school was also assessed. Results from PPCLS (mean = 45.73; SD = 29.56) and Bracken's (mean = 67.08; SD = 3.80) were significantly correlated with each other ($r = 0.31$, $p < 0.001$), while the mean score of parent reports of overall readiness for school (mean = 4.10; SD = 0.47) was significantly correlated with both PPCLS and SRC scores (PPCLS: $r = 0.14$, $p < 0.05$; SRC: $r = 0.20$, $p = 0.001$).

The relationship between parental involvement and children's readiness for school was then tested using both bivariable correlation and regression analyses. Firstly, all parental involvement dimensions were significantly correlated with children's overall readiness for school ($r \geq 0.28$, $p < 0.001$) (Table 3). To examine the association of parental involvement and readiness for school further, a hierarchical regression analysis was conducted. In this analysis, parents' reports of children's overall readiness for school was entered as the dependent variable, and all dimensions of parental involvement were entered as the independent variable, while child age and city were included in the first and second step, respectively. Although multi-collinearity could be an issue for the model involving all six significantly inter-correlated parental involvement dimensions, the problem is likely to be minimised with the large sample size utilised in this study to identify the unique effects of each dimension. Results indicated that the first two models were not significant ($p > 0.05$), however, parental involvement in step three did explain a significant amount of unique variance in children's overall readiness for school, $\triangle R^2 = 0.33$, $F\triangle(6, 258) = 21.658$, $p < 0.001$. Among the six parental involvement dimensions,

Table 3. Correlations among parental involvement dimensions and between parental involvement and readiness for school.

	Parent Discussion	Language/ Cognitive Activities	Homework Involvement	Home–school Conferencing	School Involvement	Overall Readiness for School	PPCLS	SRC
Parent Instruction	0.473***	0.539***	0.446***	0.332***	0.360***	0.495**	0.045	0.040
Parent Discussion	1	0.523***	0.394***	0.330***	0.477***	0.376**	0.063	0.008
Language/Cognitive Activities		1	0.509***	0.349***	0.513***	0.495**	0.143*	0.117*
Homework Involvement			1	0.371***	0.391***	0.408**	0.040	0.024
Home–school Conferencing				1	0.601***	0.279**	0.206**	0.150*
School Involvement					1	0.282**	0.019	0.005

Notes: PPCLS, Preschool and Primary Chinese Literacy Scale; SRC, School Readiness Composite. *$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Table 4. Summary of hierarchical regression analysis for variables predicting overall readiness for school.

Variable	*B*	*β*	R^2	*F*
Parental involvement dimensions				
Step 1			0.00	0.67
Child age	−0.01	−0.05		
Step 2			0.01	0.77
Child age	−0.00	−0.03		
City	0.06	0.06		
Step 3			0.34***	160.53
Child age	−0.00	−0.01		
City	−0.04	−0.04		
Parent Instruction	0.20	0.22**		
Parent Discussion	0.07	0.13		
Homework Involvement	0.13	0.17**		
Language and Cognitive Activities	0.19	0.24**		
Home–school Conferencing	0.03	0.06		
School Involvement	−0.03	−0.05		
Home-based involvement				
Step 1			0.00	0.38
Child age	−0.00	−0.04		
Step 2			0.01	0.67
Child age	−0.00	−0.02		
City	0.06	0.06		
Step 3			0.33***	440.70
Child age	0.00	−0.00		
City	−0.03	−0.04		
Home-based involvement	0.55	0.58***		
School-based involvement				
Step 1			0.00	0.34
Child age	−0.00	−0.04		
Step 2			0.01	0.88
Child age	−0.00	−0.01		
City	0.07	0.08		
Step 3			0.10***	100.10
Child age	0.00	0.01		
City	0.07	0.08		
School-based involvement	0.20	0.30***		

Notes: $\triangle R^2 = 0.33$ for Step 3 of parental involvement dimensions. $\triangle R^2 = 0.33$ for Step 3 of home-based involvement and $\triangle R^2 = 0.09$ for Step 3 of school-based involvement. $^{**}p < 0.01$. $^{***}p < 0.001$.

only *Parent Instruction* ($p < 0.001$), *Language and Cognitive Activities* ($p < 0.001$), and *Homework Involvement* ($p < 0.05$) were significant predictors of overall readiness for school. Next, analyses were conducted to examine overall readiness for school variances that were explained by home-based involvement and school-based involvement independently. Results indicated that home-based involvement ($F\triangle(1, 267) = 132.09$, $p < 0.001$) and school-based involvement ($F\triangle(1, 277) = 28.35$, $p < 0.001$) predicted 33% and 9% of overall readiness for school variance respectively after controlling for child age and city (Table 4).

Lastly, to examine the association between parental involvement and PPCLS and SRC, analysis of variance (ANOVA) was first conducted to examine whether there were significant effects of age, gender, city and family income in PPCLS and SRC scores. Only age effect was found in SRC scores ($p < 0.01$). Next, correlational

Table 5. Summary of hierarchical regression analysis for variables predicting the Preschool and Primary Chinese Literacy Scale (PPCLS) and School Readiness Composite (SRC).

Variable	*B*	*β*	R^2	*F*
PPCLS				
Step 1			0.05**	7.28
Language and Cognitive Activities	3.74	0.08		
Home–school Conferencing	6.47	0.19**		
SRC				
Step 1			0.03**	9.62
Child age	0.16	0.18**		
Step 2			0.06**	6.04
Child age	0.15	0.18**		
Language and Cognitive Activities	0.49	0.08		
Home–school Conferencing	0.57	0.13*		

Notes: Adjusted $R^2 = 0.04$ for Step 1 of PPCLS. $\triangle R^2 = 0.03$ for Step 2 of SRC. $^{**}p < 0.01$. $^{**}p < 0.05$.

analyses revealed that only the dimensions of *Language and Cognitive Activities* (PPCLS: $r = 0.12$, $p < 0.05$; SRC: $r = 0.14$, $p < 0.05$) and *Home–school Conferencing* (PPCLS: $r = 0.15$, $p < 0.05$; SRC: $r = 0.21$, $p < 0.001$) were correlated with children's PPCLS and SRC scores (Table 5). Regression analysis revealed that the contributions of the two predictors to both PPCLS and SRC scores were very minor. Results indicated that the two predictors of PPCLS scores had an adjusted R^2 of 0.04 ($F(2, 276) = 7.28$, $p < 0.01$), which explained a total of 4% of the variance. On the other hand, after controlling for child age, the two predictors of SRC scores had a R^2 change of 0.03 ($F\triangle(2, 278) = 4.14$, $p < 0.05$) and uniquely explained 3% of the variance.

Discussion

The present study is the first empirical investigation of Chinese parental involvement in the early years as well as its association with children's readiness for school in the Chinese context. This study demonstrated that Chinese parents tend to practise more home-based involvement than school-based involvement in early childhood years. It was found that parental involvement could predict the increases in children's overall readiness for school, with home-based involvement evidencing the strongest relationship to overall readiness for school. Finally, it was found that only *Language and Cognitive Activities* and *Home–school Conferencing* were related to children's Chinese literacy and cognitive readiness. This section will discuss these findings and their implications.

Parental involvement during early years in Chinese context

The present study found that the Chinese parents practised more home-based involvement than school-based involvement during the early years. In particular, *Home–school Conferencing* and *School Involvement* only ranked the third highest and the last among the six parental involvement dimensions, respectively. Previous studies have suggested the tendency for Chinese parents to conform to the school requirements and supervise their children's learning at home during the school years (Ho 1995; Pang 2004). However, findings from the present study suggested that such

tendency is likely to appear starting from the early childhood years. Although Chinese parents value education very much and are eager to get involved in their children's education, many of them might feel that they do not have the expertise to assist the teachers in the school, which results in their low level of involvement in the school context and mainly support their child's learning at home (Liu and Chien 1998). Furthermore, the Chinese teachers resisted involving parents in decisions about school governance, although they were willing to communicate with parents about issues related to students' learning (Ho 2003; Ng 1999; Pang 2004). As a result, the parents may have noticed the teachers' negative attitudes toward their participation in school administration and became reluctant to get involved. Thus, the Chinese parents in the present study were still taking a relatively passive role in school-based parental involvement.

The association between parental involvement and readiness for school

The present study found that parental involvement could predict children's readiness for school, which shows the important role of parental involvement in early childhood education. In particular, *Parent Instruction*, *Language and Cognitive Activities*, and *Homework Involvement* were found to be the three significant predictors in the regression model. The significant effect of *Parent Instruction* on readiness for school is consistent with the findings of Parker and others (1999), which suggested that parents' encouragement of independence can facilitate children's readiness for school. Findings from the regression model are also in line with the previous studies (Li and Rao 2000; Li, Corrie, and Wong 2006; Ortiz, Stile, and Brown 1999), showing that parents who practise *Language and Cognitive Activities* can promote preschoolers' literacy development by carrying out different learning activities at home. Consistently with findings from existing studies (Copper et al. 1998; Copper, Lindsay, and Nye 2000; Sanders 1998) suggesting the positive impact of parents' homework involvement on school-aged and high school students, the present study found that *Homework Involvement* can promote children's readiness for school because children's school knowledge is reinforced and the connection between school education and home learning is strengthened. Although the dimensions of *Parent Discussion, Home–school Conferencing* and *School Involvement* were not significant in the model, their relationships with children's outcomes have been evidenced in previous studies. For example, Coleman (1998) and his colleagues suggested that when parents communicate with their school-aged children about school issues, children are more satisfied with the school and have higher academic achievement. Marcon (1999) also found that increased parental involvement in school was associated with preschool children's positive development and mastery of basic academic skills.

It is very important to note that only *Language and Cognitive Activities* and *Home–school Conferencing* were found to be correlated with children's Chinese literacy and cognitive readiness in the present study, which is also consistent with findings in previous studies (Connell and Prinz 2002; Li and Rao 2000; Arnold et al. 2008; Zellman and Waterman 1998). Parents' practice of *Language and Cognitive Activities* is directly associated with children's Chinese literacy and cognitive readiness, as these activities are aimed at promoting children's language development and cognitive functioning. On the other hand, *Home–school Conferencing* has a relatively indirect relationship with children's Chinese literacy and cognitive

readiness. In fact, Hill and Taylor (2004) suggested that *Home–school Conferencing* helps to equip parents with skills and knowledge regarding the developmentally appropriate activities for facilitating their children's readiness for school through parents' communication with teachers. The knowledge and skills that parents acquire can then be used to enhance their practice of *Language and Cognitive Activities*. This finding has verified the unique relationships between parental involvement dimensions and specific child outcomes, whereby school and parents can work together strategically to promote targeted child outcomes. However, the above findings should be considered as exploratory because of the small percentage of variance explained by the two parental involvement dimensions.

Home-based involvement vs school-based involvement

Parental involvement in school is receiving increasing attention from scholars and educators, but research and policy sometimes fail to look beyond parents' participation in schools for ways to facilitate their involvement in improving children's educational achievement. The present study is the first Chinese investigation comparing the influence of home-based involvement versus school-based involvement on young children's learning outcomes. The finding could also lend cross-cultural support to Fantuzzo et al. (2004), who found that parental involvement at home was the strongest predictor of children's readiness for school. It highlights, again, the importance of parental involvement in supporting children's learning in the home environment.

It is very important to note that parents' practices of school-based activities predicted fewer variances of Chinese young children's readiness for school outcomes than their practices of home-based activities, although it has been widely advocated in the field. Instead, it seems that the engagement of parents in learning in the home is more likely to result in a positive difference to learning outcomes during the early years in the Chinese context. Involving parents in school activities has important social and community functions, but the interactions between parents and children are limited during the process and therefore, its impact on children's readiness might be weaker than home-based involvement. However, parental involvement in school has been found to be highly associated with a range of positive outcomes for high school students in western studies (Barnard 2004; Oyserman, Brickman, and Rhodes 2007). This implies that the impact of school-based involvement on children might emerge in later school years, or it is simply a cultural difference. Nonetheless, more studies are needed to explore further the nature of school-based involvement. When parents practise school-based parental improvement, they can gain knowledge from the school to improve their parenting and help make decisions that will affect school functioning and their children's learning (Pomerantz, Moorman, and Litwack 2007; Sussell, Carr, and Hart 1996). Therefore, the indirect impact of parental involvement in school during the early years on child outcomes should not be overlooked, and it is important to continue to encourage parents' involvement in early childhood education in order to help them establish a foundation for school-based involvement in later schooling.

Conclusions

The findings that Chinese parents tend to practise more home-based than school-based involvement in early years learning highlights the importance of examining its

influencing factors in order to motivate parents' school-based involvement. Findings also suggested that promoting parental involvement in early childhood education in the Chinese context is an effective way to promote children's readiness for school. The implications, limitations and future directions of the present study are discussed in this section.

Implications

The present empirical study provides advanced knowledge and localised information about parental involvement. The findings could be widely used to develop seminars and training programmes for Chinese educators, teachers and parents to promote a nurturing environment that secures a smooth school transition for children. Promoting parental involvement during the early childhood years lays a strong foundation for later involvement, and so more joint efforts by kindergarten teachers and parents are needed to improve the home learning environment, or to promote involvement at kindergarten to facilitate children's positive outcomes.

Despite the fact that Hong Kong and Shenzhen might not be representative of other regions in China, they are amongst the most westernised cities in China and are likely to have more western educational influences, such as the inclusion of parents in children's education, than other cities of Mainland China. However, the findings that parents in these two most westernised cities still tend to practise less school-based involvement than home-based involvement during the early childhood years calls for further cross-cultural studies to explore the real reasons for this phenomenon. The present study also built upon previous parental involvement research and has consolidated the relationship between parental involvement and readiness for school by proving that parental involvement can significantly predict the variation in children's overall readiness for school. Therefore, promoting parental involvement in early childhood education could be an effective way to improve preschool programmes. The finding that home-based involvement predicted more variance of children's readiness for school than school-based involvement can be utilised to extend, enhance and facilitate parental involvement at home to maximise children's readiness for primary school.

Limitations

The present study has several limitations that could be further improved in future studies. First, findings of the present study are likely to be regional because parental involvement was only assessed in two Chinese cities, which limited the ability for the present study to be generalised to the whole of China and to other cultures. For example, unlike preschool education in western contexts, formal instruction of skills, such as literacy and numeracy, is introduced in Chinese kindergartens. As a result, homework is often assigned to strengthen children's knowledge and Chinese parents are more likely to be involved in supervising their child's homework than parents in other cultures. Nevertheless, the question of whether or not there are cross-cultural differences in the pattern of parental involvement cannot be confirmed without cross-cultural data. Second, this study may be limited in the assessment of parental involvement. Similar to most existing parental involvement research (e.g. Griffith 1996; Marcon 1999; Seefeldt et al. 1998), the present study relied on single-informant ratings. Because parents' reports are based on the respondents' subjective judgment,

their responses may be affected by many personal factors, such as recalling details of more recent parental involvement events. In addition, this study examined the concurrent association between parental involvement and readiness for school, whereas the longitudinal relationship between the two variables is not known. Furthermore, this study only focused on assessing the quantity of certain parental involvement behaviours, whereas other possible dimensions of parental involvement as well as the quality of parental involvement activities were not assessed. For example, urban Chinese parents often send their children to tutorials as well as purchasing and using enrichment programmes to promote their children's learning. The lack of examination of parent attitudes toward and their actual practices of parent investment may have limited our understanding of Chinese parental involvement in the early years. Finally, parent education was found to be significantly correlated with many measures of young children's development (e.g. Fan 2001; Grolnick et al. 1997). However, the lack of consideration of this demographic factor in the main analyses failed to address the issue of whether the relationship between parental involvement and child outcomes is mediated or moderated by other factors.

Future directions

In the future, researchers should conduct more parental involvement research in the local context for facilitating Chinese parental involvement starting from the early years. Cross-cultural data of parental involvement are highly desired in order to conduct cross-cultural comparison of parental involvement patterns. When assessing parental involvement, future studies should utilise multi-informants and longitudinal approaches to gain a more thorough understanding of both the concurrent and the longitudinal influence of parental involvement on children's outcomes, as well as to investigate the changes across school contexts and over time. Because of the complex nature of parental involvement, future studies should also examine Chinese parents' allocation of resources and its relationship to readiness for school, the non-behavioural aspects (e.g. parents' value of education) of parental involvement, the way that parents practise their involvement (e.g. how they read to their children), as well as the influence of other demographic factors (e.g. parent education, family income and parents' marital status) on parental involvement.

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A Mixed-methods Study of Paternal Involvement in Hong Kong

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The research reported here examined Chinese fathers' direct interaction or engagement in children's education both at home and in preschool during the early childhood years using a Hong Kong sample in two studies. In Study 1, comparisons between father and mother involvement practices and examination of the associations between family background variables and father involvement as well as between father involvement and school readiness were conducted. In Study 2, father and teacher focus-group interviews were conducted to explore fathers' and teachers' beliefs and practices concerning father involvement. Consistent with previous studies, the findings showed that teachers and fathers acknowledged the importance of fathering for children's positive development as well as supportive marital relationships. While fathers were found to be involved in various educational activities both at home and in preschool, the findings showed that the influence of family background may depend on the context of fathers' involvement. In particular, family income, parental education background, parental work status, and fathers' perception of child and teacher invitations were found to affect fathers' preschool-based involvement, but not fathers' home-based involvement. Finally, father involvement, however, was not found to associate with children's school readiness. These findings are likely to contribute to the literature on father involvement regarding its determinants and influence on child outcomes during the early years in Chinese culture, drawing important implications for father education, teacher education and family policy.

Keywords: father involvement; focus-group interviews; mixed-methods approach; school readiness

Introduction

After more than a century of research in which parenting was addressed almost exclusively in terms of mothering, the past few decades have witnessed a substantial growth in the study of fathering (Marsiglio *et al.*, 2000; Cabrera & Garcia Coll, 2004). Researchers now recognise that fathering matters, and that fathers play an important and multidimensional role in their children's lives. For instance, Lamb and his colleagues (Lamb *et al.*, 1985, 1987; Lamb, 1987) developed a three-part model of paternal involvement (interaction or engagement, accessibility and responsibility) that can be used to categorise various forms of paternal participation in childrearing. The first category of paternal involvement, namely interaction or engagement, describes time spent in one-on-one interaction with the child (e.g. feeding or playing with the child). Paternal involvement in the second category, accessibility, entails the

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physical and psychological availability of the father to the child, regardless of whether direct interaction occurs (e.g. watching television while the child plays in the same room). The final category concerns the degree to which fathers take responsibility for their children's welfare and care (e.g. childcare arrangements). The focus of this study is Lamb's (1987) first category, in which Chinese fathers' direct interaction or engagement in their children's early education is examined using a framework of parental involvement that recognises the multifacetedness of parental involvement during the early years in the Chinese context (Lau *et al.*, 2012). Specifically, a mixed-methods and multi-informants research design is employed to examine Chinese fathers' involvement in the home (e.g. reviewing homework) and preschool (e.g. communicating with teachers and volunteering) contexts using a sample of Hong Kong preschoolers. The use of both qualitative and quantitative research designs enables a more thorough and systematic exploration of Chinese paternal involvement. The use of parent reports for assessing home-based involvement and teacher reports for assessing preschool-based involvement also reduced the risk of self-report bias by parents.

Paternal involvement and positive child outcomes

Researchers have provided clear evidence that fathers play an important role in their children's developmental well-being. Specifically, paternal involvement has been found to be associated with a wide range of positive development outcomes for children (Flouri, 2005; Caberra *et al.*, 2007; Sarkadi *et al.*, 2008). The children of highly involved fathers exhibit greater cognitive competence and academic achievement (Flouri & Buchanan, 2004; McBride *et al.*, 2005), higher self-esteem (Deutsch *et al.*, 2001), fewer behavioural problems (Flouri & Buchanan, 2003) and greater social competence (Parke *et al.*, 2002). Recent research suggests that the benefits of involved fathering remain significant even after controlling for mothers' involvement (Marsiglio *et al.*, 2000). Parental involvement during early childhood is acknowledged to be very important, as children develop basic skills, adjust to their new school environment and realise their role as learners during this critical period (Pelletier & Brent, 2002). However, despite ample evidence of the importance of parental involvement during early childhood (Lau *et al.*, 2011), researchers investigating early-childhood parenting have typically paid much less attention to fathers than to mothers. As a result, little is known about the specific mechanisms by which fathers' educational involvement affects preschool-aged children's learning outcomes. Hence, the present study aimed to examine various forms of paternal involvement and their association with children's school readiness.

Determinants of paternal involvement

Given the overwhelming evidence for the positive influence of parental involvement on children's development, as outlined above, the importance of assessing the determinants of paternal involvement cannot be overstated. The results of numerous studies have confirmed that fathers' education and family income independently affect the duration and breadth of paternal involvement (Hoover-Dempsey & Sandler,

1997; Bulanda, 2004). First, less well-educated fathers tend to hold lower-income jobs with longer working hours, which limit their availability and thus their involvement. Second, fathers with a low socioeconomic status (SES) tend to lack the skills and knowledge required to support parental involvement. Researchers have also suggested that fathers' involvement is sensitive to contextual factors such as family size (Lamb, 1997; Bonney *et al.*, 1999). As the number of children in a household increases, the father's involvement in each child's education decreases. In addition, the number of hours worked by the mother per week has been found to be one of the most consistent predictors of paternal participation, mainly due to the extent of the mother's availability for involvement (Barnett & Baruch, 1987; Crouter *et al.*, 1987).

Researchers have also suggested that gender-role attitudes and fathers' perceptions of the extent to which their involvement is valued by others influence actual paternal involvement (Sanderson & Thompson, 2002). For instance, fathers' beliefs, that their input is not valued by children or teachers may act as a major barrier to paternal involvement. Both Parke (1996) and Lamb (1997) used role theory to explain fathers' decisions to involve themselves in their children's lives, arguing that fathers' perceptions of appropriate paternal behaviour are influenced by both culturally defined norms of behaviour and individual beliefs. As predicted by role theory, fathers' participation in childcare has in some cases been found to be determined by their beliefs about appropriate roles for men and women. Fathers with more egalitarian attitudes towards parental roles demonstrate greater paternal involvement than fathers with more traditional attitudes. Parents' educational involvement is also likely to be influenced by the expectations of their behaviour held by their partners and other significant groups (e.g. teachers; Hoover-Dempsey & Sandler, 1997). In this study, both quantitative data reported by parents and teachers as well as qualitative data gathered in interviews with fathers and teachers were used to investigate the determinants of fathers' involvement in their children's early education.

Paternal involvement in Hong Kong

Chinese parents place a high value on education and academic success and thus, are actively involved in children's learning starting from the early childhood years. However, Asian families hold distinct cultural values and gender-role attitudes, shaped by a societal emphasis on collectivism and filial piety, which may affect the way fathers are involved. In traditional Chinese culture, fathers are regarded as the family breadwinners; they are considered responsible for all matters external to the household, while childrearing is left to mothers (Kwok *et al.*, 2012). Over the last few decades, however, China has undergone notable socio-cultural and economic changes, of which the country's dramatic economic growth and women's entry into the workforce are the most striking. In Hong Kong, of the children from birth to 9 years old and living with two parents, the proportion whose parents both worked full-time increased by a substantial 6.1% from 43.8% in 2001 to 49.9% in 2011 (The Hong Kong Council of Social Service, 2013). The increase in dual-earner nuclear families in Hong Kong is undermining the traditional division of parental roles by gender, with growing social support for gender equality (Beckert *et al.*, 2006; Ho *et al.*, 2011). As a result, parenting responsibilities are becoming less gender-bound and fathers are

becoming more involved in raising their children. Nevertheless, few studies have been conducted on parenting roles and practices in non-western contexts such as Hong Kong. As cultural context affects the ways in which paternal involvement is manifested, it is necessary to examine the involvement of Chinese fathers to gain insight into parenting in diverse contexts. While many Hong Kong dual-earner families rely on domestic helpers or extended family members to provide child care, the present study focuses on Chinese fathers' involvement in children's learning and education, rather than just care, during the early childhood years.

The present research

A mixed-methods and multiple-informant research design was adopted, and the participants were recruited from six kindergartens in Hong Kong using a stratified random sampling strategy. Specifically, two kindergartens were recruited in each of the three strata (i.e., high-, middle-, and low-income) based on the median monthly household income of the districts to ensure the representativeness of the sample. It is important to note that while preschool education is not compulsory in Hong Kong, nearly all Hong Kong children aged three to six years attend kindergarten. Therefore, Hong Kong provides an interesting context in which the understanding of the variations in fathers' involvement can be extended by investigating paternal involvement, in both home and kindergarten contexts. Specifically, the research was divided into two parts (Study 1: quantitative study; Study 2: qualitative study) to address the following research questions.

Research question 1: How does the involvement of fathers and mothers differ during early childhood? (Study 1)

Research question 2: What are the factors influencing fathers' involvement? Specifically, the demographic determinants (Study 1) and fathers' and teachers' perceived influencing factors (Study 2) of paternal involvement were examined.

Research question 3: What is the relation between paternal involvement and child outcomes? In particular, the relation between paternal involvement and children's school readiness (Study 1) and fathers' and teachers' perceived influence of paternal involvement on children's learning and development (Study 2) were examined.

Method

Study 1: Quantitative study

All children attending upper kindergarten class (the year before children enter primary school) and their families in the six participating kindergartens were invited to participate in this study. A total of 129 families (128 mothers and 125 fathers) agreed to participate, with a 76% response rate. Each family had an average of 1.73 children (SD = 0.69), and the majority of the mothers (69.5%) and fathers (47.2%) were between 31 and 40 years old. Most of the parents were married (92.2%). Of the fathers sampled, 92% worked full-time and the remaining 8% worked part-time. In contrast, 57% of the mothers were housewives; only 31.3% and 11.7% worked full-time and part-time, respectively. The median monthly family income level was

HKD10,001 to HKD20,000 (37.8%), and the median level of education completed by the fathers (29.8%) and the mothers (28.9%) was high school. This sample can be considered as lower-middle class in Hong Kong. Both the fathers and the mothers were asked to complete questionnaires on their families' demographic characteristics and their own educational involvement at home, and the teachers were asked to report on the preschool-based involvement of both parents and the school readiness of each participating child.

Parental involvement. The parents' involvement was assessed using the Chinese Early Parental Involvement Scale developed by Lau *et al.* (2012) on a 5-point Likert scale. The parents reported their home-based involvement on a 3-item Homework Involvement subscale (e.g. instruct child to complete homework). A mean score for home-based involvement was then computed for each parent (Cronbach's-alpha values: fathers = .84; mothers = .80). On the other hand, the teachers assessed the parents' preschool-based involvement using a 4-item Home-school Communication subscale (e.g. call the teacher to communicate) and a 2-item Preschool Involvement subscale (e.g. attend parent-teacher meetings). A mean score for preschool-based involvement was computed for each parent by averaging his/her scores for the six items of the two subscales (Cronbach's alpha values: fathers = .89; mothers = .88).

School readiness. The teachers were asked to rate the school readiness of the participating children using the 35-item Chinese Readiness for School Scale (CRSS) developed by Lau *et al.* (2011) (e.g. completes learning tasks seriously and is able to retell stories). The responses were given on a 5-point Likert-style scale. The scale received a Cronbach's alpha score of .96. Mean score in the CRSS was treated as an indicator of the children's overall school readiness.

Study 2: Qualitative study

In each of the six participating kindergartens, one teacher and one father of a child in each grade (lower, middle and upper kindergarten) were invited to participate in the teacher and father focus groups, respectively. One father was sick during the day of the interview and therefore, the focus-group interviews were conducted with 17 fathers and 18 teachers (see Tables 1 and 2 for background information of the interviewees). All of the interviews were conducted by the author, and lasted for 24 to 38 minutes. A semi-structured interview protocol was used to ensure the consistency of the interviews while allowing new issues to be raised and explored. Several interview techniques were used throughout the interviews, such as encouraging individual comments, avoiding leading questions, and not providing comments on responses. All interviews were conducted in Cantonese and were audio-taped for later transcription and translation. The constant comparative method of the grounded theory approach developed by Glaser and Strauss (1967) was used to analyse the data. Specifically, the responses to each interview question were compared and contrasted; categories were formed; codes were assigned to the categories; the content of each category was summarised to identify developing themes; and negative evidence was sought (Boeije, 2002). The internal consistency of each interview was carefully

Table 1. Background information of focus group fathers

	Participant	Marital status	Age	Number of children	Child's school year	Occupation	Family income in Hong Kong Dollars	Education
Kindergarten A	Father A	Married	31–40	2	K2	Full-time	50,001 or above	Diploma or Associate Degree
	Father B	Married	41–50	1	K3	Full-time	40,001–50,000	Master or above
	Father C	Married	41–50	2	K1	Full-time	50,001 or above	Master or above
Kindergarten B	Father A	Married	21–30	1	K1	Full-time	10,001–20,000	Diploma or Associate Degree
	Father B	Married	41–50	2	K2	Full-time	40,001–50,000	Secondary 4 to 5
Kindergarten C	Father A	Married	31–40	2	K3	Full-time	10,001–20,000	Secondary 6 to 7
	Father B	Married	41–50	2	K3	Full-time	20,001–30,000	Secondary 4 to 5
	Father C	Married	41–50	3	K1	Not Working	20,001–30,000	Secondary 4 to 5
Kindergarten D	Father A	Married	> 51	2	K2	Full-time	10,001–20,000	Secondary 6 to 7
	Father B	Married	31–40	1	K1	Full-time	20,001–30,000	Secondary 4 to 5
	Father C	Married	41–50	1	K3	Full-time	10,001–20,000	Secondary 4 to 5
Kindergarten E	Father A	Married	21–30	2	K1	Full-time	10,001–20,001	Secondary 4 to 5
	Father B	Married	31–40	2	K2	Full-time	20,001–30,000	Master or above
	Father C	Married	31–40	1	K3	Full-time	10,001–20,001	Diploma or Associate Degree
Kindergarten F	Father A	Married	31–40	2	K3	Full-time	40,001–50,000	Diploma or Associate Degree
	Father B	Married	31–40	1	K1	Full-time	10,001–20,001	Master or above
	Father C	Married	41–50	2	K2	Full-time	50,001–60,000	Master or above

Table 2. Background information of focus group teachers

	Participant	Class taught	Total years of teaching	Years of teaching at current kindergarten
Kindergarten A	Teacher A	K2	20	10
	Teacher B	K3	15	11
	Teacher C	K1	12	6
Kindergarten B	Teacher A	K1	10	1.5
	Teacher B	K2	20	15
	Teacher C	K3	17	4
Kindergarten C	Teacher A	K2	22	1
	Teacher B	K3	7	3
	Teacher C	K1	18	3
Kindergarten D	Teacher A	K1	19	2.5
	Teacher B	K2	30	5
	Teacher C	K3	22	8 months
Kindergarten E	Teacher A	K1	20	16
	Teacher B	K2	20	15
	Teacher C	K3	22	15
Kindergarten F	Teacher A	K2	17	6
	Teacher B	K3	16	12
	Teacher C	K1	17	5

assessed. As soon as the first interview was complete, comparison of interviews within groups began. Once the within-group analysis was complete, the interviews were compared between groups to determine whether the teachers and fathers reported similar perceptions and experiences of paternal involvement.

Results

Study 1: Quantitative study

The paired-sample *t*-test revealed that the mothers reported a significantly higher level of home-based involvement than the fathers [t (122) = 6.71; $p < .001$; mothers: $M = 4.10$; $SD = .82$; fathers: $M = 3.32$; $SD = .99$]. Similarly, the teachers reported that the mothers were significantly more involved in preschool-based activities ($M = 2.67$; $SD = .96$) than the fathers ($M = 1.54$; $SD = .85$) [t (126) = 12.48; $p < .001$].

Several rounds of one-way analysis of variance were conducted. Gender of child, paternal work status and maternal work status were entered separately as independent variables, and the parental-involvement variables were entered together as dependent variables. Effect size, r, was calculated when appropriate (Rosenthal, 1991). Child gender was found to have no significant effect on any of the paternal-involvement variables (*p*s = n.s.). Maternal work status had a significant effect on fathers' involvement in home-based settings only: $F(2, 122) = 4.76$, $p < .01$ ($r = .07$). Similarly, paternal work status significantly affected fathers' home-based involvement: $F(1, 123) = 13.37$, $p = .001$ ($r = .10$). Post-hoc analysis of the three groups of mothers differentiated by self-reported work status ('full-time', 'part-time' and 'not working')

Table 3. Correlations between fathers' involvement, demographic variables and school readiness

	Number of children	Family income	Father education	Mother education	School readiness
Father preschool-based involvement	−.04	.47**	.41**	.51**	.16
Father home-based involvement	−.13	−.03	.06	−.01	−.00

Note: **$p < .01$; *Number of participants* ranged from 123 to 127.

revealed that the mothers who worked part-time ($M = 3.95$; $SD = .74$) had spouses with higher mean scores for home-based involvement than the spouses of mothers who did not work ($M = 3.14$; $SD = 1.06$). The fathers who worked part-time received higher mean scores for home-based involvement ($M = 4.10$; $SD = .65$) than the fathers who worked full-time ($M = 3.25$; $SD = .99$). Pearson correlation coefficients were also calculated to examine the relationships between paternal involvement and several demographic variables, namely number of children, father's age, family income and father's education. As shown in Table 3, fathers' preschool-based involvement was found to be significantly associated with family income, mothers' education and fathers' education. However, fathers' home-based involvement was not related to any of the demographic variables under study.

Finally, the results of the correlation analysis suggested that fathers' involvement (both at home and in preschool) was not significantly correlated with children's school readiness. Several rounds of regression analysis were conducted to examine the role of paternal involvement in predicting children's school readiness, with child gender and maternal involvement entered in Step 1 and paternal involvement entered in Step 2. Neither of the two models tested were significant, suggesting that paternal involvement does not make a unique contribution to children's school readiness.

Study 2: Qualitative study

General perceptions of fathers' involvement. In both father and teacher focus-group interviews, paternal involvement was generally conceptualised as multidimensional in nature and consisted of two major domains: home-based involvement and preschool-based involvement. The fathers described playing with their children and engaging in parent–child discussions at home. Some reported engaging in activities traditionally regarded as the responsibility of mothers, such as feeding and helping to bathe their children. In terms of involvement in preschool, the fathers reported participating in parent–child activities organised by the kindergartens, attending parent seminars and supervising children's homework. The excerpt below illustrates the range of activities comprising the fathers' involvement in their children's education.

> There is quite a lot. Let me go first. Reading storybooks together, spending time playing toys together and doing homework together is important. Actually, I sometimes help bathe my daughter. And because she is still small, sometimes I feed her . . . that's about it. (Kindergarten B – Parent B)

The participating teachers suggested that paternal involvement has many important positive effects on children's development. The teachers believed that paternal involvement not only enhances children's learning through various types of direct parent–child interaction, but improves their psychological well-being by increasing their sense of acceptance and meeting their need for attention. The teachers observed that as fathers are generally busy at work, children regard time spent with their fathers as particularly valuable, and are eager to tell their peers and teachers about activities undertaken with their fathers. One of the teachers noted in interview that children are more motivated to learn when their parents are more involved in their education and thus perceived to be more interested in their development. The teachers also suggested that paternal involvement promotes communication between parents and positive co-parenting behaviour, which in turn enhance children's learning and development. The following excerpts illustrate the points discussed above.

> Children's learning would be more proactive and active. They know that their parents love and care about them. If they can see that the parents volunteer or are a part of school talks and activities, they are happier and more active. For example, if there are parent-child games, they are happier if their parents are playing. Such moments are very warm. (Kindergarten B – Teacher A)

> If a father participates, his communication with his wife will be better and their way of teaching their kids will be in sync. (Kindergarten B – Teacher C)

Similar to the findings from teacher interviews, the fathers recognised the importance of paternal involvement and its benefits for children. The fathers believed that involving themselves in their children's education at an early stage would help them to understand their children and thereby enhance their parenting skills. When their children responded positively to their fathers' involvement, paternal involvement was reinforced. In the interview quoted next, for example, one father shared a positive experience of volunteering at his child's kindergarten.

> For instance, when I come to school as a parent volunteer and they see me while I am taking the children to the bathroom, they will introduce me to their friends. I feel that they are happy, even though this sounds clichéd. Although I always come back to volunteer, I won't say that I am here for the school's benefit. I come back because it makes him very happy. (Kindergarten F – Parent A)

Changes in paternal involvement. In general, fatherhood has been perceived to experience a lot of changes in recent decades. Both focus group teachers and parents identified a generational change in fatherhood and a change in attitudes towards fatherhood, reporting that both the extent and the frequency of fathers' engagement with children's education have increased. These developments are indicative less of the decline of the male-breadwinner model than of an increasing trend towards involved fatherhood. The fathers suggested in interview that compared with their fathers' generation, men today feel more comfortable to show their love for their children. Parents in the previous generation were less involved in childrearing and expressed less concern about their children's development. Although fathers' traditional breadwinning role remains important, the paternal role is now recognised to be

much broader, reflecting societal change in role expectations for women and increasing emphasis in the media on fathers' contribution to children's developmental well-being. The following excerpts illustrate these points.

> Parents nowadays are a new generation. They understand that it doesn't have to be that men are the breadwinners and women are the homemakers. They know that cooperation and understanding the different roles in the family are important. That's why we put more time into the children, participate more in school's activities, try to understand more and work more together. Because there are more mothers who work these days, things may have changed. (Kindergarten A – Teacher A).

As parents today are generally more educated than their forebears, they are also more concerned about their children's academic competence. Compared with the previous generation, families today have fewer children, which allows parents to mobilise more time and resources to care for and teach their children. The parents consistently observed in interview that as academic competition between children becomes more and more vigorous, they seek to involve themselves as much as possible in their children's education to ensure better child outcomes. In the following interview excerpt, one father discussed changes in paternal involvement caused by developing societal expectations.

> Society is pretty stable now. The lives in our parents' generation were not as stable. They must save up to buy property. Educating the next generation may not be as important. Lots of things were done by us. But we have higher expectations of quality in this generation. In terms of our expectations of our children, no longer do we just expect them to help with chores; we have academic expectations too. Competition within society is fierce. I have expectations for their attitudes towards people and life, and their academic knowledge. (Kindergarten D – Parent B)

The increasing number of women in the labour force has also helped to increase paternal involvement. The fathers with working partners reported greater levels of involvement with childcare. As employment decreases the time available to spend with children, fathers with working spouses are more likely to share childcare responsibilities, which would increase paternal educational involvement. In the interview quoted next, one father explained that his involvement is crucial because his wife's job involves shift work and long working hours. He has thus tried to increase his involvement in and responsibility for childcare.

> My situation is special. My wife's job requires shift work. She works long hours and she is tired when she gets off work. So when I see this, I do more. In other families, the mother usually participates more. I think we contribute equally. Although she is tired, she will do what she has to do. Seeing her finish what she has to do even when she's tired makes me want to participate more. (Kindergarten A – Parent A)

Although the fathers and teachers highlighted similar factors that increase paternal involvement, they identified different constraints on fathers' involvement. With the exception of one non-working father, all of the fathers involved in the focus groups were employed full-time. Due to high expectations of work performance in Hong Kong, most of the participating fathers worked long hours, making it difficult for them to be extensively involved in their children's education. In the first of the following two excerpts, one father explained that he usually leaves work too late to help with

his child's homework. The teacher quoted in the second excerpt below agreed that the fathers of her kindergarten pupils are very busy at work; indeed, it was not unusual for her never to meet the fathers of some students.

> I help with homework. But my wife has greater involvement, because the kids often do their homework as soon as they get home. Unless I get off work early, or if there are special projects that require parents to participate, I don't participate. On weekdays, I don't get involved as much. (Kindergarten E – Parent B)

> Fathers nowadays are busy. Even if I've taught a child for three years. I'm not surprised if I've not seen the father. But I've also not seen the mother. The responsibility falls on the domestic helper or the grandmother. I think lives in today's society are too hectic. It's not that parents don't want to take care of them. They are just too busy. (Kindergarten C – Teacher C)

Several fathers found involvement in preschool-based activities embarrassing. Most kindergarten teachers and principals in Hong Kong are female, and the predominantly feminine preschool environment made some of the fathers uncomfortable or self-conscious about participating in activities. In addition, it is usually easier for mothers than fathers to take part in kindergarten activities. For instance, mothers are more likely to volunteer to help with cookery or arts and crafts. The father quoted in the next excerpt reported that teachers rarely approached him to discuss his child's learning and development.

> I am a man, but all of the teachers are female. Because of this, they rarely take the initiative to talk to us. The teacher will usually look for the mother, meaning the teacher will talk to the mother in the first instance. They won't come to me and talk about how the child is doing. (Kindergarten F – Parent C)

Similarly, the teachers mentioned that the overwhelming majority of kindergarten teachers are female, and that this gender disparity makes it difficult for them to communicate with their pupils' fathers. Interestingly, the teachers also reported that fathers are generally more careless about childcare than mothers. As a result, teachers may prefer to discuss children's learning progress with mothers than with fathers. The following excerpt reveals one teacher's perceptions of the differences between fathers' and mothers' involvement.

> Because mothers are females, it's easier for us to communicate. It's easier to talk to people of the same gender. We also talk to the fathers, but mostly on the phone. Because when fathers talk to teachers, they tend to be shy. As Teacher B said, they usually respond with, 'Oh really?', 'Good, good'. They don't share as much. (Kindergarten D – Teacher C)

Due to the above gender-related issues, it is suggested that fathers' decisions to become involved in their children's education often depend on the extent to which they feel that their input is welcomed by teachers. Teachers may invite involvement by expecting or requesting that parents discuss their children's learning progress, attend or help out with preschool events and supervise children's homework. Home-school cooperation requires interaction between kindergartens and parents, and invitations for involvement extended by teachers may reassure fathers that their input is highly valued. The father quoted in the first excerpt below reported that his child's

kindergarten is extremely accepting and welcoming of paternal involvement, which has enhanced his sense of belonging in the preschool environment and encouraged him to pursue further involvement in his child's education. Similarly, the teachers acknowledged the importance of considering fathers' needs when designing home–school collaboration activities, to maximise paternal involvement. For instance, the teacher quoted in the second excerpt below described strategies successfully implemented by her kindergarten to increase paternal involvement, such as taking fathers' availability and parenting interests into account.

> My daughter has been studying here for three years. Every time I come in, I get asked, 'Mr. C, did you take a day off? Why are you so free today?' The whole school is like this, it's not just the principal; even the teachers ask if I am taking a day off today. They are like your friends greeting you. (Kindergarten B – Parent C)

> We plan activities on Sundays, to accommodate parents' holidays. We give out notices, or give parents questionnaires asking about their availability so that we can plan appropriate activities. According to the questionnaires, many people are actually free on Saturdays. So Saturday it is. Sundays are also doable. The school then has to find time to discuss with the teachers to see how practical this is and what elements to include in the activities. To make the activities attractive, we have to be child oriented. The activities have to be related to the children, but we must also make accommodations with the timing and other things to attract male parents to participate. (Kindergarten C – Teacher A)

Discussion: integrating quantitative and qualitative findings

The early research on parental involvement in education was conducted largely without distinguishing between mothers and fathers. Little attention was paid to fathers in the early educational literature, because they were not perceived as having primary responsibility for their children's education (Parke, 2002). However, as expectations of fathers have increased, this mixed-method and multiple-informant study was conducted to examine the involvement of Hong Kong fathers in their children's early education. The nature and determinants of paternal involvement and its influence on children's outcomes were examined.

Fathers' involvement versus mothers' involvement

The focus-group interviews revealed that the teachers and fathers shared similar perceptions of paternal involvement, especially the importance of fathering in early years to children's learning and development. Accordingly, the fathers who participated in the focus groups were generally motivated to maintain good father–child relationships to promote their children's social and academic development. The findings of existing studies have suggested that fathers' involvement positively influences children's well-being, father–child relationships and marital relationships (Lamb, 2000; Schoppe-Sullivan *et al.*, 2004). Similarly, the fathers and teachers suggested in interviews that paternal involvement helps to promote positive father–child relationships, which enhance children's motivation to learn. Family interaction is believed to be a dynamic process; interaction between parents is related to parents' interaction with children.

More cooperative co-parenting may improve parents' marital relationships and thereby increase their ability to support their children's learning and development (Pedro *et al*., 2012). Therefore, more-involved fathers share the childcare responsibilities traditionally assumed by mothers, helping to reduce mothers' workloads and improve co-parenting behaviour and marital relationships.

Consistent with previous findings (Gronlnick & Slowiaczek, 1994; Esptein, 2001), the fathers and teachers who participated in the focus-group interviews agreed that fathers should involve themselves in their children's education both at home and in preschool. The interviews confirmed that the fathers were involved in a variety of educational activities. However, consistent with Lamb's (2010) findings, the quantitative results suggested that although fathers are increasingly involved in their children's educational lives, their involvement is still smaller than that of mothers. In a meta-analysis conducted by Kim and Hill (2015), no significant differences were found in the mean school involvement of mothers and fathers. However, studies of Asian families were excluded from the meta-analysis. Despite the global decline in gender-stereotyped parenting, it seems that traditional gender-role attitudes may remain salient in Eastern contexts, as Chinese mothers still have a greater input than fathers into their children's educational development.

Factors influencing fathers' involvement

Parents' perceptions of the value placed by others on their involvement have been found to predict their involvement decisions (Hoover-Dempsey & Sandler, 1997). Similarly, the focus-group participants explained that fathers' perceptions of the extent to which their involvement is welcomed by children and preschools have important effects on their involvement both at home and in preschool. Specifically, positive responses from children were reported to encourage fathers to involve themselves further, motivated by their children's acceptance of and appreciation for their existing involvement. Previous researchers have found that parental involvement is most effective when actively encouraged by teachers (Eccles & Harold, 1993; Epstein, 2001). The teachers who participated in this study expressed positive attitudes towards paternal involvement and reported using various strategies to facilitate fathers' involvement in preschool-based activities (e.g. taking fathers' availability and particular interests into account). Nevertheless, the female-dominated kindergarten environment reduced the fathers' motivation to become involved in their children's learning; one of the major themes to emerge from the fathers' discussion of factors that influence their involvement was the embarrassment they experience when taking part in preschool activities. Similar to the findings of Kwok *et al*. (2012), who reported that Chinese teachers perceive fathers to exhibit less competence in parenting than mothers, the results of this study indicated that many teachers still hold gender-stereotyping beliefs. For instance, the teachers felt that mothers are more likely than fathers to pay detailed attention to their children's education. This perception may have a negative influence on fathers' involvement, especially if mothers are more frequently invited to take part in preschool activities.

Bulanda (2004) suggested that family SES, which is partly determined by parental education and income, is particularly salient, because families with a low SES may

have limited skills and resources available to help their children to succeed. Although factors relating to SES were not mentioned by the focus-group participants, the study's quantitative results suggest that the influence of family SES on paternal involvement depends on the context of involvement. Specifically, only fathers' preschool-based involvement was found to differ as a function of family income and parental education. It is possible that fathers with a higher SES may have more flexibility to arrange their work and childcare responsibilities in order to get more involved in the kindergarten. Because of their higher social status, these fathers are also likely to have higher levels of parental efficacy, defined as parents' belief in their ability to execute childrearing tasks, which supports their involvement in preschool-based activities (Sanderson & Thompson, 2002; Salonen *et al.*, 2009). However, consistent with previous findings (Lee & Bowen, 2006; Hartas, 2012) that parents across socioeconomic groups are involved just as frequently in children's education at home, the lack of associations found between family income and parental education and fathers' home-based involvement in the present study may suggest that fathers' involvement in children's early education at home is relatively simple, not requiring advanced skills or additional resources, and is thus less affected by family SES.

Similar to previous findings (Bonney *et al.*, 1999), the quantitative and qualitative results obtained in this study suggested that fathers' working hours are an important determinant of their engagement. For instance, fathers who worked part-time reported higher levels of involvement than fathers who worked full-time. The fathers who participated in the focus-group interviews also explained that despite their willingness to support their children's learning and development, they are constrained by their long working hours. In contrast, previous researchers have found mothers' working hours to be positively related to fathers' engagement (Yoshida, 2012; Hofferth *et al.*, 2013). Similarly, the results of this study indicated that fathers' home-based involvement differed as a function of mothers' work status: fathers' involvement was greater in families in which mothers worked part-time than in families with non-working mothers. However, fathers' involvement was not found to differ between families with full-time and part-time working mothers, or between families with full-time and non-working mothers. It is possible that as dual-income families in Hong Kong are more likely to have extra resources for supporting their children's learning at home (e.g. hiring a tutor), the fathers in such households are less likely to be involved in their children's education solely due to mothers' work-related unavailability.

Parental involvement and child outcomes

The focus-group responses revealed that the traditional division of parents' childrearing roles in Hong Kong society has become less clear, and that fathers' involvement is widely recognised to have many positive effects on children's development (Sarkadi *et al.*, 2008). Consistent with previous findings (Fan & Chen, 2001; Hill & Taylor, 2004), the parents and teachers believed that parental involvement in children's education is related to positive learning outcomes. Children with fathers who take a more active role in their education and show more understanding of their academic progress are more willing to share information with their fathers about their learning

experiences, show more interest in attending school and are more likely to enjoy the learning experience. It has been suggested that parents' educational values, goals and aspirations for their children may be communicated indirectly through academic socialisation practices such as supportive parental involvement at home and in school (Hill & Tyson, 2009). However, similar to the results of a meta-analysis conducted by Kim and Hill (2015), in which the relationship between parental involvement and achievement was found to be stronger for mothers than for fathers, the present study found no significant association between fathers' involvement and children's readiness for school. It is possible that the quality, rather than the quantity of fathers' involvement assessed in the present study, plays a more significant role in children's learning outcomes. It is also possible that the influence of paternal involvement on children's development does not appear until later. Thus, the association between paternal involvement and children's school outcomes can only be ascertained with advanced research design.

Implications, limitations and future directions

The mixed-methods and multiple-informants research design enabled data on parental involvement and child outcomes to be collected from a range of sources, providing important insights into the perceptions of paternal involvement held by fathers and teachers. Although fathers' involvement was not found to be related to children's school readiness, the focus-group fathers and teachers discussed numerous benefits of paternal involvement for father–child relationships and marital relationships, confirming the need to encourage paternal involvement from early childhood. Together with the lack of connection observed between fathers' involvement and school readiness, the finding that mothers are still more involved than fathers in their children's learning suggests that fathers should be provided with support (e.g. father support groups) at an early stage to facilitate fathers' involvement in their children's education. Such support will also serve as a protective factor in children's later school years when expectations of academic achievement are higher and when children are more likely to struggle and parental involvement tends to be lower (Eccles & Harold, 1993). The finding that teachers hold gender-stereotyping attitudes towards fathers' involvement also indicates the need for both pre-service and in-service teacher training to develop effective strategies for collaborating with fathers. Finally, the finding that fathers' long working hours inhibit their involvement in children's education also suggests that workplaces should implement more family-friendly policies to support fathers' engagement in their children's development.

Like most other research studies, this research is to some extent limited by its design. First, the data were drawn solely from parents' self-reports and teachers' reports of parental involvement, and thus failed to capture the actual experience, or children's and spouses' perceptions, of fathers' involvement for a more objective examination. Second, as no focus-group interviews were conducted with mothers, the results do not represent the views of all important stakeholders on paternal involvement. Third, although several interview techniques were utilised to ensure the fidelity of the data collected, the limitations of focus group interview need to be acknowledged. For example, in the Chinese context where collectivism is particularly

salient, participants' responses may be biased as a result of social desirability. Fourth, the cross-sectional design failed to capture the longitudinal and reciprocal relationship between fathers' involvement and children's school readiness.

Future researchers should utilise direct observation to understand the nature of paternal involvement and should elicit children's and mothers' attitudes towards and perceptions of paternal involvement, as both children and mothers play important roles in shaping fathers' involvement in the family system. Future studies should also utilise individual interviews to avoid the effect of peer co-construction for better capturing individual differences. Finally, a longitudinal design should be used to explore the possible delayed effect of fathers' involvement on children's learning outcomes as well as the potential reciprocal causality between paternal involvement and child readiness.

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Parental involvement during the transition to primary school: Examining bidirectional relations with school adjustment

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ABSTRACT

The changes in maternal involvement during the transition to primary school and the bidirectional relations between maternal involvement and school adjustment were explored in this study using a two-wave longitudinal design with a 8-month interval. The participants were children (mean age: 5 years 10.39 months at Time 1 and 6 years 4.98 months at Time 2), mothers, and kindergarten and primary school teachers from 324 and 247 Hong Kong middle- and upper-middle-class families at Time 1 and Time 2, respectively. Approximately three months before the children finished kindergarten (Time 1), and 3 months after they entered primary school (Time 2), mothers and teachers reported on the mothers' involvement and teachers rated the children's school adjustment. Data related to children's school adjustment were also collected in a child assessment session. Results revealed that mothers' involvement in language and cognitive activities during kindergarten predicted better school adjustment after the school transition. Mothers were also more involved at their children's primary schools when their children demonstrated lower cognitive skills in kindergarten. The findings highlight the importance of examining both home-based and school-based involvement over time during the transition to primary school and the bidirectional relations between maternal involvement and children's school adjustment.

1. Introduction

Parental involvement is a multifaceted concept that encompasses a broad range of parenting practices, such as shared-book reading and communicating with teachers, that mobilize the resources of parents both at home and in school to maximize the benefits for their children (Fan & Chen, 2001). The typology of parental involvement developed by Epstein (2001, 2010) is widely recognized in the field. It focuses on the role of the school in facilitating different dimensions of the home-school partnership at home (e.g., learning at home, which involves families in learning activities at home), at school (e.g., volunteering at school, which involves families as volunteers to support school programs), and in the community (e.g., collaborating with the community, which involves coordinating community resources to strengthen school programs and family practices). Pomerantz, Moorman, and Litwack (2007) proposed that the broad distinction between parental involvement in different contexts could offer a useful way to investigate the processes and outcomes of parental involvement. In this study, we focus on both home- and school-based involvement and their bidirectional relations with children's school adjustment.

1.1. Parental involvement during the transition to school

During the first year of primary school, children are presented with new academic challenges while adjusting to a new school environment and experiencing a major transition with new and diverse developmental challenges that require emotional, social, and cognitive competence at home and in school (Cabrera, 2010; Rimm-Kaufman & Pianta, 1999). Children who enter school with more advanced cognitive abilities are more likely to benefit from classroom instruction and demonstrate more advanced skills in school (Duncan et al., 2007). However, the developmental trajectory of children who adjust poorly during school transition is discouraging, resulting in academic difficulties and antisocial behavior, which may further increase their likelihood of disliking school and eventually dropping out (Gutman, Sameroff, & Cole, 2003).

Although high-quality preschool programs and school transition practices have been found to enhance children's school readiness skills

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(Schulting, Malone, & Dodge, 2005), other researchers have found parental involvement to be crucial during the early school transition (Fantuzzo, McWayne, & Perry, 2004). According to social support theory (Cohen & Wills, 1985), parental involvement is an important social resource that helps children cope with different challenges in their learning and development and may be a strong and reliable determinant of children's outcomes. Consistent with this view, findings from cross-sectional studies have suggested that parental involvement is associated with positive child outcomes, such as academic achievement and social-emotional development (Cheung & Pomerantz, 2011; El Nokali, Bachman, & Votruba-Drzal, 2010; Lau, Li, & Rao, 2011; Phillipson & Phillipson, 2007). It has been suggested that when parents and teachers work collaboratively to support children, children are more likely to experience a successful school transition and show enhanced school adjustment, which is generally defined in terms of academic performance (i.e., language and cognitive skills) and school engagement (Birch & Ladd, 1997). Within the family context, processes related to home learning stimulation have also been found to enhance opportunities for optimal academic achievement for children from diverse cultural backgrounds (Fantuzzo et al., 2004; Li & Rao, 2000).

In fact, the view of parental involvement as a dynamic versus static variable represents a major conceptual shift in the literature that acknowledges parents' accommodation of changes in children's development and age-graded expectations (Hill & Taylor, 2004), as child development is viewed as a product of the continuous dynamic interactions of a child and the experiences provided by his or her family and social context (Bell, 1968; Sameroff, 2009; Sameroff & Mackenzie, 2003). Although an increasing number of studies have explored parental involvement at the time of school entry, they have been limited in their cross-sectional designs (e.g., Graves & Brown Wright, 2011; Nelson, 2005) and the relations between children's outcomes and their parents' involvement are far more sparse than the reverse (Ansari & Crosnoe, 2015; Barbot, Crossman, Hunter, Grigorenko, & Luthar, 2014; Crosnoe, Augustine, & Huston, 2012; Lugo-Gil & Tamis-LeMonda, 2008).

While parental involvement has generally been linked to positive child outcomes, there remain many conflicting findings about the relation between parental involvement and children's outcomes (for a review, see Fan & Chen, 2001). When findings are inconsistent with the expected positive relation between parental involvement and child adjustment, the reactive hypothesis is often used. The reactive hypothesis claims that any negative correlation or relation between parental involvement and academic achievement stems from a reactive parental involvement strategy, whereby a student who has academic or behavioral difficulties at school encourages greater levels of parental involvement (e.g., Epstein, 1988, 1992). For instance, McNeal (1999) found that parents talking to teachers was negatively related to children's academic achievement and speculated that parents could use this particular practice reactively when their children needed help. However, most of the research that has found negative relations between parental involvement and child outcomes has relied on cross-sectional studies, in which the causal links between parental involvement and child outcomes have been unclear. Studies that have examined the bidirectional relations between parental involvement and child outcomes using longitudinal research design have typically used only one dimension to investigate the associations between either home-based or school-based involvement and child outcomes (Ciping, Silinskas, Wei, & Georgiou, 2015; Daniel, Wang, & Berthelsen, 2016; McNeal, 2012). Thus, further studies that use longitudinal designs to assess the relations between parental involvement in both home and school contexts and child outcomes are desired.

1.2. Studying parental involvement and school adjustment in Hong Kong

Culturally responsive research conducted to understand the features of parenting in different cultures is important for successfully enhancing learning opportunities for children from diverse cultural backgrounds. The majority of studies that have confirmed a positive relation between parental involvement and child outcomes across racial groups relied on using samples of minority children from a single country (see Jeynes, 2007 for a review). As a result, relatively less is known about parental involvement in non-Western cultures outside of the United States. In particular, Asian parents are known to have high expectations for their children, to be highly responsive to their children's needs, and as a result to be involved more frequently in their children's education (Cheung & Pomerantz, 2011). With such parenting behaviors in mind, it would be interesting to examine whether parental involvement has a similar influence in Asian societies and whether children's developmental characteristics influence parental involvement.

To our knowledge, only one such study has been conducted in China to investigate the cross-lagged relations between parental involvement and children's school outcomes (Ciping et al., 2015). Its results suggest that children's reading and mathematics abilities negatively predict informal home literacy activities and formal home numeracy activities, respectively, such that parents engage more frequently in home activities when they notice that their children experience learning difficulties, to meet the expectations of the school system (Ciping et al., 2015). Their findings highlight the fact that parents modify their use of parenting techniques in the home learning environment based on their children's actual behavior. However, like most studies that have relied heavily on the reports of single informants on the behavior of parents in one dimension of involvement (e.g., Baker, Cameron, Rimm-Kaufman, & Grissmer, 2012; Cooper, 2010; Durand, 2011), Ciping et al. (2015) fail to capture the other dimensions of involvement (i.e., school-based involvement) and their bidirectional relations with children's achievement. We examine the bidirectional relations between home- and school-based involvement and their effects on children's school adjustment during the transition from kindergarten to primary school in Hong Kong.

Hong Kong, with a population of 7 million, was a British colony before it became a Special Administrative Region of China in 1997. Unlike other cities in China, Hong Kong has high autonomy in developing and implementing contemporary educational policies due to the “one country, two systems” policy. Hong Kong is regarded as the most Westernized and urban city in China and probably has more Western educational influences, such as the inclusion of parents in children's education, than other cities in mainland China. All kindergartens in Hong Kong are privately run and provide services for children from three to six years old. Nearly all children in Hong Kong start kindergarten at age three. Most Hong Kong kindergartens operate on a half-day basis. The aim of kindergarten education in Hong Kong is to nurture children to attain all-round development and to thereby lay the foundation for their future learning. However, with the exception of a few schools, nearly all primary schools operate on a whole-day basis. Students are expected to master a wide range of academic skills in primary schools, such as biliterate (Chinese and English) and trilingual (Cantonese, English, and Putonghua) abilities. As in most other childhood educational contexts, Hong Kong kindergartens and primary schools differ in terms of their learning environments, curricula, pedagogies, routines, teacher expectations, and peer groups, with the transition from kindergarten to primary school representing a major milestone for children during which they must cope with various adaptation problems (Wong, 2003).

The Hong Kong Guide to the Pre-primary Curriculum (Curriculum Development Institute, 2006) states that the transition between kindergarten and primary school should be taken into consideration in the pre-primary education curriculum. The Guide to the Pre-primary Curriculum also highlights the establishment of a home-school partnership as an important strategy for supporting young children's positive development. However, the design and implementation of transitional activities (e.g., primary school visits and parent seminars) and the

involvement opportunities and resources allocated to involve parents varies across different kindergartens in Hong Kong. For instance, while most kindergartens require parents to complete home activity packets and read with their children, only some kindergartens have a Parent Teacher Association to coordinate and plan parent activities and very few kindergartens have a parent resource room or a parent liaison staff. As a result, researchers found that Hong Kong parents desired more involvement opportunities during the transition period to facilitate their child's adjustment outcomes (Chan, 2010, 2012; Lau, 2013). Hence, studying parental involvement in Hong Kong is timely and important for providing insights about what can be done to facilitate quality education during the early years. Most importantly, as nearly all kindergarten-aged children in Hong Kong attend kindergarten (Rao & Li, 2009), Hong Kong is an interesting context to examine how parental involvement affects children's school adjustment beyond preschool.

2. This study

We used a two-wave longitudinal design involving multiple informants to examine the bidirectional relations between parental involvement by mothers and children's school adjustment. First, based on prior theory and research, we expected mothers' involvement to predict subsequent school adjustment assessed using child tests and teacher ratings. However, we also expected school adjustment to predict mothers' involvement in primary school. Findings of this study will have potential implications for developing strategies to facilitate parents' involvement for enhancing school adjustment in general and for exploring the characteristics of children that elicit higher levels of involvement by parents for identifying the group of parents that may need more support in their involvement practices.

3. Methods

3.1. Participants

Stratified random sampling was used to recruit 10 kindergartens in each of the three strata (i.e., high, middle, and low income) developed based on the median monthly household incomes of the districts (Hong Kong Census and Statistics Department, 2012). Invitation letters were sent to kindergartens and phone calls were made to the principals. Eleven kindergartens (three from the high-income stratum and four from both the middle- and low-income strata) agreed to participate in the study. A total of 24 classes from the 11 kindergartens were invited to participate (see Table 1). All teachers of the participating classes consented to participation. All of the kindergarten teachers were female. The teachers' median age range was 31 to 40 years old (29.2%). Their average years of kindergarten teaching experience was 15.25 years (SD = 9.10) and their median education level was post-secondary diploma (62.5%) (see Table 2).

Table 2
Descriptive statistics for participant characteristics.

Variables	*N*	Mean	*SD*	Median (%)
Child characteristics				
Child sex (1 = girl; 2 = boy)	323	1.48	0.50	1 (52.0%)
Mother characteristics				
Mother age	316	3.10	0.55	2[a] (70.3%)
Mother education	314	3.05	1.38	2[b] (55.1%)
Mother employment status	314	1.89	0.93	2[c] (12.1%)
Marital status	315	1.09	0.45	1[d] (95.6%)
Household income (HK$)	309	3.68	1.61	3[e] (20.4%)
Teacher characteristics				
Teacher age	24	3.21	0.98	3[a] (29.2%)
Teaching experience (years)	24	15.25	9.10	16 (12.5%)

[a] Mother and teacher age (1 = 20 or below; 2 = 21–30; 3 = 31–40; 4 = 41–50; 5 = 51 or above).
[b] Mother education (1 = Primary or below; 2 = Secondary; 3 = Matriculation; 4 = Diploma or Associate Degree; 5 = Degree (Bachelor); 6 = Master or above; 7 = Other).
[c] Employment status (1 = Full-time; 2 = Part-time; 3 = Not working).
[d] Marital status (1 = Married; 2 = Divorced; 3 = Remarried; 4 = Others).
[e] Household income (HK$) (1 = $10,000 or below; 2 = $10,001–20,000; 3 = $20,001–30,000; 4 = $30,001–40,000; 5 = $40,001–50,000; 6 = $50,001 or above).

The teachers then distributed introductory letters about the study to all parents in their class. Consent was received from the parents of 324 children (out of 621), with 53 children (16.3%) from the high-income strata, 103 children (31.8%) from the middle-income strata, and 168 children (51.9%) from the low-income strata. Because the school size of each kindergarten varied and that not every parent accepted our invitation to participate, the number of participants from each income strata varied. The participating children completed the child assessments and their teachers rated their school adjustment. For 319 children, the mothers completed the questionnaires to report on their demographic information and their involvement behaviors; and for the remaining five children, the mothers failed to return the questionnaires.

At the initial assessment, the children (168 girls, 156 boys) were on average 5 years 10.39 months old (SD = 3.94 months). The children and their mothers participated in the study and were followed after they entered primary school. The median age range of the participating mothers was 31 to 40 years old (70.3%). The median range of monthly household income was HK$20,001–30,000 (US$1 = HK$7.78), which is very similar to the median monthly household income of Hong Kong families (HK$24,890) (Hong Kong Census and Statistics Department, 2016). The socioeconomic status of the sample was mostly middle class. At their time of entry into the study, the parents of 301 children were married, five sets of parents were divorced, four sets of parents were remarried, and five sets of parents reported their marital status as

Table 1
Background information of the participated kindergartens.

Kindergarten	Income strata	Participating classes	Participating children	School size[a]	Median range of monthly household income (HK $)	Median of the mother education
School A	High	1	25	114	40,001–50,000	Diploma or Associate Degree
School B	High	1	13	90	10,001–20,000	Secondary
School C	Low	2	18	252	30,001–40,000	Diploma or Associate Degree
School D	Middle	4	24	229	10,001–20,000	Secondary
School E	Low	1	12	91	40,001–50,000	Secondary
School F	Middle	3	40	273	10,001–20,000	Secondary
School G	High	1	15	172	30,001–40,000	Secondary
School H	Middle	2	23	209	10,001–20,000	Secondary
School I	Low	1	22	424	30,001–40,000	Secondary
School J	Middle	5	59	115	40,001–50,000	Bachelor
School K	Low	3	73	480	20,001–30,000	Secondary

[a] Total number of permitted accommodation of classrooms in use (Education Bureau, 2017).

"other" (e.g., widowed or cohabiting). The median education level was secondary education (55.1% of the mothers), which was also the median education level of the population in 2011 (Hong Kong Census and Statistics Department, 2012), whereas 49.7% and 50% of the mothers were employed full time at Time 1 and Time 2, respectively.

3.2. Procedure

A two-wave longitudinal design was used. Time 1 data were collected in March and April 2015, whereas Time 2 data were collected in November and December 2015. The time between assessments was approximately eight months (approximately three months before and after the children entered primary school). Class teachers and parents received their questionnaires approximately three months before the end of the kindergarten school year. During the same period, the research assistant (RA) and student research assistants (SRAs) visited each kindergarten to conduct the child tests. The tests lasted approximately 20 min. The RA and SRAs received three hours of training on research protocols and data collection before administering the tests. A pilot study involving a convenience sample of 56 preschool children and their parents and teachers was conducted to ensure the clarity and validity of the questionnaire items and the instructions for the child tests, and for training purposes. The RA and SRAs remained blind to the research hypotheses. All of the measurements conducted at Time 1 were repeated at Time 2.

At Time 2, the participating children were invited to a research session either at the kindergartens the children attended, the university, or their homes. During the research session, the children and mothers completed the tests and questionnaires, respectively, in separate rooms. Over the course of the study, 77 families (24%) dropped out. Therefore, we were able to conduct follow-up assessments with 247 children (126 girls, 121 boys) and their mothers (237 mothers). The attrition was mainly due to parents no longer wishing to participate because of busy work schedules, lack of interest in the study, migration, or illness. The attrition rate was considered acceptable due to the difficulty involved in retaining families when the children changed schools. Nevertheless, a one-way analysis of variance was conducted. According to the results, the families that dropped out did not differ significantly from those that remained in the study in terms of socio-demographic variables, such as child age, child sex, and the education levels of mothers. No significant differences were found between the two groups in terms of the mothers' involvement and school adjustment variables at Time 1.

During the follow-up research session, the parents were also asked to provide consent and contact information so that the research team could obtain their children's primary school teachers' ratings of mothers' involvement and the children's school adjustment. Of the 247 children who participated in the follow-up assessment, 241 parents granted approval to contact their children's primary school teachers. Some of the participating children were in the same primary school classes. As such, some of the primary school teachers completed more than one survey (i.e., two teachers had five children, five teachers had four children, seven teachers had three children, 27 teachers had two children, and 136 teachers had one child in their classes). Phone calls were made to 177 primary school teachers in 119 primary schools to explain the study. The information letter, consent form, questionnaires, and return envelope were then sent to all of the teachers. A total of 198 (82%) completed questionnaires were received from 148 primary school teachers. It is important to note that because of the attrition and the use of multi-informant approach, the sample sizes varied across different analyses.

3.3. Measures

The measures were carefully selected to address the research questions in the specified cultural context. Specifically, a Chinese parental involvement scale was selected to capture the multidimensional nature of parental involvement during the early childhood years in the cultural context being studied. However, we did not expect Hong Kong children to differ from children in other developed countries in terms of school adjustment skills. Hence, measures developed in Western contexts that were found to be reliable and valid were utilized to assess children's general basic concept skills and school adjustment.

3.3.1. Parental involvement

Mothers' involvement behavior was assessed using the 26-item Chinese Early Parental Involvement Scale (CEPIS) developed by Lau, Li, and Rao (2012). The CEPIS includes six dimensions that capture the multidimensional nature of Chinese parental involvement during the early childhood years. The first four dimensions, namely *parental instruction*, *parental discussion*, *language and cognitive activities*, and *homework involvement,* are related to home-based involvement, whereas the other two dimensions namely *home-school conferencing* and *preschool/school involvement*, are related to school-based involvement. In this study, each mother reported on her home-based involvement and school-based involvement using the five-item *language and cognitive activities* and four-item *home-school conferencing* subscales respectively. The teachers rated mothers' involvement using the *home-school conferencing* subscale only. Among the types of involvement, *language and cognitive activities* and *home-school conferencing* were selected because of their associations with academic socialization around the goals and purposes of education, which were also found to have the strongest positive association with children's achievement (Hill & Tyson, 2009). These two parental involvement dimensions were also found to be associated with children's school adjustment in the Chinese context (Lau et al., 2011).

All items are shown in Table 3. Each respondent reported on the accuracy of each item in describing the mother's involvement behavior using a 5-point Likert scale (1 = *highly inaccurate*; 5 = *highly accurate*). The items in each subscale were summed, with higher scores indicating higher levels of involvement. The internal consistencies of the subscales ranged from 0.62 to 0.82 (Table 5). Although the alpha for mother reports of home-school conferencing at Time 2 was marginal, this

Table 3
Items in Chinese Early Parental Involvement Scale and Teacher Rating Scale of School Adjustment.

Chinese Early Parental Involvement Scale	Teacher Rating Scale of School Adjustment
Language and cognitive activities	*School liking*
1. Read stories to my child	1. Likes to come to school
2. Let child read stories to me	2. Dislikes school[a]
3. Give extra-curricular knowledge	3. Has fun at school
4. Give safety knowledge to my child	4. Is happy at school
5. Play cognitively stimulating games	5. Enjoys most classroom activities
Home-school conferencing	*Cooperative participation*
1. Attend parent-teacher conferences	1. Follow a teacher's direction
2. Participate in parent-child activities	2. Uses classroom materials responsibly
3. Use written means to communicate	3. Listens carefully to teacher's instructions and directions
4. Call the teacher to communicate	4. Is easy for teacher to manage
	5. Responds promptly to teacher's requests
	6. Accepts teacher's authority
	7. Accepts responsibility for a given task
	Independent participation
	1. Seeks challenges
	2. Self-directed child
	3. Works independently
	4. Needs a lot of help and guidance[a]

[a] Reversed item.

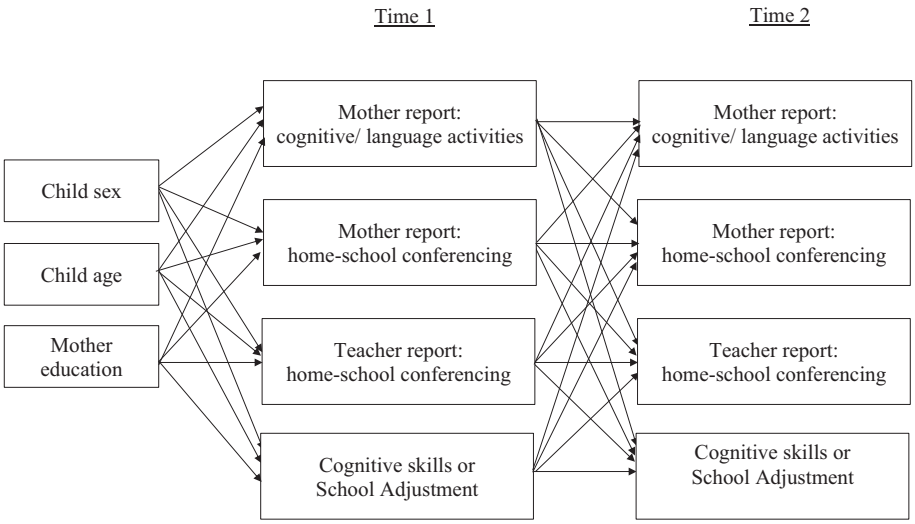

Fig. 1. Conceptual model showing all pathways that all DVs being predicted by the IVs (*Note.* paths between the three control variables and the four time 2 variables were included as well, but not shown in figure).

measure was retained, because it was made up of a small number of items (n = 4).

3.3.2. Cognitive skills

The children's cognitive skills were assessed using the Chinese version of Bracken Basic Concept Scale-Revised (BBCS-R; Bracken, 1998). Researchers have found this scale to be a valid and reliable instrument for assessing young children's acquisition of concepts and receptive language skills (Bracken, 1998; Panter, 2000). The 308-item BBCS-R consists of 11 subtests for children 2 years and 6 months old to 7 years and 11 months old: *colors*, *letters*, *numbers/counting*, *sizes*, *comparisons*, *shapes*, *direction/position*, *self/social awareness*, *texture/material*, *quantity*, and *time/sequence*. The first six subtests comprising the School Readiness Composite were administered at Time 1, and the whole scale was administered at Time 2. As English learning is not compulsory in Hong Kong kindergartens, the *letters* subtest was not conducted at either time point. As a result, 72 items from 5 subtests and 292 items from 10 subtests were administered at Time 1 and Time 2, respectively. For each item, there were four pictures shown on a page and children were asked to choose a picture that best represents the description read by the administrator in Cantonese (the official spoken language in Hong Kong). Each subtest was terminated when the children provided three incorrect answers consecutively. Most of the children were able to complete this assessment within 8 and 15 min at Time 1 and Time 2, respectively. The total score obtained at each time point (Time 1: M = 65, SD = 4.40; Time 2: M = 264.21, SD = 20.98) was considered to indicate the children's cognitive skills.

3.3.3. School adjustment

The teachers rated the children's school adjustment using the 16-item Teacher Rating Scale of School Adjustment (Birch & Ladd, 1997; Ladd & Burgess, 2001). The scale includes three subscales: *school liking* (e.g., “Likes to come to school”), *cooperative participation* (e.g., “Follows a teacher's direction”), and *independent participation* (e.g., “Seeks challenges”). The teachers indicated how true each item was of each child (1 = *very untrue*; 5 = *very true*). The items were translated and back-translated into Chinese by the first author and RA and were tested in the pilot study before being used in this study. All of the items from the three subscales were summed, with higher scores indicating higher levels of school adjustment (Time 1: M = 4.09, SD = 0.58; Time 2: M = 3.99, SD = 0.58).

3.4. Data analyses

To examine child sex differences in mothers' involvement, as well as examine changes in mothers' involvement over time, three mixed models analyses were run: one for maternal self-reports of involvement in cognitive/language activities, one for maternal self-reports of home-school conferencing, and one for teacher reports of home-school conferencing. Independent variables for these analyses were timepoint and child sex. Timepoint was treated as a repeated measure on families. The child sex by timepoint interaction was examined as well. Similar mixed models analyses were run on the two child measures (i.e., cognitive skills and school adjustment). For these analyses, missing data were imputed through multiple imputation: 100 imputations were calculated and the parameters from the pooled analyses are reported. Estimated marginal means and standard errors were calculated and presented in the tables.

To provide information on the simple bivariate relations between the variables, Pearson correlation coefficients were calculated between the types of involvement by mothers and the two measures of child outcomes. Finally, to examine the degree to which changes in mothers' involvement and child outcomes predicted one another over time, cross-lagged panel analyses were run involving a series of structural equation models. This approach made it possible to examine what predicted changes in both child outcomes and parent involvement over time and provided insights into the possible direction of effects—that is, from parent to child versus from child to parent (Selig & Little, 2012). Separate analyses were run for each of the two child variables: basic concept skills and teacher ratings of school adjustment (Fig. 1). The involvement measures were mother self-reports of language and cognitive activities in the home and both self- and teacher-reports on home-school conferencing.

An example of the cross-lagged panel analyses conducted is presented in Fig. 2—the model for mother involvement and children's cognitive skills. All of the paths between the three control variables and the Time 1 and Time 2 variables were tested in each model (for sake of clarity, the paths to the Time 2 variables are not shown in the figure). All of the autoregressive and cross-lagged paths between Time 1 and Time 2 were also included in the model. It was necessary to specify a priori some correlated errors in the models. As we expected rater effects, the errors of the two parent reports at each time point were allowed to correlate. Furthermore, as the mother and teacher reports on home-school conferencing were expected to be associated, the errors of these two measures were also allowed to correlate. The model for

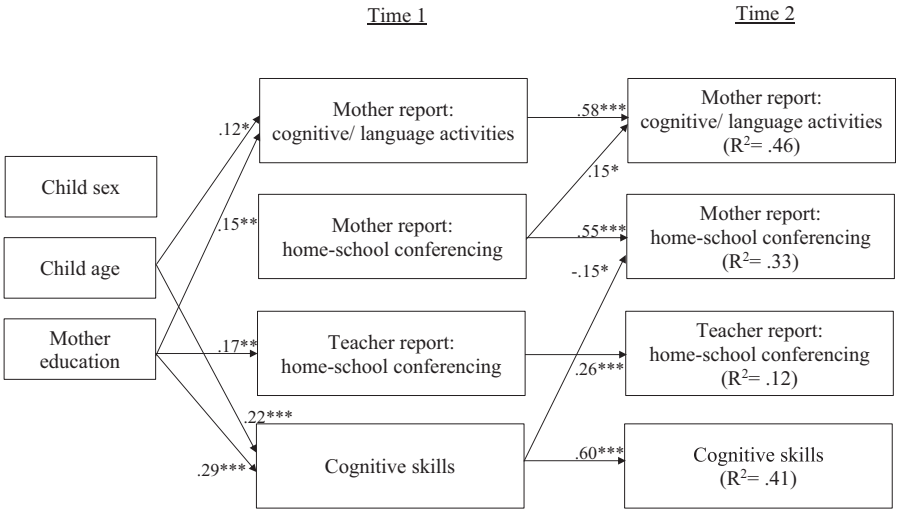

Fig. 2. Cross-lagged effects model representing reciprocal relationships between mothers' involvement and cognitive skills. The paths between variables are based on standardized estimates. *$p < .05$; **$p < .01$; ***$p < .001$.

teacher reports of child adjustment required specifying two additional correlated errors a priori due to expected rater effects—the errors between the teacher ratings of home-school conferencing and children's school adjustment. All of the analyses were run with SPSS AMOS, Version 24. Model fit was assessed using the chi square statistic/df (< 3.0), the CFI (≥0.95), and the RMSEA (≤0.08; Hooper, Coughlan, & Mullen, 2008; MacCallum, Browne, & Sugawara, 1996). The control variables in the analyses were child sex, child age, and mother education. Missing data were imputed through full-information maximum likelihood. We could not run multi-level models that accounted for nesting within schools, as we did not have a sufficient number of schools for such an analysis.

4. Results

Estimated means and standard errors for all the variables derived through the mixed model analyses are presented in Table 4. The mixed model analyses showed no significant effects of child sex for the three measures of mothers' involvement. However, maternal self-reports of home-school conferencing increased over time, $F(1, 633) = 11.90$, $p < .001$. Teacher ratings of maternal home-school conferencing showed no significant effects of child sex or timepoint. For the child measures, both cognitive skills, $F(1,355) = 32,582.90$, $p < .001$ and school adjustment, $F(1, 644) = 3.73$, $p = .05$, showed significant changes over time. As shown in the table, cognitive skills increased and school adjustment decreased. The child sex effect was also significant for school adjustment, $F(1,644) = 43.55$, $p < .001$. Girls showed greater school adjustment than boys (see Table 4). Table 5 presents the correlations between all of the variables at both time points. For Time 1, the two dimensions of involvement, which were subsequently included in the cross-lagged panel analyses, showed moderate correlations ($r = 0.53$ for the mother ratings). The correlation between the parent and teacher reports on home-school conferencing was low ($r = 0.34$).

Fit statistics for the path models are shown in Table 6. All of the models demonstrated acceptable fit. Regarding the paths between the control variables and the Time 1 variables, only one significant effect of child sex was found. In the model predicting teacher ratings of school adjustment at Time 1, boys were rated as having poorer adjustment than girls, standardized beta = −0.27, $p < .001$. Across the models, mother education was positively associated with mother reports of involvement in cognitive/language activities, standardized beta = 0.15 $p < .01$, and with teacher reports of home-school conferencing, standardized beta = 0.17, $p < .01$. Mother education was positively associated with children's cognitive skills, standardized beta = 0.29, $p < .001$, and with teacher ratings of school adjustment, standardized beta = 0.15, $p < .01$. Child age was significantly associated with cognitive skills, standardized beta = 0.22, $p < .001$. Finally, child age was positively associated with mother involvement in cognitive/language activities, standardized beta = 0.12, $p < .05$.

Only four unique controls of Time 2 effects (controlling for the controls of Time 1 effects) were significant. Three concerned mother education and child outcomes. Mother education positively predicted Time 2 cognitive skills, standardized beta = 0.12, $p < .05$, and Time 2 school adjustment, standardized beta = 0.16, $p < .05$. The remaining significant control of a Time 2 finding concerned a sex difference in

Table 4
Estimated means and standard errors of study measures derived from the mixed models analyses.

Parental involvement	N (range)		M (SE)	
	Time 1	Time 2	Time 1	Time 2
Mother self-report				
Language/cognitive activities	319 (1.40–5.00)	237 (2.00–5.00)	3.76 (0.04)	3.70 (0.04)
Home-school conferencing[a]	319 (1.00–5.00)	237 (1.00–5.00)	3.29 (0.04)	3.48 (0.05)
Teacher report on mother				
Home-school conferencing	324 (1.00–5.00)	202 (1.00–5.00)	3.64 (0.04)	3.65 (0.06)
Child measures	**Overall**			
Cognitive skills[a]	247 (44–72)	235 (151–289)	64.98 (0.24)	264.21 (1.18)
	Girl			
	168 (55–72)	121 (160–287)	65.42 (0.34)	263.85 (1.61)
	Boy			
	155 (44–72)	113 (151–289)	64.55 (0.35)	264.57 (1.68)
	Overall			
School adjustment[b,c]	324 (1.47–5.00)	202 (2.31–5.00)	4.08 (0.03)	3.99 (0.04)

[a] Change over time significant, p < .001 (see text).
[b] Change over time significant, p = .05 (see text).
[c] Sex difference significant, p < .001 (see text).

Table 5
Reliabilities and correlations of parental involvement dimensions and child outcomes.

	α	1.	2.	3.	4.	5.	6.	7.	8.	9.
Mother self-report at Time 1										
1. Language/cognitive activities	0.78***	–								
2. Home-school conferencing	0.72	0.53**	–							
Teacher report at Time 1										
3. Home-school conferencing	0.68	0.20**	0.34**	–						
Child outcome at Time 1										
4. Cognitive skills	a	0.18**	0.13*	0.08	–					
5. School adjustment	0.92	0.11*	0.06	0.18**	0.36**	–				
Mother self-report at Time 2										
6. Language/cognitive activities	0.73	0.63**	0.44**	0.16*	0.16*	0.06	–			
7. Home-school conferencing	0.62	0.24**	0.51**	0.14*	−0.06	−0.02	0.44**	–		
Teacher report at Time 2										
8. Home-school conferencing	0.81	0.19**	0.17*	0.27**	−0.00	−0.00	0.27**	0.32**	–	
Child outcome at Time 2										
9. Cognitive skills	a	0.16*	0.11	0.08	0.64**	0.22**	0.13*	−0.10	−0.01	–
10. School adjustment	0.93	0.26**	0.16*	0.13	0.40**	0.41**	0.22**	0.11	0.29**	0.34**

Note. *N* ranges from 202 to 319.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 6
Fit statistics for the two cross-lag panel analyses examining parental involvement and the child measures over time.

Model	χ^2	*df*	*p*	χ^2/df	*CFI*	*RMSEA*
Cognitive skills	40.70	20	.004	2.04	0.96	0.057
School adjustment	36.81	18	.006	2.05	0.96	0.057

teacher reports of mothers' home-school conferencing. However, because this was only significant in one model and was not significant for the Time 1 variable, it was not considered further.

The autoregressive coefficients across the time points for mother ratings of involvement were all significant, with the coefficients ranging from 0.53 to 0.58. The autoregressive coefficients for teacher ratings were much lower, but this was expected given that the teachers changed each year, standardized beta = 0.26–0.28. The autoregressive values for the child measures were all significant, but varied considerably in size: cognitive skills, standardized beta = 0.60 and teacher ratings of school adjustment, standardized beta = 0.34.

Finally, the cross-lagged coefficients were significant between the child and parent measures—the analysis of mothers' involvement and cognitive skills in Fig. 2 and the analysis of mothers' involvement and school adjustment in Fig. 3. Only significant ($p < .05$) paths are shown in the figures. In one case (Fig. 2), the child development measure at Time 1 predicted mothers' involvement at Time 2 (and not the other way around). In the other case (Fig. 3), the mothers' involvement measure at Time 1 predicted the child development measure at Time 2 (and not the other way around). Specifically, as shown in Fig. 2, the mothers of children with lower cognitive skills tended to become more involved in home-school conferencing over time (and not the reverse). However, as shown in Fig. 3, the mothers who engaged in more cognitive/language activities at home tended to have children who showed better school adjustment over time (and not the reverse). As these were only two of the 12 possible parent-child/child-parent cross-lagged paths examined (two outcome variables X six possible parent-child/child-parent cross-lagged paths per model), these two findings should be interpreted very cautiously.

5. Discussion

The aims of this study were to differentiate the bidirectional relations between mothers' involvement practices and children's school adjustment during the transition from kindergarten to primary school in a Hong Kong sample. Because only two of the 12 cross-lagged paths examined were significant, the results should be interpreted with caution. Below we discuss both the significant and non-significant findings.

Only one significant finding emerged to support the hypothesis that mothers' involvement would predict subsequent school adjustment. The findings are consistent with social support theory (Cohen & Wills, 1985), which suggests that parental involvement serves as an important social resource and is a strong and reliable determinant of children's outcomes. Specifically, before the children entered primary school, the more the mothers engaged in language and cognitive activities at home and communicated with the teachers, the better their children's adjustment outcomes were. Our findings are consistent with previous findings of the positive correlation between mothers' involvement in a variety of activities and their children's achievements (Barnard, 2004; Lamb & Tamis-Lemonda, 2004; Lau et al., 2011; Phillipson & Phillipson, 2007). The finding that mothers' involvement in language and cognitive activities in kindergarten predicted teacher-rated school adjustment in primary school was also consistent with other findings highlighting the effect of home-based involvement, above and beyond school-based involvement, on children's positive outcomes (Fantuzzo et al., 2004; Powell, Son, File, & Froiland, 2012). Although studies have shown that Chinese parents are more involved in children's education than their American counterparts (Cheung & Pomerantz, 2011; Huntsinger, Jose, Liaw, & Ching, 1997), our results contribute to the literature by providing evidence that mothers' involvement translates into significant gains in their children's school adjustment. One practical value of our findings would be to encourage kindergartens to not only support parents by increasing parent-teacher communication in school, but also by supporting parental involvement at home through various means, such as designing parent-child learning activities before the school transition. For example, kindergartens could provide ideas and examples of home activities through school newsletters and parent seminars/workshops. Kindergartens could also assign interactive home parent-child activities for parents to complete with children to facilitate their adjustment.

However, the mothers' home learning involvement did not predict

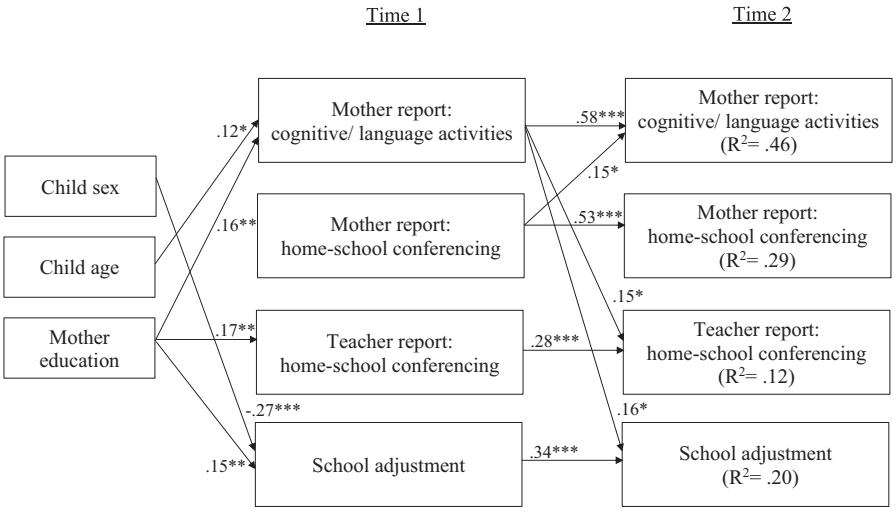

Fig. 3. Cross-lagged effects model representing reciprocal relationships between mothers' involvement and school adjustment. The paths between variables are based on standardized estimates. $*p < .05$; $**p < .01$; $***p < .001$.

cognitive skills. Furthermore, the mothers' communication with schools did not predict cognitive skills or school adjustment. The home learning activities that were assessed might have involved general and informal language and cognitive activities that promoted overall skills, abilities, and attitudes in the children that contributed to their adjustment after entering school, but that did not directly promote cognitive skills. Nevertheless, mothers' communication with schools may do more to enhance their knowledge about their children's learning progress and school functioning than directly affect their children's adjustment outcomes (Hill & Taylor, 2004). Therefore, a delayed effect on children's learning outcomes may be possible.

On the other hand, we only find one evidence to support the reactive hypothesis (Bell, 1968). Specifically, we find that children elicit the involvement of their parents with children's lower cognitive skills in kindergarten predicting higher levels of mothers' home-school conferencing in primary school. Our finding may suggest that early learning difficulties may lead to more mother-teacher contact as they unite to help children, which reflects children's influences on their mothers due to the active role that children play in influencing their social environments (Epstein, 1988, 1992). This finding also supports the genotype → environment perspective, which suggests that children with different characteristics elicit diverse reactions from others in their environment and that children are not simply passive recipients of environmental stimuli (Scarr & McCartney, 1983). In particular, the transition to primary school is critical, as it establishes children's positions in the highly stratified and cumulative curricular pipeline characteristic of contemporary Hong Kong education (Wong, 2003). This finding and the lack of finding for paths from school adjustment to mothers' involvement may suggest that once children go to primary school, mothers tend to communicate more with primary school teachers if they notice their children encountering difficulties in acquiring cognitive skills, which are considered important foundation for formal education than general school adjustment skills before the transition to school. It is possible that when mothers maintain closer communication with schools, they can gain inside information about their children's learning progress and the schools' functioning (Epstein, 1992, 2010; Fan & Chen, 2001). Their communication with school may act as a mediator to facilitate their involvement at home because of their enhanced knowledge about children's learning. This is consistent with the widely held belief among Chinese families that a child's performance reflects on the family and that parents should therefore help their children learn and achieve, particularly when children experience problems (Huntsinger & Jose, 2009; Luo, Tamis-LeMonda, & Song, 2013).

Only one study has been conducted in China to investigate the bi-directional relations between parental involvement and children's school outcomes (Ciping et al., 2015). Its findings suggest that Chinese parents engage more frequently in home activities when they notice that their school-aged children experience difficulties in learning to meet the expectations of the school system (Ciping et al., 2015). We extend their findings by finding evidence to show the influence of child outcomes on school-based involvement. In particular, the participating mothers modified their school-based involvement according to the actual behavior exhibited by their children. Mothers' involvement in kindergarten predicts children's adjustment to primary school. Furthermore, the skills children develop in their early years influence mothers' orientations toward involvement in their children's education. Thus, a practical implication for teachers would be to encourage mothers' involvement from the early years, particularly when their children are experiencing adjustment difficulties, by engaging in communication with parents about their children's needs and giving parents precise instructions on how to teach specific concepts at home. Specifically, other than relying on the formal parent-teacher meetings, teachers can engage parents in regular and frequent conversation through a variety of traditional commination channels such as home-school communication books and phone calls, as well as communication technologies such as Email and Chat Groups to keep parents with busy work and life schedules well informed of their children's learning progress.

5.1. Limitations and future directions

Several limitations of this study must be acknowledged. First, although both the teachers' and parents' reports were used to assess school-based involvement, information about home-based involvement was collected only using the mothers' self-reports. This might have resulted in inflated values due to a social-desirability bias. Future studies should consider assessing home-based involvement using spouse-reported or direct observations. Second, while fathers' involvement in raising their children has been highlighted in recent years (e.g., Lamb, 2010; Pleck, 2012), this study failed to capture the involvement of both mothers and fathers in the home and school contexts. Researchers have suggested that fathers' involvement peaks in the early childhood period (Yeung, Sandberg, Davis-Kean, & Hofferth, 2001) and that it is therefore important to understand the role fathers play in preparing their young children for early school success. Third, the limitation of utilizing a maternal involvement measure, namely mother reports of home-school conferencing at Time 2, with low reliability should be noted. The

low reliability would have worked against us finding significant findings, so future research needs to be done to create or utilize a scale with higher reliability for a stronger test of the hypothesis. Fourth, this study's examination of the bidirectional relations between mothers' involvement and school adjustment was limited by its inclusion of only two involvement dimensions (i.e., language and cognitive activities and home-school conferencing) and the lack of examination of moderation effects (i.e., teacher and school factors as moderators of the relations between parental involvement and child outcomes). Due to the complex nature of parental involvement, future studies should assess the bidirectional relations between other dimensions of parental involvement and children's school adjustment and the role that teachers and schools play as the moderators of such relations. Fifth, although most of the families were retained in the follow-up assessment, many primary school teachers failed to return the completed questionnaires, such that the data related to teacher-reported school-based involvement and school adjustment at Time 2 had a smaller sample size. Sixth, because of insufficient number of schools, our findings were limited by the failure to run multi-level models that accounted for nesting within schools. Seventh, as Hong Kong is considered the most westernized city in China, our findings may not be generalized to parents in Mainland China. Finally, this study was strengthened by the use of longitudinal data from kindergarten and primary schools. However, like most longitudinal studies on bidirectional parent-child influences, we only collected data at two time points and focused on brief temporal periods of 8 months. Nonetheless, entering first grade in Hong Kong is a significant life event in the life of a young child and we made sure we provided significant time before and after this event in order to document changes in maternal behavior. In the future, studies should consider multiple points of data collection to determine whether bidirectional effects are relatively stable across development.

5.2. Conclusion

The parents engaged in higher levels of involvement over time. The mothers' involvement in language and cognitive activities during kindergarten predicted better school adjustment after school transition. Furthermore, the mothers were more involved at their children's schools when their children demonstrated lower cognitive skills in kindergarten. Altogether, the findings have important practical values for improving home- and school-based involvement during the early transition period in general. Specifically, our findings suggest that primary schools may respond to parents' needs by providing more opportunities for parents to become involved in their children's learning both at home and in school, particularly during the first year of primary school. Doing so would help parents obtain information about school expectations and their children's learning progress. This may further increase parents' discussions with their children or impart knowledge and strategies for teaching specific concepts at home, thereby facilitating a smooth school transition.

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Are they ready for home-school partnership? Perspectives of kindergarten principals, teachers and parents

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ABSTRACT

This study used interviews with three important groups of stakeholders in kindergartens, namely principals, teachers, and parents, to explore their perspectives on, and practices of, home-school partnership in early childhood education. The participants were six kindergarten principals, 12 teachers, and 12 parents, from six Hong Kong kindergartens. The study reveals that principals, teachers and parents have consistent perceptions of the importance of home-school partnership. They also show a wide range of home-school partnership activities have been implemented, even though the establishment of a parent-teacher association (PTA) is not common. Participants saw time limitations and the parents' lack of knowledge relevant to home-school partnership as the main barriers to its implementation. While strategies have been suggested to tackle time barriers, no strategies were discussed to overcome educators' and parents' worries over parents' lack of competency. The findings suggest that more teacher training should be provided to focus on skills that enable educators to better communicate and work with parents from diverse backgrounds to overcome barriers related to parents' lack of competency perceived by principals and teachers.

1. Introduction

Home-school partnerships refers to the collaboration between school and family for maximizing students' learning outcomes (Epstein & Dauber, 1991). Despite the existence of strong empirical and theoretical grounds for home-school partnership, important gaps in the literature have yet to be addressed. For instance, the majority of the existing studies on home-school partnership are based on Western families (e.g., La Paro & Pianta, 2000; Lagacé Séguin & Case, 2010). Few empirical studies have focused specifically on home-school partnership during the early childhood years and outside Western cultural contexts, as in China for example. There is also a commonly reported decline in parents' involvement in school as children get older (Izzo, Weissberg, Kasprow, & Fendrich, 1999). This is believed to happen for a variety of reasons, including reduced opportunities for involvement in the later years of education and the fact that parents find it harder to help with advanced learning materials in the higher grades (Eccles & Harold, 1996). As it would thus be beneficial to initiate and support sustainable home-school partnership during early childhood education, it is important to derive from empirical findings more strategies to support home-school partnership from the early years. Recent studies indicate that schools and families have different views that may hinder the positive influence of home-school partnership (Hedges & Lee, 2010; Lau, 2014; Lau, Li, & Rao, 2012). However, they are limited in their examination of the perspectives of different stakeholders because they focus on just the teachers or the parents, and also fail to obtain in-depth individual responses from respondents by the use of a focus group interview approach. Because home-school partnership is a product of the interrelationship between individual barriers and school barriers (Hoover-Dempsey & Sandler, 1997), our study moves away from studying only the characteristics of teachers or parents that influence home-school partnership. Theoretically, our study of the perceptions of teachers, parents, and principals will better capture the current partnerships in the early childhood context in Hong Kong. Practically, our investigation of the barriers that might offer insights on whether such partnerships can be promoted in the education setting and on ways to provide further support to kindergartens and families, particularly in the Hong Kong context.

1.1. Importance of home-school partnership

Home-school partnership has been suggested as a way of increasing the effectiveness of schools in helping students with diverse needs (Brown & Medway, 2007; Epstein, 1995). Cross-cultural studies show that when home and school work together, they form a partnership that is important not only to the school (e.g., improvement of school

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programs and school climate) and the family (e.g., a sense of parental efficacy and positive parenting behaviors), but also the child (e.g., school adjustment) (El Nokali, Bachman, & Votruba-Drzal, 2010; Epstein, 2001; Fantuzzo, McWayne, Perry, & Childs, 2004; Lau & Power, 2018; Phillipson & Phillipson, 2007). Existing studies suggest that PTA or parent involvement in schools is a form of social capital that contributes to the wider school community. Studies have found that parent participation in PTAs, and school-based partnership activities, may not only contribute to school morale and a sense of community but also provide a valuable additional resource for school operation (Flessa, 2008; Westrich & Stroebel, 2013). A recent study has also found that parents' active participation in school, as, for instance, active members of a PTA, contribute to positive school functioning, measured by school administrators' perception of leadership support, spirit of collaboration, and lower teacher turnover. These are all vital parts of creating an optimal learning environment (Park, Stone, & Holloway, 2017). Schools with active PTA members were also found to be more responsive to parents' needs and concerns, which helps develop a school program more sensitive to families' needs (McMillan, 2000). Home-school partnership has also been associated with a wide range of positive child outcomes in elementary and high schools, in terms of such factors as academic skills and social competence (Hong & Ho, 2005). Home-school partnership is considered crucial during early childhood education because this is a period in which children are adjusting themselves to the new learning environment (Rimm-Kaufman & Pianta, 2000). According to the theory of social support (Cohen & Wills, 1985), parents' involvement in home-school partnership can be an important social resource for helping children cope with stress related to learning. It may also be a strong and reliable determinant of their adjustment.

1.2. Perspectives of principals, teachers and parents

Previous studies have suggested that the culture and organization of teaching influence the values and practices of teachers during home-school partnership. Existing studies suggest that the principals' perception of home-school partnership influences how other school stakeholders create involvement opportunities, as well as the resources available in schools to support home–school collaboration (Epstein, 2001; Ho, 2009). Different school management philosophies determine the partnership practices being implemented in the school: home-school partnership is higher in schools that have clear and well-established policies for collaborating with parents (Rimm-Kaufman & Pianta, 2000). Researchers have also identified the influence of teachers' perceptions of the effectiveness of home–school collaboration on their implementation of such practices (Epstein, 2001). While some teachers are positive about home-school partnership, others may have been discouraged by their previous attempts to involve parents or the lack of trust between teachers and parents (Schulting, Malone, & Dodge, 2005).

Other studies have shown that the variation in the level of home-school partnership depends largely on the socioeconomic status of the parents (Ho & Willms, 1996; Ice & Hoover-Dempsey, 2010). It is generally agreed that parents of higher socioeconomic status may have more resources to arrange child-care services or household chores and more flexibility in their employment, which gives them more opportunities to get involved in home-school partnership than parents of lower socioeconomic status. However, Bandura (1977) asserts that family socioeconomic status exerts only an indirect effect on child outcomes and that parental efficacy, defined as the beliefs of parents about their contribution to their child's schooling and development, may influence their choices regarding home-school partnership. Specifically, parents who are confident in their ability to promote their child's academic achievement are more likely to have higher levels of home-school partnership than those who are not (Waanders, Mendez, & Downer, 2007).

1.3. Home-school partnerships in Hong Kong

Chinese parents are known for their enthusiasm for, and dedication to, children's education as a result of their strong traditional belief that education is the key for success (Cheung & Pomerantz, 2011; Chiu & Ho, 2006). Living in one of China's major cities, Hong Kong parents are expected to be highly involved in the school to promote its success. Home-school partnership has become a general focus of government policy and educational initiatives in Hong Kong. Following the recommendation of the Education Commission Report No. 5 (Education Commission, 1992), the Committee on Home–School Co-operation was established to encourage schools to involve parents in their children's learning as a way of promoting quality education in Hong Kong. In the *Guide to the Pre-primary Curriculum* (Curriculum Development Council, 2006), parents are also acknowledged as having both a direct and indirect influence on their children's development, and so home-school partnership has been highlighted as an important strategy to support young children's positive development. The Hong Kong Government more recently implemented a free quality kindergarten education policy, from the 2017/18 school year, to improve the quality of various aspects of kindergarten education through a number of measures, including the enhancement of parent engagement and parent education (HKSAR, 2016). To further promote the involvement of parents, the Hong Kong Government recently established the Task Force on Home-school Co-operation and Parent Education to review and follow up the existing home-school co-operation and parent education (Education Bureau, 2018). Although home-school partnership has been promoted in Hong Kong, it has been found that while parental involvement at home is strongly encouraged in Hong Kong, school-based involvement is not so welcome (Ho, 2003; Lau, Li, & Rao, 2011). Further studies are needed to investigate barriers that might affect home-school partnership in the Hong Kong context to inform future practices and policies.

1.4. The present study

The current study is part of a larger longitudinal and mixed-methods project examining the influence of parental involvement on children's school adjustment in Hong Kong. This study involves interviews with three important groups of stakeholders in kindergartens, namely principals, teachers, and parents, on topics related to home-school partnership. Four major research questions are addressed: (1) How is home-school partnership perceived by different stakeholders during the early education years? (2) What are the home-school partnership practices during the early education years? (3) What are the barriers that influence home-school partnership in early childhood settings? and (4) What strategies have been employed to address the barriers in home-school partnership?

2. Method

2.1. Participants

Stratified random sampling strategy has been used to recruit two kindergartens in each of three strata based on the median monthly household income of the districts. From among each of the six kindergartens, two upper kindergarten (K3) classes with children aged five to six years were randomly selected. All participating kindergarten principals (N1 = 6), the lead class teachers (N2 = 9), and one randomly selected parent from each class (N3 = 12) participated in the individual interviews. All participants were female.

The majority of the principals (four principals) are above 51 years of age. Three of the six have Master degrees. Their mean number of years as a principal in kindergartens was 20.2 (SD = 12.8). Most teachers (five teachers) are between 41 and 50 years old, and most teachers (seven teachers) have completed Diplomas, with an average of 19.9 years (SD = 8.87) of teaching experience. Of the 12 participating

Table 1
Background information of participating kindergartens.

Schools	District[a]	Category[b]	Sessions[c]	Total number of teaching staff	Total number of enrollments in all sessions	Number of registered classrooms	Parent-teacher association
1	HKI	NGO	HD, WD	11–15	< 100	6	No
2	NT	NGO	HD, WD	11–15	100–200	6	No
3	KLN	NGO	HD, WD	16–20	200–300	10	No
4	NT	NGO	WD	16–20	100–200	3	Yes[d]
5	NT	NGO	HD, WD	21–25	200–300	7	No
6	NT	NGO	HD	16–20	> 400	7	Yes[e]

[a] HKI = Hong Kong Island, NT = New Territories, KLN = Kowloon;
[b] NGO = Non-profit organization;
[c] HD = Half-day, WD = Whole-day;
[d] Established in 2007;
[e] Established in 2003.

Table 2
Demographic information for principals.

Principals	Schools	Age	Experience as kindergarten principal (Years)	Education
Principal 1	1	51 or above	30	Bachelor
Principal 2	2	41–50	5	Master
Principal 3	3	51 or above	17	Master
Principal 4	4	51 or above	37	Diploma
Principal 5	5	51 or above	25	Master
Principal 6	6	41–50	7	Bachelor

Note. Diploma = Diploma in Early Childhood Education.

Table 3
Demographic information for teachers.

Teachers	Schools	Age	Experience as kindergarten teacher (Years)	Education
Teacher 1A	1	41–50	26	Diploma
Teacher 2A	2	41–50	30	Diploma
Teacher 3A	3	41–50	28	Diploma
Teacher 3B	3	41–50	25	Diploma
Teacher 4A	4	41–50	23	Diploma
Teacher 5A	5	31–40	17	Diploma
Teacher 5B	5	21–30	4	Diploma
Teacher 6A	6	31–40	17	Bachelor
Teacher 6B	6	31–40	9	Bachelor

Note. Diploma = Diploma in Early Childhood Education.

mothers, 11 report being married. The majority report an age of 31 to 40 years (eight mothers) and have completed secondary education (seven mothers) (see Tables 1–4).

2.2. Procedure

Based on a review of the literature and interview questions developed in previous studies in the Chinese context (e.g. Lau, 2014; Lau et al., 2012), six main interview questions were used: (1) What are your kindergarten's philosophies toward home-school collaboration? (2) What are your attitudes toward home-school collaboration? (3) What are some home-school collaboration activities available in your kindergarten? (4) What are some resources available for facilitating home-school collaboration in your kindergarten? (5) What are some difficulties associated with home-school collaboration? and (6) What are some strategies that schools could adapt to promote home-school collaboration?.

All interviews were conducted by the authors and the research assistant (RA). A semi-structured interview protocol was used to ensure consistency across participants while allowing the exploration of new issues. Several techniques were used by all interviewers across interviews, such as avoiding leading questions, utilizing probing techniques, and letting the interviewee lead. Each interview took approximately 30 min. All interviews were audio-taped and later transcribed by research assistants for analysis.

Table 4
Demographic information for parents.

Participants	Schools	Age	Income	Education	Work Status	Marital Status
Parent 1A	1	31–40	> HK$50,001	Master or above	Full-Time	Married
Parent 1B	1	31–40	NA	Diploma or AD	Not Working	Married
Parent 2A	2	41–50	HK$10,001-20,000	Secondary	Not Working	Divorced
Parent 2B	2	41–50	HK$30,001-40,000	Secondary	Not Working	Married
Parent 3A	3	21–30	HK$10,001-20,000	Secondary	Not Working	Married
Parent 3B	3	31–40	HK$10,001-20,000	Secondary	Full-Time	Married
Parent 4A	4	31–40	> HK$50,001	Master or above	Full-Time	Married
Parent 4B	4	31–40	HK$30,001-40,000	Secondary	Full-Time	Married
Parent 5A	5	31–40	HK$30,001-40,000	Diploma or AD	Not Working	Married
Parent 5B	5	41–50	HK$40,001-50,000	Secondary	Not Working	Married
Parent 6A	6	31–40	HK$30,001-40,000	Secondary	Not Working	Married
Parent 6B	6	31–40	> HK$50,001	Master or above	Full-Time	Married

Note. HK$ = Hong Kong Dollars.

The constant comparative method of the grounded theory approach developed by Glaser and Strauss (1967) were used. Specifically, the method of comparing and contrasting the respondents' responses to each interview question was used to form categories, assign codes to the categories, summarize the content of each category for developing themes, and find negative evidence (Boeije, 2002). Each interview was carefully studied to examine its internal consistency. As soon as more than one interview was completed, comparisons between interviews within the same kindergarten were conducted. Upon the completion of all within-group analyses, between-group comparisons were conducted with regard to the experience of home-school collaboration to validate the story told by one group. Different aids (i.e., memo writing, close reading and rereading, and coding) were used to facilitate the identification of relevant quotes and to support the systematization of the analysis process. The second author analyzed all interview responses. However, 6 randomly selected transcripts (two transcriptions of each stakeholder) were cross-coded by the authors. The authors also held discussions to ensure the congruency between the emerging findings and the respondents' responses.

3. Results

3.1. Perceptions and practices of home-school partnership

3.1.1. Acknowledgements of the importance of home-school partnership

When asked about the schools' philosophy and their attitudes toward home-school partnership, stakeholders (i.e. principals, teachers and parents) were remarkably consistent. Home-school partnership was consistently viewed by principals, teachers and parents as a way to increase parents' understanding of the child's learning process and the schools' practices as well as the rationale behind them. This helped parents formulate with the school a consistent approach to better supporting their children at home. Stakeholders across schools also consistently felt that parents' involvement enhanced their understanding of teaching practices, promoted a closer parent-teacher relationship, and increased parents' support for the school. Principal 1, for example, noticed that parents understood and appreciated teachers' work more if they had volunteered to help in the schools. Parents then became more supportive of the teachers, which in turn facilitated problem solving. Similarly, Principal 5 thought that parents could get a better idea of education philosophy from the school. She believed that encouraging parents to participate in school activities helped to introduce the school philosophy to the home and boost their children's all-round development.

Principal 1
From the activities, they can feel that what teachers have prepared is very thoughtful. Besides the thoughtfulness, they will agree with us about what we are doing, and then they will be very supportive of us. During this process we also invite parents to become volunteers, and when participating in activities, our relationships will be closer. If there's any problem, we can settle it easily with communication.

Principal 5
Because for kids at this age, they can't make decisions for themselves and they rely on the things that parents do, and the kind of environment that parents provide for them. So if a parent comes to school more often or participates in more different activities to learn about the school's philosophy, then the things that parents do to nurture the child would be consistent with the school.

Teacher 3B pointed out that, in addition to facilitating parent support, home-school partnerships can help teachers learn from parents, through mutual dialogue, how the school could improve. Parent 5B reiterated a similar view from a parent's perspective. She regarded parental involvement in homework as a good way to strengthen the parent-child relationship. She also suggested that parents could offer more appropriate assistance if they had a better idea of the school's needs.

Teacher 3B
In other words, we actually want parents to know about what the school is doing, and what children are doing, and also wish to improve parents' knowledge through their participation. About their child, at least they know whether the child is weak or not, what the child is good at, and what could be done to help her/him. So, related to her is important. At least they can support the school when they participate. Also, we could actually know the areas that the school could improve from the parents' point of view.

Parent 5B
A lot of homework would require parents' participation to complete together, and they build the parent-child relationship. Actually, I think beside children learning from school, parents should more or less participate, and will need to know the insufficiency of the school so that parents can help.

3.1.2. Diverse home-school partnership practices

Because of their strong belief in the positive impact of home-school partnership, the kindergartens have introduced a wide variety of initiatives, particularly in terms of home-school communication, volunteering and parent education. Specifically, the schools have opened up frequent and varied channels, both formal and informal, written and oral, to communicate about school practices and children's learning. The means of home-school communication ranged from newsletters, kindergarten notices, handbooks, students' portfolios, to regular phone calls, sending messages via WhatsApp group, and teacher-parent conferencing. Given that home-school communication is regarded as the most important aspect of home-school partnership, principal 2 mentioned that apart from regular use of handbooks, teachers in her kindergarten were required to phone parents at least 3 times every month

Principal 2
For example, we request the class teacher make at least three phone calls per month with parents to communicate. So, we would also mark something special in the children's handbook. If parents have any special questions, there is a message box in the handbook for the parents to leave messages, and teachers would also write some notes. The communication would be mainly through the handbook and phone call.

Volunteering was also a common practice. Three different conceptions and practices of handling parent volunteers were noted. Parent volunteers were viewed (1) as a teaching resource, (2) as learners of the teacher pedagogy, and (3) as a logistic resource. In terms of the value of parent volunteers as a teaching resource, it is believed that the expertise of different family members can enhance the curriculum. On the other hand, volunteer activities by parents are also considered opportunities for them to observe teachers and acquire relevant skills to help their child learn. Teacher 3A talked about how parent volunteers can come to class to enrich teaching and learning by sharing experiences relevant to the subject being taught, as well as to provide logistical assistance. Principal 6 explained how parents who volunteered could be considered learners of teachers' pedagogy.

Teacher 3A
Sometimes, parents' helps are needed for some events. For example, parents would be invited in some special activities for festival celebrations. For the last Chinese New Year event, some parent volunteers were invited to teach children how to make sticky rice balls with peanuts. The volunteers would assist many activities outside classroom, like visiting. Apart from keeping discipline, volunteers could assist teachers on group activities and activity arrangement. They could provide great assistance on safety and children's involvement in the activities, so it is quite positive.

Principal 6

There is a team of parent volunteers in school. Our parent volunteers would be regularly invited to come to school to assist school events. Actually, we also educate the parents how to teach children during the event because they could observe how teachers deal with the students.

Teachers can also extend children's learning from school to home by involving parents in helping their children complete home activities. These activities were designed to extend class learning to home and to encourage parents supporting children's home assignments. Teacher 2A gave an example of the work they wanted parents to do with their child at home, related to the learning theme of environmental protection. As discussed by Parent 4B, such activities are valuable in promoting parent-child interaction and developing closer relationships.

Teacher 2A
For instance, this time we learn about green environment, and we asked parents to make some art and craft about green environment to show children and to give parents and children some time to work together.
Parent 4B
For example, doing some news sharing and weekly diary, which must be done by both parents and children as children might not be able to finish them alone. So, I think the school would like to take these as opportunities to guide us on how to build a good relationship with our child in early childhood by doing everything together as a family, so that the relationship can be built more easily.

The final type of partnership that was commonly reported incorporates parent education. Specifically, parents are equipped with skills, such as parenting strategies or reading skills, through participating in parent workshops and seminars. This type of partnership is considered necessary in helping parents acquire the knowledge valued by the kindergarten to support children's learning and development at home. The principal below discussed parent training provided in parent workshops by her kindergarten that focused on the skills to read with children.

Principal 2
There is a training called “Bring Me A Book”. After training our teachers, the teachers would then train some parents who voluntarily participated. The parents would get some basic skills on how to train children's reading skills after they received the training.

3.2. Barriers and strategies to home-school partnership

3.2.1. Barriers perceived by stakeholders

While it is common for kindergartens to implement a variety of home-school partnership practices, four out of six of the sampled schools did not have Parent-teacher Associations (PTA). In the two kindergartens with PTAs, it is described as an importance resource for the kindergarten as well as a platform for frequent home-school contact. As described by principal 4 below, the many activities organized by the PTA in her kindergarten give parents a better understanding of the school's work and help maintain the relationship between the kindergarten and the parents. In the remaining schools, various reasons were given for the lack of a PTA, ranging from parents' SES background to parental lack of interest or unavailability. For instance, families in principal 3's kindergarten are mostly low-income families. While they may not have a deep understanding of the role of a PTA, they did cooperate with the kindergarten by reading notices issued by the kindergarten, and so the principal saw no need to establish a PTA to further strengthen the partnership. On the other hand, principal 2 said that parents were often unavailable to join PTAs because most families are dual-income families who did not have time and did not show a high interest in getting involved in them

Principal 4
We have parents' meeting, parent organization and always keep in touch with our parents. We always accommodate parents based on their preferences…… With these multiple arrangements, the parent-child relationship as well as the parent-school relationship are well maintained. Our belief is to encourage parents to join us, to involve in more school (activities), and to know how our school operate. By doing this, parents are able to incorporate our message into daily parenting.
Principal 3
The educational background of the parents is lower than the average family, and it would be more difficult for them to understand. We did not establish one, as we are happy to see that the parents would read the notices and follow the notices to do activities. In fact, it is possible to have these kinds of democratic thing (PTA) because there are parents who are more educated. But we did not end up having one, as we have heard some negative things about it.
Principal 2
Basically, our district is categorized as middle class with mostly dual-income families. So, for example, if you ask them to spare time to join a Parent-Teacher Association, it could be difficult.

Parents' lack of time was consistently raised by participants across different kindergartens as a barrier to participating in general school activities. Both working and full-time mothers felt that time is a barrier to home-school partnership. In particular, after working long hours, most parents need to be involved in supervising children's homework. It is also common for Hong Kong children to be involved in extra-curricular activities after school and during weekends. Hence, Parent 5B, as a working parent, said she experienced the tensions and competition for time, even on weekends, between school activities and activities arranged by parents. While Parent 2A is a full-time housewife, she said she could not volunteer in school due to her child care and housework commitments.

Parent 5B
I did not because of time conflict. Saturday, my child's school often holds activities on Saturday. We have to learn other things on Saturday or have classes outside the school. For weekdays, I do not have time.
Parent 2A
The school recommended it but I have never joined because of time conflict, as I have to look after my child. I could not focus on the talk and so it does not work. They hold talks on Saturday or after school, but I still have to prepare dinner and do not have much time.

In addition to time barriers, principals and teachers spoke of the pressure they experienced in managing parents' feedback and behavior during partnership activities. Specifically, as parents often did not understand the school curriculum and expectations, they sometimes challenged school practices or failed to provide expected help. For instance, Teacher 5B described how parents sometimes misunderstand their teaching approach in the class observation and misinterpret children's responses. Principal 1 and Teacher 3A said that parents would often focus on their own children and not take care of other children properly when they volunteered in the school. Often, children behave differently when their parents are around which makes it hard for those parents to take care of other children.

Teacher 5B
The High Scope curriculum was used for group activities, in which we let children plan and choose by themselves. But some parents may not understand this teaching style and they would say: “Why are the children walking around?” So, some parents may have lower trust toward the school because of their lack of understanding. And when the parents come, and the children see them, they might behave differently than usual.

Principal 1

Inviting some parent volunteers over for some performances. Having parents' engagement in some activities could help with the caring, but it also causes problems related to discipline, since children would rely on their parents and have tantrums. Throwing tantrums during the activities would then cause disciplinary problems. Some parents are also quite self-centered and would disappear when the activities begin. This aspect bothers us the most.

Teacher 3A

We had some parent volunteers who only focused on taking care of their own children and overlooked our procedures. It has been chaotic. That is, they only focused on their own children and neglected the tasks we have assigned them. So, we have experienced some disorder.

3.2.2. Strategies for overcoming barriers

While principals and teachers discussed the difficulties of home-school partnership in terms of parents' lack of knowledge of the curriculum and the differences in their goals, none of them could suggest strategies to tackle this barrier. Instead, the principals and teachers mainly discussed strategies to address time barriers. For instance, several kindergartens reported the use of advanced communication strategies to inform parents well in advance about school activities. Some examples included planning the schedule ahead and informing them well in advance so they could rearrange their work (see principal 1 below). Teacher 1A pointed out that their kindergarten also offered a child care service for participating parents so they would not need to arrange child care to be available for those activities. When stressed by limited time, working parents say they prefer to be involved in activities that have practical value or are directly related to their children's learning, such as parents' conferences and class observation. Also, while parents' physical participation is highly valued, parents also recognize the value of kindergartens sharing information with parents who cannot attend events in person. They suggested different ways of disseminating information to parents who have no time to attend talks or seminars. Parent 5B, for example, suggested giving brochures to parents to read in their own time

Principal 1

We will plan our parents' activities in advance, and let parents know when the activities will begin and when to participate, so that they can rearrange their work schedule.

Teacher 1A

It is ok with us if parents bring their kids. We have a classroom for children to do some activities so that parents can be at ease to participate in an interest class.

Parent 5B

Could provide more information so that we don't have to participate or attend seminars. Giving brochures, so we could read when we have time, as we might not be able to spare time to attend seminars. We have time to read brochures or leaflets.

Last but not least, all three groups of participants mentioned that when principals, teachers, and parents enjoy very good relationships, parents participate more. Principal 3 encourages parents' participation by utilizing relationship-building strategies, for example, inviting immigrant parents, mainly from a low SES background, to a social gathering in the parents' chat room. According to her, the initiative was very successful as immigrant parents who were not so confident in expressing themselves were more relaxed when involved in the informal games and activities. Parent 6A, a working mother, took up the position of PTA chair because of her perceived positive relationship with the kindergarten.

Principal 3

The Parent Chat Room, since we included the play element, parents are so involved, like children. We would first be gentle and play some games. After warm-up games we will introduce the theme. There is a message in the theme. And if there is time left, we will get into groups and analyze what they found useful……I think they, especially for lower socio-economic classes, did not have many activities like the ones we designed. Maybe some of them are new immigrants who do not have a broad social network and so they think they are very happy here. We design games for them to play, provide food for them to eat and take care of their children. They can be free during these few hours and they really enjoy it. So, they love to participate.

Parent 6A

School invited the children to join our workshop after school. Perhaps children think that it is so fun that they can gather with other classmates after school. Since nobody is leaving, we parent volunteers continued to work, and children worked on their homework so that they would not waste their time. We could not leave anyway as there was heavy rain. The children really enjoyed, except we did not cook. The school feels like home and they would not urge us to leave school or find ways to make you leave, which makes you feel nice.

4. Discussion

The study aimed to describe the perspectives of principals, teachers, and parents on home-school partnership in kindergartens. It considered the ways in which they perceive and practice home-school partnerships, the barriers to home-school partnerships and effective strategies for overcoming those barriers. Consistent with existing studies (Lau, 2014; Pang, 2004), our findings indicate that Hong Kong Chinese principals, teachers and parents do understand the value and function of home-school partnership. Because of their strong belief in home-school partnership, kindergartens have offered a wide range of activities to involve parents both at home and in school in supporting children's learning and development. These activities were effective in informing parents about the child's learning progress, helping them understand the child's development, and providing information about learning in school to help them implement effective strategies to help a child at home.

While the findings showed that different stakeholders in kindergarten and family are ready for their partnership, different barriers that prevented them from working together to promote children's development. Prior research has pinpointed time limitations as a major global barrier to parents' active participation in home-school partnership (Bryan & Henry, 2012; Mendez, Carpenter, LaForett, & Cohen, 2009). We consistently found that time was an obstacle to parents' involvement. Existing studies also suggest it is important for teachers to support parents through regular contact and by utilizing different strategies. This is strongly related to the engagement of parents (Patrikakou & Weissberg, 2000). Principals and teachers in the current study were well aware of this issue and have employed various strategies, such as providing childcare and arranging activities well ahead of time, to promote home-school partnership. Nevertheless the time barrier means that working parents or parents with heavy household responsibilities often prioritize activities they perceive to have practical value or to be directly related to their children's learning, such as parents conferencing and class observation. Hence, when designing home-school partnership activities, schools may be well advised to relate the activities to practical needs and identify the practical value of the activities explicitly.

However, consistent with previous studies on home-school partnership in Chinese contexts (Ho, 1995; Lau, 2014; Lau et al., 2011; Ng, 1999), our study finds that while educators in kindergartens are implementing a variety of activities to facilitate parental involvement, Chinese parents rarely engage in the management of kindergartens or undertake active school-based involvement in general. Most importantly, while principals and teachers expressed concerns, such as the

parents' lack of understanding of school management or curriculum and instruction, about involving parents in school and setting up a PTA, they also perceived parents' low SES background as a potential barrier to active partnership in the kindergarten. Such findings are consistent with others that show low SES is related to less involvement by parents (Fantuzzo, Tighe, & Childs, 2000; Kohl, Lengua, & McMahon, 2000; Rimm-Kaufman & Pianta, 2005). It is possible that parents with low SES may feel that they are not as well equipped to help. As teachers were found to have lower expectations of students with low SES background (De Boer, Bosker, & Van der Werf, 2010; Hinnant, O'Brien, & Ghazarian, 2009), it is also possible that these biases in expectations extend to the families of these students and that this results in low levels of support for less educated parents (Murray et al., 2014).

Studies on home-school partnership have provided evidence to show the positive influence of both home-based and school-based involvement on children's outcomes, parenting beliefs and behaviors, and school function (El Nokali et al., 2010; Fantuzzo et al., 2004; Jeynes, 2005; Lau & Power, 2018; Phillipson & Phillipson, 2007; Yamamoto & Holloway, 2010). Due to the benefits of home-school partnership for schools, parents, and children, and the lack of strategies adopted by some educators to involve parents in school management and the establishment of a formal parent-teacher association, it appears that there's a need for more support for finding and implementing strategies to involve parents in school governance or decision-making. In fact, more research attention has been given to the lack of preparation teachers receive to work with parents. In their studies, Morris and Taylor (1998) and Uludag (2008) found that teacher education programs in which home-school partnership instruction and activities are integrated into courses and field experiences, and thus allow preservice teachers to interact with parents, enhance their perceptions of comfort and competence in working with families. In terms of effective teaching approach, Kroeger and Lash (2011) have described an inquiry-based method of home-school partnership construction in teacher training as an important strategy for facilitating teachers' understanding of their relationships with families. Taken together, our results suggest the need for teacher training to focus on skills that enable educators to better communicate and work with parents from diverse backgrounds and address concerns about facilitating parents' all-round involvement.

5. Limitations and future directions

Several limitations of this study should be noted. First, Hong Kong is considered the most westernized city in China, so our findings may not be generalized to parents in Mainland China and other cultures. Future studies should include parents in other cultural contexts to further identify the support needed for strengthening home-school partnership. Second, the small sample size and the qualitative design of the study limit the generalizability of the findings beyond the study participants. Future studies should conduct home-school partnership research using a larger sample size and a quantitative research design that can depict a pattern of a wider scope for a more thorough examination of home-school partnership. This will enable effective programs to be designed to facilitate the partnership between home and school in different contexts across developmental and educational stages (e.g., from kindergarten to primary school). Quantitative studies for assessing the impact of different strategies and behaviors to determine what resources are needed to truly promote home-school partnership. Finally, while fathers' involvement in home-school partnership has been highlighted in recent years, we only included mothers in our interviews and failed to capture the perspectives of fathers on home-school partnership. It is important for future studies to include both mothers and fathers to explore what form and level of support might encourage fathers' participation.

6. Conclusion

Principals, teachers and parents within and across kindergartens held consistent views on the importance of home-school partnership. While a wide range of activities have been implemented in the participating kindergartens, they were mostly initiated and organized by the kindergartens. The establishment of a PTA is not common in the participating kindergartens. Different barriers, including time and parents' lack of relevant knowledge for home-school partnership, were discussed by principals, teachers, and parents. While various strategies were implemented to tackle the time barrier, no strategies were discussed to overcome the educators' and parents' concerns over the parents' lack of competence in active involvement in home-school partnership. The findings suggest that more teacher training should be provided to focus on skills that enable educators to better communicate and work with parents from diverse backgrounds to facilitate their participation in home-school partnerships.

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Declarations of interest

None.

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EMPIRICAL ARTICLE

CHILD DEVELOPMENT

Examining the effectiveness of a video-based parent–child program on executive functions for children 5 to 6 years old: A randomized controlled trial

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Abstract

This study evaluates the effectiveness of the *Parent–child Brain Camp,* a 4-week video-based executive functions (EFs) training program for children ages 5–6, through a randomized controlled trial with a pre- and post-test design with 173 Hong Kong children (intervention $ni = 79$, 48.7% girls, $M_{age} = 69.16$ months; control $n = 94$, 56.4% girls, $M_{age} = 68.58$ months) in 2022. Results from the two-way mixed ANOVA revealed that while the main effect of the Group was not significant, the main effect of Time ($\eta_p^2 = 0.232$) and the Time × Group interaction effect ($\eta_p^2 = 0.038$) were significant, with the intervention group demonstrating greater improvements in EFs compared to the control group.

INTRODUCTION

Executive functions (EFs) are a set of neurocognitive processes that involve top-down control and are crucial for attention, information retention, response control, planning, and evaluating consequences (Diamond, 2013; Hofmann et al., 2012). The three core components of EFs in adults are working memory (i.e., the retention and manipulation of information); inhibitory control (i.e., the ability to resist impulsive actions and temptations); and cognitive flexibility (i.e., the ability to flexibly shift attention and ways of thinking) (Miyake et al., 2000). In early childhood, however, there is evidence suggesting that these EF components may not be as distinctly separable as they are in adults. Instead, they may be structured as a single latent factor, meaning that the various tasks requiring EF skills are underpinned by a common underlying ability (Garon et al., 2008). EFs are cornerstone elements to both academic achievement and socio-emotional development for children as they enable children to navigate the learning environment more efficiently. Research consistently demonstrates that EFs play a vital role in the early development of children, contributing to improved school readiness and increased resilience during the transition to school (Best et al., 2011; Lau et al., 2023; Li & Lau, 2019). Specifically, children with well-developed EF skills are better able to maintain focus, follow instructions, regulate their behaviors, and effectively problem-solve (Blair & Razza, 2007; Fitzpatrick et al., 2014; Liew, 2012; Nguyen

Abbreviations: CF, cognitive flexibility; CFA, confirmatory factor analysis; DCCS, Dimensional Change Card Sort; EFs, executive functions; HTKS, Head-Toe-Knee-Shoulders; IC, inhibitory control; MC, Mr. Cucumber; Ms, means; POMS, proportion of maximum scaling approach; RAs, research assistants; RMANOVA, ANOVA with repeated measures; SD, standard deviations; SEN, special educational needs; SS, Simon Says; The Camp, the Parent-Child Brain Camp; WM, working memory.

& Duncan, 2019). With the growing evidence highlighting the vital role of EFs in enhancing children's school readiness and that EFs are broadly malleable through intervention (Diamond & Lee, 2011), a video-based intervention program that is cost-effective, easy to implement, and scalable was designed for 5- to 6-year olds as they transition into formal schooling. The primary objective of this intervention program was to enhance EF skills to better support children during this critical period of school transition. In the present study, we investigate the effectiveness of this new intervention program in enhancing children's EFs.

Training executive functions

The early childhood years are a pivotal period for EF maturity, with EF skills growing rapidly, and promoting expeditious development and malleability during this phase (Best et al., 2011; Garon et al., 2008; Howard et al., 2015). Prior studies have demonstrated that EFs can be improved through a variety of interventions, including physical activity training (Li et al., 2020; Ludyga et al., 2023), music training (Shen et al., 2019; Williams et al., 2023), and play (Schmidt et al., 2020; Tominey & McClelland, 2011). Among these interventions, cognitive training approaches have garnered significant attention because of their direct focus on improving EF skills. However, despite this targeted approach, the effectiveness of cognitive training interventions in enhancing EF skills has yielded inconsistent results (Kassai et al., 2019; Li et al., 2020; Ludyga et al., 2023; Nguyen & Duncan, 2019; Scionti et al., 2020; Wollesen et al., 2020).

A range of factors have likely contributed to inconsistent effects observed across cognitive training approaches to date. First, some programs directly target isolated and specific EFs (e.g., Bergman Nutley et al., 2011; Liu et al., 2015; Passolunghi & Costa, 2016). However, as EF skills are interrelated, targeting only one or two skills may not fully address the complexity of EF development and its impact on other domains (Diamond, 2013). Second, the duration and dosage of training programs vary (Blakey et al., 2020; Schmidt et al., 2020), and in cases where programs are brief compared to longer programs, they may not provide sufficient opportunities for children to consolidate and develop their skills. Third, a number of existing EF training programs may be repetitive or boring for younger children, leading to disengagement and reduced motivation (Blair, 2017; Scionti et al., 2020). Fourth, the lack of parental involvement in most EF training programs to date diminishes parents' role in supporting child development and encouraging engagement of children during the training (Marti et al., 2018). Finally, there are varying constraints associated with delivering EF interventions through curriculum in education settings compared to individual child training. Specifically, curriculum-based interventions delivered in education settings tend to show modest effects and often require excessive time, intensive teacher supervision, and other resources (Diamond & Lee, 2011; Otero et al., 2014; Shen et al., 2019; Shuai et al., 2021; Traverso et al., 2015). On the other hand, individual child training, although effective, is resource-intensive in terms of time and personnel resources, which limits its accessibility for many children both at home and in school (Bergman Nutley et al., 2011; Röthlisberger et al., 2012; Traverso et al., 2015).

The intervention: The parent–child brain camp

The limitations of existing cognitive training programs suggest a clear need for innovative approaches to EF training for young children. In response to the above considerations, the *Parent–Child Brain Camp* (*The Camp*), a video-based parent–child EF program for enhancing EF, was developed and tested. Since Cantonese-Chinese serves as the official language of Hong Kong alongside English and is the primary language used in everyday communication, education, media, and government affairs, we designed the intervention in Cantonese-Chinese. Recognizing the significance of maintaining children's motivation for engagement, the importance of dosage in the intervention, and the need to target all dimensions of EF, *The Camp* incorporates play-based and age-appropriate activities that target all three components of EFs in children across 12 sessions over 4 weeks. *The Camp* also stands out from previous EF interventions in two key ways. First, it is conducted in the home environment through a series of video sessions. The video-based approach effectively reduces the time and personnel resources required in traditional curriculum-based or individual intervention designs (e.g., Otero et al., 2014). Second, *The Camp* actively involves parents in engaging with their children during EF training activities. While parental involvement has been rarely emphasized in EF interventions for typically developing children, it has been shown to be crucial in EF interventions for school-age children with neurodevelopmental disorders (e.g., Molinary, 2023; Shuai et al., 2017, 2021). By involving parents, we aim to increase children's interest in participating in the activities and their motivation to apply learned EF skills in real-world situations (Blair, 2017). To our knowledge, there is currently no other intervention that specifically focuses on video-guided parent–child activities to promote children's EFs.

In *The Camp*, each of the 12 videos (~20 minutes each) contains four playful and interactive activities for individual EF training, including a warm-up activity (~3 minutes), two EF cognitive training games (~14 minutes), and a mindfulness exercise (~3 minutes; Table 1). There are no repetitions in the content of the 12 videos. The provision of a novel experience each time aims to boost engagement and motivation

TABLE 1 Description of activities included in the Parent–child Brain Camp.

Activity	Episodes	Content	Executive functions		
			WM	IC	CF
Section 1: Rhythm and music					
Musical roller coaster	12	Parents and children clap, sing, and gesture along theme songs, synchronizing their movements with the evolving rhythms. As sessions become more challenging, the variety of rhythms expands, while incorporating lyrics, dances, and props	✓	✓	
Section 2: Executive function games (high motor movement level)					
Head, hands, bottom, and feet	3	Participants engage in a dynamic game that combines vocalization of the game chant with synchronized physical gestures. They recite the chant while performing coordinated body movements. As the game advances, participants maintain the chant but receive prompts that challenge them to pause specific actions or perform movements that contradict the chant	✓	✓	✓
Adventure of the pirates	3	Participants memorize eight specific actions. Once the music begins, they move in sync with the beat. When the beat stops, signaled by distinct sound alerts, participants make a swift decision between freezing in their position and performing designated actions indicated by the prompt cards on the screen. As the level of difficulty increases, parents and children are assigned different actions	✓	✓	✓
Superpower GO!	3	Participants memorize body movements as different superpower abilities to evade attacks from villains. Attacks focus on specific areas, requiring participants to execute corresponding body movements. Additionally, attacks may target specific individuals, requiring either the parent, the child, or both to move accordingly	✓	✓	
Rhythms of shapes	3	Before each set, participants memorize hand gestures corresponding to specific shapes. They perform the gestures in synchrony with the rhythm. The level of difficulty escalates due to the changing representations of the shapes and colors, with unrelated shapes being introduced to create distractions	✓	✓	✓
Section 3: Executive function games (low motor movement level)					
Digit span	2	The parent reads out sets of numbers displayed on the screen. Facing away from the screen, the child repeats the numbers they hear in reverse order, with the number of digits gradually increasing in each subsequent set	✓		
My funny diary	2	The parent performs actions related to the morning routine or weather as shown on the screen. Looking away from the screen, the child proceeds to perform the same actions in reverse order, with the number of actions gradually growing	✓		
Line up, animals!	2	The parent reads out a list of animals. Turning away from the screen, the child repeats the names of animals they hear in reverse order. The level of difficulty increases as certain animals are substituted with clapping or skipping	✓	✓	✓
Story detective	3	Parents and children memorize their own set of specific target words. As they attentively listen to a detective story, they raise a prop sign whenever they hear their respective target words being mentioned	✓	✓	✓

(Continues)

TABLE 1 (Continued)

Activity	Episodes	Content	Executive functions		
			WM	IC	CF
Multitasker	3	Participants utilize both their left and right hands to execute distinct hand gestures, swiftly swapping the gestures between hands in each set	✓	✓	✓
Section 4: Mindfulness exercises					
Mindful breathing	8	Participants are instructed to seek a comfortable position, close their eyes, and focus on their breathing while engaging in soothing body movements	✓	✓	✓
Mindful story time	4	Participants are guided to seek a comfortable position, close their eyes, and center their attention on their breathing while immersed in a calming story	✓	✓	✓

Note: Each episode includes sections 1–4 and contains one activity from each section.
Abbreviations: CF, cognitive flexibility; IC, inhibitory control; WM, working memory.

throughout the program to maximize participant interest and involvement in the training activities. The order of the 12 videos in the intervention program was decided and fixed during the design and development phase. While there was no specific criterion for determining the order of the EF games, we ensured that each rhythm and music activity, EF game, and mindfulness exercise progressively built upon the learning from previous episodes. Parents and children complete *The Camp* with three videos per week for 4 weeks at home. Each activity features an adult host and a child host who demonstrate and provide clear instructions on how to complete the activities in the video. Parents are required to participate with their children to increase motivation and engagement, and reduce the likely isolation if children were to complete the cognitive tasks on their own. The role of parents encompasses both joining in alongside their children (e.g., participating in singing and dancing), as well as having a distinct role as partners to enable the completion of activities (e.g., responding to different stimuli and acting as distractions as part of inhibitory control training).

During the warm-up activity, children are asked to sing and dance as well as engage in rhythmic exercise (i.e., beat synchronization), as research confirms that rhythm and movement activities positively influence EFs in children (Bentley et al., 2023). For EF cognitive training, a total of nine games are included. In line with recommendations that EFs are best trained with increasing difficulty to stretch skills (Diamond, 2013), each game appears in two or three episodes, but with different levels of difficulty each time. Given that previous studies reveal gains in one single component of EFs are not transferred to untrained components, and the impurity problem of EF tasks (Kassai et al., 2019), each EF game in *The Camp* targets one or more core EFs. Specifically, working memory training involves tasks such as remembering and repeating sequences of numbers, objects, or actions. Inhibitory control training involves tasks in which children respond quickly to one stimulus but inhibit their response to another, as well as challenges where parents and children are prompted to provide different responses. Cognitive flexibility training involves tasks in which children switch between different rules in response to changing cues. Apart from one EF game adapted from an established EF test (i.e., Digit Span), all other games in the training program have been developed specifically for *The Camp*. Lastly, each episode of *The Camp* ends with a guided mindfulness exercise. This inclusion is based on consistent findings that mindfulness exercises improve EFs in children by helping them develop attentional control and self-regulation skills (Zelazo et al., 2018). The intervention videos were carefully reviewed by the project team to ensure that the parent–child activities adequately covered all components of EF.

The present study

The primary objective of this study was to assess the effectiveness of *The Camp* in enhancing children's EF. Specifically, the research question guiding this study was: Did the implementation of *The Camp* have a positive influence on children's EF, encompassing inhibitory control, working memory, and cognitive flexibility? We hypothesized significant differences between the control group participants and the intervention group participants in post-intervention EF tests, with the intervention group having higher scores.

METHODS

Participants

In Hong Kong, the majority of children begin their kindergarten education at the age of three. The primary goal of kindergarten education in Hong Kong is to foster

the holistic development of children and establish a solid foundation for their future learning endeavors, including the transition from kindergarten to primary school (Curriculum Development Council, 2017). Kindergartens in Hong Kong typically offer center-based programs that can be either half-day or full-day, catering to children aged three to six. These programs are divided into different levels: nursery class (K1) for 3- to 4-year-olds, lower kindergarten class (K2) for 4- to 5-year olds, and upper kindergarten class (K3) for 5- to 6-year olds. After completing K3, children move on to primary school, marking the official commencement of their formal education journey.

This project spanned the initial stages of the COVID-19 pandemic, which resulted in school closures in Hong Kong. Prior to the school closures during the period of this study, our recruitment efforts for the study targeted K3 students in kindergartens. We approached six kindergartens and requested their assistance in disseminating project information to parents of K3 children. Although the intervention was designed to be completed independently by parents and children at home following the fixed order and schedule, the initial plan for this effectiveness study was to conduct the intervention within the school premises, where parents and children would complete the videos in a controlled environment. However, due to the COVID-19 pandemic and subsequent school closures from January to April 2022, the response rate to recruitment was low and conducting the intervention in schools became impractical. To address this, this study was adapted to an online format and the research team conducted open online recruitment. An invitation poster was published on one of the Facebook pages of the first author's university, providing brief project details to encourage the participation of families with K3 children.

A total of 448 families expressed interest (64 from the six kindergartens approached, 384 from public social media posts). After contacting the families to provide comprehensive project information and confirm availability, a total of 212 parents provided consent to participate in the study. To be eligible for the study, families had to meet the following inclusion criteria: (1) the child was currently enrolled in K3 which is the last year of kindergarten before entering primary school, (2) the family had access to a laptop, desktop, or tablet with the Zoom video conferencing application installed, and (3) the child had not previously been diagnosed with special educational needs. Two families did not meet the inclusion criteria (e.g., children were not enrolled in K3) and were subsequently excluded from the study. The remaining 210 families (50.3% girls; $M_{age}=68.51$, $SD=6.34$) were then randomly assigned to either the intervention group ($n_i=101$) or the control group ($n_c=109$). Among them, a total of 209 families ($n_i=100$; $n_c=109$) provided consent and completed the pre-test. Participants from both the control and intervention groups completed pre- and post-test assessments. Participants in the intervention group received the intervention after the pre-test assessment, while the control group continued with business as usual and only received the intervention after the post-test assessment was completed.

Participants were selected for inclusion in final analyses based on a range of attendance and intervention fidelity factors. Within the intervention group, a total of 21 (21.00%) families were excluded from the analysis due to low attendance of the intervention (i.e., attended nine or fewer sessions from the 12 scheduled sessions; $n=4$), poor observer-report fidelity to intervention implementation (i.e., passed nine or fewer sessions; $n=7$, see further fidelity measures information below), both low attendance during the intervention and poor observer-report intervention fidelity ($n=6$), and families withdrawing from the study ($n=4$), resulting in a post-test sample size of 79. Among the 79 children in the intervention group, 74 participated with their mothers, while five children participated with their fathers. Each child had a consistent parent throughout the intervention. In the control group, 15 (13.76%) families withdrew from the study, leaving a post-test sample size of 94. The participant flowchart is depicted in Figure 1.

Attrition analyses were performed to examine potential bias between those who included ($n=173$) and excluded ($n=36$) from the final analyses. No significant differences were found between the two groups in most demographic variables, that is, child age, child gender, and family status ($ps>.05$), except for the monthly household income ($\chi^2(5, n=181)=11.979$, $p=.024$; see Table 2). Also, at baseline (pre-test), there were no significant differences in the scores of the individual EF tasks between the included and excluded groups ($ps>.05$).

The final analytic sample comprised 173 (83%) children ($n_i=79$, $n_c=94$; 52.9% girls; $M_{age}=68.86$ months, $SD=6.39$). A priori power analysis for the repeated measures ANOVA within-between interaction indicated that a minimum sample size of 60 was necessary to achieve a power of 90% ($\beta=.90$; $\alpha=.05$) with a small to medium effect size (*Cohen's d* = .35; Carr et al., 2021; Faul et al., 2007; Koydemir et al., 2021). Therefore, our sample size was deemed sufficient.

All the participating families were Chinese families in Hong Kong. As shown in Table 2, the majority of children came from intact families (93.5%), with small proportions from single-parent families (3.2%), families with parents living apart ($n=3$; 1.7%), and families not specifying family status ($n=2$; 1.6%). The average monthly household income for 49.7% of families exceeded HK$40,001 (US$1 = HK$7.78), surpassing the median monthly household income of Hong Kong families in 2022 (HK$28,300) (Hong Kong Census and Statistics Department, 2023). Hence, this sample can be characterized as middle-class.

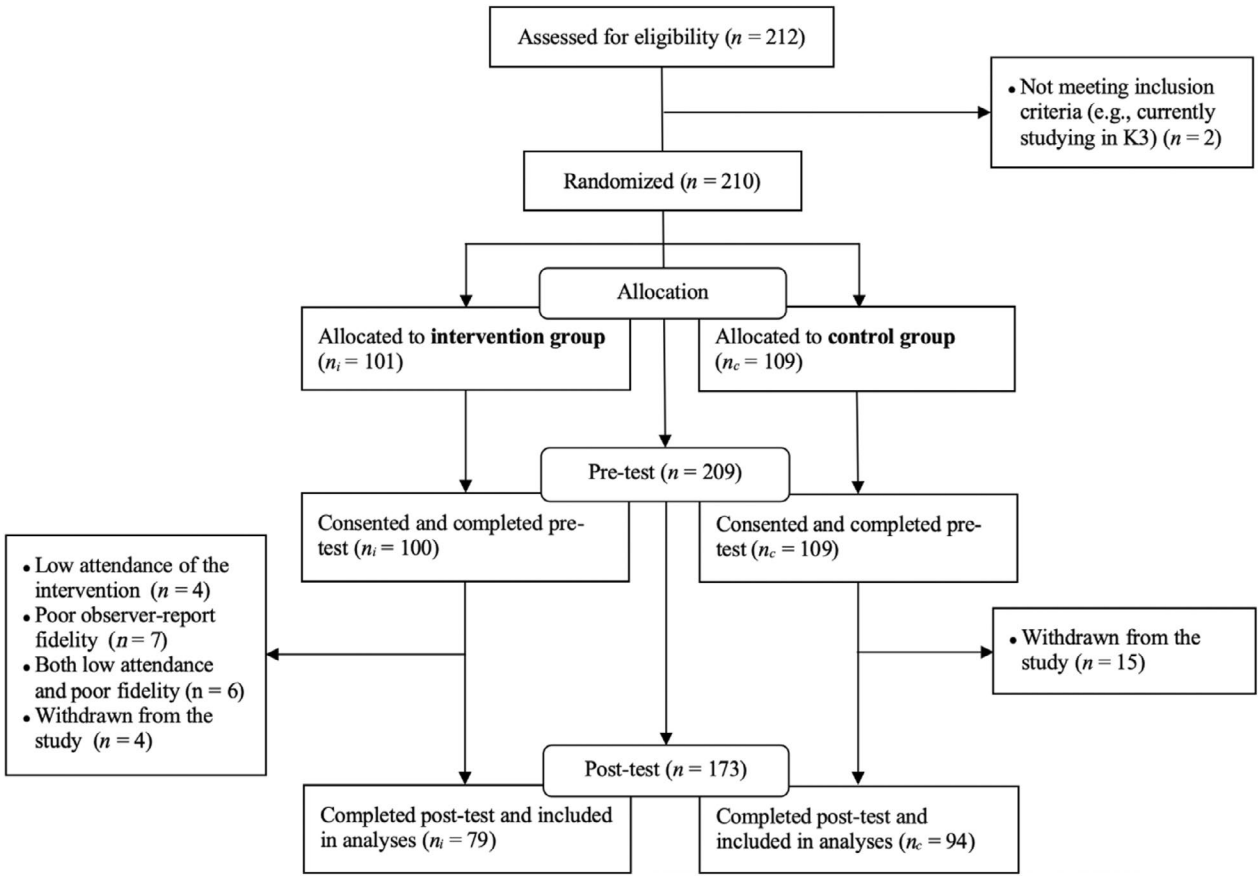

FIGURE 1 Participant flowchart.

Procedure

The study received approval from the Institutional Review Board of the corresponding author's affiliated university. During the study period, which was impacted by the COVID-19 pandemic and government-imposed school closures, the pre-test (mid-March 2022) post-test (late April 2022), and the 12 intervention sessions were conducted remotely via Zoom. In this study, the first video session was delivered to parents 1 week after the pre-test assessment and parent survey. The post-test assessment was conducted within 7–14 days after the end of the last video session for each participating child. Pre- and post-test assessments for participating children in the control group were conducted in the same periods as the intervention group, to ensure that the time frames for both groups were similar.

For the pre- and post-assessments, trained RAs conducted the assessments, while simultaneously recording children's responses on the scoring sheet. Children were instructed to stand up and face the camera for the four tasks, while parents were instructed to (a) enable the camera and audio, (b) use loudspeakers during the assessment, (c) ensure that no other individuals (e.g., other children or family members) or obstacles were present in the assessment environment, (d) ensure that electronic devices used during the test would not cause any interference (e.g., alarms, notifications), and (e) ensure that the camera lens captured the child's entire body. Parents were requested not to assist their children during the assessments, including providing prompts or helping with task completion, even if the child sought assistance from the parent. The entire assessment session lasted approximately 20–30 minutes.

For the intervention group, the delivery schedule consisted of three videos per week, with at least 1 day lapse between each video, spanning over a 4-week period (12 videos in total). The 12 intervention videos were played to each family in the intervention group individually, with the videos being presented in a fixed order during 12 Zoom sessions scheduled by the research team for each family to suit their schedule. In most cases, the sessions were delivered on Mondays, Wednesdays, and Fridays or Tuesdays, Thursdays, and Saturdays at a fixed time. Only one family participated in each Zoom session, and an RA was in charge. Twelve RAs were trained to host the Zoom sessions and conduct the fidelity assessments. Although the intervention was designed from the outset to allow participants to independently complete the program following directions in an online mobile app allowing for scalability, we had originally planned to undertake this first trial of the intervention on school premises. This plan was to allow researchers to more easily observe families

TABLE 2 Baseline demographic characteristics.

	Intervention group ($n_i = 79$)	Control group ($n_c = 94$)	All analyzed sample ($n = 173$)	Excluded sample ($n_e = 36$)
Child mean age in months (*SD*)	69.16 (6.29)	68.58 (6.52)	68.86 (6.39)	66.85 (6.01)
Child gender				
Female	37 (48.7%)	53 (56.4%)	90 (52.9%)	12 (35.3%)
Male	39 (51.3%)	41 (43.6%)	80 (47.1%)	22 (64.7%)
Family status				
Intact	69 (94.5%)	76 (92.7%)	145 (93.5%)	22 (84.6%)
Single-parent	4 (5.5%)	1 (1.2%)	5 (3.2%)	3 (11.5%)
Others	0 (0%)	5 (6.1%)	5 (3.2%)	1 (3.8%)
Monthly household income				
Less than HK$ 10,000	2 (2.7%)	2 (2.4%)	4 (2.6%)	2 (7.7%)
HK$10,001–HK$20,000	13 (17.8%)	7 (8.5%)	20 (12.9%)	5 (19.2%)
HK$20,001–HK$30,000	20 (27.4%)	10 (12.2%)	30 (19.4%)	4 (15.4%)
HK$30,001–HK$40,000	11 (15.1%)	13 (15.9%)	24 (15.5%)	5 (19.2%)
HK$40,001–HK$50,000	4 (5.5%)	14 (17.1%)	18 (11.6%)	7 (26.9%)
HK$50,001 or above	23 (31.5%)	36 (43.9%)	59 (38.1%)	3 (11.5%)

Note: 1 US Dollar = 7.78 Hong Kong Dollars.
Abbreviation: HK$, Hong Kong Dollars.

engaging in sessions, and allow for close monitoring of fidelity. However, due to COVID-19-related school closures, we adapted our research plan to deliver the videos online through scheduled Zoom sessions hosted by the research team and attended by families from their own homes. After careful consideration, we found this alternative approach suitable as it closely aligned with the ultimate intention for home completion, albeit with potential issues related to online connectivity that could affect the scheduled delivery. To mitigate these issues, we provided guidelines for parents prior to each scheduled session that aimed to create optimal conditions for the intervention.

Specifically, prior to each session, parents were asked to ensure a disturbance-free environment (e.g., no other people or obstacles). During each session, one RA was responsible for playing the intervention video and conducting fidelity checks. Upon completing each session, parents were invited to provide feedback on their satisfaction with the intervention by accessing an online survey via the link shared in the Zoom chat room. The survey consisted of four items (i.e., the activities were appealing and interesting; the activities taught me some games that I can play with my child on regular days; the activities promote the development of young children; the activities enhance parent–child interaction) on a 4-point scale (1 = strongly disagree, 4 = strongly agree) (*M* of all four items = 3.46 out of 4; *SD* = 0.48). For the participants in the control group, they were given access to the intervention through the mobile app after the post-test assessment. They could independently complete all the intervention videos, following the same order and schedule as the intervention group. Each participating family received a token of appreciation in the form of supermarket coupons (HK$200 = US$25.71) for completing the intervention (for the intervention group) and the two-wave assessment.

Fidelity

To ensure intervention fidelity, all videos were shown via Zoom to make sure that families in the intervention group received the identical intervention at regular intervals. Attendance at the scheduled Zoom sessions was monitored as a criterion for sample exclusion. On average, the 100 families assigned to the intervention condition participated in 11.36 of the 12 sessions, with a range in participation rates from 7 to 12 sessions. Two implementation factors were coded by observers using a checklist. Exposure to interruptions, which referred to the smoothness of the sessions conducted, was coded on seven items (e.g., There are no interruptions, including video issues due to internet delay or child distraction or refusal; 0 = fail, 1 = pass). Adherence to activities referred to the degree to which parents and children followed instructions to participate in the activities in each session. The adherence to each of the four activities in each session was rated separately for both parent and the child (i.e., the parent/child were able to follow the instructions

to participate in the activity), resulting in eight items (two participants X four activities) for each session. Observers (trained research assistants [RAs]) rated items on a 3-point scale (1 = not focused at all, 2 = focused most of the time, 3 = always focused). Implementation adherence was high with a mean of .94 (*SD* = .13) out of 1 for lack of interruptions and a mean score of 2.89 (*SD* = .31) out of 3 and 2.84 (*SD* = .34) out of 3 for parents and children, respectively, for adherence to activities. The passing scores for each session were set at 80% for lack of interruptions and adherence to activities, respectively (i.e., pass if the score for lack of interruptions was higher than .80 and the score for adherence to activities higher than 2.40), in any particular session. To be included in the analysis, the participating families needed to pass both dimensions for every session attended. Among all the sessions (4 activities per session), 124 sessions (i.e., 496 activities) were randomly selected from a total of 1136 sessions and observed simultaneously by two RAs, resulting in a percentage agreement of 89.5% for exposure to interruptions and 93.5% for adherence to activities.

Measures

Both the intervention and control groups completed pre- and post-tests to assess their EF. All RAs conducting the assessments were blinded to the intervention and control condition of the child. To assess the three core EF components, a battery of child tasks that were not part of the training program and did not share similar surface features or instructions as the training tasks were administered. Specifically, the Simon Says task assessed inhibitory control, the Mr. Cucumber task evaluated working memory, the Dimensional Change Card Sort task measured flexibility, and the Head–Toe–Knee–Shoulders task assessed the aggregate EF, including inhibitory control, working memory, and flexibility. To the best of our knowledge, these tasks have not been previously adapted for online delivery. In the current study, the online adaptation was considered successful as no floor or ceiling effects were observed in either the pre- or post-tests.

During both the pre- and post-tests, the four EF tasks were administered in the same sequence, as follows: (1) Simon Says, (2) Mr. Cucumber, (3) Head–Toe–Knee–Shoulders, and (4) Dimensional Change Card Sort. These tasks, with the exception of the Mr. Cucumber task, have been previously implemented in the Hong Kong Chinese context in prior studies (Caldwell et al., 2022; Li et al., 2021; Li & Lau, 2019; Zhang, Hu, et al., 2018; Zhang, Sun, et al., 2018).

Simon Says task (Strommen, 1973). To ensure cultural appropriateness, the original command "Simon Says" was replaced with "Teacher Says." The experimenter began with two practice trials, explaining to the child that they should imitate the action if the command was prefaced with "Teacher Says" (imitation), and remain still if it was not (inhibition). Once the child had performed the two practice trials correctly, the test trials would begin. There were a total of 20 commands, with half of them including "Teacher Says" (imitation) and half without (inhibition), presented in a pseudorandom order. During the test trials, children received a score of 2 if they did not perform any action within 3 seconds, a score of 1 if they corrected their action and remained still for 3 seconds, and a score of 0 if they fully or partially imitated the action within 3 seconds. The total scores of all the trials were calculated to represent the overall inhibitory control ability.

Mr. Cucumber task (Case, 1985; Morra, 1994). Children were shown an outline of a character named Mr. Cucumber, with colored stickers placed on different body parts on the screen using a PowerPoint presentation. The test trial consisted of eight levels, starting with one sticker and progressing up to eight stickers. In the first five levels, the stickers were shown for 5 seconds before being covered by a black square. For levels six to eight, the stickers were shown for the same duration as the number of stickers attached. In the original design, children completed the test in a face-to-face setting where they were required to physically point at the positions on the picture. However, in this study conducted via Zoom, a different approach was used. After the presentation of the colored stickers, a picture of Mr. Cucumber was presented with numbers and letters covering the original positions of the stickers. Children were asked to recall and indicate the position of all the stickers by verbally reading aloud the corresponding number or letter (refer to Figure 2). If the child pointed at the position instead of naming the letter or number, the RAs reminded the child to verbally state the letter or number attached to Mr. Cucumber. Only verbal responses made directly by the child were recorded and counted as valid responses.

To accommodate the larger number of positions on the picture, both numbers and letters were used. The inclusion of letters was necessary to prevent exceeding double-digit numbers due to space limitations on the picture. According to the Kindergarten Education Curriculum Guide in Hong Kong (Curriculum Development Council, 2017), K3 children should be generally capable of understanding the English alphabet and simple English words, as well as be able to count and write from 1 to 20. To ensure clarity and minimize confusion caused by the screen display (e.g., "8" and "B"), we carefully selected additional alphabet characters (specifically, "A," "C," "D," "F," and "H") that are easily distinguished from single-digit numbers (i.e., "1" to "9"). Each level included three trials, and if the child recalled inaccurately in all three trials within the same level, the task was terminated. Scores were assigned based on accuracy. A score of 1 was given for two or three accurate recalls within a level, and a score of 0.33 was given for one accurate recall beyond that level. The total scores

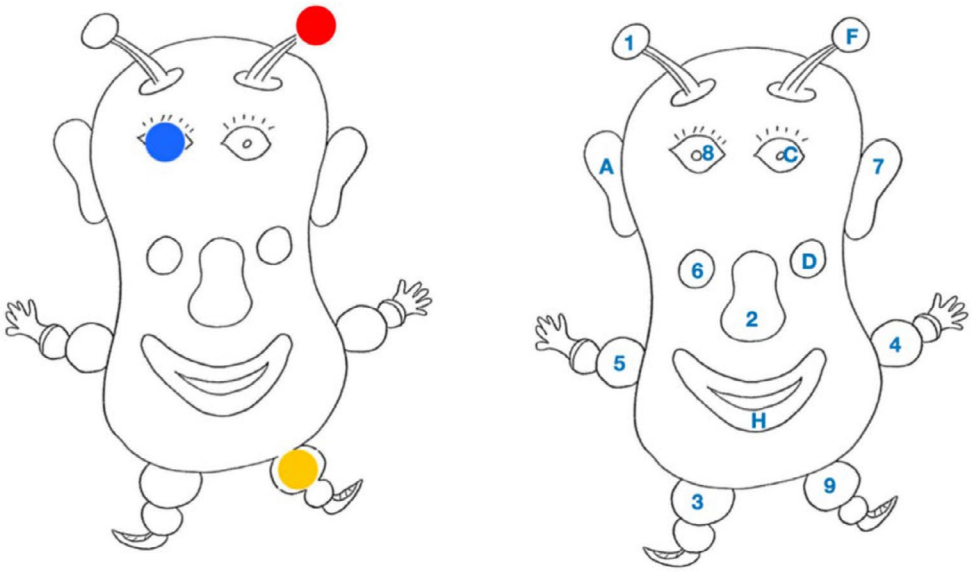

FIGURE 2 Sample pictures of the Mr. Cucumber task. The first slide displayed colored stickers (as shown in the figure on the left). Following that, a second slide showed a picture of Mr. Cucumber with numbers and letters covering the original positions of the stickers (as shown in the figure on the right). Children were instructed to recall and indicate the position of all the stickers by reading the corresponding number or letter aloud. In this example the correct response would be F, 8, 9 (provided in any order).

were calculated by summing scores for all trials as an index of working memory.

Head–Toe–Knee–Shoulders (Ponitz et al., 2009). In this task, the children were instructed to touch the opposite part of their body from the given instruction. For example, if the experimenter asked the child to touch their toe, they were expected to touch their head instead. The task was divided into two sessions, each consisting of 10 test trials. Level one involved touching one pair of body parts, specifically the head and toe. Level two involved two pairs of body parts, including the head and toe, as well as the shoulder and knee. There were six practice trials for level one and five practice trials for level two to familiarize the children with the task. For each test trial, the children received a score of 2 for a correct response, 1 for a self-corrected response, and 0 for an incorrect response. The total score was calculated as the sum of the scores from the 20 test trials.

Dimensional Change Card Sort task (Zelazo, 2006). At the beginning of this task, a series of PowerPoint slides displayed two boxes (Box A and Box B) at the bottom of the screen. Box A contained a picture of a blue rabbit, while Box B contained a picture of a red boat. Each child was presented with a deck of cards with different colors (red, blue) and shapes (rabbit, boat) on the screen. The children were then required to sort the cards by saying "A" or "B" to indicate their answers across three phases: the pre-switch phase (sorting the cards by colors), the post-switch phase (sorting the cards by shapes), and the border phase (sorting by color for cards with a black border and by shape for cards without a black border). There were six test trials for both the pre-switch and post-switch phases and 12 test trials for the border phase (including five trials with borders). The number of correct responses in the border phase was calculated.

Data analysis

The data were analyzed using SPSS version 28.0. The analyses presented represent a confirmatory effort as the study involves a well-defined sample for testing its hypothesis. Preliminary analyses were conducted as follows: (a) descriptive analyses, including means (*M*s) and standard deviations (*SD*s) were conducted to determine the central tendencies of the individual and composite EF scores during the pre- and post-tests; (b) analyses of skewness and kurtosis were examined to assess the distribution of the measured variables; (c) a set of independent sample *t*-tests was carried out to examine the differences among the four individual tasks scores, comparing groups at baseline (pre-test) and after intervention (post-test), respectively; (d) bivariate correlations were also conducted to examine the associations among the individual EF scores in the pre- and post-test.

To assess the effectiveness of this program in targeting all three core components of EFs (namely inhibitory control, working memory, and cognitive flexibility), composite scores, including all four tasks, were calculated for the pre-and post-tests, respectively, for further analyses. Specifically, the proportion of maximum scaling approach (POMS) (Moeller, 2015) was employed by transforming each task score to a metric of 0 to 1. Next, the four individual scores were averaged to create a composite EF score for the pre- and post-test, respectively (Camerota et al., 2020; Williams et al., 2023).

TABLE 3 Means (*M*s), standard deviations (*SD*s), and intercorrelations among the individual and composite EF scores at pre- and post-tests ($n = 173$; $n_i = 79$, $n_c = 94$).

Variable	M_i (*SD*)	M_c (*SD*)	1	2	3	4	5	6	7	8	9	10
1. SS (pre-test)	0.697 (0.304)	0.798 (0.231)	–									
2. MC (pre-test)	0.429 (0.190)	0.454 (0.208)	0.206**	–								
3. HTKS (pre-test)	0.789 (0.220)	0.832 (0.178)	0.578***	0.200**	–							
4. DCCS (pre-test)	0.624 (0.242)	0.662 (0.237)	0.300***	0.317***	0.323***	–						
5. Composite EFs (pre-test)	0.635 (0.170)	0.687 (0.143)	0.779***	0.579***	0.738***	0.699***	–					
6. SS (post-test)	0.820 (0.259)	0.857 (0.202)	0.618***	0.095	0.458***	0.193*	0.505***	–				
7. MC (post-test)	0.547 (0.146)	0.509 (0.179)	0.299***	0.382***	0.323***	0.296***	0.456***	0.280***	–			
8. HTKS (post-test)	0.806 (0.203)	0.821 (0.212)	0.472***	00.085	0.472***	0.208**	0.450***	0.539***	0.354***	–		
9. DCCS (post-test)	0.751 (0.241)	0.740 (0.216)	0.270***	0.193*	0.248**	0.361***	0.386***	0.299***	0.263***	0.204**	–	
10. Composite EFs (post-test)	0.731 (0.151)	0.732 (0.143)	0.600***	0.251***	0.535***	0.374***	0.637***	0.780***	0.620***	0.746***	0.653***	–

Abbreviations: DCCS, Dimensional Change Card Sort; EFs, executive functions; HTKS, Head–Toe–Knee–Shoulders; MC, Mr. Cucumber; SS, Simon Says.
*$p < .05$, **$p < .01$, ***$p < .001$.

We then conducted a one-factor confirmatory factor analysis (CFA) separately for the pre- and post-tests. The results indicated that, at both time points, the composite EF scores demonstrated satisfactory construct validity (pre-test: $\chi^2/df = .021$, $p = .884$, $CFI = 1.00$, $TLI = 1.06$, $RMSEA = .000$, $SRMR = .002$; post-test: $\chi^2/df = .647$, $p = .421$, $CFI = 1.00$, $TLI = 1.02$, $RMSEA = .000$, $SRMR = .014$).

Finally, to examine the main effect of Time and Group, as well as the interaction effect between Time and Group on the composite EF score, a two-way mixed ANOVA with repeated measures (RMANOVA) analysis was conducted. The analysis included one within-subject factor, Time (pre- and post-test), and one between-subjects factor, Group (control and intervention group). To determine the effect size, Partial eta-squared (η_p^2) was utilized, with the η_p^2 values smaller than .06 and .14 representing small and medium effect sizes, respectively (Cohen, 2013). If RMANOVA revealed a significant Time × Group interaction effect, a Bonferroni correction post hoc test was conducted to identify specific differences in the composite EF scores between the groups over the intervention period. Further, gain scores (post-test – pre-test) and descriptive statistics of the four individual EF tasks and the composite EF were compared using the independent sample *t*-tests to assess changes in scores for both groups. Based on the RMANOVA and the current sample size of 173, we were able to detect a medium effect size with a power of >.79 ($\alpha = .05$) (G*Power version 3.1).

RESULTS

Table 3 displays the *M*s and *SD*s for the four individual EF tasks, and the composite EF scores at pre- and post-test for both the intervention and control groups (see also Figure S1). The skewness and kurtosis for all variables were within acceptable ranges (skewness from −3 to 3 and kurtosis from −10 to 10) (Kline, 2009). Independent sample *t*-tests were conducted to examine differences in the scores of the individual EF tasks between the intervention and control groups at pre- and post-test. No significant differences were found (*p*s > .05) in the four tasks at pre-test, except for the Simon Says task, where the control group had significantly higher scores ($M_c = .798$, $SD = .231$) compared to the intervention group ($M_i = .697$, $SD = .304$) ($p = .015$). There were no significant differences between the groups in the four tasks at post-test (*p*s > .05). In addition, Table 3 shows significant correlations between the four EF tasks and the composite score at pre- and post-tests.

The RMANOVA with the composite EF scores revealed a significant main effect of Time with a medium effect size, $F(1,171) = 51.535$, $p < .001$, $\eta_p^2 = .232$. There were significant differences between composite EF scores at the pre-test ($M_{pre} = .663$, $SD = .160$) and the post-test ($M_{post} = .731$, $SD = .146$). The main effect of Group was

not significant, $F(1,171)=1.552$, $p=.215$, $\eta_p^2=.009$. The averaged composite EF scores of the intervention group ($M_i=.683$, $SD=.145$) did not significantly differ from the composite EF scores of the control group ($M_c=.709$, $SD=.133$).

However, there was a small yet significant interaction effect between Time and Group, $F(1,171)=6.765$, $p=.010$, $\eta_p^2=.038$. Post hoc tests using Bonferroni correction revealed that the control group ($M_{pre}=.687$, $SD=.148$; $M_{post}=.732$, $SD=.143$) had higher composite EF scores than the intervention group ($M_{pre}=.635$, $SD=.169$; $M_{post}=.731$, $SD=.151$) at both the pre-test and post-test. However, at the post-test, the gap between the two groups narrowed because of the sharper increase in EFs in the intervention group (Figure 3), indicating the effectiveness of the intervention program in stimulating steeper growth in EFs than experienced by typical developmental processes. Gain scores (i.e., post-test – pre-test) were calculated to further compare the immediate training effects of the intervention program on the *M*s and *SD*s of the individual tasks scores and the composite EF scores (Figure 4). The gain scores were higher for all individual tasks and the composite EF scores. Results of the independent sample *t*-tests showed that the intervention group had significantly higher gain scores on the Mr. Cucumber task, $t(171)=2.047$, $p=.042$, and the composite EF scores, $t(171)=2.601$, $p=.010$, indicating that their EFs increased more compared to the control group at the post-test. No significant differences were found in the gain scores on the Head–Toe–Knee–Shoulders task and the Dimensional Change Card Sort task between the intervention and the control group.

DISCUSSION

Cognitive training programs have shown success in improving children's EF skills, particularly during the preschool years when EF demonstrates expeditious development and malleability (Scionti et al., 2020). Prior studies have shown inconsistent effects and several limitations in program design, including targeting only isolated and specific EFs, varying duration and dosage, being repetitive or boring for younger children, lacking parental involvement, and being highly demanding with curriculum- and individual-based designs (e.g., Bergman Nutley et al., 2011; Blair, 2017; Diamond & Lee, 2011; Marti et al., 2018; Otero et al., 2014). To address these considerations, the present study developed a video-based parent–child EF intervention program, *The Camp*, to complement existing EF interventions. Using a randomized control trial, we tested the effectiveness of *The Camp* in improving an index of EFs which included three cognitive components (inhibitory control, working memory, cognitive flexibility) among children aged 5–6 years. Our findings indicated that though children from the control group had higher EF scores than those from the intervention group at both the pre- and post-tests, children who were trained in *The Camp* evidenced a sharper increase in EF scores across the 4-week program period. The narrowed gap in EFs between the intervention and the control groups at the post-test suggests the effectiveness of *The Camp*. Follow-up analyses of the gain scores of the individual EF tasks corroborated this finding. From pre- to post-training assessment, children in the intervention group showed significantly higher gains in the scores of the two individual EF tasks and the composite EF scores compared to those in the control group. Taken together, our newly developed EF intervention program was effective, as demonstrated by the greater improvements in EFs among the intervention group compared with the control group.

One recurring question in the EF literature is whether EFs are malleable and could be promoted through training efforts. Meta-analytic studies have shown that training children's EFs is possible (Kassai et al., 2019; Li et al., 2020; Scionti et al., 2020), although interventions may vary in their effect sizes. Our results are consistent with the general picture proffered by existing

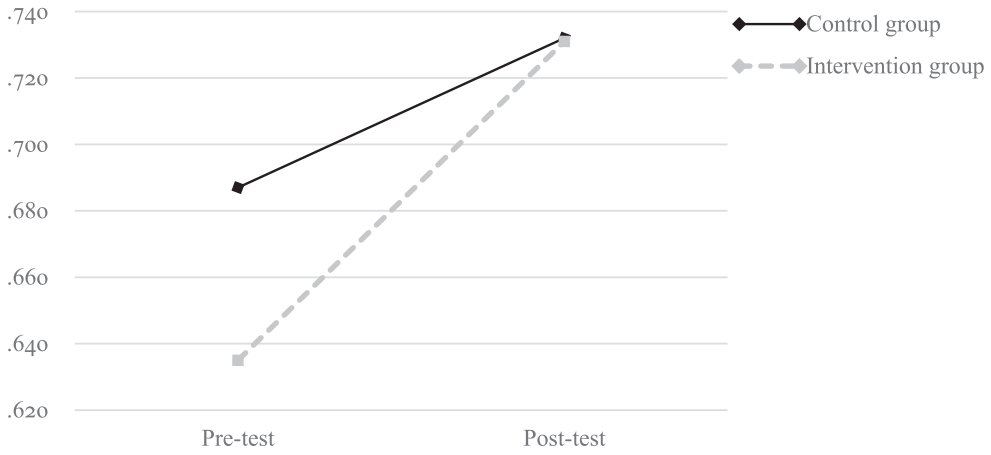

FIGURE 3 Profile plots of the composite EF scores ($n=173$).

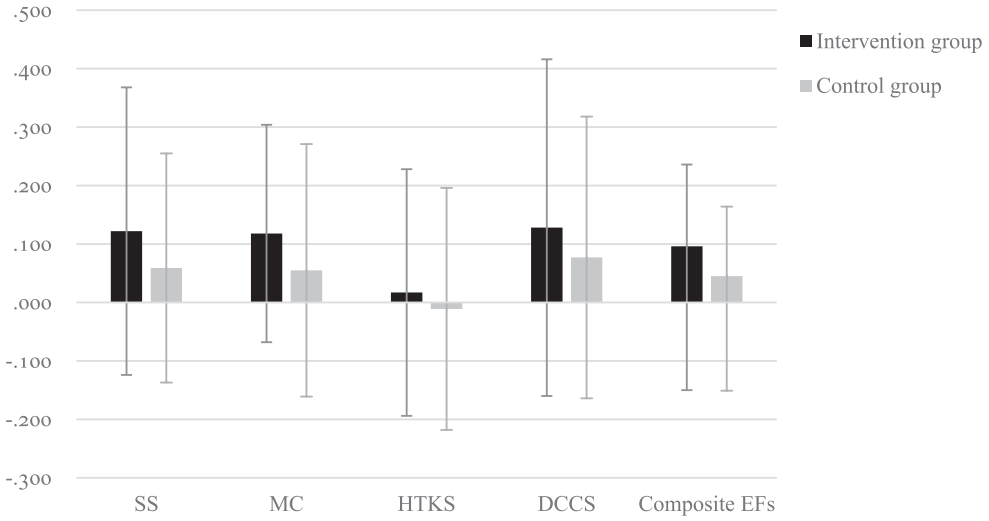

FIGURE 4 Comparison of the *M*s and *SD*s of the gain scores (post-test − pre-test) of the individual EF tasks between the intervention and control groups (n_i = 79, n_c = 84). DCCS, Dimensional Change Card Sort; EFs, executive functions; Gain score, post-test − pre-test; HTKS, Head–Toe–Knee–Shoulders; MC, Mr. Cucumber; SS, Simon Says.

meta-analyses that EFs are by and large trainable. It is worth noting that our randomization procedure unexpectedly did not create two groups with comparable pre-test characteristics. In fact, we are not the only research group to have encountered this issue recently (Williams et al., 2023). The control group displayed stronger EF skills than the intervention group at pre-test, and this advantage of the control group remained at the post-test. Nonetheless, the children who were engaged in *The Camp* with their parents exhibited more pronounced improvements in EFs over the training period compared to the control children. Thus, the initial gap in EF abilities between the two groups was significantly reduced at the post-test. This finding is encouraging since it implies that it is possible for children who possess weaker EFs to catch up with those with stronger EFs when they are supported by well-designed intervention. Indeed, there is evidence that parent-based language intervention for 2- to 4-year olds not only resulted in greater language gains compared to a control group receiving no intervention, but also led to a smaller gap in the language development trajectory between the intervention group and their typical developing peers compared with the control group (Buschmann et al., 2009; Roberts & Kaiser, 2012).

Similar findings of the potential for intervention to stimulate a "gap closing" across the early childhood and transition to school period have been reported in relation to a teacher-delivered rhythm and movement intervention for self-regulation, executive function, and school readiness (Bentley et al., 2023; Williams et al., 2023). Our video-based parent–child EF program succeeded in closing the EFs gap between the intervention and control groups and extends these prior findings to the medium of parent-involved and video-mediated interventions, showing high potential to target children who struggle with EFs and support them to catch up to peers.

We would like to highlight two merits of the newly developed EF intervention program, *The Camp*. First, our use of video sessions and the involvement of parents demonstrate the effectiveness of video-based EF interventions in the family context, particularly during the transition to primary school. Past researchers have raised concerns that EF interventions for young children could be rather costly, time-consuming, and labor-intensive (Otero et al., 2014; Shen et al., 2019; Shuai et al., 2021; Traverso et al., 2015). The effectiveness of *The Camp* suggests the possibility of applying video-based sessions in EF training in the family context supported by parents or caregivers. *The Camp* offers a low-resource alternative approach to training EFs in young children. This approach is arguably more feasible and acceptable to children, parents, and even teachers and schools, due to its low costs and wide accessibility. This merit is particularly relevant in times or contexts where resources are tight and face-to-face training by teachers or other professionals is less feasible. The study was conducted during the prolonged period of school closure due to COVID-19, during which children were isolated from the vivo modeling of new skills by teachers in the school settings. *The Camp*, enabling quality parent–child interactions in the family context, significantly promoted EF skills in this specific period.

Another merit of *The Camp* is the active involvement of parents in the EF training activities as required by the training protocol. In the current study, parents' active participation in the sessions was high as evidenced by the observed fidelity scores for parents, and parental satisfaction with the training activities was also high, as indicated by the survey they completed after each session. (M = 3.46 out of 4). Parental involvement has rarely been emphasized in existing EF interventions. However, the significance of parental involvement for intervention

success has been highlighted in the child development literature (Marti et al., 2018). Prior systematic reviews and meta-analyses have also indicated the effects of parents as crucial intervention agents for improving the language skills of young children with or at risk for language impairment (Buschmann et al., 2009; Heidlage et al., 2020; Roberts et al., 2019; Tosh et al., 2017). Rojas-Torres et al.'s (2023) review also concluded that the inclusion of parents in treatment increases the effectiveness of interventions for children with ASD. Our findings extend the literature by showing that parent–child interventions that involve home practices were also effective in improving EFs among typically developing children, possibly due to increased child engagement encouraged by parents.

Implications, limitations, and future directions

This study holds significant implications and practical value for education and intervention programs. The findings suggest the potential for widespread dissemination of *The Camp* among Cantonese-speaking cities, allowing for the broad implementation of effective interventions to enhance children's EF. Our vision for the intervention is to ensure it is accessible to all families, regardless of their socioeconomic status. The intervention was designed to be low-cost, widely accessible, and easy to use, making it suitable for all families. We have already made the app available for free download. All kindergartens in Hong Kong have been invited to share information about this app with K3 parents each year to encourage its use in the home context. The success of *The Camp* also serves as a model for designing similar interventions in other languages, enabling adaptation and implementation in diverse cultural and societal contexts. Finally, by leveraging video-based methods, *The Camp* can be utilized as an exemplar for developing similar interventions aimed at training children's EFs. This research opens up avenues for enhancing cognitive development in children and provides valuable insights for educators and practitioners seeking evidence-based interventions for EF enhancement using alternative approaches.

While we obtained initial evidence regarding the effectiveness of a novel, video-based, and parent–child program in training children's EF, several limitations of this study should be noted. First, the online format of the pre- and post-tests may have posed additional challenges for young children when engaging with the four assessment tasks. For instance, the online implementation of the DCCS task and Mr. Cucumber using PowerPoint required a higher cognitive level of verbalizing responses, as opposed to the physical sorting of cards and pointing at the body part, respectively. Although no floor or ceiling effects in the four tasks were found and normality in the data was established, future studies with online adaptations shall also carefully examine the reliability, validity, and distribution of the data. Second, while our study demonstrated the effectiveness of a video-based EF intervention for young children with parental involvement, our current design could not disentangle the exact mechanism(s) driving the training effects for EF. Future studies may therefore compare the effects of EF interventions with similar features with and without parental involvement. Recognizing that parental involvement might not be feasible for all families, future studies should also consider the effectiveness of involving non-parental caregivers at home or professionals such as teachers and social workers to assist children from diverse households to complete the intervention. Third, it is important to note that our study only assessed the immediate effect of *The Camp* through a post-test. The long-term sustainability of the program's effects remains unknown. To address this knowledge gap, future studies should evaluate whether the positive effects of the program are maintained over an extended period by including a follow-up data collection point. Lastly, our current data did not speak to the issue of far-transfer effects. Doebel (2020) suggested that the development of EFs is better understood as the emergence of skills in using control in service of specific goals. Specifically, this perspective posits that skills in using EFs develop through the acquisition of various kinds of mental content such as knowledge, beliefs, and values that support its use in relation to specific goals. Evidence of the far-transfer effects of existing EF interventions has been mixed (Li et al., 2020; Scionti et al., 2020). Taken together, future studies are warranted to follow up on the efficacy of our developed EF intervention program in impacting skills that are not directly trained in the program.

CONCLUSION

This study addresses the shortcomings of existing EF training programs, which tend to lack variety and become monotonous for children, leading to disengagement and reduced motivation. The results offer pioneering evidence that engagement in a video-based parent–child EF intervention holds promise for promoting the development of EF skills in 5- to 6-year-old children. Notably, the intervention group exhibited significant improvements across all EF tasks compared to the control group at the post-test. These findings suggest that video-based training represents a cost-effective approach that can be readily disseminated in the family context by parents and other caregivers to enhance EFs in young children. This research contributes valuable insights to the field and highlights the potential of video-based interventions in fostering cognitive growth during early childhood.

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CONFLICT OF INTEREST STATEMENT

The authors declare no competing interests.

DATA AVAILABILITY STATEMENT

Data, analytic code, and materials are available from the first author upon reasonable request.

ETHICS STATEMENT

The present study was approved by the Human Research Ethics Committee at The Education University of Hong Kong (Ref: 2021–2022-0158). Written informed consent was obtained from all participating families prior to the administration of the study.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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Symposium 1

Visual Arts Education Studies in Hong Kong Kindergartens

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Visual Arts Education Studies in Hong Kong Kindergartens

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Visual Arts in Early Childhood Education

- Bresler (1998) recognised the relationship between child arts and fine arts, considering both as essential elements of a meaningful arts curriculum.
- Early art refers to original expression in children's dance, drama, visual arts and music, and this has been a legitimate subject of scholarly discussion in early childhood education (ECE) for several decades (Twigg & Garvis, 2010).
- The power of arts and their impact on children's aesthetic and creative development have long been recognised (Clement, 1992).
- The visual arts become the first language of young children, providing ways for them to learn and express themselves (Wright, 2003).
- Art is an important tool through which children can demonstrate their abilities, whether intellectual, emotional or aesthetic (Freeman, 1980; Wright, 2014).

Teaching Approaches in Early Visual Arts

- According to Bresler (1993, pp. 30e31), three distinct orientations can be identified, based on the prevailing educational beliefs and goals: (a) a production orientation, (b) a little-intervention orientation, and (c) a guided-exploration orientation.
- Kindler (1995) found that teachers' non-directive guidance motivated children to sustain their interest in visual art activities when teachers were eager to be attentive and have dialogues related to their artistic processes.
- Bae (2004) suggested that teachers should guide children to observe, listen and express their feelings through artistic expression and aesthetic appreciation.
- Eckhoff (2008) studied kindergarten teaching in visual arts, finding that if teachers do not integrate rich and meaningful art viewing experiences, it is difficult for them to discuss or appreciate art with young children.
- Eckhoff (2012) emphasised the power of conversation as an integral pedagogical component in teaching visual arts to young children.

Teacher Education in Early Visual Arts

- Winton and Bussye (2005) observed 900 children across six US states, discovering that teachers engaged children in arts-related activities for only 9% of the time.
- Oztürk and Erden (2011) examined Turkish kindergarten teachers' beliefs and found that teachers had difficulty integrating visual arts with other activities in the curriculum.
- Garvis and Pendergast (2010) found that student teachers perceived the level of support from sources within the teacher education institution as minimal compared with the support available for literacy and numeracy.
- Bautista et al. (2018) observed 113 kindergarten classrooms in Singapore, demonstrating that certain art forms were rarely evident in kindergarten classrooms (e.g. 3D visual arts, dance and instrumental performance); instead, the arts-related pedagogical practices in ECE settings were traditional and product-oriented in nature.

The Hong Kong Context

- In March 2017, the committee reviewed the Guide to the Pre-primary Curriculum, and renamed it the Kindergarten Education Curriculum Guide ('the Guide'). In the Guide, the learning domain 'Arts' was renamed 'Arts and Creativity' to place greater emphasis on children's freedom of expression and creativity. In this revision, the core framework for developing well-rounded children remains unchanged, and aesthetics continues to be a component of the curriculum goals.
- Children's capacity for art appreciation, creative expression and imagination are highlighted in the document, and elements of the visual arts are also mentioned (e.g., lines, colours, shapes and forms of expression). In general, the new Guide has strengthened teachers' basic understanding of early visual arts teaching (Curriculum Development Council, 2017).

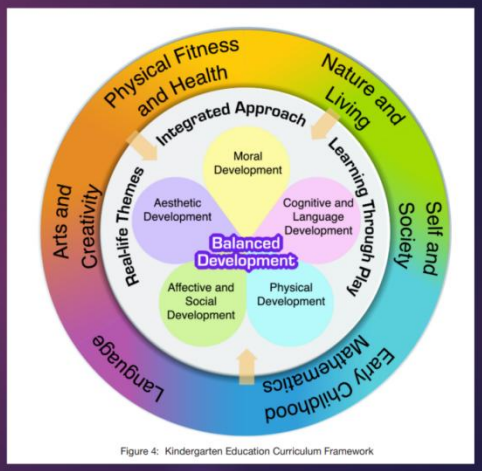


Figure 4: Kindergarten Education Curriculum Framework

The Hong Kong Context

- The entire Hong Kong educational system is competitive, academic and rigid, all of which run opposite to children-centredness (Lee & Yelland, 2017).
- Teachers are given little space in kindergartens and can only provide limited visual arts experiences to children (Bautista et al., 2018; Leung, 2018).
- Most Hong Kong kindergarten teachers have not received any visual arts training since Secondary Three, unless they specifically chose an arts-related subject (e.g. visual arts) as one of their elective subjects for the Hong Kong Diploma of Secondary Education Examination.
- Even most bachelor's degree programmes in ECE do not provide student teachers with a single module on visual arts (Leung, 2018).

Explaining kindergarten teachers' beliefs and practices

The qualitative part (Phase 1) is an interview study of 19 kindergarten teachers in two focus groups, aiming to develop a conceptual structure of teachers' behavioural, normative and control beliefs. The quantitative part (Phase 2) is a survey study of 243 teachers from the randomly sampled 21 kindergartens regarding their EVAE beliefs and practices. Most teachers believe in child-centred teaching while practising teacher-directed instruction and support creativity while delivering closed-ended instruction. Four influential factors are identified to account for this gap: (1) practising child-centred pedagogies as a result of behavioural beliefs; (2) undervaluing visual arts as a result of normative beliefs; (3) instructing children directly as a result of normative beliefs; and (4) delivering subject knowledge in studio teaching as a result of control beliefs.

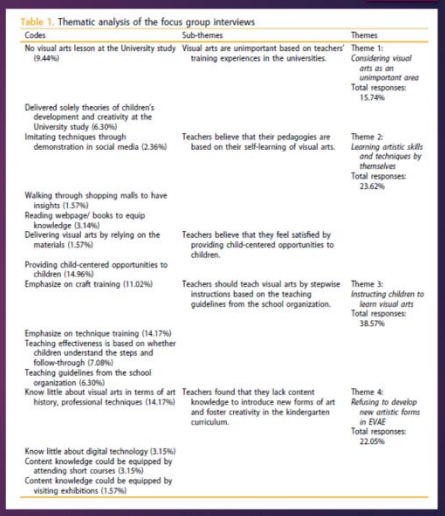
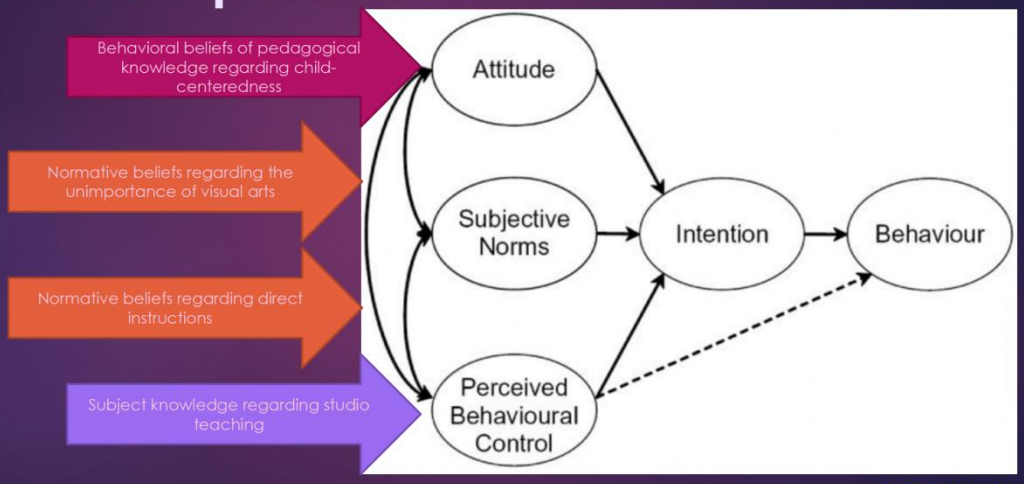


Table 1. Thematic analysis of the focus group interviews

Codes	Sub-themes	Themes
No visual arts lesson at the University study (9.44%)	Visual arts are unimportant based on teachers' training experiences in the universities.	Theme 1: *Considering visual arts as an unimportant area* Total responses: 15.74%
Delivered solely theories of children's development and creativity at the University study (6.30%)		
Imitating techniques through demonstration in social media (2.36%)	Teachers believe that their pedagogies are based on their self-learning of visual arts.	Theme 2: *Learning artistic skills and techniques by themselves* Total responses: 23.62%
Walking through shopping malls to have insights (1.57%)		
Reading webpage/ books to equip knowledge (3.14%)		
Delivering visual arts by relying on the materials (1.57%)	Teachers believe that they feel satisfied by providing child-centered opportunities to children.	
Providing child-centered opportunities to children (14.96%)		
Emphasize on craft training (11.02%)	Teachers should teach visual arts by stepwise instructions based on the teaching guidelines from the school organization.	Theme 3: *Instructing children to learn visual arts* Total responses: 38.57%
Emphasize on technique training (14.17%)		
Teaching effectiveness is based on whether children understand the steps and follow-through (7.08%)		
Teaching guidelines from the school organization (6.30%)		
Know little about visual arts in terms of art history, professional techniques (14.17%)	Teachers found that they lack content knowledge to introduce new forms of art and foster creativity in the kindergarten curriculum.	Theme 4: *Refusing to develop new artistic forms in EVAE* Total responses: 22.05%
Know little about digital technology (3.15%)		
Content knowledge could be equipped by attending short courses (3.15%)		
Content knowledge could be equipped by visiting exhibitions (1.57%)		

Leung, S. K. Y., Wu, J. & Li, H. (2023). Explaining kindergarten teachers' beliefs and practices regarding early visual arts education: A perspective from the theory of planned behavior. *Journal for the Study of Education and Development, 46*(1), 190–224. https://doi.org/10.1080/02103702.2022.2133400

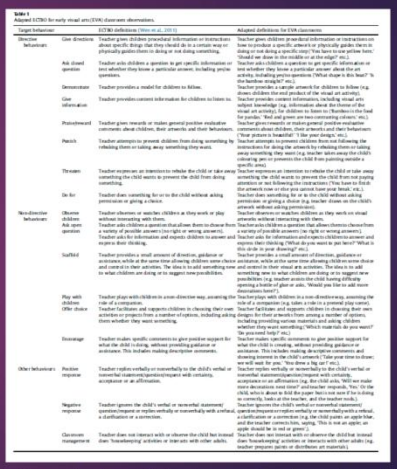
Explaining kindergarten teachers' beliefs and practices



(Ajzen, 1991)

Investigating teaching behaviours in early visual arts

The study aimed at using a mixture of direct observations and interviews to investigate kindergarten teachers' knowledge and pedagogical approaches to visual arts. An adapted version of the Early Childhood Teacher Behaviour Observation (ECTBO) instrument was used to investigate the possible reasons for teachers' current behaviours in Hong Kong visual arts classrooms. In an observation study, a total of 18 classrooms with 76 children in two local kindergartens in Hong Kong were observed during a 30-min visual arts activity. Altogether, 540 min of video data were recorded and analysed using field notes and a time sampling strategy. In addition, 18 class teachers from the observed classrooms were invited to give post-observation interviews, and 810 min of data were recorded.



Leung, S. K. Y., Wu, J., Lam, Y. & Ho, T. H. (2023). An explanatory study of kindergarten teachers' teaching behaviours in their visual arts classrooms. *Teaching and Teacher Education*. https://doi.org/10.1016/j.tate.2023.104018

Investigating teaching behaviours in early visual arts

The interview participants supported the importance of non-directive early childhood arts. However, the observation findings revealed that they still relied heavily on directive teaching in implementing early visual arts teaching. Thus, a discrepancy was found between the teachers' subject matter knowledge in visual arts and the integration of their pedagogies in their actual classroom practice.

Table 2
Distribution of observed behaviours according to class level.

		K1 (n = 105) N(%)	K2 (n = 97) N(%)	K3 (n = 93) N(%)	All (n = 295) N(%)
Directive behaviours		61(58.10%)	52(53.61%)	32(34.41%)	145(49.15%)
DB1	Give directions	13(12.38%)	20(20.62%)	10(10.75%)	43(14.58%)
DB2	Ask closed question	2(1.90%)	7(7.22%)	2(2.15%)	11(3.73%)
DB3	Demonstrate	13(12.38%)	9(9.28%)	11(11.83%)	33(11.19%)
DB4	Give information	1(0.95%)	5(5.15%)	2(2.15%)	8(2.71%)
DB5	Praise/reward	1(0.95%)	3(3.09%)	2(2.15%)	6(2.03%)
DB6	Punish	1(0.95%)	1(1.03%)	0(0.00%)	2(0.68%)
DB7	Threaten	1(0.95%)	1(1.03%)	0(0.00%)	2(0.68%)
DB8	Do for	29(27.62%)	6(6.19%)	5(5.38%)	40(13.56%)
Non-directive behaviours		23(21.9%)	26(26.8%)	49(52.69%)	98(33.22%)
ND1	Observe children	10(9.52%)	10(10.31%)	38(40.86%)	58(19.66%)
ND2	Ask open question	0(0.00%)	2(2.06%)	2(2.15%)	4(1.36%)
ND3	Scaffold	7(6.67%)	8(8.25%)	4(4.30%)	19(6.44%)
ND4	Play with children	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
ND5	Offer choice	6(5.71%)	4(4.12%)	1(1.08%)	11(3.73%)
ND6	Encourage	0(0.00%)	2(2.06%)	4(4.30%)	6(2.03%)
Other behaviours		21(20%)	19(19.59%)	12(12.90%)	52(17.63%)
OB1	Positive response	3(2.86%)	7(7.22%)	6(6.45%)	16(5.42%)
OB2	Negative response	1(0.95%)	2(2.06%)	1(1.08%)	4(1.36%)
OB3	Classroom management	17(16.19%)	10(10.31%)	5(5.38%)	32(10.85%)
		105(100%)	97(100%)	93(100%)	295(100%)

Examining teachers' CK and PCK in early visual arts

The study aimed to investigate kindergarten teachers' content knowledge and pedagogical content knowledge in early visual arts education (EVAE) and to identify the challenges they faced in teaching visual arts to children. The study surveyed 342 in-service kindergarten teachers in Hong Kong and conducted individual interviews with 12 participants. The findings revealed that Hong Kong kindergarten teachers generally performed well in terms of their pedagogical content knowledge, but they lacked content knowledge in various forms of early visual arts (EVA) and faced challenges in teaching visual arts effectively.

Table 2 Structural Design of the Survey

Dimensions	Specifications	Tables shown in the finidings section
Demographic data of teachers	Age, gender, qualifications, year(s) of teaching experience, type of kindergarten, class level taught this year, mode of work, position of work, previous training in visual arts	
Beliefs about EVAE	• Beliefs about delivering visual arts activities to children • Importance of various aspects for delivering visual arts activities to children	Table 3 Teachers' Beliefs and Perceived Importance of Delivering EVA Activities
Pedagogical knowledge in EVA classrooms	Frequency of performing behaviors in visual arts classrooms based on the ECTBO instrument (Wen et al., 2011)	Table 4 Kindergarten Teachers' Self-Reported Directive vs. Non-Directive Teaching Behaviors in EVA Lessons
Content knowledge of EVA	• Understanding of elements of visual arts • Understanding of historical periods of visual arts • Frequency of delivering forms of visual arts activity	Table 5 Teacher's Self-Assessed Content Knowledge of Visual Arts Table 6 Self-Reported Frequency of EVA Activities per Month
Teachers' perceived challenges in EVA	Challenges of delivering visual arts in kindergarten classrooms	Table 7 Teachers' Perceived Challenges in EVAE

Leung, S. K. Y., Wu, J., & Ho, T. H. (2024). Early childhood visual arts education: Teachers' content knowledge, pedagogical content knowledge, and challenges. *The Asia-Pacific Education Researcher*. https://doi.org/10.1007/s40299-024-00859-w

Examining teachers' CK and PCK in early visual arts

Table 5 Teachers' Self-Assessed Content Knowledge in Visual Arts (N = 342)

	Very unfamiliar (1)	Unfamiliar (2)	Familiar (3)	Very familiar (4)	*M (SD)*
To what extent are you familiar with the following basic elements in visual arts?					
Color	0.29%	4.40%	80.06%	15.25%	3.10 (0.45)
Shape	0.29%	5.56%	81.29%	12.87%	3.07 (0.44)
Line	0.29%	7.60%	78.36%	13.74%	3.06 (0.47)
Pattern	0.29%	9.65%	79.53%	10.53%	3.00 (0.48)
Space	0.59%	21.11%	70.38%	7.92%	2.86 (0.54)
Texture	0.58%	22.81%	70.47%	6.14%	2.82 (0.53)
Brightness	0.58%	28.07%	63.16%	8.19%	2.79 (0.59)
Composition	1.46%	30.99%	61.11%	6.43%	2.73 (0.60)
Form	1.17%	37.13%	57.60%	4.09%	2.65 (0.58)
To what extent are you familiar with the following schools of thought in art history?					
Pop art	15.45%	49.85%	30.61%	4.08%	2.23 (0.76)
Abstract expressionism	15.16%	50.73%	31.49%	2.62%	2.22 (0.73)
Realism	15.16%	52.19%	30.61%	2.04%	2.20 (0.71)
Renaissance	17.01%	50.73%	31.09%	1.17%	2.16 (0.71)
Impressionism	18.13%	54.68%	24.27%	2.92%	2.12 (0.73)
Surrealism	18.18%	57.77%	21.11%	2.93%	2.09 (0.71)
Romanticism	19.01%	56.73%	22.51%	1.75%	2.07 (0.69)
Conceptual art	19.24%	62.97%	16.03%	1.75%	2.00 (0.65)
Baroque	21.35%	58.77%	19.01%	0.88%	1.99 (0.66)
Expressionism	21.64%	62.28%	14.91%	1.17%	1.96 (0.64)
Post-impressionism	20.47%	66.08%	11.99%	1.46%	1.94 (0.62)

The table displays the mean and SD values in descending order

Table 7 Teachers' Perceived Challenges in EVAE (N = 342)

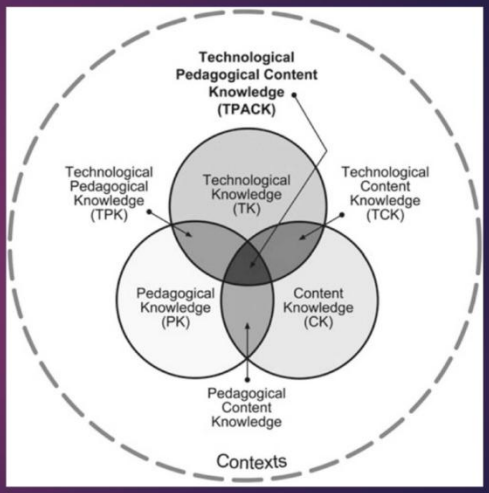
	Very unlikely (1)	Unlikely (2)	Likely (3)	Very likely (4)	*M (SD)*
Receiving inadequate training in visual arts	0.00%	5.54%	57.73%	36.73%	3.31 (0.57)
Having a very tight teaching schedule in kindergarten	1.46%	17.25%	46.78%	34.50%	3.14 (0.75)
Lack of attention from school managers to visual arts teaching	21.87%	44.90%	30.61%	2.62%	3.14 (0.78)
Acquiring limited knowledge of visual arts	0.87%	14.29%	59.48%	25.36%	3.09 (0.65)
Relying too much on a step-by-step teaching approach	0.29%	17.78%	58.89%	23.03%	3.05 (0.65)
Being equipped with limited skills and tools in visual arts	0.58%	17.78%	61.22%	20.41%	3.01 (0.64)
Overemphasizing handcrafts in teacher education	0.87%	24.49%	54.23%	20.41%	2.94 (0.69)
Lack of attention from parents to children's learning in visual arts	2.92%	22.74%	58.60%	15.74%	2.87 (0.70)

The table displays the mean and SD values in descending order

In implementing EVA activities, the teachers also stressed the importance of child-centeredness for children's art-making processes:
My stance is to not directly give instructions to children. . . We cannot force them to follow our steps. We can provide some references for them and guide them to explore. We encourage them to observe the environment and make use of their daily experiences to create their artworks. Unlike adults, children have high levels of creativity and do not have a frame to limit themselves. (Teacher C)

Exploring teachers' TPACK through Digital Storytelling

Altogether, 42 online storytelling activities were recorded, and preservice teachers' views were collected in a 120-minute focus group. Our findings indicated that preservice teachers spend most of their time on pedagogical content knowledge (PCK) and technological content knowledge (TCK) and only a few minutes on technological pedagogical knowledge (TPK) during digital storytelling activities. It revealed the extent of the TPACK of current ECE teachers and provided insights and recommendations on how to improve ECE teachers' professional development regarding technology, including providing multiple types of digital devices and their applications and examples of technology-assisted teaching.



Leung, S. K. Y., Yip, O. W. & Li, J. W. (2024). Exploring preservice ECE teachers' TPACK through digital storytelling during the pandemic. *Early Child Development and Care*. https://doi.org/10.1080/03004430.2024.2395381

Exploring teachers' TPACK through Digital Storytelling

A participant shared how she used the functions of Zoom for telling stories to children:

Before telling stories, I introduced the story by using screen sharing to let children look at the cover of the storybook. Children could observe and guess the story's content, which may stimulate their observation and creativity. Then, I used the function of screen sharing in Zoom to attract children to read the storybook. When changing the scene of the story, such as the living room of the bear family or their bedroom, I also used Zoom's screen-sharing function to change the background image so that the children were more involved in the story. (Teacher F)

Table 4. TPACK indicators relating to teachers' digital storytelling for children.

Specific behaviours	General behaviours	TPACK knowledge
Motivating children by using props (e.g. puppets and real objects)	Motivating children's learning	Pedagogical content knowledge (PCK)
Manipulating physical objects to make concepts visible	Making concepts visible	
Reinforcing children positively Altering voice to draw children's attention Inviting children to participate in class	Engaging and involving children	
Probing questions Rephrasing children's responses	Facilitating children's inquiry	
Summarizing concepts Making conclusions	Consolidating knowledge	
Using text to present teaching content	Making concepts visible digitally	Technological content knowledge (TCK)
Using graphics or photos to illustrate concepts or narratives Inserting videos to illustrate concepts or narratives Creating voice-overs to demonstrate concepts or narratives Inserting animations to illustrate concepts or narratives Applying virtual backgrounds to describe context or narratives Using screen sharing to share PowerPoint or Word documents for storytelling	Illustrating concepts or narratives electronically	
Inserting PowerPoint with graphics to consolidate storylines or key ideas Using PowerPoint with graphics to revisit concepts or narratives	Consolidating ideas electronically	
Sharing files through the chat box to facilitate extended learning Interacting with the camera to motivate children Using the camera's screen on–off function to attract children	Using technical functions to motivate children's learning	Technological pedagogical knowledge (TPK)
Inserting new videos to facilitate discussion	Using technical functions to encourage class interactions	
Using digital graphics to assess children's learning outcomes	Using technical functions to assess children's learning and performance	

Facilitating children's computational thinking through animation arts

Teacher: Where do the three little pigs live? This or that one?
Child R: This one.
Teacher: Then who will live in this one?
Child R: The wolf.
Teacher: Oh, the wolf lives just next to the three little pigs? It sounds dangerous. What should they do to stop the wolf from coming nearby?
Teacher: [Pointing at the little green circle on the righthand side of the picture] Wow, you have a lock here!
Child R: The little pigs should not go into this building. It is dangerous for them.
Teacher: So, you lock up the wolf but not the little pigs, who can go in and out freely.
Child R: The three little pigs have the key for their house. The key for the wolf's house is taken away.
Teacher: The wolf does not have the key.
Child R: The three little pigs get his key, and they flush it down the toilet!
Teacher: So the wolf can never get out again.

Leung, S. K. Y., Wu, J., Li, J. W., Lam, Y. & Ng. O. (2024). Examining young children's computational thinking through animation art. *Early Childhood Education Journal*. https://doi.org/10.1007/s10643-024-01694-w

Facilitating children's computational thinking through animation arts

Table 3 Developmental Trajectories of Children's CT in connection to Animation Making

Powerful ideas (Bers, 2018)	Age		
	K1 (aged 3–4)	K2 (aged 4–5)	K3 (aged 5–6)
Design process	Children were able to complete every single part of the design process with close guidance	Children could not fully implement exactly what they had planned at the early stage	Children were able to express the intentions, rationales, and features of their plans and execute the plans accordingly
Representation	Children could provide a single meaning for a color or a geometric figure	Children could provide multiple meanings for a color or a geometric figure	Children used different polygons to build the designated objects based on different colors or geometric figures and create a series of meanings
Control structures	Children chose the appropriate materials for building a tree using a simple model with two components	Children were able to specify the desired sizes of their shapes to create a designated object using a model with more than two components	Children determined which units should be moved or kept in place using a relatively complex model
Debugging	Children could decompose the designated objects by recognizing polygons and counting numbers with close guidance	Children could decompose the designated objects by recognizing polygons and counting numbers with some guidance	Children could decompose the objects into precise numbers of different geometric figures
Algorithms	Children demonstrated their understanding of the concept of sequential order under close instruction	Children could draw their sequential order as a four-slide storyboard with guidance	Children could draw the sequential order as a six-slide storyboard with very limited guidance
Modularity	Children broke down the circles for the designated objects into different slides with close guidance	Children designed a combination of components for each frame	Children broke down the designated objects into different photo slides by following their storyboards
Hardware/software	Children could tell that a smartphone has a photo-taking purpose, but they could not operate it very well	Children could take photos by using smartphones with some guidance	Children could take photos by using smartphones without any guidance

Facilitating children's computational thinking through animation arts

An in-depth interview protocol was designed to elicit the participating teachers' understandings of CT and difficulties in implementing CT activities. After animation-making activities, 10 teachers were invited to attend a 30-minute individual interviews. A total of 300 minutes of audiotaped interview data was collected. The interviews will be transcribed, coded, and analysed to generate thematic networks (Attride-Stirling, 2001). To minimize researchers' biases, two separate researchers conducted the data analysis process. Any discrepancies in their analyses were carefully examined, leading to a consensus on the final categorization.

The concept of CT was not clear to all teachers. The following are the definitions that teachers made in response to what they understood by the literal meaning of CT.

"CT is a mindset for problem solving." "CT is a way to help our brains develop and cope with problems." "CT is a way to develop mindsets." "CT is using some math concepts to enhance children's logical abilities." "CT is about developing children's minds with methods that include technology content." "CT is using computer software to think about something." "CT is a series of mathematical concepts."

THANK YOU

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Symposium 1

Researching the early childhood workforce: A focus on co-design.

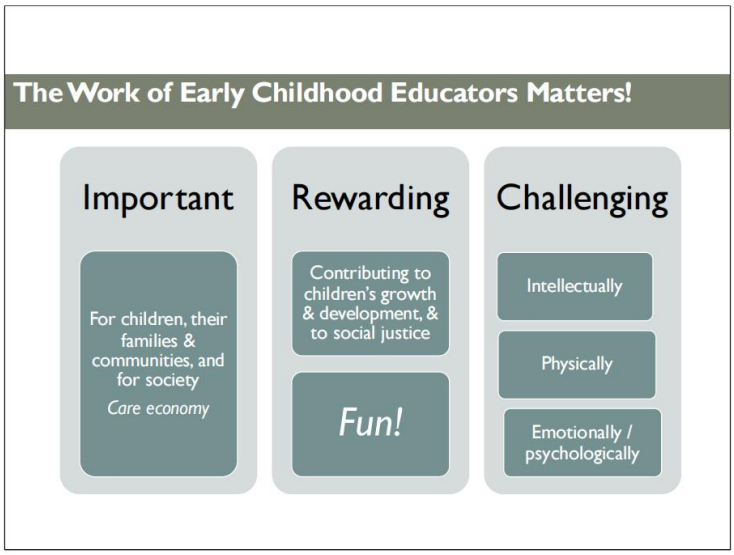
Sandie Wong, Ph.D., Australia

Ne How

My name is Sandie Wong – I'm a Professor in Early Childhood in the Centre for Research in Early Childhood Education at Macquarie University in Sydney.
I'm going to be talking with you today about research that I've conducted with my colleagues on the ECE workforce – with a particular focus on the use of co-design approaches.

In this presentation I'm going to first, very briefly, provide an outline of some challenges facing the Australian and global ECE workforce that are leading to global workforce shortages.

Next, I'm going to make an argument that traditional research approaches may be inadequate for generating the evidence that we need to address these workforce shortages. And I'll argue instead for co-design approaches – providing two examples of co-designed approaches we used to research the EC workforce - to illustrate my argument.



But first, why examine the EC workforce. Quite simply the work of EC educators matters
It's well known that high quality ECE contributes to children's learning and development, but sadly the opposite is also true – poor quality ECE is detrimental to children's learning and development – especially those experiencing marginalisation – who are doubly jeopardised when ECE is poor quality.
And, of course, ECE is a critical component of the care economy – it's essential work that keeps nations moving.

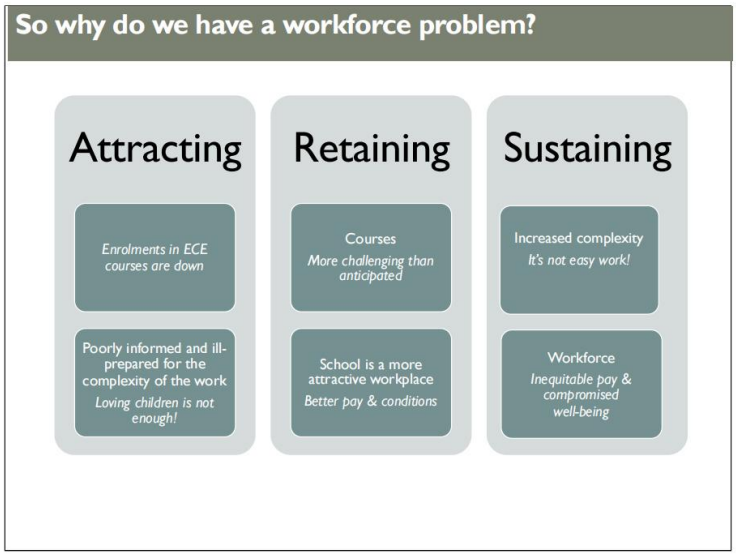
But ECEC cannot exist without educators. It is educators who contribute to children's learning and development through their everyday interactions with children.

This work is rewarding – but it is also both intellectually, physically and emotionally and psychologically challenging.

- Pay and conditions are poorer than in other professions

Overall, we're not doing a good enough job at making visible the complex and demanding albeit, rewarding, nature of the work, and we're not supporting educators or rewarding them adequately to do the work.

So despite the rewarding nature of working in ECEC – the challenges are many.



So why do we have this problem? There's no one answer to that!

What we do know is that as a sector we have difficulty:

- **Attracting** people into the sector
  - Enrolments into EC courses has declined
  - We sometimes attract the 'wrong' people into ECE – people who think the work is easy – and so who are unprepared for the complexity of the work.
- **Retaining**
  - High levels of attrition out of ECE courses.
  - Graduates and ECTs transition into school – rather than EC settings – where the pay and conditions are better.
- **Sustaining**
  - The work of educators is getting ever more complex – and so educators are burning out and quitting

So this brings me to our role as ECE researchers. To address this global crisis in the early education workforce, we need better evidence about the EC workforce.

And, I argue, researchers need to work collaboratively with providers and policy makers to gather evidence and generate practice and policy solutions.

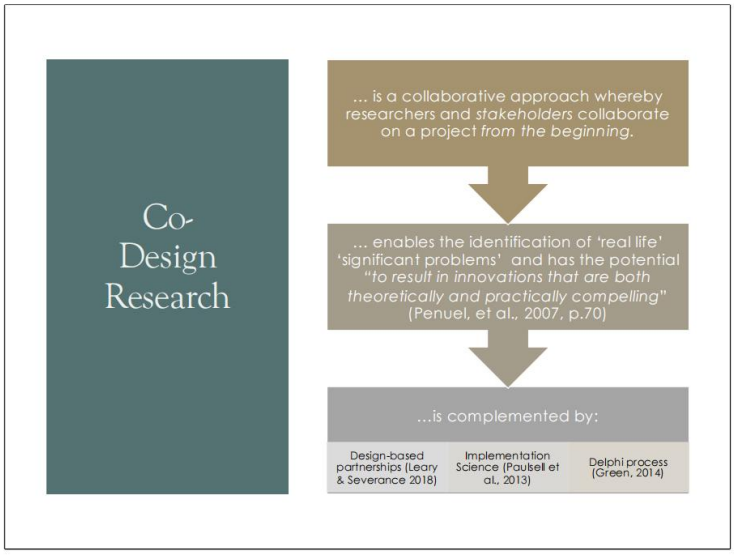
grounded in literature – rather than systemic or practice-based concerns. In my view, to be relevant and make a difference – researchers need to work collaboratively with practitioners, providers and policy makers to identify the most pressing practical questions.

Second, the traditional rational-linear view of evidence-into-practice **assumes that researchers are the ones who know best how to conduct research on and in practice**. But do we? I often hear my colleagues lament that their invitations to educators or providers to participate in their carefully designed research projects were not accepted, or their designs did not work because "educators didn't" participate. I argue that if we want our research methods to work – we should **design them *with* educators and providers** – not simply impose our ideas on them. The result will likely be far better.

Third, the traditional rational-linear view of evidence-into-practice assumes that the knowledge generated is understandable, accessible and translatable into practice and policy. But often this is not the case. We publish in journals that neither practitioners nor providers can afford to access. We write in scholarly ways that are not always accessible. And we often don't provide policy ready papers.

I argue that if we work collaboratively with providers and policy makers to identify research questions that are of concern to them, and if we conduct our research in ways that are informed by them, it will be more likely that the evidence we generate will be accessible.

So how do we do that?



A counter-narrative to the traditional hierarchical view of research into practice, is the idea of co-design research. Co-design is collaborative approach where researchers and stakeholders, collaborate on a project **from the beginning**. It's a way of identifying 'real life' 'significant' problems and providing innovations that are both theoretically and practically compelling.

Co-design research is complemented by concepts such as 'design-based partnerships' and 'implementation science', and by processes such as the "delphi process".

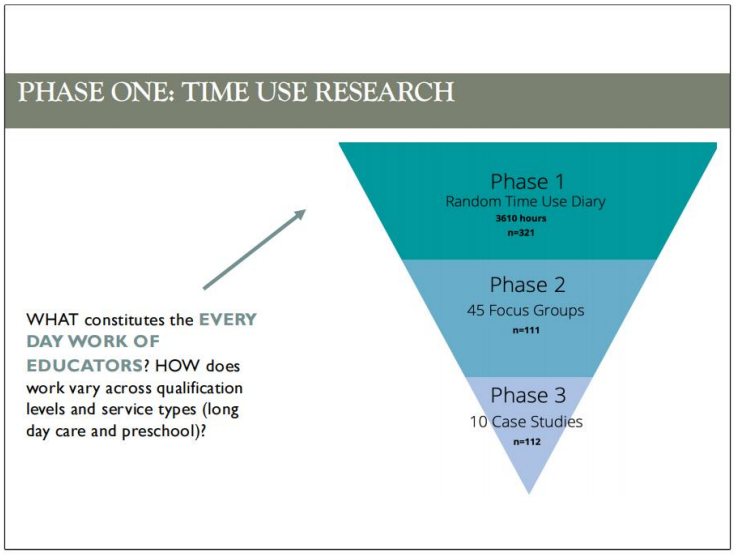
So now I've made an argument for co-design research approaches to generate evidence for workforce challenges. So what does co-design look like?

My examining the workforce over the past decade or so. Here are some examples of this work.

I'll briefly talk about two of these studies – (1) the co-design of a time use diary – this study is completed; and (2) the co-design of a tool for assessing ECT quality – this study is in progress.

The first co-design research example is a project that developed a smart phone app for studying educators' time use – as part of a larger study funded by the Australian Research Council and eight partners – to investigate ECE work.

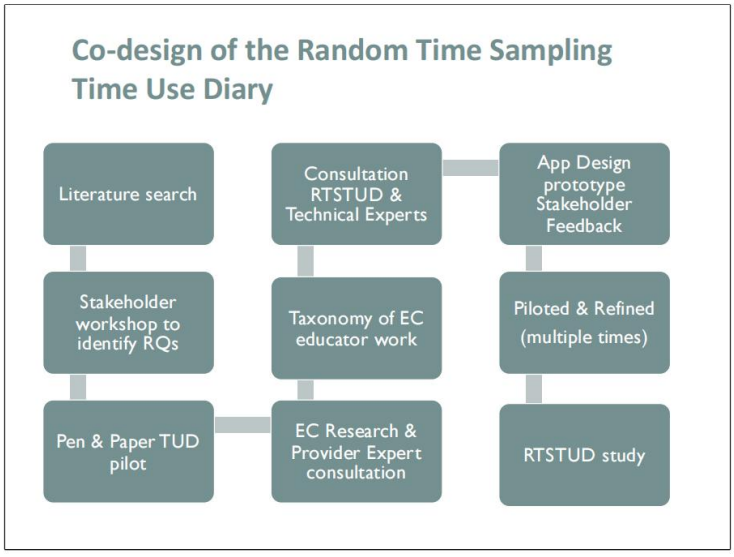
This project has now been completed. We have reported on it – that QR code will take you to the report.



The first RQ that this overarching study asked was "what constitutes the every day work of educators?". What is it that they do every **day that leads to high quality ECEC? And how does this differ across qualifications and service types?**

To address this RQ we aimed to use time use diary methods to record educators' work activities.

But Time Use Diary research is traditionally very demanding and time-consuming – both for researchers and participants. So we worked with our partners and Professor Michael Bittman to develop an intensive hour method of collecting Time Use Diary data by asking educators to self-report what they did via a smart phone app.



We sought to design a tool that measured educators' time use in robust and reliable ways – that is not too burdensome on educators?

Process:

WHAT ARE EDUCATORS DOING ACROSS THE WORK DAY? ACTIVITY DOMAINS AND SUB-CLASSES

Domain	Sub-class of activity
1. Staff personal time	scheduled break, other break, self-care activity
2. Intentional teaching	problem-solving, literacy, numeracy, science/nature, social/cultural, art/craft, music/dance, media/technology, physical/self-help, health/wellbeing
3. Being with' children	watch/supervise, play with, listen/respond to children
4. Routine care / transitions	hygiene, nutrition, health, sleep/rest, injury, organise transitions
5. Emotional support	support positive behaviour, mediate conflict, comfort child, stop unsafe behaviour, encourage inclusion, support colleague
6. Family communication	individual face-to-face, individual email/phone, group
7. Organise room/ OH&S	set-up, pack-up, food, clean/tidy, laundry, maintenance / OH&S compliance
8. Plan, assess, evaluate	curriculum planning, observe/assess child, document learning, evaluate
9. Administration	record keeping/roll, answer phone/door, staff handover/communication, staff meeting
10. Professional learning	self-educate, attend PD/in-service, support/mentor others, receive support/mentoring, pedagogical leadership, reflection

The taxonomy we developed had multiple domains and activities. These became items on the RTSTUD from which educators could select.

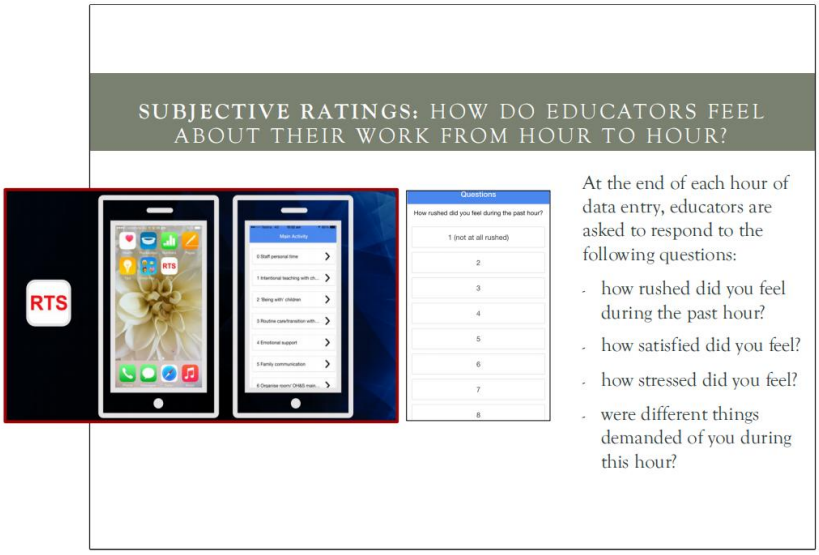
WHAT ARE EDUCATORS DOING ACROSS THE WORK DAY? ACTIVITY DOMAINS AND SUB-CLASSES

Tells us about WHAT educators are doing & HOW LONG they are doing it for - task rotation or 'switching'

Screens 1, 2 and 3 are repeated until 60 minutes are completed

Educators completed the app upon receiving a randomized notification twice during the work day – until they had responded to 14 notifications in total.

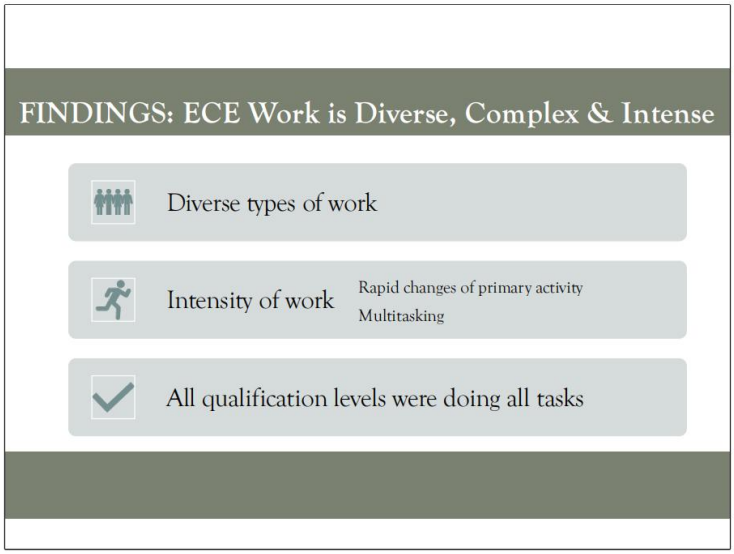
Activities were logged in 6 minute blocks.



Educators also responded to a number of closed questions rating how rushed, satisfied, and stressed they felt – and if different things were demanded of them during the hour.

Feedback from educators on the use of the app, was that after initial familiarization - it was easy to use and didn't take long to complete.

But did this co-designed tool provide useful data?



Yes – it did.

We now have evidence – for what we probably all believed - that EC work is **complex, diverse and intense**

Educators engage in **diverse pedagogical, caring, organization, regulatory work**, and so on. It's not just about playing with children – although that is important too!

The work is intense: **Rapid changes of work activity and multi- tasking are typical.** Educators engage in high levels of task-rotation and multi-tasking.

Task-rotation or switching of tasks was indicated by the number of work activities recorded for 12- minutes or the minimum block of 6 minutes. Overall, results showed that nearly 50% of work activity occurred for 12-minutes or less, indicating a high level of task-rotation across educators' working day.

Multi-tasking was reported for more than 60% of diary entries, measured by the number of episodes when educators reported undertaking two work activities during the same time period. While multi-tasking was reported for all ten work domains, it occurred more often when educators were being with children, engaged in routine care/transitions and intentional

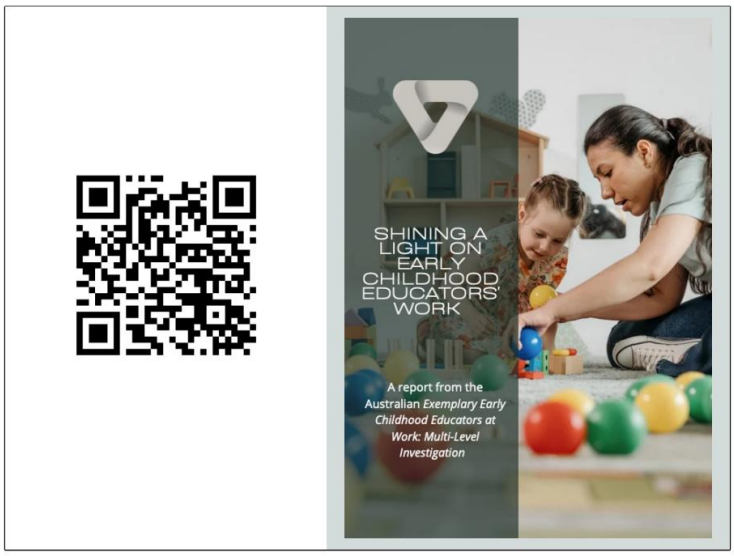
teaching.

All educators reported that they engaged in all ten domains of work. But there were marked differences in the time spent in some domains for educators with differing qualifications. For example, teachers holding a degree spent more time in family communication, planning/assessing/evaluating children's learning, and administration, than Certificate III-qualified staff, who spent more time 'being with children', engaged in 'routine care/transitions' and 'organising the room/OH&S'.

So why is this work important? We now have evidence of the complexity of educators' work. This evidence is important for policy – but also for arguing for pay and conditions that reflect the complexity of the work.

Publications include:
Harrison, L., Wong, S., Brown, J., Gibson, M., Cumming, T., Bittman, M., & Press, F. (2023). Taking a detailed look at early childhood educators' worktime. *Australasian Journal of Early Childhood, 49*(2), 95-113. 10.1177/18369391231219820
Wong, S., Harrison, L. J., Gibson, M, L., Press, F., Bittman, M., Crisp, K., & Ryan, S. (2022). Measuring early childhood educators' time at work using an electronic random time-sampling approach. *International Journal of Research and Method in Education,* Open Access. doi/full/10.1080/1743727X.2022.2128102.

But – you may ask – are these findings relevant for other cultural contexts? We are aiming to find out – we're piloting the taxonomy in China. And early analysis suggests that it is a good fit for China – but may need some modifying.

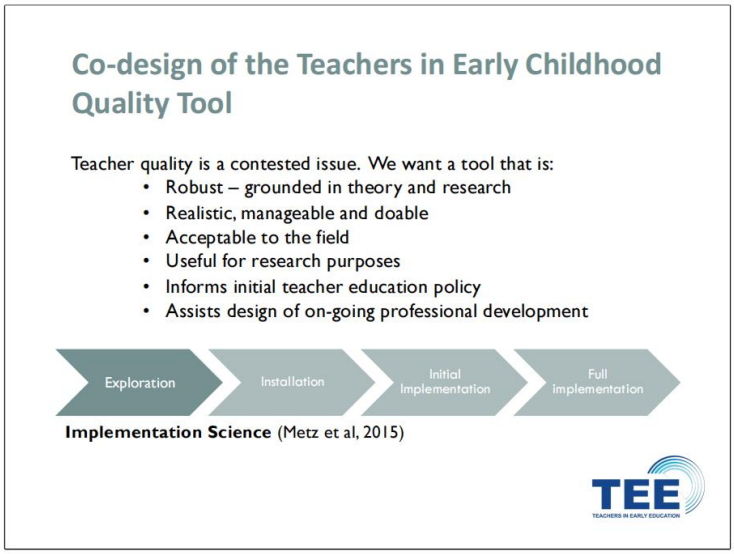


This *Exemplary Early Childhood Educator at Work* study provides strong evidence to demonstrate the complex, highly skilled nature of exemplary educator practice across Degree, Diploma and Certificate III qualifications, and the organisational and structural processes and systems required to enable high quality early childhood education provision.

The findings provide positive evidence that the early childhood sector knows what is required to ensure that all children, in every Australian early childhood service, have access to high quality educational practices that will support their learning and well-being. The findings presented in this report suggest four major areas as priority for policy, organisation/employer, and educator attention to ensure that exemplary early childhood educators' work is enabled, and that their work with children is valued and matters:

The second research project that I'm going to talk about is the Teacher in Early Education Project

- Teacher quality matters! But this has been difficult to substantiate. The research is ambiguous.
- One of the reasons for this ambiguity is because extant research fails to differentiate between teachers on quality indicators. Indeed, there has been little attention to teacher quality.



One of the aims of this overarching research is to design a tool for assessing teacher quality. But teacher quality is a contested issue. So it's important – that we consider diverse views.
We wanted a tool that is:

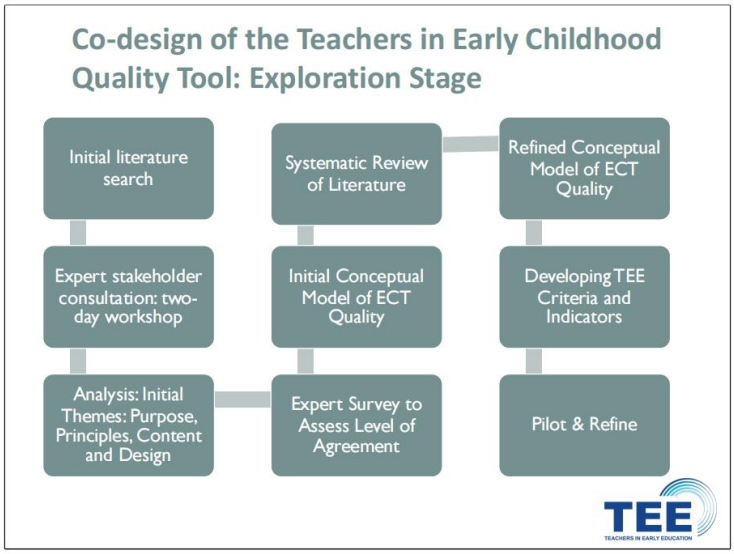
- Robust – grounded in theory and research
- realistic, manageable and doable
- acceptable to the field
- useful for research purposes

- Contributes to practice
  - Informs initial teacher education
  - Assists design on-going professional development

To do this we used a co-design process drawing on implementation science approaches.

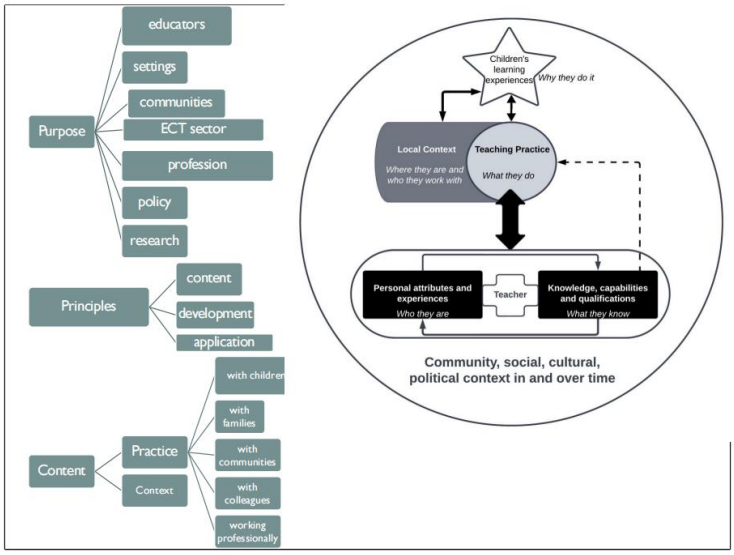
Implementation science, as described by Metz et al, was designed to support the design and successful implementation of tools and resources in practice.
The *Integrated Stage-Based Planning Tool* (SBPT) (Metz 2015) has four stages:

1. **Exploration Stage – what is the problem and what might work?**
2. **Installation Stage** - How will it happen?
3. **Initial Implementation** – Trial the implementation
4. **Full implementation** - Make sure it works, do it better, make it business as usual



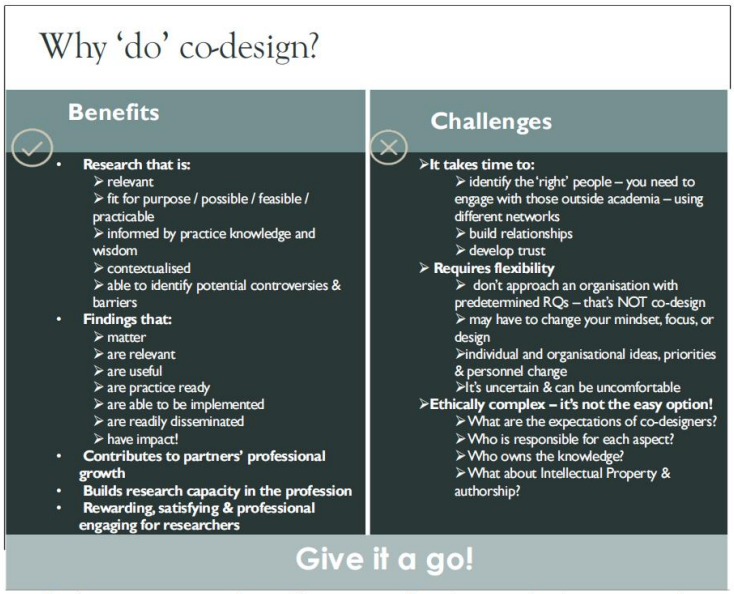
How can we assess ECT quality?

This study is still in the exploration stage. I'll outline process we're undergoing to design our TEE tool.



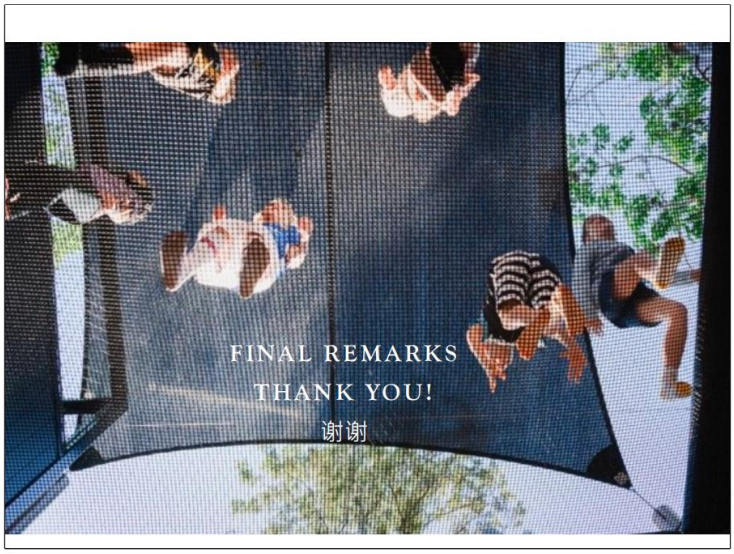
Based on this work we have identified Purpose; Principles; Content and Design elements of the TEE tool.
We've also developed an initial conceptualization of ECT teacher quality.

If you'd like to know a little more about this project and / or the development of the TEE tool – please visit our website.



As I've argued, there are many benefits to conducting co-design research.

But there are many challenges too that you should reflect on.



I started this presentation with the argument that early childhood educators are critical to the delivery of high quality ECEC provision. But up until recently we had little evidence about the every day work of educators, and our understanding abut ECT quality is limited.

I then argued that there are challenges associated with the traditional linear approaches to research that may be limiting our capacity as researchers to address these research gaps.

I then shared how recent and emerging research, including the two studies that I briefly presented today, have used co-design approaches to develop research tools that shine a light on educators' practices and ECT quality.

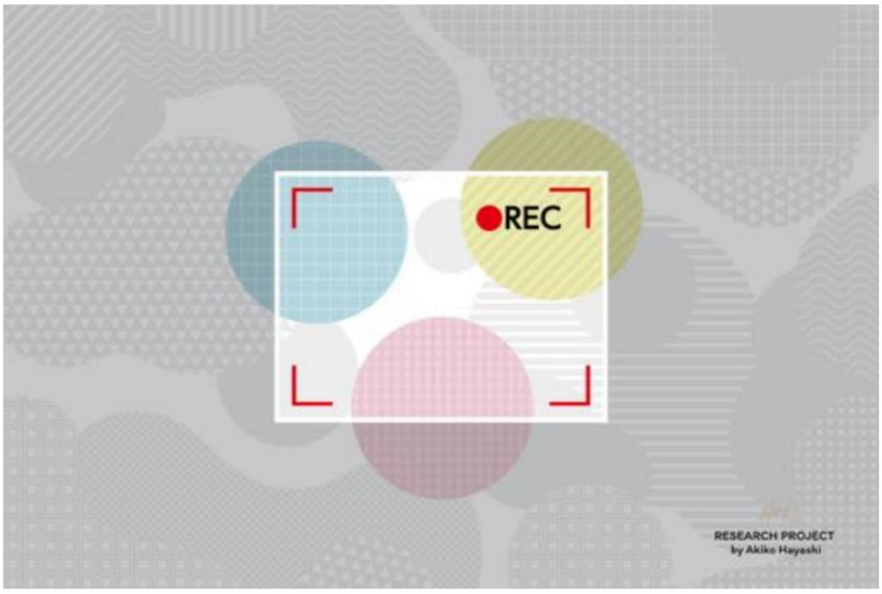
I hope that the two research stories I have shared with you today, have demonstrated that by employing co-design approaches, researchers can design research methods that work in practice, to generate evidence that is not only theoretically sound and makes a contribution to the literature, but which is significant and relevant to the sector. Thank you for your attention.

Symposium 1

Preschool in Three Eras in Japan: 1984, 2002, and 2022

Akiko Hayashi, Ph.D., Japan

Preschool in Three Eras in Japan: 1984, 2002, and 2022



Keio University
Tokyo, Japan

Three Eras of Komatsudani Hoikuen (Daycare center in Kyoto)

1984 2002 2022

In this talk

2002 2022

“What has been changed or not changed over the last 20 years, from 2002 to 2022, at Komatsudani Preschool in Kyoto?”

The Video-Cued Ethnographic Method

Steps of the Method

- videotape a day in a preschool
- edit the tape down to 20 minutes
- show the edited tape to the classroom teacher
- focus-group discussions of the tape with other staff at the preschool
- focus-group discussions with staff of other preschools around the country
- focus group discussions with staff of preschools in other countries

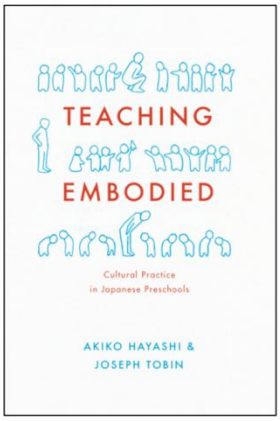
The PSin3C Revisited Method

The authors called this method “video-cued multivocal diachronic ethnography” (Tobin, Hsueh, and Karasawa, 2009)

Additional Steps

- The research team went back to the original three preschools where the research team videotaped in 1984 and repeated the same steps -videotaping, interviewing, etc.
- The research team showed the staff at these preschools not just the new video but also the 1984 video and asked them to reflect on the ways in which they changed and stayed the same and how and why.

Teaching Embodied Method



Video in Two Ways

- Video-cued interviewing focusing on embodied aspects of teaching and learning
- Microanalysis (frame by frame analysis of the videos)

My Method for This Study

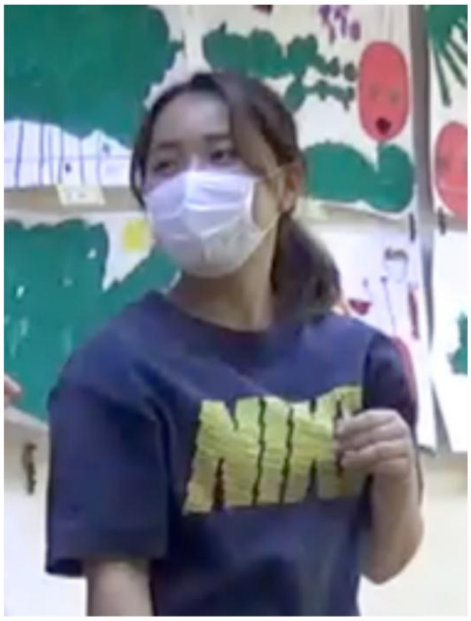
- Video as a cue for in-depth ethnographic interviews
- Video as a cue for diachronic ethnographic interviews
- Video as a cue for interviewing focusing on embodied aspects of teaching and learning
- Video as a data

2002 video

Morita-sensei

Her 3rd year of teaching

2022 video



Yoshimoto-sensei

Her 3rd year of teaching

	Morita	Nogami	Director's son
2002			
2022			

Videos

Social Situation

- Birth rate
- Economy
- Gender relations
- Family structures
- ‘National mood’

Educational Reform

- Course of Study for Kindergarten revised (modified) in 2008 and 2017
- Curriculum Guideline for Daycare Center revised (modified) in 2008 and 2017

(Implicit) Cultural Beliefs and Practices

- Not explicitly taught in schools of education;
- Or written down in textbooks;
- Or mandated in reform guidelines;
- Instead they are passed down through on-the-job learning;
- And embedded in the larger cultures in which schools are located.

Cultural Practices at Komatsudani in 2002

- *Kejime* (marking contextual differences and expecting different behaviors for different contexts).
- *Toban* (giving authority to classroom monitors)
- *Tatte wari kyoiku* (mixed-age interactions);
- *Sabishisa (*Emphasis on the expression of emotions and especially of sadness)
- *Machi no hoiku* (a hesitation of teachers to intervene quickly)

Kejime

*(*marking contextual differences and expecting different behaviors for different contexts)

2002

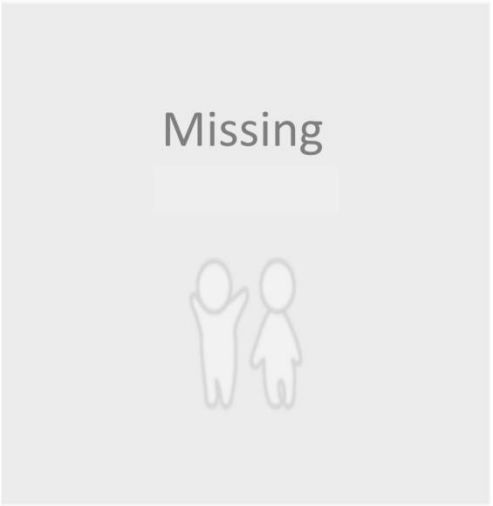
2022

Toban

(giving authority to classroom monitors)

2002

2022



Tatte wari kyoiku

(Mixed Age Interactions)

2002

2022

Sabishisa

(Emphasis on the expression of emotions)

2002

2022

Machi no Hoiku

(Teacher Non-Intervention)

2002

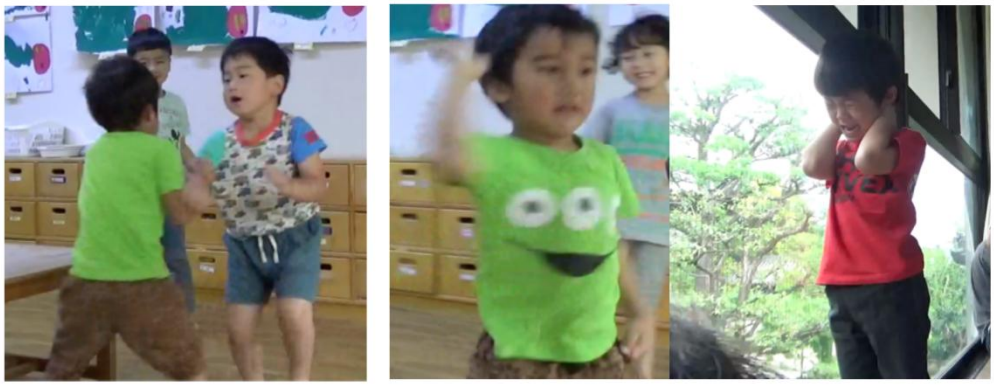
- 4 years old girls are pulling and tugging on a teddy bear in the back in the classroom.
- Morita-sensei (classroom teacher) didn't intervene.

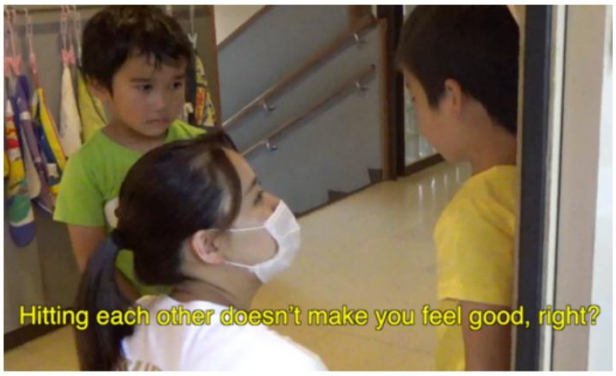
2022

- 4 years old boys are hitting each other in the classroom.
- Yoshimoto-sensei (classroom teacher) did talk to children twice, once in a classroom, the other in a hallway.

2002

2022





My Potential Argument

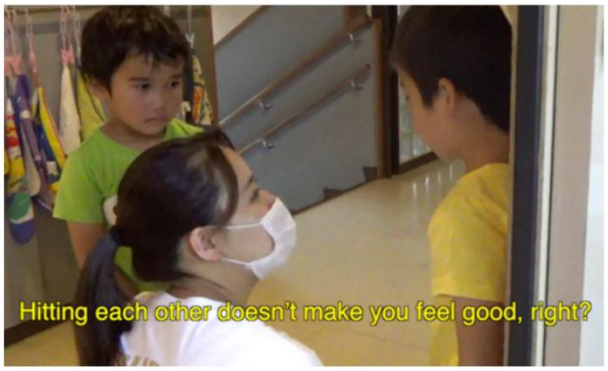
- Many of the cultural practices we saw in 2002 at Komatsudani, we also see in 2022.
- I could suggest the presence of these same practices provide evidence for the power of implicit/deep cultural practices and beliefs.

Explanations to Further Explore

- Implicit cultural beliefs and practices in Japan;
- Global circulation of beliefs and practices in early childhood education and culture;
- Common characteristics of 4 years old.

“ We have changed a lot over the last 20 years. The government takes ECE serious therefore they put a lot of money on the ECE field; teacher’s salary has increased, we are now allowed to buy materials, we can put our time and effort on professional development. ”

“I am very impressed to see children’s drawings on the wall. That is about a picture book, ’The Very Hungry Caterpillar’ coming from the US.”



"This, for me, is very American! Physically moving children away from the classroom!"

The Symposium Theme

"Nurturing Futures: Global Perspectives and Local Initiatives in Early Childhood Education"

Thank you!

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Web: akikohayashi.net

Symposium 2

Facilitating Hong Kong Kindergarten Teachers' Implementation of Play-Based Learning Through 4Es: The conceptual Framework and Empirical Enquiry

Hongbiao Yin, Ph.D., HKSAR, China

香港中文大學
The Chinese University of Hong Kong



Facilitating Hong Kong Kindergarten Teachers' Implementation of Play-Based Learning Through 4Es:

The conceptual Framework and Empirical Enquiries

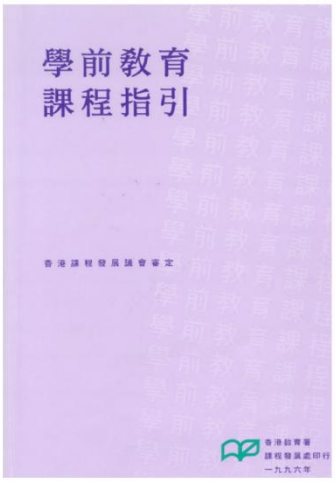
Faculty of Education
CUHK 中大教育

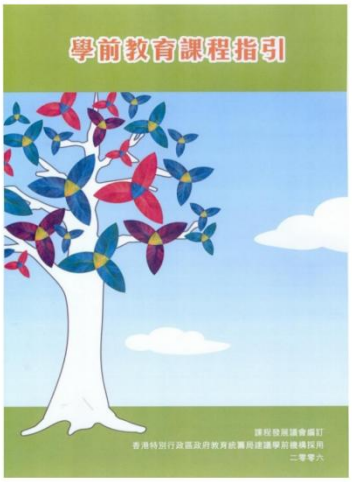
Hongbiao Yin

Department of Curriculum and Instruction
Faculty of Education
The Chinese University of Hong Kong

Hong Kong Pre-primary Education Curriculum Guides

香港中文大學
The Chinese University of Hong Kong





Guide to the Pre-primary Curriculum 2017

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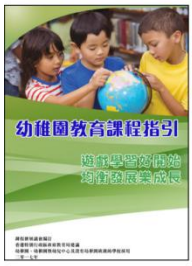
The Chinese University of Hong Kong



目 錄

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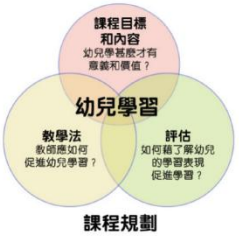
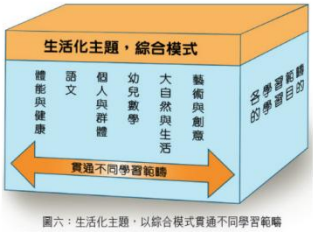
圖四：幼稚園教育課程架構



圖三：幼稚園教育課程規劃的三個導向



圖六：生活化主題，以綜合模式貫通不同學習範疇

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- Categories of Play
- Enhancing Elements of Free Exploration
- Teacher's Role
- Role of Information Technology

4.4 從遊戲中學習

遊戲能配合幼兒的發展和興趣，是有效的學習策略。

理念

幼兒喜愛遊戲，與別人一起玩耍、合作、模仿等經歷，能帶給他們愉快、有趣、成功的感覺和體會。遊戲是最能配合幼兒年齡發展特徵的有效學習途徑。

遊戲被認為是促進幼兒身心發展的理想活動模式。幼兒運用語言、數學、感官和已有經驗進行遊戲，在過程萌發不同的意念，能促進對自己、別人以至環境的認識，並**發展創意、解難和適應的能力**。

此外，幼兒更在遊戲中學習運用大小肌肉，**發展手眼協調的能力**，漸能掌握控制身體的動作。遊戲亦幫助他們**抒發情緒，建立自信心，促進社交發展**。

學術界及業界廣泛認同**遊戲能促進幼兒的學習和發展**。建基於本地學校在教學實踐的經驗和優勢，我們深化幼兒在遊戲中學習的理念，**進一步加強遊戲中自由探索的元素**。

加強自由探索的元素

自由探索是遊戲的重要元素之一，是幼兒有效學習的催化劑，能維持及增強他們的專注力和學習興趣。學校應配合幼兒喜愛遊戲的天性，為他們提供參與自由遊戲的機會。以下是實踐建議：

- 可**配合課程目標及內容**，因應幼兒的生活經驗、興趣和能力，設計各式各樣的遊戲，為幼兒提供**輕鬆及有成效的學習經歷**。
- **創設有利於遊戲的安全環境**，靈活協調各班級參與遊戲的時間，善用課室興趣角、大肌肉場地等設施，讓幼兒能在活動區域自由走動。
- 教師宜**減少遊戲的規範**，讓幼兒在自由遊戲中，因應自己的喜好、能力和生活經驗，選擇各式各樣的玩具、邀請玩伴及設計遊戲的玩法，以增加遊戲的趣味，盡情**表達感受和探索身邊事物**。
- 半日制及全日制幼稚園，應分別每日安排幼兒參與不少於**30分鐘及50分鐘的自由遊戲**。學校應避免於幼兒自由遊戲的時段進行其他學習活動。

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- Whole-Person Development
- Play-Based Learning
- Integrated Curriculum / Curriculum Integration
- Assessment for Learning
- Catering for Learner Diversity

QEF Thematic Network on KG Education (Whole-Person Development)
學前教育（全人發展）學校網路計劃

香港中文大學
The Chinese University of Hong Kong

- Five-year period: 2012-2017
- 160 kindergartens

http://qtn-wcd.fed.cuhk.edu.hk/aims.html

QEF Thematic Network Tertiary Education "Play, Learn, Grow"Project 「遊戲·學習·成長」計劃

香港中文大學
The Chinese University of Hong Kong

- School-based professional support: 2015-2019
- Thematic network project: 2019-2025
- Thematic network project: Application pending

http://qtn-wcd.fed.cuhk.edu.hk/aims.html

"Play, Learn, Grow" Project

香港中文大學
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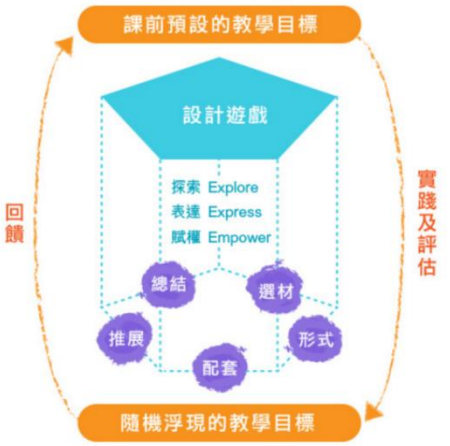
「遊戲・學習・成長」計劃 (2015-2022年度)

遊戲為本的教學設計框架

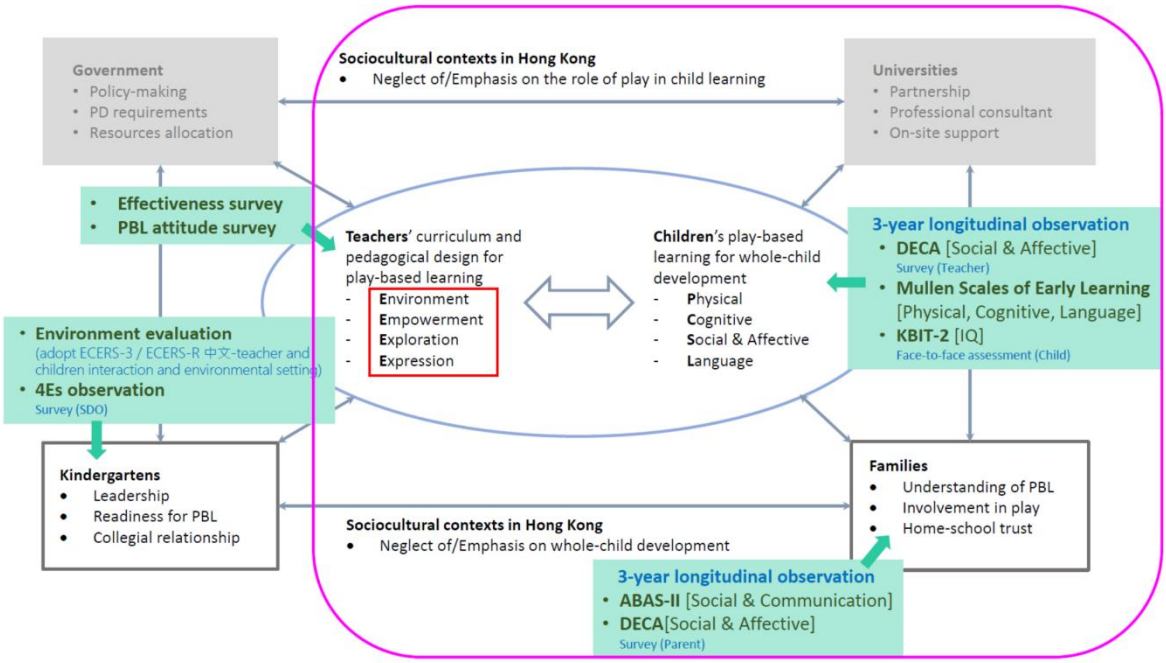


Principles 原則	Practices 實踐	Learning Outcomes 成果
• 對幼兒了解及聆聽他們的心聲 • 關注環境的安全及塑造互相尊重的關係 • 與家長及社區人士結成夥伴 • 對孩子有高期望並重視公平的原則 • 尊重人的差異 • 從反思中持續學習	• 整合課程 • 關心孩子的需要 • 讓孩子從遊戲中學習 • 教師在遊戲教學前應有適當的準備(時間、空間、物料...) • 向孩子提供適當的鷹架 • 從評估中學習 • 與孩子一起總結學習經驗及反思	**學生** • 藉遊戲達致全人發展 **教師** • 對遊戲教學的理念清晰 • 教學範式轉移 • 專業能量提升 **學校** • 塑造開放、公平及尊重的文化 • 具一群熱愛幼兒教育的專業團隊

Since 2015, the center has supported kindergartens in developing school-based "Play-Based Learning" curricula:

Year	Project	Number of Participating Schools
2015-2016	校本專業支援 「遊戲·學習·成長」計劃 (School-based Professional Support "Play, Learn, Grow" Project)	25
2016-2017		25
2017-2019		40
2019-2020	優質教育基金 主題網絡計劃 - 大專院校 「遊戲·學習·成長」計劃 (Quality Education Fund Thematic Network Project - Tertiary Institutions "Play, Learn, Grow" Project)	30
2020-2021		40
2021-2022		40
2022-2023		35
2023-2024		40
2024-2025		50

In total：325



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Conceptual Basis

Play-Based Learning

Play-based learning (PBL) is an educational approach that **emphasizes the deep integration of play and learning activities** to promote child development and learning. This method advocates for play as the core of learning, helping children explore, discover, and learn through creative and autonomous play activities in an enjoyable experience.

PBL encompasses various forms, **from teacher-led guided play to child-initiated free play** (Bubikova-Moan et al., 2019), and has two key characteristics:

- **Sharedness:** In play, children can **experience interaction and cooperation between teachers and students / among students by co-constructing and sharing the play world**. In these interactions, children can regulate, expand, and understand their experiences of the real world through mutual communication (Singer, 2013).
- **Integration:** Play and learning are intertwined (Trawick-Smith, 2019); children both explore and acquire new knowledge through play, and enjoy the fun of play during the learning process. At this point, **play is not only a tool for learning but also a state of learning.**

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Conceptual Basis

Whole-Child Development

Whole-Child Development is rooted in humanistic education theory, advocating that education should focus on children's holistic growth, including the development of their social-emotional, physical, and cognitive skills (e.g., Milteer et al., 2012). This concept believes that the ultimate goal of education is "**the whole person,"** which means helping children **achieve harmonious and balanced development in emotional, social, physical health, and academic achievement.** It has three key advantages:

- **Multi-dimensional Focus:** Whole-child development **goes beyond traditional academic achievement orientation**, emphasizing the harmonious growth of all aspects of children, aiming to **cultivate children with solid social skills, healthy bodies, and critical thinking abilities**. This multi-dimensional focus enables children to better adapt to future life, possess diverse abilities, and develop sound personalities.
- **Systematic and Integrated Education:** Whole-child development emphasizes the systematic integration of educational policies, curriculum design, and classroom practices, and **builds a learning environment that supports children's all-round growth** through the collaboration of schools, families, and community resources.
- **Promoting Academic Achievement:** Whole-child development advocates for improving children's academic performance through the cultivation of various abilities. Research shows that fostering children's social-emotional skills, physical health, and mental well-being can enhance their concentration, self-discipline, and motivation to learn, thereby indirectly improving academic performance in a more cost-effective way (Diamond, 2010).

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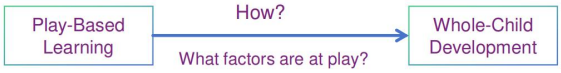
Existing Research

Play-Based Learning and Whole-Child Development

Over the past decade, **PBL has been widely applied in educational systems** in North America, Europe, and Asia, and its effectiveness has been highly recognized by scholars and practitioners in the field of Early Childhood Education (ECE) (e.g., Curriculum Development Council, 2017; National Association for the Education of Young Children, 2022; Ontario Ministry of Education, 2016).

Research shows that compared to traditional teaching, PBL can, on the one hand, **promote children's personal development in various aspects** (e.g., cognitive development, social-emotional development, and self-regulation); on the other hand, it also **facilitates childre's learning development in different domains** (e.g., general academic learning, mathematical skills, oral language skills, and reading and writing skills) (e.g., Pyle et al., 2017; Stagnitti et al., 2016; Vogt et al., 2018).

Question: Although there is an "obvious" positive connection between the two, how exactly does it happen?



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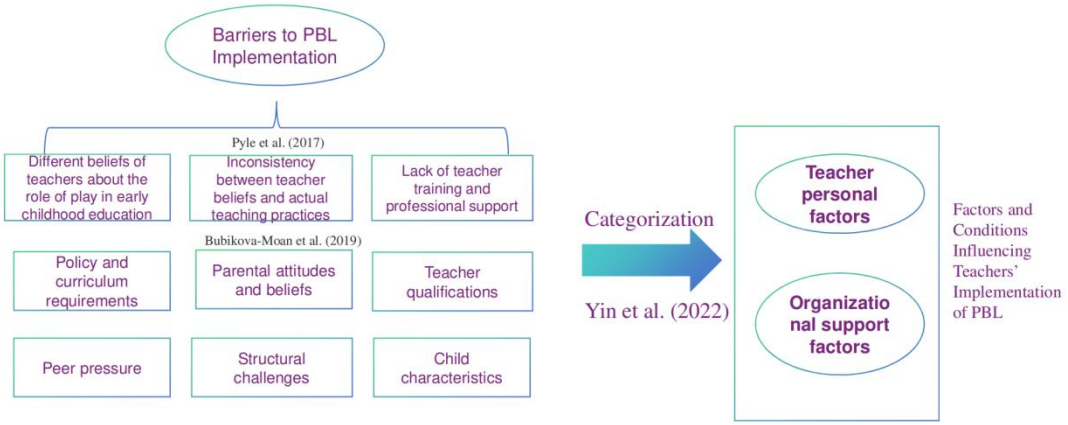
Existing Research

Factors Enabling Teachers' Enactment of Play-Based Learning



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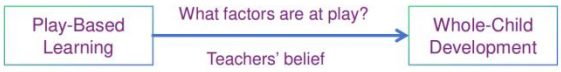
Existing Research

Personal Factors Enabling Teachers' Enactment of Play-Based Learning

1. Teachers' Beliefs of PBL

- Teachers' beliefs of PBL **are related to their views on the role of play in early childhood education**, and these beliefs **directly influence teachers' application of PBL in the classroom** (e.g., Baker, 2014; Bubikova-Moan et al., 2019; Pyle & Danniels, 2017).

- There are differences in how different teachers view the role of play in early childhood education, forming two types of teachers (Pyle & Danniels, 2017):
  - Type 1: Views play and learning as separate activities, primarily using free play.
  - Type 2: Believes play can support academic learning, balancing teacher-guided and child-initiated play.



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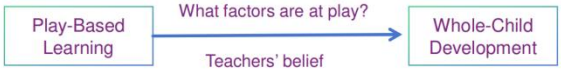
Existing Research

Personal Factors Enabling Teachers' Enactment of Play-Based Learning

2. Teachers' Self-Efficacy for Implementing PBL

- Teacher self-efficacy refers to **teachers' beliefs in their ability to handle the responsibilities and challenges of the teaching profession** (Bandura, 1997; Barni et al., 2019).
- ECE teachers' beliefs in their ability to design and implement PBL **directly affect their intention to implement PBL** (Yin et al., 2022).
- ECE teachers' self-efficacy **improves the quality of teacher-child interactions** and promotes teachers' teaching enthusiasm (Wolstein et al., 2021).
- Research found that ECE teachers' mathematics **teaching efficacy mediated the positive relationship between constructivist beliefs** (beliefs about early mathematics teaching) and **child-centered practices** (Zhu et al., 2021).

Summary: Both types of teacher beliefs—**general beliefs about PBL and self-efficacy**—are potential factors influencing teachers' implementation of play-based learning.



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Existing Research

Organizational Conditions Enabling Teachers' Enactment of Play-Based Learning

School Organizational Characteristics

- School organizational characteristics have been shown to play an important role in facilitating teachers' implementation of PBL, especially **professional support or pressure from colleagues**, and **supportive/distrustful relationships between teachers and parents** (Bubikova-Moan et al., 2019; Keung & Cheung, 2019; Pyle et al., 2017).
- Implementing PBL to support children's holistic development requires not only teachers' professional improvement but also schools to **build professional learning communities** that provide a mutually supportive working environment for teachers (Curriculum Development Council, 2017; Yin et al., 2019).

Teacher Collaboration

Home-Kindergarten Collaboration

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Existing Research

Organizational Conditions Enabling Teachers' Enactment of Play-Based Learning

1. Teacher Collaboration

Teacher Professional Growth: Teacher collaboration promotes the professional development of ECE teachers, especially in student-centered cooperation where different perspectives are shared, which helps enhance trust among colleagues (Gragg & Collet, 2022).

Enhancing Teacher Self-Efficacy: Trust is a prerequisite for teacher collaboration, and it helps enhance ECE teachers' self-efficacy, thereby **further strengthening their intention to implement PBL** (Yin et al., 2019; Yin et al., 2022).

2. Home-Kindergarten Collaboration

Addressing Parental Concerns about Play-Based Teaching: Parental concerns about play-based teaching (e.g., affecting children's academic readiness) are often seen as barriers to PBL, making home-kindergarten collaboration particularly important in this context (Bubikova-Moan et al., 2019; Cheng, 2010).

Promoting Children's Holistic Development: Home-kindergarten collaboration helps build trust, leveraging parents' cultural capital and their understanding of play-based learning to promote children's holistic growth (Yahya, 2016; Keung & Cheung, 2019).

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Research Background

Practical Needs

The Hong Kong Education System's Continuous Emphasis on PBL, Teacher Professional Development, and Home-Kindergarten Collaboration:

"Curriculum Guide for Kindergarten Education" (CDC, 2017)

- Requires kindergartens to promote "joyful learning through play" to foster children's balanced development.
- Emphasizes the importance of strengthening home-kindergarten cooperation and community participation, **establishing a "close partnership" between home and kindergarten** to actively promote new teaching methods.
- Highlights the importance of **teacher collaboration** for the continuous development of teacher professional capacity, requiring kindergartens to arrange peer lesson preparation and observation to strengthen collaborative learning and sharing among teachers.

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Research Background

Existing Research Gaps

Most PBL-related studies in Hong Kong have **adopted qualitative research methods**, focusing on the obstacles and difficulties teachers face in implementing PBL (e.g., Cheng, 2010, 2012; Keung & Fung, 2021), with **few studies using quantitative methods** to explore the supporting factors for teachers' implementation of PBL and its relationship with children's holistic development.

Objectives of This Study

- To explore the relationship between teachers' implementation of PBL and children's holistic development **through quantitative analysis**.
- To analyze how **teachers' personal beliefs (beliefs of PBL, self-efficacy)** and **organizational support factors (teacher collaboration, home-kindergarten collaboration)** influence their intention to implement PBL.

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Research Design

Participants

- The data for this study were collected from a survey of 617 teachers in 70 kindergartens in Hong Kong between 2017 and 2021.
- These kindergartens **participated in a university-led professional support program aimed at promoting the adoption of PBL among kindergarten teachers.** The program provided various forms of professional support to participating kindergartens, including teacher development seminars, parent workshops, collaborative lesson planning, and on-site teaching sessions.

Data Collection

- The project was divided into two cohorts (2017-2019 and 2020-2021), with anonymous questionnaires distributed to teachers at the end of each cohort.

After removing missing data, **the final effective sample consisted of 592 teachers** (323 from 40 kindergartens in 2017-2019; 269 from 30 kindergartens in 2020-2021), covering principals, vice-principals, class teachers, teachers, assistant teachers, and other kindergarten staff.

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Research Design

Research Tools

This study used 6 scales, all employing a 6-point Likert scale, from 1 (strongly disagree) to 6 (strongly agree).

Scales	Description	Items	Examples	References
1、Teachers' Beliefs of Play-Based Learning	Assess teachers' beliefs of PBL.	7	Play-based learning should understand children's needs by listening to their voices.	Baker, 2014; Pyle & Danniels, 2017
2、Teachers' Self-Efficacy Beliefs for Implementing Play-Based Learning)	Assess teachers' self-efficacy beliefs, namely, their confidence in designing and implementing play-based learning pedagogies in kindergartens.	8	I can design diverse activities in line with the direction of play-based learning.	Cheng, 2012; Perren et al., 2017; Curriculum Development Council, 2017
3、Perceived Teacher Collaboration in Kindergartens)	Assess participants' perceived teacher collaboration in kindergartens.	5	In my kindergarten, teacher collaboration has been enhanced through collective lesson planning.	Keung & Cheung （2019）
4、Teacher-Perceived Home-Kindergarten Collaboration)	Assess participants' perceived home-kindergarten collaboration.	4	There is an increase of parents' participation in their children's learning activities.	Keung & Cheung （2019）
5、Teachers' Reported Enactment of Play-Based Learning)	Assess participants' reported enactment of play-based learning in classrooms.	7	I provide children with opportunities of inquiry during play.	Keung & Cheung （2019）
6、Teacher-Perceived Whole-Child Development)	Measure participants' perceptions of whole-child development in four domains, namely, cognitive and language development, affective and social development, aesthetic development, and physical development.	12	children show interest in the people and things around them. Children are able to express their feelings in an appropriate manner. Children are able to appreciate the works or performance of themselves and others. Children are well developed in their sensory functions and body coordination.	Keung et al. (2020)

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Research Design

Data Analysis Methods

Using SPSS 26.0 and Mplus 8.3

Analysis Process:

- **Confirmatory Factor Analysis (CFA):** To examine the structural validity of each scale.
- **Descriptive Statistics, Correlation, and Reliability Test:** To analyze the basic properties of the statistical data.
- **Structural Equation Modeling (SEM):** To test the relationships between variables, using various model fit indices such as χ^2, RMSEA (< .08), TLI (> .90), CFI (> .90) (Schreiber et al., 2006).
- **Mediation Effect Analysis:** To examine indirect effects through 5,000 bootstrap samples, controlling for four demographic variables (year of data collection, participants' teaching position, years of teaching experience, and highest qualification attained).

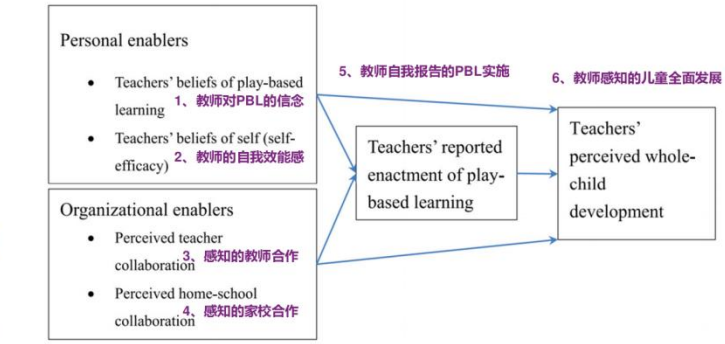

Figure 1. The conceptual framework of the study.

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Results

1. Structural Validity, Reliability, Descriptive Statistics, and Correlation Analysis

Structural Validity:

The construct validity of each scale was verified through CFA, and all scales met acceptable or fully fitted standards.

Reliability:

Cronbach's α coefficients for all factors ranged from 0.87 to 0.93, indicating high internal consistency of the scales.

Table 2. Descriptive statistics, construct validities, reliabilities, and correlation matrix.

Factors	1	2	3	4	5	6
1. Teachers' beliefs of PBL[a]	–					
2. Teachers' self-efficacy for implementing PBL[b]	.65*	–				
3. Perceived teacher collaboration in kindergartens[c]	.47*	.62*	–			
4. Perceived home-kindergarten collaboration[d]	.27*	.41*	.57*	–		
5. Teachers' reported enactment of PBL[e]	.45*	.67*	.75*	.54*		
6. Teacher perceived WCD[f]	.46*	.62*	.76*	.62*	.79*	–
Cronbach's *α*	.88	.93	.88	.87	.88	.87
M	5.48	5.49	5.34	4.98	5.32	5.16
SD	.46	.47	.52	.59	.50	.42

Note. *$p < .001$, PBL = play-based learning, WCD = whole-child development; [a]Goodness-of-fit indices: $\chi^2 = 17.752$, $df = 14$, $p = .218$, RMSEA = .02, CFI = .996, TLI = .994; [b]Goodness-of-fit indices: $\chi^2 = 66.328$, $df = 20$, $p < .05$, RMSEA = .06, CFI = .975, TLI = .965; [c]Goodness-of-fit indices: $\chi^2 = 1.423$, $df = 2$, $p = .491$, RMSEA = .00, CFI = 1.000, TLI = 1.002 (after removing one item); [d]After deleting one item, it reached a saturated data fit. [e]Goodness-of-fit indices: $\chi^2 = 21.628$, $df = 5$, $p < .001$, RMSEA = .08, CFI = .982, TLI = .965 (after removing two items); f. Goodness-of-fit indices: $\chi^2 = 73.490$, $df = 50$, $p < .05$, RMSEA = .03, CFI = .990, TLI = .987 (second-order factor structure).

Descriptive Statistics:

2. Teachers' self-efficacy for implementing PBL: M = 5.49, SD = 0.47 (Highest)
1. Teachers' beliefs of PBL: M = 5.48, SD = 0.46
3. Perceived teacher collaboration in kindergarten: M = 5.34, SD = 0.52
5. Teachers' reported enactment of PBL: M = 5.32, SD = 0.50
6. Teacher-perceived WCD: M = 5.16, SD = 0.42
4. Perceived home-kindergarten collaboration: M = 4.98, SD = 0.59 (Lowest)

Correlation:

All factors were significantly positively correlated at $p < .001$.

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Results

2. Structural Equation Modeling (SEM)

SEM model constructed to analyze the relationships between personal and organizational enablers, teachers' reported enactment of PBL, and their perceived whole-child development.

Control variables: Year of data collection, participants' teaching position, years of teaching experience, and highest qualification attained.

Goodness-of-fit of the model is good: $\chi^2 = 1143.731$, df = 827, $p < .001$ RMSEA = .025, CFI = .972, TLI = .969

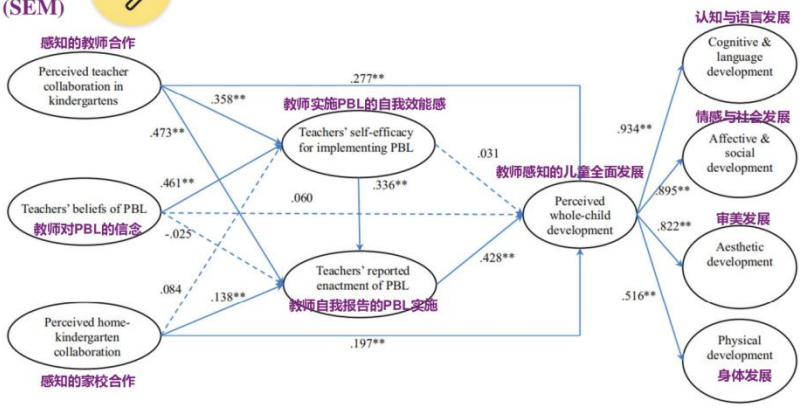

Figure 2. The relationships between personal and organizational enablers, teachers' reported practice of PBL and perceived whole-child development ($N = 592$). *Note.* ** $p < .01$; Goodness-of-fit indices: $\chi^2 = 1143.731$, $df = 827$, $p < .001$, RMSEA = .025, CFI = .972, TLI = .969; PBL = play-based learning; The effects of teachers' self-efficacy for implementing PBL, reported enactment of PBL, and perceived whole-child development were controlled with year of data collection, participants' teaching position, years of teaching experience, and highest qualification attained.

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Results

2. Structural Equation Modeling (SEM)

Personal Factors:

- Teachers' beliefs of PBL showed a positive association with self-efficacy for implementing PBL ($\beta = .461$, $p < .01$), but no significant relationship with reported enactment of PBL.
- Teachers' self-efficacy showed a positive association with reported enactment of PBL ($\beta = .336$, $p < .01$).
- Neither type of teacher belief showed a significant relationship with perceived whole-child development.

Organizational Factors:

- Perceived teacher collaboration showed positive associations with teachers' self-efficacy for implementing PBL ($\beta = .358$, $p < .01$), reported enactment of PBL ($\beta = .473$, $p < .01$), and perceived whole-child development ($\beta = .277$, $p < .01$).
- Perceived home-kindergarten collaboration showed a weaker positive association with reported enactment of PBL ($\beta = .138$, $p < .01$) and perceived whole-child development ($\beta = .197$, $p < .01$), but no significant relationship with teachers' self-efficacy.

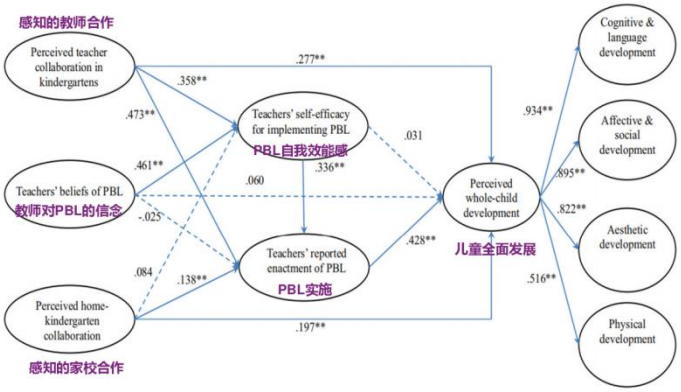

Figure 2. The relationships between personal and organizational enablers, teachers' reported practice of PBL and perceived whole-child development ($N = 592$). *Note.* ** $p < .01$; Goodness-of-fit indices: $\chi^2 = 1143.731$, $df = 827$, $p < .001$, RMSEA = .025, CFI = .972, TLI = .969; PBL = play-based learning; The effects of teachers' self-efficacy for implementing PBL, reported enactment of PBL, and perceived whole-child development were controlled with year of data collection, participants' teaching position, years of teaching experience, and highest qualification attained.

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Results

3. Mediation Effect Analysis

Table 3. Mediation tests of the indirect associations between personal and organizational enablers and kindergarten teachers' perceived whole-child development.

IV	Total effects	Total indirect effects	Mediation analysis		
			Mediator	Estimates (SE)	95% CI [LL, UL]
PBLB	.133	.069			
教师对PBL的信念			SE	.015 (.030)	[−.055, .066]
			Enactment	−.011 (.027)	[−.072, .036]
			SE − Enactment	.066 (.021)*	[.035, .121]
TC	.541*	.265*			
感知的教师合作			SE	.011 (.024)	[−.037, .059]
			Enactment	.202 (.043)*	[.133, .303]
			SE − Enactment	.051 (.015)*	[.027, .091]
HKC	.270*	.073*			
感知的家校合作			SE	.003 (.006)	[−.006, .021]
			Enactment	.059 (.023)*	[.018, .111]
			SE − Enactment	.012 (.007)†	[.000, .031]

Note. *$p < .05$, †lower 95% CI = .000; IV = independent variable, PBLB = teachers' beliefs of play-based learning, SE = teachers' self-efficacy for implementing play-based learning, TC = perceived teacher collaboration in kindergartens, HKC = perceived home-kindergarten collaboration, Enactment = teachers' reported enactment of play-based learning.

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Results

3. Mediation Effect Analysis

Indirect Path 1: **Teachers' beliefs of PBL → Teachers' self-efficacy for implementing PBL → reported enactment of PBL → Perceived whole-child development**

- Result: Mediation effect is significant (β = .066, 95% CI: [.035, .121])
- Interpretation: The positive influence of teachers' PBL beliefs on perceived whole-child development is realized through their self-efficacy and PBL enactment.

Indirect Path 2: **Teachers' self-efficacy for implementing PBL → reported enactment of PBL → Perceived whole-child development**

- Result: Mediation effect is significant (β = .142, 95% CI: [.081, .234])
- Interpretation: The positive influence of teachers' self-efficacy for implementing PBL on perceived whole-child development is primarily realized through PBL enactment.

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Results

3. Mediation Effect Analysis

Indirect Path 3: **Perceived teacher collaboration → reported enactment of PBL → Perceived whole-child development**

- Result: Mediation effect is significant (β = .202, 95% CI: [.133, .303])

Indirect Path 4: **Perceived teacher collaboration → Teachers' self-efficacy for implementing PBL → reported enactment of PBL → Perceived whole-child development**

- Result: Mediation effect is significant (β = .051, 95% CI: [.027, .091])
- Interpretation: The influence of teacher collaboration on perceived whole-child development is significantly mediated through multiple pathways.

Indirect Path 5: **Perceived home-kindergarten collaboration → reported enactment of PBL → Perceived whole-child development**

- Result: Mediation effect is significant (β = .059, 95% CI: [.018, .111])
- Interpretation: The influence of home-kindergarten collaboration on perceived whole-child development is only realized through PBL enactment.

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Discussion

This study used structural equation modeling and mediation analysis to verify the positive relationship between PBL and whole-child development, and explored the personal and organizational factors influencing Hong Kong kindergarten teachers' implementation of PBL and their roles in this process.

Major findings:

1. SEM analysis showed that **teachers' reported enactment of PBL** significantly and positively influenced their **perceived whole-child development**.

2. Mediation analysis showed that the **indirect effects** of all significant personal and organizational factors on perceived whole-child development were mediated by **teachers' reported enactment of PBL**.

3. Personal and organizational factors played different roles in this process:

- Organizational support factors: **Both teacher collaboration and home-kindergarten collaboration** showed direct or indirect positive associations with **teachers' perceived whole-child development.**
- Personal support factors: No significant relationship was found between teachers' two beliefs (beliefs of PBL and self-efficacy for implementing PBL) and perceived whole-child development.

Actions Speak Louder Than Words

坐言起行，行胜于言

These findings supplement the evidence in ECE research, on the one hand, **further emphasizing the role of organizational support in whole-child development** (Darling-Hammond & Cook-Harvey, 2018; Keung et al., 2020); on the other hand, they also indicate that **personal beliefs may influence perceived whole-child development through mechanisms distinctly different from organizational support.**

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Discussion

The Role of Personal and Organizational Support Factors

1. Personal Factors:

- **Teachers' beliefs of PBL** did not significantly influence teachers' reported enactment of PBL, but they can play a role: **"Teachers' beliefs of PBL → Teachers' self-efficacy for implementing PBL → Reported enactment of PBL → Perceived whole-child development."**
  - ➢ This aligns with previous research findings (Baker, 2014; Cheng, 2012), where ECE teachers, despite acknowledging the value and importance of PBL, often still choose traditional teaching methods due to various reasons (such as lack of professional support and parental pressure), **meaning that teachers' teaching beliefs do not necessarily align with their teaching practices.**
- **Teachers' self-efficacy for implementing PBL** significantly influenced **teachers' reported enactment of PBL**, and also **fully mediated** the positive relationship between teachers' beliefs of PBL and their reported enactment of PBL.
  - ➢ This is consistent with previous research findings (Yin et al., 2022; Zee & Koomen, 2016), which consider **teacher self-efficacy** as an important resource for improving classroom processes and implementing educational reforms.

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Discussion

The Role of Personal and Organizational Support Factors

2. Organizational Factors:

- **Teacher collaboration** showed positive associations with both **teachers' self-efficacy for implementing PBL and teachers' reported enactment of PBL.**
- **Home-kindergarten collaboration** only showed a positive association with **teachers' reported enactment of PBL**, and this association ($\beta < .15$) was weaker compared to teacher collaboration ($\beta > .40$).
  - ➢ The above findings support the **establishment of learning communities** within and between kindergartens to enhance teachers' ability to implement PBL.

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Discussion

The Role of Personal and Organizational Support Factors

3. Role of Organizational Factors on Teachers' Self-Efficacy for Implementing PBL:

- Perceived teacher collaboration helps enhance teachers' self-efficacy for implementing PBL, while perceived home-kindergarten collaboration does not have this effect.
  - ➢ Teacher collaboration promotes peer learning (vicarious experiences) and strengthens shared beliefs through mutual communication (verbal or social persuasion), leading to positive emotional experiences (positive physiological and emotional states), thereby enhancing teachers' self-efficacy.
  - ➢ While home-kindergarten collaboration helps strengthen the trusting relationship between teachers and parents, it has less impact on teachers' professional beliefs or understanding.

From the perspective of Social Cognitive Theory (SCT), the four sources of efficacy (Bandura, 1997):

- Mastery experiences
- Vicarious experiences
- Verbal or social persuasion
- Physiological and emotional states

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Implications

1. Emphasize the importance of PBL in promoting children's holistic development, supporting its educational value with quantitative evidence.

- **Encourage policymakers to take effective measures to promote PBL in kindergartens**, and to formulate relevant initiatives that facilitate the integration of learning and play in ECE practices.

2. Emphasize the importance of teacher beliefs for their implementation of PBL.

- Encourage kindergarten principals to **provide teachers with PBL-related professional development programs**, creating opportunities for teachers to learn independently and collaboratively, thereby enhancing their self-efficacy by reinforcing their successful experiences, vicarious experiences, social persuasion, and positive emotional states in implementing PBL.
- Encourage kindergarten principals to **foster a mutually supportive atmosphere within the kindergarten**, motivating and appreciating teachers for their PBL practices.

3. Emphasize the development of adult collaboration within and outside kindergartens.

- Encourage kindergarten principals to **strengthen teacher collaboration and home-kindergarten collaboration**;
- Provide space for teachers to engage in peer learning and professional sharing, and **establish professional learning communities within and between kindergartens**;
- Consider **organizing parent workshops and parent-child activities** to showcase play-based learning outcomes, enhance parental involvement, and encourage them to explore children's learning and development.

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Limitations

1. Sampling

- **Limitation:** This study used convenience sampling, which could not control for some variables related to PBL implementation (e.g., children's family play experiences, classroom play time).
- **Suggestion:** Future research could collect and analyze data on these variables, or use randomized experimental designs to reduce the influence of confounding variables.

2. Generalizability of Results

- **Limitation:** The research sample came from a university-led professional support program, and the sample might be more professional in terms of PBL implementation.
- **Suggestion:** Future research could use stratified random sampling, considering background factors such as kindergarten type (full-day/half-day) and size, to improve the generalizability of the research results.

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Limitations

3. Research Design

- **Limitation:** This study adopted a cross-sectional design, making it difficult to establish causal relationships.
- **Suggestion:** Future research could adopt longitudinal or experimental research designs to verify the directionality of relationships between variables.

4. Research Tools

- **Limitation:** This study used teachers' subjective perceptions to assess children's holistic development.
- **Suggestion:** Future research could combine objective assessment methods (e.g., children's work, observational data) to more comprehensively measure children's learning and development.

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Relevant information

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Thank you very much!

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Symposium 2

STEM+C Education in Early Childhood: Research Evidence and Implications

Weipeng Yang, Ph.D., HKSAR, China

PECERA 2025 Conference, Shanghai

STEM+C Education in Early Childhood: Research Evidence and Implications

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July 2025

香港教育大學 The Education University of Hong Kong

Department of Early Childhood Education 幼兒教育學系

There is structural inequality in children's access to age-appropriate and meaningful digital tools and learning opportunities (Su et al., 2022).

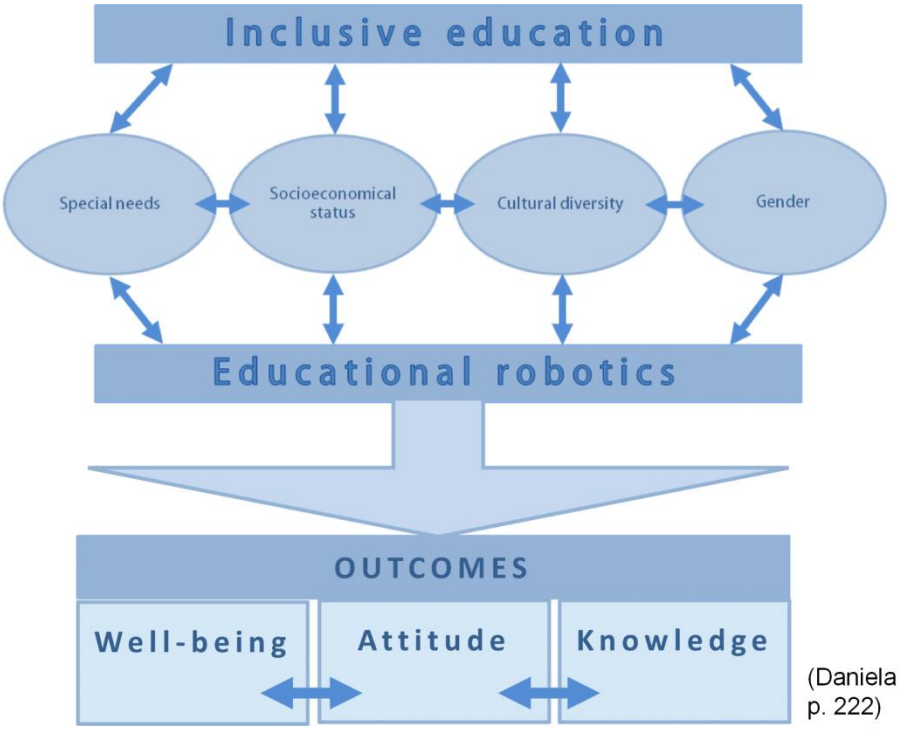
Su, J., Yang, W., & Zhong, Y. (2022). Influences of gender and socioeconomic status on children's use of robotics in early childhood education: A systematic review. *Early Education and Development.* https://doi.org/10.1080/10409289.2022.2078617

- **Boys tend to have a higher level of enjoyment in being an engineer than girls.**
- **Boys generally outperformed girls in robot tasks.**

Su, J., Yang, W., & Zhong, Y. (2022). Influences of gender and socioeconomic status on children's use of robotics in early childhood education: A systematic review. *Early Education and Development.* https://doi.org/10.1080/10409289.2022.2078617

- **Children in high-SES schools have a better understanding of robotics.**
- **Educational robotics tend to be more easily accessible for children whose families can pay for the learning opportunities.**

Su, J., Yang, W., & Zhong, Y. (2022). Influences of gender and socioeconomic status on children's use of robotics in early childhood education: A systematic review. *Early Education and Development.* https://doi.org/10.1080/10409289.2022.2078617



Daniela, L., & Lytras, M. D. (2019). Educational robotics for inclusive education. *Technology, Knowledge and Learning*, *24*(2), 219-225.

(Daniela & Lytras, 2019, p. 222)

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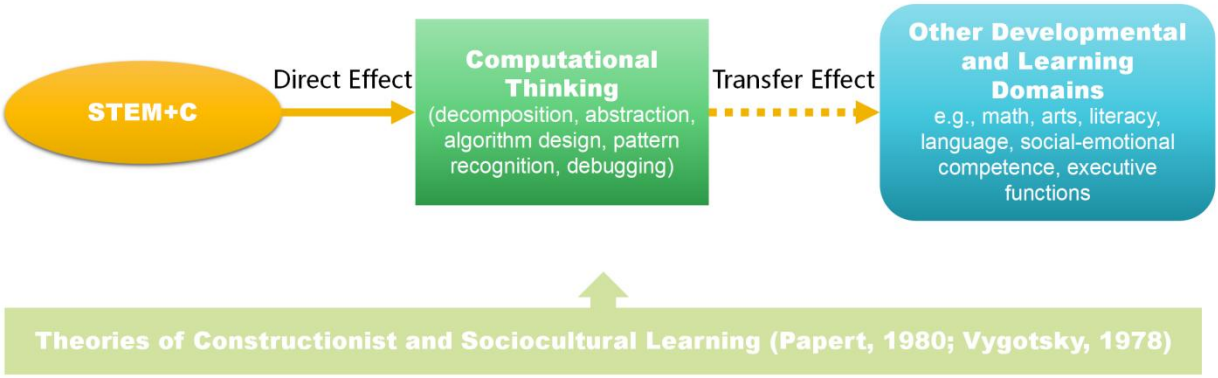
Learning Outcomes



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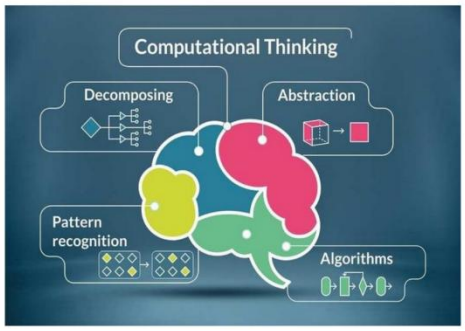
Computational Thinking (CT)

CT involves a range of creative skills such as

(1) designing systems using concepts fundamental to **computer science**,

(2) using different levels of **abstraction** to solve problems, and

(3) thinking **algorithmically** to develop efficient solutions.



Zeng, Y., Yang, W., & Bautista, A. (2023). Computational thinking in early childhood education: Reviewing the literature and redeveloping the three-dimensional framework. *Educational Research Review*, *39*, 100520.

STUDY 1

- **Robot Programming versus Block Play in Early Childhood Education**

Yang, W., Ng, D. T. K., & Gao, H. (2022). Robot programming versus block play in early childhood education: Effects on computational thinking, sequencing ability, and self- regulation. *British Journal of Educational Technology*, *53*(6), 1817-1841.

Research Design

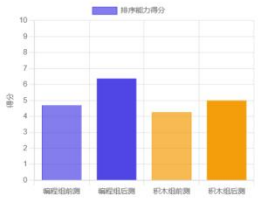
- Randomized controlled experiment with 101 children aged 4-6 years
- Divided into robot programming group (54 people) and building blocks game group (47 people)
- 6-week intervention, 2 times a week, 30 minutes each time

Content of intervention

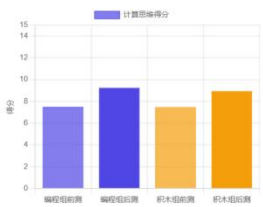
- Robot Programming Group: Using Matatalab to program robots without screens
- Building Blocks: Build with Marble Run Building Blocks
- Focus on spatial construction, problem solving and cooperative interaction

Assessment tools

- Computational Thinking: The TechCheck Scale (15 questions)
- Sorting ability: picture sorting task (PST, 10-point system)
- Self-regulation: head-toe-knee-shoulder task (HTKS, 60-point scale)



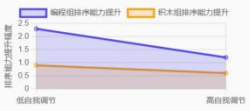
The post-test score of the robot programming group was significantly higher than that of the building blocks (F=5.09, p < 0.05), and the intragroup effect d = 0.59, significantly better than the block group d = 0.25.



The difference between the two groups was not significant (F = 0.41, p>0.05), but older children improved more significantly in the programming group.

The regulatory role of self-regulation

Children with low baseline self-regulation improved significantly more in the sequencing capacity of the programming group than in the building blocks (F=2.37, p<0.05).



The adjustment of age

Older children had significantly greater CT gains in the programming group than in the building blocks (F=2.40, p<0.01).

Implications

01

Robot programming has benefits for sequencing ability and computational thinking compared to traditional block play.

02

Self-regulation and age moderate benefits, with lower functioning children and older children benefiting more.

03

Supports integrating screen-free robot programming in early childhood education.

STUDY 2

- **Coding with Robots or Tablets?**

Yang, W. (2024). Coding with robots or tablets? Effects of technology-enhanced embodied learning on preschoolers' computational thinking and social-emotional competence. *Journal of Educational Computing Research, 62*(4), 938-960.

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Robot Coding VS Tablet Coding

N=37 (19 girls)

physical objects provide a concrete representation of abstract programming concepts

allowing children to physically program and control a **robot** while observing its behavior in the real world

N= 36 (20 girls)

software-based coding tool

children snap together graphical programming blocks to make characters move, jump, dance, and sing

Higher-order thinking

Social-emotional outcomes

Interventions

- Robot program used the Matatalab robot, app used ScratchJr
- 9-week programs, 35 minutes twice a week
- Coding through stories and hands-on activities

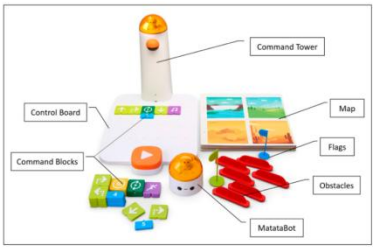


Figure 1. The matatalab coding robot. *Source.* https://matatalab.com/en/coding-set.

Figure 2. The ScratchJr coding app. *Source.* https://www.scratchjr.org/learn/interface.

Table 2. Pre-Test and Post-test Scores by Group and Assessment.

	Coding Robot Group				Coding App Group						
Variable	*n*	Pre-Test *M* (*SD*)	Post-Test *M* (*SD*)	Within-Group Cohen's *d*	*n*	Pre-Test *M* (*SD*)	Post-Test *M* (*SD*)	Within-Group Cohen's *d*	Between-Group Cohen's *d*	*F*	*p*
CT	37	7.86 (1.80)	12.17 (2.26)	2.11	36	8.78 (2.78)	11.24 (2.86)	.87	1.24	5.398	.024*
PCS	35	3.19 (.64)	3.37 (.64)	.28	34	3.25 (.63)	3.42 (.54)	.29	.01	.007	.933
ERS	35	2.90 (.63)	2.81 (.64)	.14	34	3.04 (.57)	3.04 (.46)	0	.14	2.189	.144
SEC	35	3.04 (.59)	3.09 (.58)	.09	34	3.14 (.54)	3.23 (.46)	.18	.09	.694	.408

Notes. CT = Computational Thinking; PCS = Prosocial/Communication Skills; ERS = Emotional Regulation Skills; SEC = Social-Emotional Competence. Between-group Cohen's *d* = differences (Coding Robot Group minus Coding App Group) between within-group pre/post *d*s; *F* = value of group by time interaction.
*$p < .05$; **$p < .01$.

Findings

- Robot coding can effectively develop preschoolers' higher-order thinking skills, i.e., computational thinking.
- Targeting robot coding at children with weaker skills can boost social-emotional development.

Implications

The physical interactions of robots (such as direct observation of action feedback after programming) reinforce children's understanding of abstract concepts. For example, by placing "forward" and "turning" instruction blocks, children can intuitively see the robot's movement path to better understand the sequence logic.

The robot provides multi-dimensional feedback such as vision and touch, which can attract children's attention and deepen memory compared to a single screen interaction of flat-panel applications.

Both tools offer opportunities for collaboration, such as group programming, which could lead to no significant differences in SEC promotion; but physical interactions with robots may be more attractive to children with difficult emotional regulation and facilitate their participation.

STUDY 3

- **A Three-phase Professional Development Approach**

Yang, W. (2025). A three-phase professional development approach to improving robotics pedagogical knowledge and computational thinking attitude of early childhood teachers. *Computers & Education, 231,* 105282.

Research Design

Pretest-posttest Control Group

27 kindergarten teachers from Hong Kong were randomly assigned to the CT4ECE group (17 teachers) or a wait-list control group (10 teachers).

CT4ECE Group	17 Teachers
Control Group	10 Teachers

Mixed Methods

Quantitative data from surveys (TCRPKS; TCTAQ) and qualitative data from semi-structured interviews.

- Teachers' Coding Robotics and Pedagogical Knowledge Survey (TCRPKS)
- Teacher Computational Thinking Attitude Questionnaire (TCTAQ)
- Semi-structured Interviews

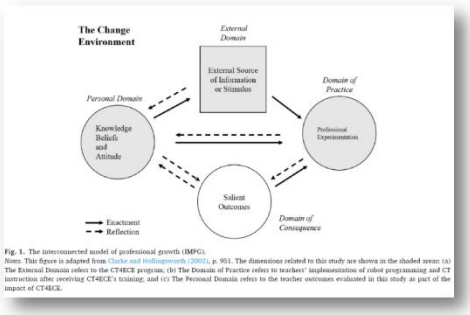


Fig. 1. The interconnected model of professional growth (IMPG).
Notes. This figure is adapted from Clarke and Hollingsworth (2002), p. 951. The dimensions related to this study are shown in the shaded areas: (a) The External Domain refers to the CT4ECE program; (b) The Domain of Practice refers to teachers' implementation of robot programming and CT instruction after receiving CT4ECE's training; and (c) The Personal Domain refers to the teacher outcomes evaluated in this study as part of the impact of CT4ECE.

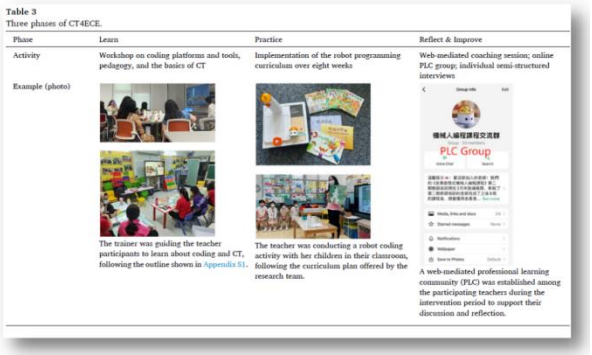


Table 3
Three phases of CT4ECE.

Phase	Learn	Practice	Reflect & Improve
Activity	Workshop on coding platforms and tools, pedagogy, and the basics of CT	Implementation of the robot programming curriculum over eight weeks	Web-mediated coaching session; online PLC group; individual semi-structured interviews
Example (photo)	The trainer was guiding the teacher participants to learn about coding and CT, following the outline shown in Appendix S1.	The teacher was conducting a robot coding activity with her children in their classroom, following the curriculum plan offered by the research team.	A web-mediated professional learning community (PLC) was established among the participating teachers during the intervention period to support their discussion and reflection.

Robotics Knowledge and Pedagogy (RQ1)

CT4ECE group showed significant improvements in both General Robotics Knowledge (GRK) and Robotics Pedagogical Knowledge (RPK), while the control group showed no significant changes.

General Robotics Knowledge (GRK)

Pretest 12.24

Post-test 16.29

Hedges' g = 0.94 (Large Effect)

Robotics Pedagogical Knowledge (RPK)

Pretest 23.06

Post-test 32.53

Hedges' g = 1.50 (Very Large Effect)

Teacher Beliefs (RQ3)

Screen-free Robotics

Teachers valued tangible tools (e.g., Matatalab) for making coding concrete for young children, noting benefits for logical and spatial reasoning.

> *"The physical nature of the robots helps children understand abstract concepts better."*

> *"Children were more engaged because they could touch and manipulate the robots."*

CT Understanding

Teachers recognized CT as involving pattern recognition, problem-solving, and algorithm design, though some conflated it with math skills.

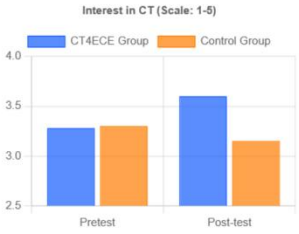
> *"CT is about breaking down problems into smaller steps."*

> *"I realized CT is not just about coding, but about logical thinking."*

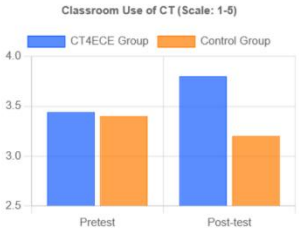
CT Attitudes (RQ2)

CT4ECE group exhibited positive shifts in Interest in CT and Classroom Use of CT, with significant improvement in total TCTAQ scores, while the control group showed declines.

Interest in CT



Classroom Use of CT



Total TCTAQ Scores — Hedges' g = 0.51 (Medium Effect)

The three-phase structure fostered a structured change process, enabling teachers to progress from learning to practice and reflection.

1 Learn

Demystified CT and robotics for teachers.

2 Practice

Enabled classroom application and adaptation.

3 Reflect

Facilitated continuous improvement via coaching and PLCs.

Interconnected Model of Professional Growth (IMPG)

The study aligns with the IMPG framework, showing how external inputs (CT4ECE program) influenced teachers' personal domain (knowledge/attitudes) and practice.

TPACK Framework

The program design integrated technological, pedagogical, and content knowledge, guiding effective CT integration in early childhood education.

Empowering Young Children in the AI Age

Balance both traditional and digital materials and tools for early learning;

Highlight robotics as a tool to foster children's embodied, multimodal learning and positive technological development;

The three-phase approach provides a theoretically sound and practical model for PD in early childhood STEM+C education, equipping teachers to prepare children for the digital future.

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Thank You!

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Symposium 2

Teacher migration and contributory rights in early childhood education workplaces in the Asia-Pacific region

Joce Nuttall, Ph.D., New Zealand

Teacher migration and contributory rights in early childhood education workplaces in the Asia-Pacific region

Presentation to the 2025 conference of the Pacific Early Childhood Education Research Association, UNESCO Teacher Education Centre, Shanghai, China, 10-12 July 2025

Joce Nuttall, University of Canterbury, New Zealand
Sirene Lim, Singapore University of Social Sciences, Singapore
Ting Ma, University of Canterbury, New Zealand

Research problematic

- Intensive policy demands in Asia-Pacific nations to raise the quality of early childhood education provision
- Pressing problems of workforce attraction and retention
- The emergence of a globally mobile early childhood education workforce
- A diverse educator workforce is positively correlated with positive outcomes for diverse learners

Research questions

- What are the learning needs of migrant educators in relation to local workplace cultures?
- How can local early childhood professionals learn to mobilize the expertise of migrant colleagues to raise program quality, particularly for culturally and linguistically diverse children and families?

PECERA 2021: Analysis of quality improvement texts in South Korea, Singapore, and Australia

Systemic omission of *teachers' cultural and linguistic expertise*; the ideal professional practitioner is homogenous, a 'blank slate' equipped to accommodate all kinds of differences

PECERA 2023: Concepts to help us understand why cultural difference matters for a diverse ECE workforce

- *Contributory rights* (Turner, 2001) comprise the rights to contribute to society that enable the claims citizens make against society. For example, parents contribute to society by having and raising children; in return, those children have a right to expect protection and education from that same society.

Contributory rights are a key component of a second concept: *transformative citizenship*

- *Transformative citizenship* is a characteristic of states and societies where *"transformations constitute the main sociopolitical order, and the transformation-embedded interests form the core social identity"* (Chang, 2022, p. 11, italics in original).

- Social transformations, such as raising the general level of education, lifting people out of poverty, and rapid growth in the national economy, are a central goal of many nation states.

- But such transformations are only possible if citizens are enabled to contribute to their maximum potential

Methodology for investigating the contributory rights of migrant early childhood educators

- ECE policy analysis in Australia, Singapore, and South Korean (completed; see Nuttall, et al., 2021)
- Interviews with up to 10 migrant educators per country Interviews of up to 1 hour exploring 2 main dimensions of migrant teachers' experience:
  - Demographic background (citizenship, visa status, teacher education, work history)
  - Challenges of professional migration (transition to a new professional culture, support received to make this transition, advice for future teacher migrants)

Participants

- The study is ongoing, but participants so far are:
  - Singapore (9 interviews)
  - South Korea (4 interviews)
  - New Zealand (7 interviews)

Comparative analysis between Singapore and New Zealand in this paper – most participants are either from the Philippines or the PRC

Comparative thematic analysis – *shared* challenges

Theme 1: Making the transition from academically-oriented preschools to more open-ended, free play environments

“这样会感觉比较吵，而且所有的孩子都会在一起。对，就是一开始比较不太适应。后来感觉还好，而且感觉到新加坡的这种教育其实也是蛮好的，因为所有的孩子他们都会有接触，不同年龄阶段的孩子都会接触到” (Singaporean response)

So when I stepped in the room, I saw kids playing everywhere. It's so messy. Kids were having messy play, but I didn't know that parents here they're happy to see their kids getting dirty, messy playing, as long as they're having fun and they're learning. There was me picking up the toys, tidying up the toys back, putting back in place (New Zealand response)

Theme 2: finding worthwhile professional learning information

“…the in-house training revolves around the organisation’s thematic curriculum. Not very much that is new to me and not always useful because I have learned these before…” (Singapore response)

“It's very detailed here when it comes to the training, which is very good. So there is no excuse for the teacher when you don’t manage well. You can access the training in [the employer’s online training platform]. It’s very accessible and there are free Te Whāriki websites where you can go through the curriculum. It’s all in there. You just need to read them” (New Zealand response)

Theme 3: (Ironically), adapting to the diversity of children and families

"…what I find challenging is differentiating my instruction to cater to children from different linguistic and cultural backgrounds…" (Singaporean response)

"…the most challenging part for me [is] having many diverse children in the classroom. Because I come from a different culture and they also speak different languages, it takes extra effort to make sure everyone feels included, understood and supported in their learning" (New Zealand response)

Comparative thematic analysis – *different* challenges

Theme 1: Ease of diversity versus the hegemony of English

"…in my previous childcare, Chinese teachers learn from each other. The current one is different. It seems that English teachers and Chinese teachers can learn from each other. For example, we will have a meeting every month, and there will be some shares…" (Singapore response)

"I speak Chinese and I also speak a little bit of Korean. But in most cases, if there were other teachers around us, we would use English because I think it is respect for them and they can understand what we are talking about" (New Zealand response)

"[We are] only allowed to speak English so that the other people listening to us understand what the conversation is all about" (New Zealand response)

Theme 2: Short programmes versus long programmes

“…I find the kindergarten faster pace, you have to rush; you are going against time. You have such a short programme[…] lesson planning detailed, more paperwork to do” (Singapore response)

“In the Philippines, we focused on the academic skills and had lots of paperwork. But here in New Zealand, many children stay with us for most of the day, so our responsibilities extend beyond teaching. We also attend to their overall wellbeing. This includes serving their meals, changing their nappies, and assisting them to change their clothes. So that's surprised me because you're not just a teacher, sometimes you are also like a nanny for the kids” (New Zealand response)

Long-term aim of the research

To identify leadership resources and practices for early childhood services to ensure migrant teachers can contribute fully to the transformative potential of early childhood education in their new national contexts.

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Turner, B. S. (2001). The erosion of citizenship. *British Journal of Sociology, 52*(2), 189-209.

Symposium 2

Play-Based Early Childhood Education in the Digital Era: Korea's Creative Integration of Technology and Practice

Hong-Ju Jun, Ph.D., South Korea

Play-Based Early Childhood Education in the Digital Era: Korea's Creative Integration of Technology and Practice

Hong-Ju Jun (Professor, Sungshin Women's University, Korea)

1. Introduction

As digital transformation reshapes education globally, early childhood education (ECE) faces a dual imperative: to preserve developmentally appropriate practices while preparing children for a rapidly changing future. Artificial intelligence, robotics, and ubiquitous digital media have heightened interest in how young children interact with technology and what kinds of digital competencies they should develop.

In Korea, these shifts raise specific tensions. On one hand, there is a deep societal emphasis on school readiness and academic achievement; on the other, national education policy affirms the importance of play-based, child-led learning. The question arises: **How can Korea integrate digital competencies in early education without compromising the relational, joyful, and exploratory nature of play?**

2. Policy Context in Korea

Korea's *Nuri Curriculum*, the national framework for children aged 3 to 5, was revised in 2019 to emphasize **play-based learning, autonomy, and holistic development**. The revised curriculum aims to center the child's perspective, supporting emotional, social, cognitive, and physical growth through exploration and meaningful engagement.

Simultaneously, the Ministry of Education and other stakeholders have begun to explore how digital literacy and future-oriented skills can be introduced in a manner that respects the principles of developmentally appropriate practice. This has led to new initiatives focused on creating a balanced approach to technology integration in early learning environments.

3. Technology in Early Childhood Settings

Recent efforts in Korea emphasize the importance of meaningful, developmentally appropriate uses of technology with young children. Rather than promoting early exposure for skill-building alone, these approaches support active, creative, and ethical engagement with digital tools.

Examples include:

- **Digital expression**: Encouraging children to use tablets, cameras, and audio tools for storytelling, art, and communication.
- **Unplugged coding**: Introducing basic computational thinking through non-digital methods, such as pattern games, directional movement, and storytelling with sequence cards.
- **Balanced media use**: Supporting children's ability to engage with media critically and safely, with guidance from educators and families.

This approach aims to shift the discourse from "screen time" to "screen purpose"—highlighting the *quality and context* of digital experiences over mere exposure.

4. Building Teacher Capacity

The success of any innovation in early childhood education depends largely on the **professional capacity of educators**. In Korea, several initiatives now focus on strengthening teacher readiness to integrate technology within a play-based pedagogical approach.

Key elements of teacher support include:

- **Training in digital tools** that are appropriate for young learners, such as storytelling apps, child-friendly cameras, and classroom audio recorders.
- **Workshops on play-technology integration**, helping teachers to maintain child agency and creativity when using digital resources.
- **Peer collaboration and reflective practice**, encouraging communities of teachers to experiment, adapt, and share emerging strategies.

Teachers are not seen as implementers of a fixed curriculum but as **co-creators of learning environments** that respect both the developmental needs of children and the affordances of technology.

5. Field-Based Practices

Across Korean kindergartens and childcare centers, innovative practices are emerging that demonstrate how technology can support, rather than detract from, play-based learning. These practices are often low-cost, scalable, and grounded in the realities of diverse local contexts.

Examples include:

- **Digital play corners**, where children create digital drawings, take photos of their construction projects, or record sounds from nature walks.
- **Child-led multimedia projects**, such as making digital books about their classroom garden or recording puppet shows with narration.

- **Collaborative family activities**, where parents and children co-create digital stories at home, or document weekend explorations to share with peers.

These examples show that **technology is not treated as a subject**, but rather as a **tool for exploration, expression, and communication**—used within the context of meaningful, play-based experiences.

6. Implications for Policy and Practice

Korea's evolving approach to play and technology integration highlights several important insights for early childhood education worldwide:

- **Technology can support—not substitute—play.** When intentionally integrated, digital tools can extend children's natural curiosity, creativity, and agency. The goal is not to replace hands-on learning, but to offer new ways to engage with the world.
- **Pedagogical intentionality is key.** Not all uses of technology are beneficial. Educators must carefully design learning environments where technology aligns with developmental goals.
- **Teachers are essential change agents.** Sustainable integration of technology requires investment in teacher training, planning time, and collaborative communities.
- **Cultural context matters.** Korean parents often express concern about digital distractions or premature exposure to technology. Addressing these concerns openly, and involving families in the design of digital experiences, is critical.
- **Equity must be considered.** Access to devices, internet, and professional development varies widely. Equity in digital literacy starts with recognizing and addressing these disparities.

7. Conclusion

Technology and play are often framed as opposing forces in early childhood education. However, Korea's experience shows that **they can coexist—and even enhance one another—when guided by strong pedagogical values**.

By embedding digital tools into play-based environments, empowering teachers as designers of learning, and involving families as partners, Korea is forging a path where innovation does not come at the cost of joy, agency, or meaning.

Rather than preparing children for a distant future, this approach invites us to nurture their capacity to live fully now—curious, connected, and creative.

"The best way to prepare for tomorrow is to give children the tools to wonder today."

This perspective affirms that when technology is used with purpose and care, early childhood education can remain both rooted and visionary—grounded in relationships, and open to possibility.

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