

The Relationship Between Instructional Leadership and Teachers' Application of Montessori-Inspired Practices in Early Years Centres in Kuala Lumpur, Malaysia

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ABSTRACT

Montessori-inspired practices are increasingly adopted across early years centres in Kuala Lumpur, Malaysia, reflecting a broader shift toward child-centred and experiential learning in Malaysian early childhood education. However, the quality and consistency of implementation vary considerably across institutional settings, and limited empirical research has examined the organisational factors that shape the depth and fidelity of Montessori-inspired classroom practice. This quantitative correlational study investigated the relationship between three dimensions of instructional leadership: instructional guidance and clarity, professional development and coaching, and monitoring and feedback on instruction, and teachers' application of Montessori-inspired practices across Montessori, Montessori-inspired, private, government, and international early childhood centres in Kuala Lumpur. Data were collected from 261 valid respondents using a self-administered online questionnaire comprising 21 Instructional Leadership items and 25 Teacher Classroom Practice items rated on a five-point Likert scale. Pearson Product-Moment Correlation analyses were conducted using SPSS. The findings revealed very strong positive and statistically significant relationships between all three dimensions of instructional leadership and teachers' application of Montessori-inspired practices: instructional guidance and clarity ($r = .976$, $p < .001$), professional development and coaching ($r = .971$, $p < .001$), and monitoring and feedback on instruction ($r = .970$, $p < .001$). The overall relationship between instructional leadership and teacher classroom practice was also very strong ($r = .982$, $p < .001$). These findings indicate that higher perceived levels of instructional leadership are strongly associated with higher levels of Montessori-inspired classroom implementation. The study provides practical insights for centre leaders, professional development providers, and policymakers seeking to strengthen the quality and consistency of child-centred early childhood education in Kuala Lumpur and across Malaysia.

Keywords: instructional leadership, Montessori-inspired practices, early childhood education, teacher classroom practice

INTRODUCTION

Early childhood education in Malaysia has changed substantially over the past two decades as greater attention has been given to the role of the early years in children's long-term development. The Malaysia Education Blueprint 2013-2025 positioned quality early childhood education as an important foundation for national educational development (Ministry of Education Malaysia, 2013). More recently, the Kurikulum Prasekolah 2026 (KP2026) strengthened the national emphasis on play-based, child-centred, competency-focused, and developmentally appropriate learning (Ministry of Education Malaysia, 2025). This policy direction has increased the relevance of pedagogies that emphasise autonomy, active engagement, and experiential learning.

Montessori-inspired practice is one of the child-centred approaches used in early years settings in Kuala Lumpur. Montessori education is grounded in respect for children's developmental tendencies and

emphasises self-directed learning, intrinsic motivation, purposeful engagement with a prepared environment, extended work periods, and hands-on materials (Lillard, 2017). The teacher is positioned primarily as an observer and facilitator who prepares conditions for learning rather than as the sole director of classroom activity. In contemporary settings, however, Montessori principles are frequently adopted along a continuum from authentic Montessori programmes to blended or Montessori-inspired approaches that combine selected principles with national or international curricula (Lillard, 2019; Marshall, 2017).

This flexibility enables wider use of Montessori principles, but it also creates challenges concerning implementation consistency. In Kuala Lumpur, teachers may work in centres that use the Montessori label while differing substantially in training requirements, curriculum expectations, and fidelity to Montessori pedagogy. Some educators enter Montessori-inspired environments without accredited Montessori preparation and rely instead on short courses, workplace learning, or guidance from centre leaders. Consequently, the depth of classroom implementation is closely linked with the instructional support and professional learning available within the centre (Sharim et al., 2023; Wai Leng et al., 2021).

Leadership is therefore important because early years teachers often exercise considerable classroom autonomy while centre leaders simultaneously manage administrative, regulatory, staffing, parent, and instructional responsibilities. Instructional leadership focuses specifically on the improvement of teaching and learning through clear instructional direction, professional development, supervision, monitoring, and feedback (Hallinger & Murphy, 1985). Research across educational settings has consistently identified instructional leadership as an important organisational influence on teaching quality and teacher effectiveness (Bush & Glover, 2014; Grissom et al., 2021; Hallinger, 2011). In early childhood settings, this leadership function is especially relevant because the translation of a pedagogical philosophy into day-to-day practice requires sustained guidance rather than one-time policy statements or training events.

Despite the expansion of Montessori-inspired provision in Kuala Lumpur, classroom implementation is not necessarily consistent across centres. Core principles such as child choice, prepared environments, uninterrupted work cycles, observation-based planning, and the purposeful use of Montessori-inspired materials may be implemented to different degrees. The resulting gap between an adopted educational philosophy and actual classroom practice creates a quality concern. Existing research has considered teacher training and classroom implementation, but quantitative evidence examining instructional leadership as an organisational correlate of Montessori-inspired practice in Malaysian early childhood settings remains limited.

The present study addressed this gap by examining the relationship between instructional leadership and teachers' application of Montessori-inspired practices in early years centres in Kuala Lumpur. Instructional leadership was examined through three dimensions: instructional guidance and clarity, professional development and coaching, and monitoring and feedback on instruction. The study specifically asked whether each dimension was significantly related to teachers' application of Montessori-inspired practices. Three corresponding hypotheses proposed significant positive relationships between each instructional leadership dimension and teacher classroom practice.

THEORETICAL AND EMPIRICAL BACKGROUND

Instructional leadership theory

The principal conceptual lens for the study was Hallinger and Murphy's (1985) instructional leadership model. The model identifies three broad leadership functions: defining the school mission, managing the instructional programme, and promoting a positive learning climate. Together, these functions emphasise the leader's role in establishing instructional goals, overseeing teaching, coordinating curriculum, supporting professional learning, and sustaining conditions that enable effective instruction.

The model has been widely used across national and cultural contexts. Hallinger's (2011) review of four decades of research showed the continuing relevance of instructional leadership for teaching quality and school performance, while work in Malaysia has also supported the applicability of instructional leadership

constructs within the local educational context (Thien, 2022). Recent Malaysian research further shows that principals recognise the importance of instructional leadership but may struggle to sustain attention to teaching and learning when administrative responsibilities become dominant (Teo et al., 2024).

A related study of principals in rural districts of Sabah similarly found instructional leadership practised at only a moderate overall level, with sub-dimensions such as monitoring student progress and promoting professional development showing particular room for strengthening (Osman & Kamrozzaman, 2024).

In early childhood settings, the model is particularly useful when instructional leadership is interpreted as pedagogical guidance: centre leaders communicate the educational philosophy, mentor teachers, align curriculum and classroom practice, and engage in observation and feedback. These functions are important because early childhood leaders often operate in close proximity to teachers and can influence classroom routines through frequent professional interaction.

Montessori learning theory

The dependent construct, teachers' application of Montessori-inspired practices, was grounded in Montessori learning theory. Montessori education views children as active participants in their learning and assumes that meaningful development occurs through purposeful interaction with a carefully prepared environment, hands-on materials, freedom within structure, and opportunities to follow intrinsic motivation (Lillard, 2017). Central practices include respecting developmental readiness, facilitating uninterrupted work cycles, using self-correcting materials, promoting independence, and observing children to inform individualised learning experiences.

Contemporary practice ranges from highly authentic Montessori implementation to blended forms that incorporate selected Montessori principles within broader curricular frameworks (Lillard, 2019; Marshall, 2017). This distinction is particularly relevant in Kuala Lumpur, where centres vary in curriculum type and teacher preparation. In non-authentic or blended environments, the leader's role becomes important in maintaining coherence between stated philosophy and actual classroom practice. Murray et al. (2025), for example, emphasised the importance of implementation fidelity in early childhood Montessori settings and the need for observable indicators of classroom practice.

Instructional guidance and clarity

Instructional guidance and clarity refer to leadership behaviours that communicate a coherent pedagogical vision, establish clear expectations, and create a shared understanding of educational goals among staff. Teachers are more likely to implement complex pedagogical approaches consistently when leaders translate broad educational principles into explicit instructional expectations and regularly discuss teaching strategies (Grissom et al., 2021; Hallinger, 2005; Hallinger & Murphy, 1985). Conversely, unclear or inconsistent expectations may contribute to variability in classroom implementation.

This dimension is especially relevant to Montessori-inspired practice because teachers must translate abstract principles such as independence, freedom within limits, observation, and prepared environments into everyday routines. When leaders do not prioritise instructional dialogue, teachers may rely on visible or surface-level elements without fully applying the underlying pedagogy. Research on early childhood instructional leadership similarly indicates that leaders may require additional support to enact a stronger pedagogical role alongside operational responsibilities (Brown et al., 2024).

Professional development and coaching

Professional development and coaching encompass the structured and sustained learning opportunities that leaders provide or facilitate to strengthen teachers' knowledge, skills, and confidence. For child-centred pedagogies, professional learning is most useful when it is connected to classroom practice rather than limited to isolated workshops. Liao et al. (2024) found that professional development for playful and child-centred early childhood pedagogy was strengthened by coaching and reflective strategies, while Yang

(2022) reported positive effects of coaching on early childhood teachers' instructional behaviour. In the Malaysian context, Kunasegaran and Kamrozzaman (2026) similarly found that continuous professional development supported teacher performance through knowledge updating, teaching effectiveness, and practical application, while leadership support and access to varied training opportunities shaped the professional learning experience.

The need for contextually relevant professional learning is particularly important in Montessori-inspired settings. Teachers may understand the general philosophy yet still require modelling, guided reflection, peer observation, mentoring, and follow-up support to enact the approach consistently. Teacher beliefs and prior experiences can also influence implementation fidelity (Clayback et al., 2023). In Malaysia, access to sustained and specialised professional development may be uneven, reinforcing the importance of centre leaders in organising ongoing, site-specific learning opportunities (Sharim et al., 2023).

Monitoring and feedback on instruction

Monitoring and feedback on instruction include classroom observation, instructional supervision, constructive feedback, and follow-up on identified areas for improvement. These practices provide leaders with direct information about how pedagogical expectations are enacted and allow feedback to be connected to observable classroom behaviour. Grissom et al. (2021) identified instructionally focused interactions, including observation and feedback, as important leadership practices for strengthening teaching.

Monitoring is also relevant to Montessori-inspired settings because implementation can become superficial when classroom practice is not examined against the underlying principles of the approach. Structured observation and developmental feedback can help leaders distinguish between the visible use of Montessori materials and deeper practices such as child autonomy, purposeful observation, individualised planning, and consistent work cycles. Tools such as the Measure of Montessori Implementation - Early Childhood provide an emerging basis for observing implementation fidelity more systematically (Murray et al., 2025).

Teachers' application of Montessori-inspired practices

Teachers' application of Montessori-inspired practices refers to the extent to which key Montessori principles are translated into daily classroom behaviours and routines. In the present study, the construct included child autonomy and choice, preparation and maintenance of the learning environment, management of uninterrupted work cycles, observation-based planning, and the use of hands-on Montessori-inspired materials. These indicators reflect core characteristics identified in the Montessori literature (Lillard, 2017; Murray et al., 2025).

Throughout this manuscript, the construct is described consistently as teachers' self-reported application of Montessori-inspired practices rather than as observed implementation fidelity. The questionnaire captured respondents' own perceptions of their classroom behaviour, and no independent observational measure was used to verify these reports. This distinction is maintained throughout the reporting of results and discussion, consistent with the observation-based validation recommended for future research.

Implementation quality can vary according to teacher preparation and organisational support. Teachers without formal Montessori training may adopt materials or environmental arrangements while applying the broader philosophy less consistently. Leadership support therefore provides an organisational mechanism through which a centre can clarify expectations, develop teacher capability, observe implementation, and maintain coherence across classrooms.

This concern is not unique to Montessori-inspired settings: research on teachers with specialised instructional needs in Malaysian international schools has similarly found that when leadership support is reactive and generalised rather than tailored to those needs, teachers can end up feeling isolated and under-supported in their day-to-day practice (Ammasiemuthusamy & Kamrozzaman, 2025).

Based on this theoretical and empirical background, the study expected all three instructional leadership dimensions to be positively associated with teachers' application of Montessori-inspired practices.

METHODOLOGY

Research design and setting

A quantitative, non-experimental correlational survey design was used to examine naturally occurring relationships between instructional leadership and teacher classroom practice. Correlational research is appropriate when the objective is to determine the strength and direction of association between variables without manipulating them or making causal claims (Cohen et al., 2018; Creswell & Creswell, 2018). Data were collected using a self-administered online questionnaire.

The study was conducted across 34 early childhood education centres in Kuala Lumpur, Malaysia, spanning both government and private-sector provision. Participating settings included authentic Montessori schools; Montessori-inspired or blended-curriculum centres; private early childhood centres operating on the national preschool curriculum (Kurikulum Standard Prasekolah Kebangsaan, KSPK); government early childhood settings; and international schools following international curricula, including the International Baccalaureate Primary Years Programme (IB PYP) and the United Kingdom Early Years Foundation Stage (UK EYFS).

This broad inclusion was a deliberate methodological decision grounded in the observable reality of the Kuala Lumpur early years sector, rather than an incidental feature of convenience sampling. The label “Montessori-inspired” is applied loosely and inconsistently across Kuala Lumpur early childhood settings, and a growing number of centres, including government-operated preschools and private centres following the KSPK, incorporate elements of Montessori philosophy into their branding and practice without necessarily adhering to its core pedagogical principles (Wai Leng et al., 2021). This pattern, in which centres describe themselves as Montessori without faithfully implementing its principles, reflects a broader trend of superficial adoption that has been documented within the Malaysian context (Wai Leng et al., 2021; Lillard, 2019). The risk of diluting core Montessori principles is particularly pronounced where teachers lack formal training or adequate leadership support (Lillard, 2019; Nor Mashitah et al., 2023). Restricting the sample to formally accredited Montessori schools alone would therefore have produced an artificially narrow picture of how Montessori-inspired practice is implemented in Kuala Lumpur. The deliberate inclusion of government early years centres, blended-curriculum schools, and private preschools alongside authentic Montessori settings strengthens the ecological validity of the study, even though, as noted in the Limitations and Recommendations for Future Research, this broad inclusion criterion does not by itself distinguish the depth of Montessori engagement across centre types.

Population, sample, and sampling

The target population comprised teachers and centre leaders working in Kuala Lumpur early childhood settings that incorporated Montessori or Montessori-inspired methods. The project paper reported a population of 798 educators and leaders based on Montessori Association Malaysia records. Using the Krejcie and Morgan (1970) sample-size guideline for a population of approximately 800, a minimum of about 260 participants was targeted. The final sample comprised 261 complete and usable responses.

Convenience sampling was employed because a complete sampling frame across the range of relevant centre types was practically not available. The researcher approached principals and centre leaders within a professional network and asked participating centres to distribute the survey to eligible staff. Although this approach enabled access to varied institutional settings, it limits representativeness and is therefore acknowledged as a study limitation (Etikan et al., 2016).

Table 1. Demographic Profile of Respondents (N = 261)

Variable	Category	n	%
Gender	Female	207	79.3
	Male	54	20.7
Age	20-25	4	1.5
	26-30	138	52.9
	31-35	44	16.9
	36-40	51	19.5
	Above 40	24	9.2
Role	Teacher	146	55.9
	Senior/Lead Teacher	90	34.5
	Centre Leader/Principal	23	8.8
	Assistant Teacher	2	0.8
Qualification	SPM/O-Level	2	0.8
	Diploma	3	1.1
	Bachelor's Degree	170	65.1
	Master's/PhD	86	33.0
Experience	Less than 1 year	3	1.1
	1-3 years	56	21.5
	4-6 years	91	34.9
	7 years and above	111	42.5
Montessori training	No formal training	47	18.0

Variable	Category	n	%
	Short courses/workshops	155	59.4
	Accredited Montessori training	59	22.6
Centre type	Authentic Montessori	71	27.2
	Montessori-inspired/blended	70	26.8
	Private (local curriculum)	65	24.9
	Government/public	54	20.7
	International school	1	0.4

Note: Percentages may not total 100% due to rounding.

Instrument and pilot study

The final questionnaire contained demographic items and two principal constructs. Instructional Leadership consisted of 21 items across three seven-item dimensions: instructional guidance and clarity, professional development and coaching, and monitoring and feedback on instruction. Teacher Classroom Practice consisted of 25 items assessing the application of child autonomy, prepared environments, work-cycle management, observation-based planning, and Montessori-inspired materials. All substantive items were rated on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Before the main study, a pilot test involving 30 early years educators was conducted to assess the reliability and internal consistency of the initial instrument. The pilot participants were not included in the main sample. The pilot informed restructuring and refinement of the questionnaire. In the final main-study data, internal consistency was reported as excellent, with Cronbach's alpha values of .990 for Instructional Leadership and .992 for Teacher Classroom Practice.

The pilot study is reported here at a general level. An initial version of the questionnaire was piloted with 30 early years educators, who were not included in the main sample, and the pilot informed restructuring and refinement of the instrument before it was administered in the main study. Because the final instrument differed in structure and scope from the piloted version, the pilot reliability estimates cannot be treated as evidence of the validity of the final scale structure, and this distinction is noted as a boundary condition on the reliability coefficients reported above.

Data collection and participant protection

Data were collected through Google Forms. Centre leaders who agreed to facilitate participation received the survey link and distributed it to staff. Respondents were informed about the purpose of the study, that participation was voluntary, that responses would remain anonymous, and that data would be used for academic research. The project paper also states that necessary permissions were obtained from relevant institutional authorities before data collection. A total of 261 complete responses were retained for analysis.

Ethical procedures for the study consisted of informing respondents about the purpose of the research, the voluntary and anonymous nature of participation, and the academic use of the data, alongside institutional

permissions obtained prior to data collection. Formal ethics committee or institutional review board approval is not separately specified beyond these institutional permissions, which is acknowledged as a limitation of the reporting. Because participants were recruited through centre leaders within the researcher's professional network, the possibility of some perceived pressure to participate among staff cannot be entirely ruled out, notwithstanding the stated voluntariness and anonymity of participation.

Data analysis

Data were analysed using SPSS version 26. Frequencies and percentages were used to describe the sample, while means and standard deviations summarised the instructional leadership dimensions. Pearson Product-Moment Correlation was used to test the relationships between each instructional leadership dimension and overall Teacher Classroom Practice, as well as the relationship between overall Instructional Leadership and Teacher Classroom Practice. Statistical significance was set at $p < .05$. Before analysis, scatterplots were inspected for linearity and skewness, and kurtosis statistics were examined for serious departures from normality; no severe violations were reported. Correlation magnitudes were interpreted using the study's adaptation of Cohen's (1988) guidelines.

Because several of the reported correlations exceeded $r = .97$, these associations were treated as warranting particularly careful visual inspection, beyond the general linearity and normality checks already reported, for restricted variance, unusual clustering, or scoring artefacts that can artificially inflate linear correlation coefficients. Formal 95% confidence intervals around the correlation coefficients were not computed in the present analysis; their absence is acknowledged as a limitation of the statistical reporting, and their inclusion is recommended for future analyses using this instrument.

RESULTS

Respondent characteristics

The sample was predominantly female (79.3%). More than half of respondents were aged 26-30 years (52.9%), and 55.9% were teachers, followed by senior or lead teachers (34.5%). Most respondents held a bachelor's degree (65.1%), while 33.0% held a master's or doctoral qualification. The sample was also relatively experienced: 42.5% reported seven or more years in early childhood education and 34.9% reported four to six years. The respondent structure is also relevant to interpreting these results. As shown in Table 1, 23 respondents (8.8%) held centre leader or principal roles and would have responded to the Instructional Leadership items with reference to their own leadership behaviour, whereas the remaining 238 respondents (91.2%), comprising teachers, senior or lead teachers, and assistant teachers, would have rated the leadership they received from others. Correlations in the present analysis were computed on the pooled sample and were not examined separately by respondent role; this is acknowledged as a limitation, since disaggregating results by respondent role may help explain the strength of the overall coefficients.

Montessori preparation varied considerably. Most respondents (59.4%) reported short courses or workshops as their Montessori training, 22.6% reported accredited Montessori training, and 18.0% reported no formal Montessori training. Respondents were distributed across authentic Montessori schools (27.2%), Montessori-inspired or blended centres (26.8%), private local-curriculum centres (24.9%), government/public settings (20.7%), and one international school (0.4%).

Descriptive results for instructional leadership

Table 2. Descriptive Statistics for Instructional Leadership Dimensions

Dimension	Mean	SD	Highest-rated indicator	Lowest-rated indicator
Instructional guidance and clarity	3.930	1.255	Curriculum, teaching, and assessment aligned with educational philosophy (M =	Clear instructional expectations and goals (M = 3.878)

			4.000)	
Professional development and coaching	3.933	1.259	Ongoing, sustained professional learning (M = 3.977)	Professional development relevant and aligned with Montessori-inspired practice (M = 3.870)
Monitoring and feedback on instruction	3.947	1.241	Monitoring consistency of Montessori-inspired practices across classrooms (M = 3.996)	Teacher comfort with feedback and classroom observations (M = 3.912)

All three instructional leadership dimensions recorded mean scores above 3.90. Monitoring and feedback on instruction had the highest sub-dimension mean (M = 3.947, SD = 1.241), followed by professional development and coaching (M = 3.933, SD = 1.259) and instructional guidance and clarity (M = 3.930, SD = 1.255). These scores indicate that respondents generally perceived substantial instructional leadership activity across the participating centres.

Within instructional guidance and clarity, the highest-rated item concerned alignment among curriculum, teaching practice, assessment, and educational philosophy (M = 4.000), while the lowest concerned the clarity of instructional expectations and goals (M = 3.878). Within professional development and coaching, sustained professional learning received the highest mean (M = 3.977), whereas the relevance and alignment of professional development to Montessori-inspired practice was lowest (M = 3.870). For monitoring and feedback, monitoring the consistency of Montessori-inspired practice across classrooms was highest (M = 3.996), whereas teacher comfort with observation and feedback was lowest (M = 3.912).

Relationships between instructional leadership and teacher classroom practice

Table 3. Pearson Correlations Between Instructional Leadership and Teacher Classroom Practice (N = 261)

Predictor/construct	r with Teacher Classroom Practice	p	Interpretation	Hypothesis
Instructional guidance and clarity	.976	< .001	Very strong positive	H1 supported
Professional development and coaching	.971	< .001	Very strong positive	H2 supported
Monitoring and feedback on instruction	.970	< .001	Very strong positive	H3 supported
Overall instructional leadership	.982	< .001	Very strong positive	-

Note: All correlations are significant at the .001 level (two-tailed).

Instructional guidance and clarity were very strongly and positively related to Teacher Classroom Practice ($r = .976$, $p < .001$), supporting H1. This indicates that respondents who perceived clearer pedagogical guidance and stronger instructional direction also reported higher levels of Montessori-inspired classroom implementation.

Professional development and coaching were also very strongly and positively related to Teacher Classroom Practice ($r = .971$, $p < .001$), supporting H2. Higher perceived access to professional learning, coaching, reflection, and follow-up support was therefore associated with higher reported classroom implementation.

Monitoring and feedback on instruction showed a similarly very strong positive relationship with Teacher Classroom Practice ($r = .970$, $p < .001$), supporting H3. Respondents who perceived more regular observation, constructive feedback, monitoring of consistency, and follow-up also reported higher levels of Montessori-inspired practice.

Finally, the overall Instructional Leadership score was very strongly related to the overall Teacher Classroom Practice score ($r = .982$, $p < .001$). Taken together, the results indicate a highly consistent positive association between instructional leadership and teachers' reported application of Montessori-inspired practices in the participating Kuala Lumpur early years centres.

DISCUSSION

Instructional guidance and clarity

The first finding showed a very strong relationship between instructional guidance and clarity and teachers' application of Montessori-inspired practices. This is consistent with instructional leadership theory, which positions clear goals, pedagogical direction, and curriculum coordination as central leadership functions (Hallinger, 2005; Hallinger & Murphy, 1985). When centre leaders communicate an educational philosophy and align curriculum, teaching, and assessment with that philosophy, teachers have a clearer framework for classroom decisions.

The item-level pattern adds practical meaning to this result. Curriculum alignment was the strongest aspect of instructional guidance, suggesting that respondents generally perceived leaders as maintaining coherence between the centre's philosophy and its instructional programme. However, the comparatively lower mean for clear instructional expectations suggests that translating a broad philosophy into specific classroom goals may still require attention. This is particularly relevant in Montessori-inspired environments because principles such as child choice, uninterrupted work periods, prepared environments, and observation-based planning require deliberate translation into everyday practice (Lillard, 2019).

The result also aligns with research showing that instructional leaders can shape teaching by creating shared understanding and engaging directly with instructional work (Grissom et al., 2021). In early childhood settings, where organisational structures are often smaller and leader-teacher interaction is frequent, instructional guidance may be especially visible in daily practice. Brown et al. (2024) similarly highlighted the importance of strengthening leaders' capacity to support early childhood instruction rather than allowing early years programmes to remain peripheral to the instructional leadership agenda.

Professional development and coaching

The second finding demonstrated a very strong positive relationship between professional development and coaching and teachers' application of Montessori-inspired practices. This result supports the view that leadership affects classroom implementation not only by communicating expectations but also by developing teachers' capability to enact them. Sustained professional learning received the highest rating within this dimension, indicating that respondents valued continuing learning rather than isolated training events.

This pattern is consistent with systematic review evidence that coaching, reflection, and practice-embedded professional learning can strengthen early childhood teaching (Liao et al., 2024; Yang, 2022). Montessori-inspired pedagogy requires teachers to develop both conceptual understanding and practical judgement. Skills such as observing children, preparing the environment, pacing intervention, facilitating independence, and managing extended work cycles are difficult to develop through one-off workshops alone. Ongoing

coaching creates opportunities to discuss classroom problems, observe modelling, reflect on teaching choices, and receive feedback linked to the actual setting.

At the same time, the lowest-rated item in this dimension concerned the relevance and alignment of professional development to Montessori-inspired practice. This finding is important because most respondents reported short courses or workshops rather than accredited Montessori training, and 18.0% reported no formal Montessori training. The result therefore supports the need for professional development that is not merely frequent but specifically connected to the pedagogical model used by the centre. Sharim et al. (2023) identified professional development challenges among preschool teachers in Selangor, while Clayback et al. (2023) showed that teacher beliefs and prior experiences can affect implementation fidelity. These findings collectively suggest that professional learning should be sustained, context-specific, and responsive to teachers' existing knowledge and practice.

Monitoring and feedback on instruction

The third finding showed a very strong positive relationship between monitoring and feedback on instruction and teachers' application of Montessori-inspired practices. This dimension also recorded the highest mean among the three instructional leadership dimensions. The result suggests that observation, feedback, and follow-up are prominent features of instructional leadership in the participating centres and are strongly associated with reported classroom implementation.

The highest-rated item concerned monitoring the consistency of Montessori-inspired practices across classrooms. This is significant because one of the central challenges identified in the study is uneven implementation across different settings. Regular observation allows centre leaders to examine whether the stated philosophy is reflected in classroom routines rather than inferred from labels, materials, or room appearance. Developmental feedback can then focus on specific behaviours such as the organisation of child choice, work-cycle management, teacher observation, or the use of hands-on materials. This interpretation is consistent with Grissom et al. (2021), who emphasised the value of instructionally focused leader-teacher interactions.

Teacher comfort with observation and feedback received the lowest mean within this dimension, although it remained relatively high. This suggests that the relational climate surrounding instructional supervision deserves attention. Feedback is most likely to support improvement when it is specific, constructive, and developmental rather than experienced as inspection alone. In Montessori-inspired settings, structured observation tools may also help centre leaders ground feedback in clearer indicators of implementation fidelity (Murray et al., 2025).

Overall instructional leadership and classroom practice

The overall correlation between Instructional Leadership and Teacher Classroom Practice was $r = .982$ ($p < .001$), indicating a very strong association between the two constructs in this sample. The finding is consistent with the central proposition of instructional leadership research that leaders influence teaching through a combination of pedagogical direction, professional learning, and engagement with classroom practice (Hallinger, 2011; Hallinger et al., 2025). Rather than operating as isolated practices, the three dimensions appear to function together as a coherent system of instructional support.

Given the extraordinary strength of these correlations, the reason Instructional Leadership and Teacher Classroom Practice are so closely correlated in this sample deserves direct scholarly attention. Genuine organisational coherence, whereby well-led centres consistently support stronger classroom practice, remains one plausible explanation. However, shared-source bias, overlapping questionnaire content between the two scales, and a broader latent factor such as a generally positive perception of centre climate are equally plausible alternative explanations that correlational evidence alone cannot rule out. The very strong correlations reported here are therefore interpreted with this caution, as strong evidence of association rather than as unambiguous confirmation of instructional leadership theory.

In the Kuala Lumpur early years context, this combined leadership role may be particularly important because teachers work across diverse institutional settings and possess different levels of Montessori preparation. Clear guidance establishes shared expectations; professional development develops the capability to meet those expectations; and monitoring and feedback help maintain consistency and support improvement. Together, these processes provide an organisational structure for translating Montessori-inspired philosophy into daily classroom behaviour.

The findings should nevertheless be interpreted as associations rather than causal effects. The cross-sectional correlational design cannot establish whether stronger instructional leadership produces stronger classroom practice, whether effective teaching shapes perceptions of leadership, or whether other organisational factors influence both. The results therefore support the importance of instructional leadership as a correlate of practice while leaving causal direction for future research.

IMPLICATIONS

The practical recommendations that follow are proportionate to a correlational design. The study demonstrates that instructional leadership and Montessori-inspired classroom practice are strongly associated domains, not that strengthening instructional leadership will necessarily cause stronger classroom implementation. The implications below are therefore framed as areas warranting attention and future intervention testing rather than as guaranteed outcomes of leadership development.

Implications for centre leaders and administrators

The findings suggest that centre leaders should treat instructional leadership as a core responsibility alongside administration. Leaders can strengthen Montessori-inspired implementation by regularly communicating pedagogical expectations, linking curriculum decisions to the centre's educational philosophy, observing classroom practice, and providing constructive follow-up. The comparatively lower rating for the clarity of instructional expectations also indicates the value of translating broad philosophical statements into specific, observable expectations for classroom practice.

Professional development should be deliberately linked to the centre's needs and the pedagogical approach being implemented. Site-based coaching, peer observation, reflective discussion, mentoring, and follow-up after training may be more useful than relying primarily on generic or one-off workshops. These strategies are especially relevant when staff have varied levels of Montessori preparation.

Implications for teacher professional development

The distribution of Montessori training in the sample indicates a need for accessible and sustained professional learning pathways. With 59.4% of respondents relying on short courses or workshops and 18.0% reporting no formal Montessori training, professional development providers can play an important role in offering structured learning that connects Montessori principles with practical classroom application. Particular attention may be given to observation-based individualised planning, child autonomy, work-cycle management, and the intentional preparation of the learning environment.

Professional development can also be strengthened by incorporating opportunities to observe experienced colleagues, practise specific instructional routines, receive coaching, and reflect on implementation. Such approaches align professional learning with the day-to-day decisions teachers make in child-centred classrooms rather than treating training as separate from classroom practice.

Implications for policy

At the policy level, the study supports greater recognition of instructional leadership as a component of early childhood centre quality. Quality assurance in early childhood education often includes structural and compliance indicators; the findings suggest that attention should also be given to leaders' pedagogical roles,

including curriculum alignment, teacher mentoring, professional learning, classroom observation, and developmental feedback.

This is particularly relevant in a diverse urban context such as Kuala Lumpur, where authentic Montessori schools, blended centres, private centres, and government settings may all incorporate child-centred or Montessori-inspired practices to different degrees. Leadership development programmes and professional standards for early childhood centre leaders could therefore include explicit competencies related to instructional and pedagogical leadership.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Several limitations should be considered when interpreting the findings. First, the study relied on self-reported questionnaire data, so the findings reflect respondents' perceptions rather than observed behaviour and may be subject to social desirability. Future research should combine surveys with classroom observation and qualitative interviews.

Second, convenience sampling through the researcher's professional network may limit representativeness despite the diversity of centre types included. Future research could use stratified or probability-based sampling and extend the study to rural and semi-urban regions.

Third, the cross-sectional correlational design cannot establish causation or directionality. Longitudinal designs and examination of mediating or moderating variables such as teacher self-efficacy, experience, and institutional type would strengthen future work.

Fourth, the exceptionally high reliability coefficients ($\alpha = .990$ and $.992$) and the very strong intercorrelation between scales ($r = .982$) raise the possibility of item redundancy, scale overlap, or common-method bias, none of which was formally tested; this is treated as a substantive limitation.

Fifth, correlations were computed on the pooled sample without controlling for background variables such as centre type, Montessori training, experience, and role, or disaggregating by respondent role; centre leaders (8.8% of the sample) would have rated their own leadership, while other respondents rated leadership received from others. A regression model incorporating these covariates and examining subgroup differences would help clarify the meaning of the overall coefficients.

Sixth, the criteria for classifying a centre as Montessori-inspired were broad and not tightly defined, potentially treating centres with only minimal Montessori elements as equivalent to authentic provision. Future analyses should define these criteria precisely and compare centre types separately.

Finally, future research should connect instructional leadership and classroom practice with children's developmental outcomes to strengthen the broader educational significance of these findings.

CONCLUSION

This study examined the relationship between instructional leadership and teachers' application of Montessori-inspired practices across early years centres in Kuala Lumpur. All three instructional leadership dimensions were very strongly and positively associated with Teacher Classroom Practice: instructional guidance and clarity ($r = .976$, $p < .001$), professional development and coaching ($r = .971$, $p < .001$), and monitoring and feedback on instruction ($r = .970$, $p < .001$). Overall Instructional Leadership was also very strongly associated with Teacher Classroom Practice ($r = .982$, $p < .001$).

The findings indicate that instructional leadership is closely connected with the quality and consistency of Montessori-inspired classroom implementation in the participating centres. Clear pedagogical direction helps establish shared expectations, professional development builds teachers' capacity to apply the approach, and monitoring and feedback support consistency and ongoing improvement. For early childhood

systems seeking to strengthen child-centred practice, leadership development should therefore extend beyond administration and include sustained pedagogical engagement with teachers and classrooms.

Within the Kuala Lumpur context, this conclusion is particularly important because Montessori-inspired practice is implemented across diverse settings and teachers enter those settings with varied levels of specialised training. Strengthening centre leaders' instructional capacity provides one practical route for supporting greater coherence between educational philosophy and everyday classroom practice.

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Conflict of Interest

The authors confirm that no conflicts of interest exist.

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