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Mentoring for Foundation Phase Mathematics delivery in South African primary schools: A multiple-case study using Deliverology and Implementation Science

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ABSTRACT

The effective delivery of Foundation Phase Mathematics is crucial to establish strong numeracy foundations in South African primary schools; however, many teachers continue to face challenges related to content knowledge, pedagogical practices, and sustained instructional improvement. Mentoring has increasingly been identified as a key strategy to support teachers' professional development and improve classroom practice. This study explored teachers' experiences and perceptions of mentoring for Foundation Phase Mathematics delivery, drawing on Deliverology and Implementation Science as complementary analytical frameworks to understand how mentoring initiatives are designed, implemented, and sustained. The study examined the role of mentoring in improving instructional quality, identified factors that support or hinder effective implementation, and generated evidence-based strategies to strengthen mentoring programmes in primary schools. A qualitative, multiple-case study design was used, involving selected South African primary schools that implemented structured mentoring interventions. Data were collected through semi-structured interviews with Foundation Phase teachers, mentors, and school leaders, as well as classroom observations and document analysis. The findings indicate that mentoring contributes positively to teachers' confidence, pedagogical content knowledge, and instructional consistency in Mathematics. However, challenges related to time constraints, variability in mentor expertise, and limited monitoring mechanisms were also identified. Applying Deliverology and Implementation Science frameworks highlighted the importance of clear goals, continuous feedback loops, and systemic support for sustaining mentoring initiatives. Overall, the study demonstrates that well-structured mentoring, when effectively implemented and supported, has the potential to significantly improve Foundation Phase Mathematics delivery in South African primary schools.

Keywords: Mentoring, Foundation Phase Mathematics, Primary Schools, Deliverology, Implementation Science.

INTRODUCTION

Globally, concerns about learner performance in early-grade mathematics have intensified, as substantial evidence demonstrates that foundational numeracy competencies acquired in the early years strongly influence later academic achievement and long-term educational trajectories. Research

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consistently shows that conceptual gaps established in the Foundation Phase are difficult to remediate in subsequent schooling, particularly in contexts characterised by socioeconomic disadvantage and uneven instructional support.[1] Consequently, education systems increasingly emphasise teacher quality, instructional leadership, and sustained professional development as critical levers for improving early mathematics outcomes. Within the South African context, these global concerns are exacerbated by enduring structural inequalities that continue to shape schooling conditions and learner achievement. Despite successive curriculum reforms and targeted policy interventions, national and international assessments repeatedly reveal persistent underperformance and wide disparities in Foundation Phase mathematics achievement, particularly in schools serving low-income communities.[2] The Foundation Phase (Grades R–3) is a crucial period for developing learners' conceptual understanding of number sense, operations, and problem-solving, as outlined in the national curriculum policy.[3] However, many Foundation Phase teachers work under challenging conditions, including large class sizes, limited teaching and learning resources, and inconsistent instructional support, all of which constrain effective mathematics delivery.[4]

In response to these challenges, mentoring and coaching have gained prominence as key mechanisms for supporting teacher professional development and strengthening instructional practice. Evidence from both international and local studies indicates that well-structured mentoring can enhance teachers' pedagogical content knowledge, instructional confidence, and reflective practice, particularly when mentoring is sustained, contextually responsive, and aligned with curriculum goals.[5] However, in South African primary schools, mentoring practices remain uneven and fragmented. Formal mentoring initiatives introduced through departmental programmes are often episodic, compliance-driven, and characterised by limited follow-up and weak monitoring mechanisms. Conversely, informal mentoring -typically occurring through peer interaction, collegial support, and experiential learning - is more prevalent but largely unstructured and insufficiently aligned with systematic instructional improvement.[6] Although both formal and informal mentoring contribute to teacher learning, there is limited empirical research on how these practices can be integrated into coherent systems that directly support Foundation Phase mathematics delivery. Existing literature often treats formal mentoring as a discrete intervention and informal mentoring as incidental or individualised, with insufficient attention to how mentoring can be aligned with clear performance goals, monitoring routines, and sustainability mechanisms.[7] As a result, mentoring is often implemented as an isolated professional activity rather than as a systemic strategy to improve instructional quality and learner outcomes in mathematics.

Despite sustained policy attention and curriculum reform, learner performance in Foundation Phase mathematics in South Africa remains uneven, with persistent gaps evident, particularly in schools

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[1] Carmen Belafi, Yue-Yi Hwa, and Michelle Kaffenberger, "Building on Solid Foundations: Prioritising Universal, Early, Conceptual and Procedural Mastery of Foundational Skills" (Oxford, UK, August 6, 2020), https://doi.org/10.35489/BSG-RISE-RI_2020/021; Susanne Prediger et al., "Teacher Expertise for Fostering At-Risk Students' Understanding of Basic Concepts: Conceptual Model and Evidence for Growth," *Journal of Mathematics Teacher Education* 26, no. 4 (2023): 481–508.

[2] Djordje M Kadijevich et al., "Impacts of TIMSS and PISA on Mathematics Curriculum Reforms," in *Mathematics Curriculum Reforms around the World: The 24th ICMI Study* (Springer, 2023), 359–74; Hamsa Venkat and Ingrid Sapire, *Early Grade Mathematics in South Africa between 2000 and 2010: What Did We Know in 2010, and How Did This Set the Stage for the 2010–2020 Decade?* (Oxford University Press, 2022).

[3] Lerato B Ndabezitha, "Children's Development of an Understanding of Number: A Model for Grade R Teachers," *South African Journal of Childhood Education* 12, no. 1 (2022): 1195.

[4] Timothy Köhler, "Class Size and Learner Outcomes in South African Schools: The Role of School Socioeconomic Status," *Development Southern Africa* 39, no. 2 (2022): 126–50; Roy Venketsamy and Zijing Hu, "Exploring Challenges Experienced by Foundation Phase Teachers in Using Technology for Teaching and Learning: A South African Case Study," *Journal for the Education of Gifted Young Scientists* 10, no. 2 (2022): 221–38.

[5] Ina Dewi, "A Mentoring-Coaching to Improve Teacher Pedagogic Competence: An Action Research," *Journal of Education, Teaching and Learning* 6, no. 1 (2021): 1–6; Katherine L Walters, Theodore J Kopcha, and Christopher R Lawton, "'History Comes Alive': Implications for Teacher Professional Development on Place-Based Local History," in *Society for Information Technology & Teacher Education International Conference* (Association for the Advancement of Computing in Education (AACE), 2020),1536-45.

[6] Rachel Shanks, "Informal Coaching and Mentoring and an 'Informal Turn' in Teacher Professional Learning," *International Journal of Mentoring and Coaching in Education* 12, no. 4 (2023): 440–52.

[7] Lisa A Giacumo, Jie Chen, and Aurora Seguinot-Cruz, "Evidence on the Use of Mentoring Programs and Practices to Support Workplace Learning: A Systematic Multiple-studies Review," *Performance Improvement Quarterly* 33, no. 3 (2020): 259–303; Carol A Mullen and Cindy C Klimaitis, "Defining Mentoring: A Literature Review of Issues, Types, and Applications," *Annals of the New York Academy of Sciences* 1483, no. 1 (2021): 19–35.

serving socioeconomically disadvantaged communities. Although mentoring and coaching are widely recognised as effective mechanisms to support teacher development and improve instructional practice, their implementation in primary schools is frequently fragmented, episodic, and insufficiently aligned with curriculum delivery goals.

Formal mentoring initiatives are often compliance-driven and short-term, while informal mentoring - although more prevalent - lacks structure, coherence, and systematic monitoring. Critically, existing mentoring practices are seldom embedded within clear delivery and implementation frameworks that link teacher support directly to instructional improvement and learner outcomes in mathematics. As a result, mentoring tends to function as an isolated professional activity rather than as a coordinated, system-level strategy for strengthening Foundation Phase mathematics delivery. Furthermore, limited empirical research has examined how school leadership conceptualises, organises, and sustains mentoring within schools, particularly through the integration of results-oriented delivery approaches and implementation frameworks. The absence of a coherent model that integrates mentoring with structured goal setting, monitoring, and sustainability mechanisms constrains the potential impact of mentoring on mathematics teaching and learning. This gap underscores the need for research that examines mentoring through the combined lenses of Deliverology and Implementation Science, with particular attention to the role of school management teams in driving instructional coherence and sustained improvement in Foundation Phase mathematics.

This study addresses this gap by applying Deliverology and Implementation Science as complementary analytical frameworks. Deliverology offers a results-oriented approach that foregrounds clarity of goals, disciplined execution, monitoring of progress, and accountability in instructional delivery. [8] Implementation Science extends this perspective by explaining how innovations such as mentoring are adopted, adapted, and sustained within complex educational contexts, with particular attention to leadership, organisational capacity, and contextual fit.[9] Integrating these frameworks enables a systematic examination of mentoring not only as a professional development activity, but also as a delivery mechanism and a sustainable organisational practice within Foundation Phase mathematics education. The study adopts a multiple-case study design and foregrounds the perspectives of school management teams, including principals, deputy principals, and heads of department. These actors play an essential role in instructional leadership, mentoring coordination, and curriculum monitoring at the school level. School management teams are responsible for translating policy expectations into practice, creating enabling conditions for teacher development, and ensuring coherence between mentoring activities and curriculum delivery. Examining mentoring from this leadership perspective provides critical insight into how mentoring is conceptualised, prioritised, and enacted as a system-level process to strengthen Foundation Phase mathematics instruction. This focus aligns directly with the study's overarching aim of understanding how mentoring, when guided by Deliverology and Implementation Science principles, can contribute to sustained improvements in mathematics teaching and learning in South African primary schools.

This study examines how mentoring for Foundation Phase mathematics delivery is organised, implemented, and sustained in South African primary schools, using Deliverology and Implementation Science as integrated analytical frameworks. Specifically, it explores the understandings of school management teams of mentoring, identifies formal and informal mentoring practices, analyses their alignment with Deliverology principles of results orientation, monitoring, and accountability, and examines implementation factors that enable or constrain the sustainability of mentoring practices. In doing so, the study seeks to generate insight into how mentoring can function as a coherent, system-level strategy for strengthening Foundation Phase mathematics delivery and improving instructional quality. The study is guided by the overarching research question: How is mentoring for Foundation Phase mathematics delivery conceptualised, implemented, and sustained within South African primary

[8] Sharon Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education," *Journal of Education Policy* 36, no. 4 (2021): 504–29.

[9] Kelsey S Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists," *Journal of Clinical and Translational Science* 5, no. 1 (2021): e112; Enya B Vroom, Alexandra Albizu-Jacob, and Oliver T Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice," *Global Implementation Research and Applications* 1, no. 3 (2021): 147–59.

schools when examined through the lenses of Deliverology and Implementation Science? This question is addressed through sub-questions focusing on how school management teams conceptualise mentoring, what formal and informal mentoring practices are implemented, how these practices align with goal setting, monitoring and accountability, how leadership and organisational conditions influence sustainability, and what enabling factors and constraints shape mentoring as a system-level mechanism for improving Foundation Phase mathematics delivery.

LITERATURE REVIEW

Definition and purpose of Mentoring in Education

Mentoring in educational contexts is a structured professional support process through which experienced educators (mentors) guide less experienced teachers to improve pedagogical practice, content knowledge, and instructional decision-making.[10] In early grade mathematics, mentoring has been associated with enhanced teacher confidence, improved instructional strategies, and greater fidelity in curriculum implementation. Effective mentoring is ongoing, contextually grounded and linked to clear instructional goals rather than episodic or compliance-driven.[11] South African research indicates that mentoring initiatives often suffer from fragmentation; formal programmes are short-term and compliance-oriented, while informal mentoring remains unstructured and opportunistic.[12] This undermines the potential benefits of mentoring to improve Foundation Phase mathematics delivery.

Global Issues in Early Grade Mathematics Performance

International evidence underscores that weak numeracy foundations in early grades have long-term negative effects on learners' academic trajectories.[13] Foundational skills such as number sense, operations, and problem solving are critical precursors to advanced mathematics learning.[14] Studies in low- and middle-income contexts, including South Africa, highlight persistent underachievement in early grade mathematics due to systemic challenges, teacher preparation gaps, and limited access to quality instructional support.[15] These global patterns highlight the urgent need for professional support mechanisms, such as mentoring, that not only build teacher capacity but are systematically integrated into school instructional systems.

Deliverology: Results-Oriented Framework for Educational Improvement

Deliverology has its roots in public sector performance management but has been successfully adapted to educational settings to achieve measurable gains in learner outcomes through disciplined execution.[16] The core tenets include setting explicit targets, defining delivery chains, using evidence-based monitoring, and instituting accountability routines.[17] In mathematics education, Deliverology has been used to drive instructional change by aligning professional learning with clear performance metrics, continuous data review, and adaptive problem solving.[18] However, Deliverology alone offers limited insight into the how of sustained practice change within complex school environments, necessitating a complementary lens such as Implementation Science.

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[10] Beatrice Avalos, "Teacher Professional Development in Teaching and Teacher Education over Ten Years," *Teaching and Teacher Education* 27, no. 1 (2011): 10–20.
[11] M. A. Kraft and D. Blazar, "Teacher Coaching and Student Outcomes," 2018.
[12] Shanks, "Informal Coaching and Mentoring and an 'Informal Turn' in Teacher Professional Learning."
[13] Julie Sarama and Douglas H Clements, *Early Childhood Mathematics Education Research: Learning Trajectories for Young Children* (Routledge, 2009).
[14] David C. Geary, "Reflections of Evolution and Culture in Children's Cognition: Implications for Mathematical Development and Instruction," *American Psychologist* 50, no. 1 (1995): 24.
[15] Venkat and Sapire, *Early Grade Mathematics in South Africa between 2000 and 2010: What Did We Know in 2010, and How Did This Set the Stage for the 2010–2020 Decade?*; V. Reddy et al., "TIMSS/SACMEQ Findings in South Africa," 2021.
[16] Michael Barber, Andy Moffit, and Paul Kihn, *Deliverology 101: A Field Guide for Educational Leaders* (Corwin Press, 2011).
[17] P. Mampane and C. Bouwer, "Deliverology in South African Education," 2020.
[18] Michael Barber, Nick Rodriguez, and Ellyn Artis, *Deliverology in Practice: How Education Leaders Are Improving Student Outcomes* (2455 Teller Road, Thousand Oaks California 91320 : Corwin, 2016), https://doi.org/10.4135/9781071800621.

Implementation Science: Contextualising Practice Change

Implementation Science examines the processes, conditions, and mechanisms through which interventions are adopted, adapted, and sustained in real-world settings.[19] It emphasises organisational readiness, leadership, and implementation drivers, competency, organisational, and leadership supports that influence programme effectiveness.[20] In educational settings, Implementation Science has been increasingly used to understand how professional development, coaching, and mentoring programmes achieve fidelity and impact in diverse schools.[21] Unlike models that treat mentoring as a discrete intervention, Implementation Science situates mentoring within the broader school ecosystem, attending to context, adaptation, and sustainability.[22]

Mentoring in South African Primary Schools

South African studies highlight mentoring as both a formal and informal support mechanism for teachers, yet find that mentoring is often under-utilised or unevenly implemented.[23] Formal programmes are frequently episodic and inadequately supported, while informal mentoring, although more common, lacks structure and alignment with broader instructional goals.[24] There remains a research gap regarding how mentoring can be consistently implemented as part of a coherent delivery system that incorporates goal setting, monitoring, leadership routines, and organisational supports - precisely the integration offered by Deliverology and Implementation Science.

School Leadership, Instructional Systems, and Mentoring

School management teams (SMTs) play a central role in shaping the conditions for mentoring, particularly in linking professional support with instructional priorities.[25] Research emphasises the importance of distributed leadership in fostering cultures of reflective practice, feedback, and collaborative inquiry.[26] Effective leaders also align mentoring with school improvement plans and integrate monitoring routines that support teaching and learning goals.[27] In South African contexts where instructional leadership capacity varies widely, understanding the role of SMTs in facilitating mentoring is critical for strengthening mathematics delivery and learner outcomes.

Theoretical Integration: Deliverology and Implementation Science

The integration of Deliverology and Implementation Science consolidates focus on outcomes and processes. Deliverology foregrounds clarity of goals and disciplined execution, while Implementation Science situates change within organisational systems.[28] Together, they offer a robust conceptual foundation for analysing not just whether mentoring exists, but how it is enacted, monitored, adapted, and sustained within schools.

THEORETICAL FRAMEWORK

Deliverology and Implementation Science

This study is theoretically anchored in the complementary frameworks of Deliverology and Implementation Science, which together provide a coherent lens for examining mentoring as a system-level mechanism for improving Foundation Phase mathematics delivery in South African primary

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[19] D L Fixsen, "Implementation Research: A Synthesis of the Literature," *University of South Florida, Louis de La Parte Florida Mental Health Research Institute, The National Implementation Research Network*, 2005.
[20] Per Nilsen and Sarah A Birken, *Handbook on Implementation Science* (Edward Elgar Publishing, 2020).
[21] Nilsen and Birken, *Handbook on Implementation Science*.
[22] Laura J Damschroder, "Clarity out of Chaos: Use of Theory in Implementation Research," *Psychiatry Research* 283 (2020): 112461.
[23] Shanks, "Informal Coaching and Mentoring and an 'Informal Turn' in Teacher Professional Learning"; Walters, Kopcha, and Lawton, "'History Comes Alive': Implications for Teacher Professional Development on Place-Based Local History."
[24] Mullen and Klimaitis, "Defining Mentoring: A Literature Review of Issues, Types, and Applications."
[25] James P Spillane, "Distributed Leadership," in *The Educational Forum*, vol. 69 (Taylor & Francis, 2005), 143–50.
[26] Cecilia Azorín, Alma Harris, and Michelle Jones, "Taking a Distributed Perspective on Leading Professional Learning Networks," *School Leadership & Management* 40, no. 2–3 (2020): 111–27.
[27] C. Glickman and R. W. Burns, *Leadership for Learning: How to Bring Out the Best in Every* (ASCD, 2020).
[28] Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education"; Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists."

schools. The integration of these frameworks enables an analysis that goes beyond mentoring as an isolated professional development activity and instead conceptualises it as a structured, monitored, and sustainable process embedded within instructional leadership and school improvement systems.

Deliverology as a results-oriented framework for Mathematics delivery

Deliverology, initially developed within public sector reform, is a results-driven framework that focuses on the systematic delivery of priorities through clear goal setting, performance tracking, routine monitoring, and problem-solving.[29] In education, Deliverology has been increasingly applied to strengthen instructional delivery by aligning classroom practices with measurable learning outcomes and accountability structures. Central to Deliverology are three interrelated components: (i) a clearly defined and shared goal, (ii) a delivery chain that specifies roles and responsibilities, and (iii) disciplined routines for monitoring progress and addressing implementation challenges.

Within the context of Foundation Phase mathematics, Deliverology provides a valuable lens for understanding how mentoring can function as a delivery mechanism that supports curriculum coverage, pedagogical consistency, and learner performance. Mentoring, when aligned with Deliverology principles, shifts from ad-hoc support to a purposeful strategy linked to specific mathematics outcomes such as number sense development, progression pacing, and instructional coherence across grades. School management teams (SMTs) play a pivotal role in this delivery chain by setting instructional priorities, coordinating mentoring activities, and using evidence from classroom observations and learner performance to inform targeted support. By foregrounding accountability, data use, and continuous improvement, Deliverology strengthens the capacity of mentoring systems to contribute directly to mathematics delivery. However, while Deliverology clarifies what must be delivered and how progress is monitored, it provides limited insight into how mentoring practices are adopted, adapted, and sustained within complex school contexts. This limitation necessitates the complementary application of Implementation Science.

Implementation Science and the Sustainability of Mentoring Practices

Implementation Science offers a theoretically robust framework for understanding the processes through which innovations, including professional development interventions such as mentoring, are effectively embedded within organisational systems.[30] Rather than assuming that well-designed interventions will naturally lead to improved outcomes, Implementation Science emphasises the conditions, mechanisms, and contextual factors that influence implementation fidelity, adaptation, and sustainability. Key constructs within Implementation Science relevant to this study include implementation drivers, organisational readiness, leadership support, and contextual fit. Implementation drivers - such as competency development, organisational supports, and leadership - highlight the importance of aligning mentoring with teacher capacity, school structures, and leadership practices. In Foundation Phase contexts characterised by resource constraints and varied teacher expertise, these drivers are critical for ensuring that mentoring is not only initiated but maintained over time.

Implementation Science also acknowledges the dynamic interaction between intervention design and context. Mentoring practices must be responsive to local school conditions, including class size, language diversity, and professional backgrounds of teachers. This perspective allows the study to examine how formal and informal mentoring practices are adapted within schools, and how SMTs mediate between policy expectations and practical classroom realities.

CONCEPTUAL FRAMEWORK

Integrating Deliverology and Implementation Science

The integration of Deliverology and Implementation Science provides a comprehensive analytical framework for this study.

[29] Barber, Moffit, and Kihn, *Deliverology 101: A Field Guide for Educational Leaders*.
[30] Fixsen, "Implementation Research: A Synthesis of the Literature."

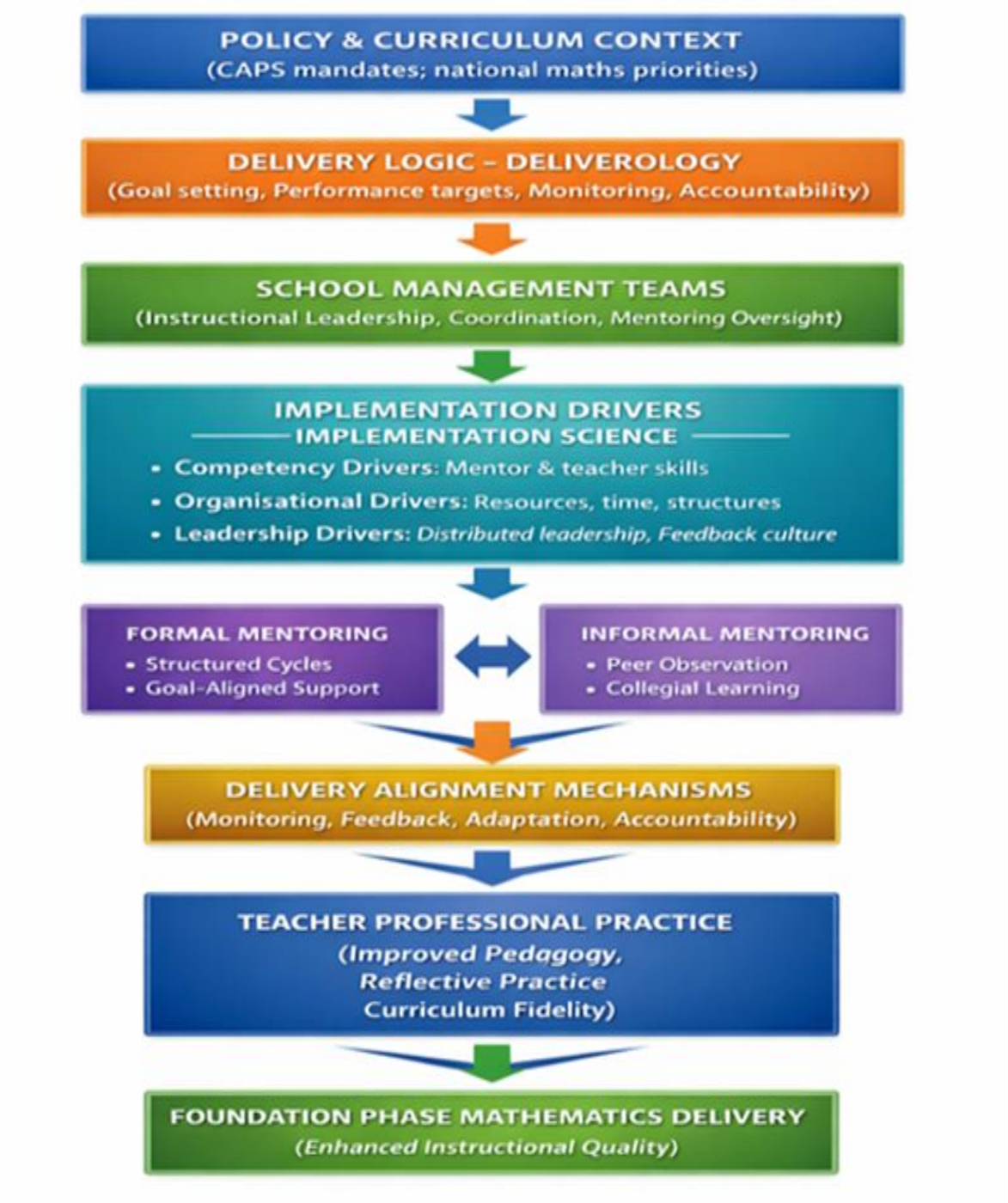

Figure 1: Integrated Deliverology and Implementation Science Conceptual Framework

Deliverology contributes a focus on direction, discipline, and delivery, ensuring that mentoring is purposefully linked to mathematics outcomes. Implementation Science complements this by illuminating the processes and conditions that enable mentoring to be embedded, sustained, and scaled within schools. Together, these frameworks position mentoring as both a delivery strategy and an implementation process. This dual framing aligns directly with the study's research questions, which seek to understand not only how mentoring is structured and enacted, but also how leadership practices, organisational conditions, and monitoring routines shape its effectiveness in improving Foundation Phase mathematics delivery.

Methodological Alignment and Trustworthiness

The theoretical framework directly informs the study's qualitative multiple-case research design. Using SMT perspectives, the study examines mentoring at the intersection of leadership, delivery, and

implementation. Data collection methods - including semi-structured interviews and document analysis - are aligned with the framework's emphasis on process, context, and decision-making.

Trustworthiness is ensured through strategies consistent with qualitative rigor and the study's theoretical grounding. Credibility is enhanced through triangulation of data sources and member checking with participants. Dependability is supported by maintaining a clear audit trail linking data collection, analysis, and interpretation to Deliverology and Implementation Science constructs. Confirmability is addressed through reflexive engagement with the researcher's positionality and systematic use of theory-informed coding. Transferability is strengthened through rich, contextualised descriptions of school settings and mentoring practices, enabling readers to assess the applicability of findings to similar contexts. By grounding the study in Deliverology and Implementation Science, this theoretical framework provides a coherent and rigorous foundation for analysing mentoring as a system-level mechanism for improving Foundation Phase mathematics delivery. The integrated framework enables a nuanced examination of both performance-oriented delivery processes and the contextual dynamics that shape implementation, thereby contributing to theoretical advancement and practical insight in early grade mathematics education.

METHODOLOGY

Research Design

This study adopted a qualitative multiple-case study design to examine how mentoring practices for Foundation Phase Mathematics delivery are conceptualised, implemented, and sustained in selected primary schools. A qualitative approach was appropriate because the study sought to understand meanings, interpretations, and experiences within real school contexts rather than measure variables statistically. The multiple-case design allowed comparison across three public primary schools in the Tshwane North District, with each school treated as a bounded case shaped by its own leadership structures, organisational culture, and contextual conditions. Cross-case comparison and pattern matching were used to identify recurring themes and contextual variations in the cases. The original methodology section already identified the study as qualitative, interpretivist, and multiple-case in design, with the unit of analysis focused on mentoring practices as understood and monitored by school management teams.

Study Sample and Population

The study population comprised school members of the management team responsible for instructional leadership, mentoring coordination, and Foundation Phase curriculum monitoring. Purposive sampling was used to select six participants from three public primary schools, consisting of two principals, two deputy principals, and two heads of department. Purposive sampling was suitable because the study required participants with direct knowledge of mentoring, curriculum support, and school-level implementation processes. The members of the school management team were selected because they occupy strategic leadership positions through which mentoring practices are organised, supported, and monitored. Classroom teachers were not included because the study focused specifically on leadership-driven mentoring structures and system-level implementation.

Data Collection

Data were collected through semi-structured individual interviews with members of the selected school management team. Semi-structured interviews were appropriate because they provided consistency among participants while allowing flexibility to probe emerging issues in depth. The interview guide was aligned with the research questions and the theoretical frameworks of Deliverology and Implementation Science to ensure conceptual coherence. The interviews focused on participants' understandings of mentoring, formal and informal mentoring practices, leadership roles, implementation challenges, accountability processes, and sustainability conditions. All interviews were conducted in private school settings, audio-recorded with informed consent, and transcribed verbatim to preserve the accuracy of participants' responses. The original methodology section also specified that probing questions were used to clarify responses and deepen the exploration of key themes.

Data Analysis Procedure

Data were analysed thematically using Braun and Clarke's six-phase approach to thematic analysis, which supports systematic identification, analysis, and interpretation of patterns in qualitative data.[31] The researcher first familiarised herself with the transcripts before generating initial codes from participants' narratives. The related codes were then grouped into themes reflecting mentoring practices, leadership conditions, implementation challenges, and system-level support. The analysis combined inductive coding with theoretically informed interpretation, using Deliverology and Implementation Science as sensitising concepts rather than rigid coding categories.[32] Cross-case comparison, peer debriefing, member checking, and an audit trail were used to strengthen credibility and trustworthiness.[33]

Ethical Considerations

Ethical clearance was obtained before data collection, and permission was secured from the University of South Africa and participating schools. Participants received complete information about the purpose of the study and provided written informed consent before participating. Participation was voluntary, and participants were informed of their right to withdraw without penalty. Confidentiality and anonymity were protected using pseudonyms and the removal of identifying information from transcripts and reports. Audio recordings and transcripts were stored securely in password-protected digital files and will be retained and destroyed in line with institutional ethical requirements.

PRESENTATION OF FINDINGS AND DISCUSSION

This section presents the study findings through a thematic analysis of data generated from semi-structured interviews with members of school management teams. Guided by an interpretivist paradigm, the analysis sought to identify recurring patterns of meaning related to mentoring practices, leadership dynamics, and Foundation Phase mathematics delivery within primary school contexts. Themes were developed through an iterative process that combined inductive coding with theoretically informed interpretation, allowing participants' experiences to remain central while being examined through the lenses of Deliverology and Implementation Science. The thematic analysis thus provides a structured yet context-sensitive account of how mentoring is conceptualised, enacted, and constrained within schools, forming the empirical basis for subsequent discussion and recommendations.

Absence of Formalised Mentoring Systems and Conceptual Ambiguity

In all cases, participants highlighted the absence of clearly defined institutionalised mentoring systems within their schools. Mentoring was described as implicit rather than formally recognised or structured within school operations. Professional development activities occurred, but they were neither conceptualised nor labelled mentoring, creating ambiguity around purpose, expectations, and outcomes.

Participant A reflected on this ambiguity, stating,

> *"My experience of mentoring and coaching, I think, at the school level is there, but the concept of mentoring and coaching, we do not use," and further noted, "there is no exact method of mentoring or coaching staff at the school level."*

Participant B reinforced the lack of formalisation, explaining,

> *"We didn't have mentoring and coaching programmes, only good practice information-sharing sessions once in a quarter."*

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[31] Virginia Braun and Victoria Clarke, "Reflecting on Reflexive Thematic Analysis," *Qualitative Research in Sport, Exercise and Health* 11, no. 4 (August 8, 2019): 589–97, https://doi.org/10.1080/2159676X.2019.1628806.

[32] Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."

[33] Katrien Verleye, "Designing, Writing-up and Reviewing Case Study Research: An Equifinality Perspective," *Journal of Service Management* 30, no. 5 (2019): 549–76; Yasir Rashid et al., "Case Study Method: A Step-by-Step Guide for Business Researchers," *International Journal of Qualitative Methods* 18 (2019): 1609406919862424.

Participants C and D described mentoring as largely invisible in their leadership experiences:

"mentoring was not a salient feature" (C) and*

"I was never mentored or coached, only attended workshops and meetings" (D).

Analytically, the absence of formal mentoring reflects a weak delivery chain, characterised by the lack of explicit targets, structured routines, monitoring, and feedback mechanisms that link mentoring to instructional improvement.[34] From an Implementation Science perspective, this conceptual ambiguity indicates low organisational readiness, where mentoring practices are neither clearly defined nor embedded within structures necessary for consistent adoption and sustainability.[35]

Informal Mentoring as Experiential and Self-Directed Learning

In the absence of formal systems, participants relied on informal, experience-based pathways for professional learning. Informal mentoring occurred through observation, imitation, trial and error, and personal initiative, rather than structured developmental relationships. Learning was largely self-directed, with individuals drawing on personal experience or observing colleagues without formal guidance.

Participant A explained,

"I was mentored through experience and through doing." Similarly,

Participant C noted,

"I was an onlooker, I copied from others, I learned through doing," and

Participant D stated,

"Skills are acquired mostly through studies and personal initiative."

Participant F highlighted the uneven access to mentoring, asserting,

"It all goes with passion and readiness to comply."

From an Implementation Science perspective, these practices represent contextual adaptation, where individuals compensate for absent systems through self-directed learning.[36] However, Deliverology emphasises that mentoring, dependent on individual initiative, lacks the shared targets, delivery routines, and accountability structures necessary for systematically improving Foundation Phase mathematics outcomes.[37]

Mentoring as a Determinant of Leadership Effectiveness and Organisational Stability

Participants consistently positioned mentoring as central to leadership effectiveness and organisational stability. The absence of mentoring was associated with disorganisation, inefficiency, and a weaker leadership capacity, whereas its presence improved coordination, decision-making, and school performance.

Participant A said emphatically,

"Without mentoring and coaching, it is chaos; I think it is a disaster."

[34] Lee E Nordstrum, Paul G LeMahieu, and Karen Dodd, "Deliverology," *Quality Assurance in Education* 25, no. 1 (2017): 43–57; Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."

[35] Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists"; Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."

[36] Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."

[37] Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."

Participant B linked mentoring to learner outcomes:

"Those who participated performed better in learner results; those who did not participate struggled."

Participant F observed,

"Leadership without coaching will not be successful."

These findings suggest that mentoring stabilises school systems by supporting leadership development, curriculum coordination, and performance management. Deliverology underscores that leadership capacity is central to effective delivery, as leaders coordinate routines, monitor performance, and sustain accountability.[38] Implementation Science similarly identifies leadership drivers as critical enablers of successful implementation, especially in complex organisational settings requiring coordinated action and sustained support.[39]

Leadership Culture, Power Relations, and Lack of Psychological Safety as Barriers

School culture and interpersonal dynamics emerged as significant barriers to effective mentoring. Participants described environments characterised by fear, political influence, bullying, and lack of trust, which limited open engagement and honest reflection.

Participant A explained,

"One challenge is a lack of expertise; some get positions through politics or unions, sometimes bullying is another problem, and there is no proper communication."

Participant B noted,

"SMTs don't open up to indicate their challenges; they fear being undermined."

Participant C highlighted power imbalances,

"There is a tendency to deprive others of leadership opportunities," while

Participant D criticised political interference,

"Leaders should be chosen for skills, not political favour."

These conditions align with Implementation Science literature that emphasises psychological safety, ethical leadership, and relational trust as prerequisites for sustained implementation.[40] From a Deliverology perspective, such leadership cultures disrupt feedback loops and inhibit honest performance review, undermining conditions for effective delivery and continuous improvement.[41]

Communication and Collaboration as Core Enablers of Mentoring Effectiveness

Participants consistently highlighted communication and collaboration as critical enablers of mentoring. Dialogue, shared problem-solving, and collective reflection were described as mechanisms that strengthen mentoring and leadership development.

Participant A stated,

"The best way to overcome those challenges is through communication."

Participant C advocated for,

"collaboration, listening, and recognising people's capabilities, not a top-down approach."

[38] Nordstrum, LeMahieu, and Dodd, "Deliverology."
[39] Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists."
[40] Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."
[41] Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."

Participant F emphasised routine interaction, noting,

"regular staff meetings for continuous development," and further added, *"being a leader means listening and finding popular solutions."*

Analytically, communication and collaboration function as core delivery routines in Deliverology, enabling feedback loops, alignment to instructional goals, and collective accountability. [42] Implementation Science similarly positions structured dialogue and collaborative learning as key implementation drivers that support adoption, fidelity, and sustainability of professional development initiatives.[43]

Mentoring Outcomes: Professional Growth, Mobility, and Performance Improvement

Participants conceptualised mentoring outcomes primarily as professional growth, leadership mobility, and improved performance. Successful mentoring was associated with greater confidence, competence, and progression into leadership roles.

Participant A observed,

*"Teachers who respond positively succeed, especially when coming to promotions."**

Participant E highlighted,

"quicker leadership development and identification of role models," while

Participant B linked mentoring to learner outcomes,

"Those who participate hands-on receive mentoring, and their learners perform well."

Participant F framed mentoring success more broadly, noting,

"respect, compliance, lifelong leadership, understanding situations."

Deliverology underscores the need to translate these perceived outcomes into measurable indicators related to curriculum delivery and learner performance.[44] Implementation Science highlights that, without formal measurement, outcomes remain implicit, reflecting weak implementation supports and limited systematic evaluation.[45]

System Strengthening through Structured Programmes, Capacity Building, and Accountability

The participants proposed concrete strategies to strengthen mentoring systems, emphasising formalisation, capacity building, accountability, and sustainability.

Participant A recommended,

"All teachers should undergo mentoring and coaching, not one-day workshops," and stressed the importance of *"communication and conflict resolution."*

Participant B advocated proactive planning:

"The department should not wait for problems; it should have structured annual mentoring programmes."

Participant C suggested broader systemic support, including

"exchange programmes, wellness support, and engagement of researchers and health professionals."

Participant D called for incentives and reduced political influence:

"Revisit deadlines, create incentives, avoid political interference."

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[42] Nordstrum, LeMahieu, and Dodd, "Deliverology."

[43] Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."

[44] Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."

[45] Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists."

Participant E proposed,

"rotation of SMT roles and inviting external mentors and coaches," while

Participant F emphasised accountability:

"Increase curriculum accountability and report on educators who fall behind."

These recommendations align with Deliverology principles that emphasise planned routines, monitoring, and accountability,[46] and Implementation Science principles that highlight organisational readiness, leadership capacity, and sustainability supports required to embed mentoring as a long-term system-level practice.[47]

Table 1: Emergent themes

Theme	Core Empirical Focus	Deliverology Constructs	Implementation Science Constructs
1. Absence of Formalised Mentoring Systems and Conceptual Ambiguity	Mentoring exists informally without clear definition, structure, or institutional recognition.	Weak delivery chain, Absence of clear goals and targets, Lack of delivery routines and feedback loops	Low organisational readiness, Undefined intervention components, Poor implementation infrastructure
2. Informal Mentoring as Experiential and Self-Directed Learning	Learning occurs through observation, trial and error, and personal initiative rather than structured mentoring.	Reliance on individual effort rather than system routines, Inconsistent delivery practices	Contextual adaptation, Individual-level coping mechanisms, Lack of fidelity to formal intervention models
3. Mentoring as a Determinant of Leadership Effectiveness and Organisational Stability	Mentoring is perceived as essential for leadership capacity, coordination, and school performance.	Leadership capacity as a delivery driver, System coherence and alignment, Performance management	Leadership drivers, Implementation leadership, Organisational capacity building
4. Leadership Culture, Power Relations, and Lack of Psychological Safety	Fear, politics, bullying, and mistrust constrain mentoring and learning	Disrupted feedback loops, poor performance review culture, Poor problem-solving routines	Psychological safety, Ethical and relational leadership, Implementation climate
5. Communication and Collaboration as Core Enablers	Dialogue, shared problem-solving, and collaboration enable mentoring effectiveness.	Delivery routines, Feedback mechanisms, Collective accountability	Facilitative administration, Collaborative learning, Implementation support processes
6. Mentoring Outcomes: Professional	Mentoring related to confidence, promotions,	Outcome orientation, Focus on results and improvement, Need	Outcome monitoring, Absence of systematic

[46] Nordstrum, LeMahieu, and Dodd, "Deliverology"; Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."

[47] Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists"; Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."

Growth, Mobility, and Performance Improvement	leadership growth, and learner performance	for measurable indicators	evaluation, Weak data use for improvement
7. System Strengthening through Structured Programmes, Capacity Building, and Accountability	Calls for formal programmes, training, incentives, accountability, and sustainability	Planned delivery routines, Monitoring and accountability systems, and continuous improvement cycles	Organisational readiness, Sustainability planning, Capacity-building supports

DISCUSSION

This section interprets the findings in relation to the purpose of the study and the guiding theoretical frameworks of Deliverology and Implementation Science. Rather than reiterating the findings, the discussion critically examines mentoring and coaching as system-level mechanisms that shape leadership capacity, organisational coherence, and the delivery of Foundation Phase mathematics. Through these frameworks, mentoring is conceptualised not only as professional support but also as a delivery driver and an implementable innovation, whose effectiveness depends on clear goals, structured routines, leadership capacity, feedback mechanisms, and supportive organisational conditions. Based on theoretical alignment, the discussion focuses on five core themes: (1) absence of formalised mentoring systems, (2) leadership capacity and organisational stability, (3) leadership culture and psychological safety, (4) communication and collaboration as delivery routines, and (5) accountability and system strengthening. Themes relating solely to individual perceptions or informal learning are integrated where they illuminate systemic weaknesses rather than discussed independently.

Theme 1: Absence of Formalised Mentoring Systems as a Breakdown in the Delivery Chain

The absence of formalised mentoring systems across cases represents a fundamental breakdown in the delivery chain, as conceptualised within Deliverology. Although there were professional development activities, their lack of formal recognition as mentoring resulted in weak alignment between mentoring practices and instructional goals. Deliverology emphasises that effective delivery requires clearly articulated targets, defined routines, monitoring mechanisms, and feedback loops.[48] In this study, mentoring lacked these elements, rendering it invisible within school improvement processes and difficult to evaluate in relation to Foundation Phase mathematics delivery. Implementation Science further explains this absence as a condition of low organisational readiness, where mentoring has not been institutionalised through shared definitions, leadership commitment, or enabling structures.[49] Without formalisation, mentoring remains dependent on individual discretion, limiting consistency, fidelity, and sustainability. The findings thus demonstrate that mentoring cannot function as a delivery mechanism unless it is explicitly embedded within school systems and leadership practices.

Theme 2: Mentoring, Leadership Capacity, and Organisational Stability

A central contribution of the findings is the strong association between mentoring, leadership effectiveness, and organisational stability.[50] Participants consistently linked the presence of mentoring to improved coordination, decision-making, and school performance, while its absence was associated with instability and inefficiency. This aligns with Deliverology's assertion that leadership capacity is a primary driver of delivery success, as leaders are responsible for translating strategy into action, monitoring progress, and sustaining accountability.[51] Implementation Science similarly identifies

[48] Nordstrum, LeMahieu, and Dodd, "Deliverology"; Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."
[49] Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists"; Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."
[50] Belafi, Hwa, and Kaffenberger, "Building on Solid Foundations: Prioritising Universal, Early, Conceptual and Procedural Mastery of Foundational Skills."
[51] Nordstrum, LeMahieu, and Dodd, "Deliverology."

leadership drivers as critical enablers of implementation, particularly in complex organisational settings such as schools.[52] The findings suggest that weak mentoring systems undermine leadership development, which in turn compromises the consistent delivery of Foundation Phase mathematics. Mentoring, therefore, emerges as a stabilising mechanism that strengthens leadership capacity and supports a coherent instructional delivery throughout the school.

Theme 3: Leadership Culture and Psychological Safety as Implementation Conditions

Leadership culture and psychological safety emerged as critical contextual conditions shaping the effectiveness of mentoring. Environments characterised by fear, political interference, and power imbalances inhibited open dialogue, reflection, and learning. Implementation Science explains these dynamics as contextual barriers that undermine implementation fidelity and sustainability, as staff are unlikely to engage meaningfully in mentoring when trust and ethical leadership are absent.[53] From a Deliverology perspective, such leadership cultures disrupt feedback loops and honest performance review, both of which are essential for continuous improvement.[54] The findings indicate that mentoring systems cannot succeed independently of broader leadership and governance conditions. To function as a delivery driver, schools must cultivate ethical leadership practices, relational trust, and psychologically safe environments that support learning and accountability.

Theme 4: Communication and Collaboration as Core Delivery and Implementation Routines

Communication and collaboration emerged as central enablers of mentoring effectiveness, functioning as both delivery routines and implementation supports. Deliverology emphasises structured communication as a mechanism to align practice with instructional goals, enable feedback loops, and sustain collective accountability.[55] In the absence of formal mentoring systems, communication and collaboration partially compensated for systemic gaps, although unevenly. Implementation Science similarly positions collaborative dialogue and facilitative administration as key implementation drivers that support adoption and sustainability of professional practices.[56] The findings suggest that mentoring effectiveness depends not only on formal structures but also on the quality of relational and communicative practices that enable shared problem-solving and continuous learning.

Theme 5: Accountability and System Strengthening through Structured Mentoring Programmes

The participants' recommendations converged on the need for formalisation, accountability, and sustainability, aligning directly with the core principles of both Deliverology and Implementation Science. Deliverology advocates for planned routines, performance monitoring, and accountability structures that link professional development to instructional outcomes.[57] Participants' calls for structured programmes, regular monitoring, and curriculum accountability reflect this logic.[58] Implementation Science reinforces these recommendations by emphasising organisational readiness, leadership capacity, and sustainability planning as prerequisites for long-term system change.[59] The findings indicate that strengthening mentoring in Foundation Phase mathematics requires coordinated system-level action, where mentoring is embedded within delivery expectations and supported by

[52] Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists."
[53] Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."
[54] Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."
[55] Nordstrum, LeMahieu, and Dodd, "Deliverology."
[56] Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."
[57] Nordstrum, LeMahieu, and Dodd, "Deliverology"; Gewirtz et al., "What's Wrong with 'Deliverology'? Performance Measurement, Accountability and Quality Improvement in English Secondary Education."
[58] Belafi, Hwa, and Kaffenberger, "Building on Solid Foundations: Prioritising Universal, Early, Conceptual and Procedural Mastery of Foundational Skills."
[59] Dickson et al., "Value of Peer Mentoring for Early Career Professional, Research, and Personal Development: A Case Study of Implementation Scientists"; Vroom, Albizu-Jacob, and Massey, "Evaluating an Implementation Science Training Program: Impact on Professional Research and Practice."

implementation infrastructure. Without such alignment, mentoring remains fragmented and unable to drive sustained instructional improvement.

Taken together, the discussion demonstrates that mentoring in Foundation Phase mathematics functions most effectively when conceptualised as both a delivery mechanism and an implementable system innovation. Deliverology clarifies what mentoring must achieve: clear targets, routines, feedback, and accountability, while Implementation Science explains how mentoring can be adopted, embedded, and sustained within real school contexts. The findings underscore that mentoring cannot be reduced to individual goodwill or informal learning but must be systematised through strong leadership, ethical cultures, structured communication, and accountability mechanisms.

RECOMMENDATIONS

The recommendations presented in this section are directly derived from the study's findings and are explicitly aligned with the core constructs of Deliverology and Implementation Science. In line with the Curriculum and Assessment Policy Statement (CAPS) for the Foundation Phase, which emphasises curriculum coverage, progression, assessment, and accountability, mentoring is positioned as both a delivery mechanism for curriculum implementation and a system-level innovation requiring deliberate planning, leadership capacity, and sustainability supports. Each recommendation corresponds to a key discussion construct and addresses both what should be strengthened (Deliverology) and how it should be implemented and sustained (Implementation Science).

Formalising Mentoring as a Core Delivery Mechanism

Absence of Formalised Mentoring Systems / Delivery Chain / Organisational Readiness - It is recommended that the Department of Basic Education (DBE) and district offices formally institutionalise mentoring and coaching as part of school improvement planning. Schools should develop written mentoring frameworks that clearly define mentoring objectives, roles, processes, and expected outcomes for Foundation Phase mathematics delivery. These frameworks should be embedded in School Improvement Plans (SIPs) and Annual Teaching Plans (ATPs), ensuring alignment with CAPS requirements. From a Deliverology perspective, mentoring should be linked to explicit delivery targets, such as curriculum coverage, assessment quality, and learner progression in mathematics. Implementation Science further requires that schools be supported to develop organisational readiness, including leadership commitment, shared understanding, and enabling structures that allow mentoring to be implemented with fidelity and sustained over time.

Strengthening Leadership Capacity through Structured Mentoring

Leadership Capacity and Organisational Stability / Leadership Drivers - Targeted mentoring and coaching programmes should be introduced for school management teams, with a specific focus on instructional leadership in the Foundation Phase. Principals, deputy principals, and department heads should receive continuous mentoring on curriculum leadership, data use, and staff development. Deliverology emphasises leadership as a primary driver of effective delivery; therefore, SMT mentoring should focus on coordinating delivery routines, monitoring progress, and addressing implementation gaps. Implementation Science reinforces the importance of leadership drivers, recommending that mentoring for leaders be ongoing, role-specific, and supported by district-level coaching to ensure consistency and sustainability.

Creating Psychologically Safe and Ethical Leadership Cultures

Leadership Culture / Psychological Safety / Implementation Climate - Schools should intentionally cultivate leadership cultures that promote psychological safety, ethical conduct, and relational trust. This can be achieved through leadership development programmes that address power relations, conflict resolution, and ethical decision-making, as well as through clear policies that minimise political interference in appointments and professional development. Implementation Science identifies psychological safety as a prerequisite for meaningful engagement in mentoring and change initiatives. Deliverology similarly requires honest feedback and performance review to support continuous

improvement. Therefore, it is recommended that schools establish norms and structures that encourage openness, reflective practice, and constructive feedback within mentoring relationships.

Institutionalising Communication and Collaboration as Delivery Routines

Communication and Collaboration / Delivery Routines / Implementation Supports - Regular, structured opportunities for collaborative dialogue should be institutionalised within schools. These may include scheduled mentoring sessions, professional learning communities (PLCs), and Foundation Phase curriculum meetings focused on problem-solving and reflective practice. From a Deliverology perspective, communication and collaboration should function as delivery routines that enable feedback loops and alignment with instructional goals. Implementation Science supports this by emphasising facilitative administration, where structured interaction supports adoption, fidelity, and sustainability of mentoring practices. Schools should therefore move beyond ad hoc meetings toward routinised, purpose-driven collaboration linked to mentoring objectives.

Integrating Accountability and Monitoring within Mentoring Systems

Accountability / Performance Monitoring / Outcome Measurement - Mentoring systems should incorporate clear accountability mechanisms, including monitoring tools that track participation, implementation quality, and impact on Foundation Phase mathematics delivery. SMTs should be required to report on mentoring activities as part of curriculum monitoring and school evaluation processes. Deliverology stresses the importance of translating mentoring into measurable outcomes, such as improved lesson quality, curriculum pacing, and learner performance. Implementation Science complements this by advocating for embedded monitoring and feedback systems that inform continuous improvement rather than compliance alone. Districts should provide templates and guidance to support consistent data collection and use.

Ensuring Sustainability through System-Level Support and Capacity Building

System Strengthening / Sustainability / Organisational Readiness - To ensure long-term sustainability, mentoring should be supported through system-level capacity building, including district-based mentoring coordinators, external coaching partnerships, and ongoing professional development. Incentives, recognition, and career progression pathways related to mentoring participation should be introduced to reinforce commitment. Implementation Science highlights sustainability as dependent on continued resources, leadership support, and adaptation to context. Deliverology reinforces the need for sustained delivery focus over time. It is therefore recommended that mentoring be treated as a long-term system investment rather than a short-term intervention, particularly in resource-constrained Foundation Phase contexts.

Therefore, these recommendations operationalise the study's findings by aligning mentoring with Deliverology's focus on targets, routines, monitoring, and accountability, and Implementation Science's emphasis on readiness, leadership drivers, psychological safety, and sustainability. When implemented together, these recommendations position mentoring as a coherent, system-level mechanism capable of strengthening leadership practice and improving Foundation Phase mathematics delivery in South African primary schools.

CONCLUSION

This study examined how mentoring for Foundation Phase Mathematics delivery is organised, implemented, and sustained in selected South African primary schools through the integrated lenses of Deliverology and Implementation Science. The study set out to understand mentoring not only as a professional development activity, but as a school-level mechanism that can support instructional leadership, curriculum delivery, teacher development, and sustained improvement in early-grade Mathematics teaching. The findings show that school management teams consider mentoring important, but it remains weakly formalised in school systems. In many cases, mentoring occurs through informal guidance, personal initiative, observation, and shared experience rather than through planned, monitored, and accountable structures. This limits its consistency and reduces its potential to contribute directly to Foundation Phase Mathematics delivery. Therefore, the study concludes that

mentoring cannot depend only on individual goodwill or occasional professional support. It needs to be deliberately structured, clearly defined, and linked to curriculum priorities, teacher development needs, and learner progression in Mathematics. Leadership is central to the effectiveness of mentoring. Where school management teams create conditions for communication, collaboration, trust, and professional learning, mentoring is more likely to support teacher confidence and instructional improvement. However, where leadership cultures are shaped by fear, weak communication, power relations, or a lack of psychological safety, mentoring becomes difficult to sustain. The effectiveness of mentoring, therefore, depends not only on the presence of mentors but also on the quality of the school environment in which mentoring takes place. The final position of this study is that mentoring should be treated as a core delivery mechanism to strengthen Foundation Phase Mathematics in South African primary schools. It should be embedded in school improvement planning, supported by district structures, guided by clear goals, monitored through regular feedback, and sustained through leadership commitment. When mentoring is planned, supported, and accountable, it has the potential to move beyond informal professional assistance and become a coherent system for improving Mathematics teaching in the Foundation Phase.

Limitations of the Study

This study used a qualitative multiple-case study design, prioritising depth of understanding over statistical generalisation. Consequently, the findings are context-specific, reflecting the experiences and perceptions of school management teams in a limited number of primary schools within the Tshwane North District. While the study offers rich, transferable insights into mentoring practices in socioeconomically constrained contexts, the findings should not be interpreted as representative of all South African primary schools. The study deliberately focused on members of the school management team, principals, deputy principals, and department staff due to their responsibility for instructional leadership, mentoring coordination, and CAPS implementation. Although this focus enabled a system-level analysis of mentoring, the exclusion of classroom teachers limited insight into how mentoring is experienced and enacted in the classroom. Teachers' perspectives could have provided additional understanding of day-to-day instructional practices and the direct influence of mentoring on teaching and learning.

Data were generated through semi-structured interviews that relied on self-reported and retrospective accounts. As such, the responses of the participants may have been influenced by social desirability, professional positioning, or recall bias. Although credibility was strengthened through member checking, peer debriefing, and the use of verbatim quotations, the findings remain interpretive rather than observational. The absence of classroom observations, document analysis, and learner performance data limited methodological triangulation. Furthermore, the study did not include direct or longitudinal measures of learner achievement. As a result, associations between mentoring practices and Foundation Phase mathematics outcomes are based on participants' perceptions rather than empirical performance data. Although this aligns with the interpretivist orientation of the study, it constrains conclusions about causal impact. This limitation is particularly relevant given Deliverology's emphasis on measurable indicators and outcome monitoring, which could not be fully operationalised within the scope of this research.

In essence, the integration of Deliverology and Implementation Science shaped the analytic focus toward system-level and leadership-oriented explanations. Although this strengthened theoretical coherence, it may have marginalised alternative theoretical perspectives on mentoring and professional learning. This risk was mitigated by inductive coding and sustained attention to the voices of the participants. Despite these limitations, the study provides robust, contextually grounded insights and identifies clear directions for future research.

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