



Learning Outcome Mapping in Government Elementary Schools

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Abstract— Learning outcome mapping, the systematic alignment of curricular content, pedagogical processes, and assessment practices with clearly defined, stage-specific expectations of what a child should know and be able to do, has become a central concern of elementary education policy in India. Following the National Council of Educational Research and Training's development of class-wise Learning Outcomes for the elementary stage, and the subsequent launch of the National Education Policy (NEP) 2020 and the NIPUN Bharat Mission for foundational literacy and numeracy, government elementary schools are now expected to align classroom practice with an explicit, nationally articulated outcomes framework. This paper reviews the conceptual foundations of curriculum and outcome mapping, the specific policy architecture developed for Indian elementary education, and the empirical evidence on how far these mapping efforts have translated into improved classroom practice and measurable learning gains. Drawing on the Annual Status of Education Report (ASER) and recent studies of teacher awareness and implementation, the review finds a persistent gap between the existence of a well-articulated outcomes framework and its consistent application in government elementary classrooms, with structural constraints, resource limitations, and assessment capacity emerging as recurring barriers. The paper concludes that outcome mapping, while conceptually well established and formally mandated, requires sustained investment in teacher capacity, assessment literacy, and monitoring

systems if it is to close the gap between policy intention and classroom reality in government elementary schools.

Keywords— Learning outcomes, curriculum mapping, elementary education, government schools, NEP 2020, NIPUN Bharat, foundational literacy and numeracy, assessment

INTRODUCTION

Elementary education systems worldwide face a persistent challenge: ensuring that what is taught in the classroom, how it is taught, and how it is assessed are coherently aligned with clearly stated expectations of what children should learn at each stage of schooling. This alignment problem is not merely administrative; when curriculum, pedagogy, and assessment drift apart, teachers may continue "completing the syllabus" without any reliable indication of whether children have actually acquired the underlying competencies, a concern that has repeatedly surfaced in large-scale assessments of elementary learning in India.

The concept of curriculum or learning outcome mapping, understood as the process of making explicit the relationships between intended learning outcomes, the content actually delivered, the learning opportunities provided to students, and the methods used to assess them, was formally articulated within the AMEE Guide framework developed for medical



education by Harden, who argued that a curriculum map functions as "the glue which holds the curriculum together," allowing both teachers and learners to see clearly what is to be learned, when, and how it will be assessed (Harden, 2001). Although Harden's framework originated in professional and higher education, its underlying logic, that a curriculum functions best when outcomes, content, pedagogy, and assessment are made explicit and traceable to one another, applies with equal force to elementary schooling, where the stakes of misalignment are arguably higher given the foundational nature of early learning.

learning outcome mapping in government elementary schools as both a conceptual and a practical undertaking: conceptually, as the alignment of curriculum, pedagogy, and assessment with defined learning outcomes; and practically, as a policy architecture whose success depends on teacher capacity, assessment systems, and implementation support at the school level.

LITERATURE REVIEW

Conceptual Foundations of Curriculum and Outcome Mapping

The foundational conceptual account of curriculum mapping in the education literature is provided by Harden, whose widely cited AMEE Guide No. 21 defines curriculum mapping as the process of making explicit the relationships between the intended learning outcomes, the content delivered, the learning opportunities provided, and the assessment methods employed (Harden, 2001). Harden's framework identifies several "windows" through which a curriculum map can be viewed, including the expected learning outcomes, the curriculum content or areas of expertise, the learning opportunities through which content is delivered, and the assessment methods used to evaluate whether outcomes have been achieved. The central argument of this framework is that curriculum mapping renders the curriculum more transparent to all stakeholders, teachers, students, curriculum developers, and researchers alike, and that this transparency in turn supports more effective and efficient curriculum planning. Although developed originally within medical education, this conceptual apparatus has since been applied and adapted across numerous educational contexts, and its core logic, namely that outcomes must be explicitly linked to content and assessment for a curriculum to function coherently, provides a useful conceptual anchor for examining outcome mapping in elementary schooling.

The Indian Policy Architecture for Learning Outcomes

Within India, the formal articulation of stage-specific learning outcomes for elementary education began with the NCERT's 2017 publication of Learning Outcomes at the Elementary Stage, developed at the instance of the Ministry of Human Resource Development to guide states and union territories in monitoring student learning against expected benchmarks, organizing additional instruction for children with learning gaps, and communicating progress to parents and guardians (NCERT, 2017). This document represented an explicit shift away from the earlier Minimum Learning Levels framework, recognizing the child's capacity to construct knowledge as a

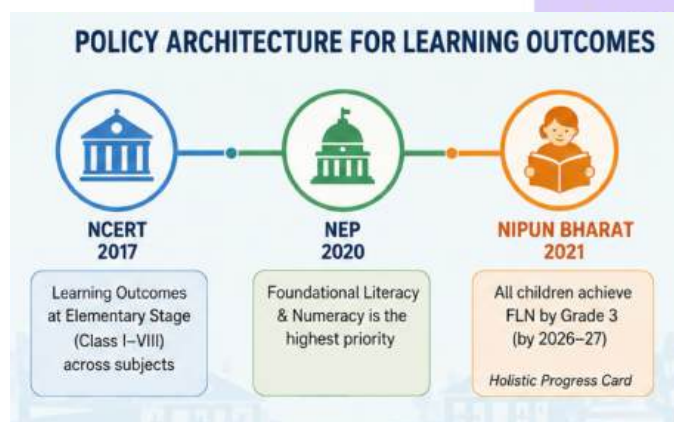


In India, this logic has been substantially formalized at the policy level. The NCERT's Learning Outcomes at the Elementary Stage document laid down class-wise learning outcomes across languages, mathematics, environmental studies, science, and social science for Classes I through VIII, explicitly intended to help teachers, School Management Committees, and parents understand curricular expectations and monitor children's progress against them (NCERT, 2017). This framework was subsequently reinforced by the National Education Policy 2020, which identified the achievement of universal foundational literacy and numeracy as the highest priority of the entire school education system, and by the NIPUN Bharat Mission, launched in 2021, which set a time-bound national target for every child to acquire foundational literacy and numeracy competencies by the end of Grade 3 (Government of India, 2020).

Despite this increasingly well-articulated outcomes architecture, large-scale assessments of learning in government elementary schools continue to reveal substantial gaps between the outcomes children are formally expected to achieve and the outcomes they demonstrate in practice. This paper examines

natural learner and repositioning the teacher's role as primarily a facilitator of that process rather than a transmitter of fixed content.

This outcomes framework was substantially reinforced by the National Education Policy 2020, which stated unequivocally that the highest priority of the school education system must be to achieve universal foundational literacy and numeracy in primary school, warning that the rest of the policy's ambitions would remain largely irrelevant for a large proportion of students if this most basic learning were not first secured (Government of India, 2020). Operationalizing this priority, the Ministry of Education launched the NIPUN Bharat Mission in July 2021, setting a national target for every child to achieve desired learning competencies in reading, writing, and numeracy by the end of Grade 3, with an interim proficiency target set for Grade 2, to be achieved nationally by 2026-27. The NIPUN Bharat framework explicitly frames foundational literacy and numeracy not as isolated skills but within a holistic model of child development encompassing physical and motor development, socio-emotional development, cognitive development, and life skills, to be tracked through a Holistic Progress Card for each child.



Empirical Evidence on Learning Outcome Attainment

While this policy architecture provides an increasingly explicit outcomes framework, large-scale citizen-led assessments continue to document substantial gaps between intended and actual learning outcomes in practice. The Annual Status of Education Report (ASER) 2023, conducted by the Pratham-affiliated ASER Centre across 28 districts in 26 states and covering 34,745 youths aged 14 to 18, found that roughly a quarter of respondents could not read a Class 2-level text in their regional language, and that a substantial proportion continued to struggle with basic arithmetic operations expected

at the primary level, despite having progressed well beyond elementary school. These findings are particularly significant for the present review because they demonstrate that foundational learning gaps identified at the elementary stage tend to persist rather than resolve themselves as children progress through the system, underscoring the practical stakes of getting outcome mapping right at the elementary level in the first instance.

Teacher-Level Implementation of Outcome-Based Approaches

A further body of evidence addresses how the outcomes and pedagogical frameworks associated with policies such as NEP 2020 are actually taken up by teachers within government elementary schools. A recent mixed-methods study examined the awareness and implementation of Activity-Based Learning, a learner-centred pedagogical approach formally promoted through NEP 2020 and the National Curriculum Framework for School Education 2023, among headmasters and teachers in government elementary schools in rural Odisha (Mishra, 2026). The study found a high overall level of teacher awareness of the approach, yet identified a clear "awareness-implementation gap": despite strong conceptual knowledge, teachers and headmasters reported substantial structural and contextual barriers to sustained classroom implementation, including resource and material constraints, time and curriculum pressure, classroom management difficulties, gaps in training and professional development, and, notably, challenges specifically related to assessment and evaluation. This finding is directly relevant to learning outcome mapping because it suggests that even where teachers are well informed about outcome-oriented pedagogical frameworks, translating that awareness into consistent, outcome-aligned assessment practice in the classroom remains a distinct and unresolved challenge.

Synthesis Across the Literature

Read together, this literature suggests a layered picture. At the conceptual level, curriculum and outcome mapping is a well-established educational planning tool whose value lies in making explicit the connections between intended outcomes, content, pedagogy, and assessment (Harden, 2001). At the policy level, India has developed an increasingly detailed and ambitious outcomes architecture for elementary education, moving from the NCERT's class-wise Learning Outcomes document, through NEP 2020's prioritization of foundational literacy and numeracy, to NIPUN Bharat's time-bound, holistically framed national mission (NCERT, 2017; Government of India, 2020). At the level of classroom practice



and system-wide measurement, however, both large-scale citizen assessments and school-level implementation studies indicate that substantial gaps remain between the outcomes formally specified in policy and curriculum documents and the outcomes actually achieved and consistently assessed in government elementary classrooms (ASER Centre, 2023; Mishra, 2026).

RESEARCH GAP

Several gaps constrain a complete understanding of learning outcome mapping in government elementary schools. First, while the conceptual literature on curriculum mapping is well developed in professional and higher education contexts (Harden, 2001), comparatively little research has systematically applied or adapted this conceptual framework to the specific institutional conditions of government elementary schooling in low-resource settings. Second, although India's policy architecture for learning outcomes has become increasingly detailed, relatively few empirical studies directly examine how outcome mapping is operationalized at the level of individual government schools, as distinct from studies of national or state-level learning achievement more broadly. Third, existing implementation studies, such as the Odisha study reviewed above, tend to be geographically limited and small in scale, raising questions about the generalizability of identified barriers across India's highly diverse elementary school system (Mishra, 2026). Fourth, there is limited research directly linking teacher-level assessment practices to the specific learning outcomes articulated in the NCERT framework, as opposed to broader pedagogical approaches such as activity-based learning. This paper addresses these gaps by synthesizing the conceptual, policy, and empirical literatures within a single integrative framework and by highlighting where future research and practice attention is most needed.

OBJECTIVES OF THE STUDY

The present study is guided by the following objectives:

To examine the conceptual foundations of curriculum and learning outcome mapping as an educational planning tool.

To review the policy architecture developed for learning outcome mapping in Indian elementary education, including the NCERT Learning Outcomes framework, NEP 2020, and the NIPUN Bharat Mission.

To examine empirical evidence on the extent to which specified learning outcomes are being achieved in government elementary schools.

To examine evidence on teacher-level awareness and implementation of outcome-oriented pedagogical and assessment practices.

To identify the structural and practical gaps that limit effective learning outcome mapping in government elementary schools and propose directions for strengthening it.

RESEARCH METHODOLOGY

This study adopts a narrative and integrative literature review methodology, appropriate given its aim of synthesizing conceptual, policy, and empirical literatures on learning outcome mapping. Sources were identified through targeted searches of peer-reviewed academic databases and journals, including Medical Teacher, the Journal of Education, Society and Behavioural Science, and relevant government and quasi-government publications, including NCERT curricular documents, National Education Policy 2020, NIPUN Bharat Mission guidelines issued by the Ministry of Education, and the Annual Status of Education Report published by the ASER Centre. Search terms included combinations of "learning outcomes," "curriculum mapping," "elementary education," "government schools," "foundational literacy and numeracy," and "NEP 2020."

Inclusion criteria required that sources be either peer-reviewed academic publications or official government and recognized non-governmental policy or assessment documents directly relevant to learning outcomes in elementary education, with priority given to sources that could be independently verified against a citable, indexed, or officially published source. Sources were excluded if they could not be verified against such a source or if they addressed learning outcomes in higher education or professional training contexts without direct relevance to elementary schooling. Given the integrative and policy-oriented nature of this review, no formal meta-analytic pooling of quantitative findings was undertaken; rather, sources were organized thematically around conceptual foundations, policy architecture, and empirical implementation evidence, and then synthesized to identify convergences and persistent gaps.

Discussion



Table 1: Key Components of the Learning Outcome Mapping Architecture in Indian Elementary Education

Framework / Document	Issuing Body & Year	Core Function	Relevance to Outcome Mapping
Learning Outcomes at the Elementary Stage	NCERT (2017)	Specifies class-wise learning outcomes (Classes I–VIII) across languages, mathematics, EVS, science, and social science	Provides the substantive "outcomes" reference point against which curriculum, teaching, and assessment can be mapped
National Education Policy 2020	Ministry of Education, Government of India (2020)	Establishes universal foundational literacy and numeracy as the highest system-wide priority	Provides the policy mandate driving outcome-based reform at the elementary stage
NIPUN Bharat Mission	Ministry of Education (2021)	Sets a time-bound national target (by 2026-27) for foundational literacy and numeracy by Grade 3	Operationalizes outcomes into a holistic, trackable mission with a Holistic Progress Card
Curriculum Mapping Framework (AMEE Guide No. 21)	Harden (2001)	Provides the conceptual methodology linking outcomes, content, pedagogy, and assessment	Supplies the analytical lens for evaluating whether outcomes are genuinely mapped to practice

Table 1 illustrates that India's elementary education system now possesses a comparatively well-developed formal architecture for learning outcome mapping, spanning a substantive outcomes document (NCERT, 2017), an overarching policy mandate (Government of India, 2020), and an operational mission with concrete, time-bound targets (NIPUN Bharat). Read against Harden's (2001) conceptual framework, this architecture addresses the "outcomes" and, to a considerable extent, the "assessment" windows of the curriculum map; what remains less consistently addressed, according to the implementation literature reviewed above, is the reliable linkage between these formally specified outcomes and the actual content delivery and pedagogical opportunities provided in individual government classrooms.

Table 2: Evidence on the Outcome–Practice Gap in Government Elementary Schools

Evidence Source	Focus	Key Finding	Implication for Outcome Mapping
ASER 2023 (ASER Centre / Pratham)	Foundational reading and arithmetic levels among rural youth aged 14–18	Roughly one-quarter could not read a Class 2-level text; many struggled with basic arithmetic expected at the primary level	Foundational learning gaps identified at the elementary stage persist well beyond it, indicating incomplete outcome attainment
Mishra (2026), rural Odisha	Teacher and headmaster awareness and implementation of Activity-Based Learning in government elementary schools	High awareness (Total Mean 66.05/75) but significant implementation barriers, including resource constraints (90%) and assessment challenges (65%)	Demonstrates an awareness-implementation gap that directly constrains consistent outcome-based classroom practice
NIPUN Bharat Mission targets	National foundational literacy and numeracy attainment by Grade 3	Mission set with 2026-27 target; national rollout still in progress with variation across states	Indicates the outcome-mapping architecture is still in an active implementation phase rather than a settled, fully realized system

The evidence summarized in Table 2 points to a consistent theme across otherwise very different sources: the existence of a well-specified outcomes framework does not, by itself, guarantee that those outcomes are achieved or even consistently pursued in day-to-day classroom practice. The Odisha implementation study is particularly instructive in this respect because it demonstrates that the barrier is not primarily one of teacher knowledge or awareness, teachers in the study demonstrated high conceptual familiarity with outcome-oriented pedagogy, but rather one of practical implementation capacity, including resource availability, time pressure within an already demanding curriculum, and, notably, difficulties specifically related to assessment and evaluation practice (Mishra, 2026). This last point is significant for outcome mapping specifically, since assessment is the mechanism through which the achievement of specified learning outcomes is actually verified; if assessment practice itself is under strain, the entire mapping exercise, from outcomes to content to pedagogy to assessment, is weakened at its final and arguably most consequential link.

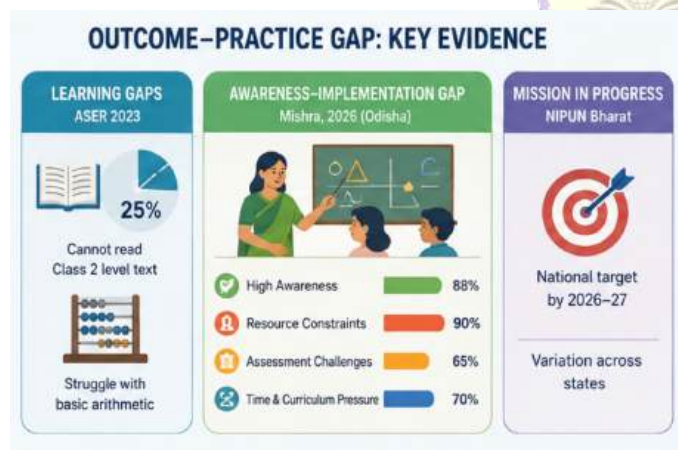
FINDINGS

The reviewed literature supports several key findings regarding learning outcome mapping in government elementary schools. India has developed a comparatively comprehensive and increasingly time-bound formal architecture for specifying elementary learning outcomes, moving from the NCERT's class-wise outcomes document through NEP 2020's prioritization of foundational literacy and numeracy to the NIPUN Bharat Mission's holistic, target-driven implementation framework. Despite this architecture, large-scale citizen-led assessment data continue to reveal substantial gaps between the outcomes formally specified for the elementary stage and the outcomes actually demonstrated by students, with these gaps persisting well beyond the elementary years into adolescence. Teacher-level implementation studies indicate that awareness of outcome-oriented pedagogical approaches among government elementary school teachers is often high, but that translating this awareness into consistent classroom practice is constrained by resource limitations, curricular time pressure, and, specifically, challenges in assessment and evaluation practice. Applying the conceptual curriculum-mapping framework developed by Harden (2001) to this context suggests that India's elementary outcomes architecture is comparatively strong on the "outcomes" component of the map but remains uneven on the links connecting those outcomes to consistently delivered content, pedagogy, and, most critically, verified assessment at the level of individual government schools.

Outcomes framework, reinforced by NEP 2020's prioritization of foundational literacy and numeracy, and operationalized through the NIPUN Bharat Mission's time-bound national targets. However, the persistence of substantial learning gaps documented in large-scale assessments, together with implementation research showing a clear gap between teacher awareness and consistent classroom practice, indicates that the mapping of these formally specified outcomes onto actual government-school classroom content, pedagogy, and assessment remains incomplete. Strengthening learning outcome mapping in government elementary schools will require attention not only to the further refinement of outcomes documents and national missions, but, more urgently, to the practical conditions, teacher training, assessment capacity, resource availability, and curricular time, that determine whether those outcomes are genuinely realized in the classroom.

LIMITATIONS AND FUTURE SCOPE

As a narrative rather than systematic review, this paper does not employ formal meta-analytic techniques or an exhaustive systematic search protocol, and its conclusions should be read as a synthesis of representative literature rather than an exhaustive account of the field. The empirical implementation evidence reviewed, in particular the Odisha-based study, is geographically limited and drawn from a comparatively small sample, and further research is needed to determine whether similar awareness-implementation gaps hold across India's diverse state-level elementary education systems. Future research should prioritize school-level studies that directly trace the linkage between NCERT-specified learning outcomes, actual classroom content delivery, and locally administered assessment practices, using the conceptual apparatus of curriculum mapping as an explicit analytical framework rather than treating outcomes, pedagogy, and assessment as separate areas of inquiry. Additionally, as NIPUN Bharat approaches its 2026-27 target date, future research should systematically evaluate the extent to which the mission's holistic progress-tracking mechanisms are being implemented consistently across government elementary schools, and what structural investments are most needed to close the persistent gap between outcome specification and outcome attainment.



CONCLUSION

This paper set out to examine learning outcome mapping in government elementary schools as both a conceptual and a practical undertaking. The evidence reviewed indicates that India possesses an increasingly well-articulated formal architecture for specifying what children at the elementary stage should learn, embodied in the NCERT's Learning

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