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From Gurukula to Competency Framework: What Cognitive Apprenticeship Theory Can and Cannot Offer NEP 2020's Competency-Based Reform

Pāṭhyakrama: Curriculum Design and Implementation

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Abstract

India's National Education Policy (NEP) 2020 and the National Curriculum Framework for School Education 2023 commit Indian schooling to competency-based education while simultaneously invoking the guru-shishya paramparā, the traditional teacher-disciple apprenticeship model, as an indigenous precedent for experiential and holistic learning. This paper examines whether that invocation is pedagogically substantive or merely symbolic by testing the guru-shishya model against two independent bodies of evidence: cognitive apprenticeship theory, which offers a structural account of how expert-guided, situated learning actually works, and the substantial critical literature on competency-based education, which has for decades warned that atomizing learning into discrete, assessable competencies risks fragmenting the very expertise it aims to build. The paper argues that a genuine and useful correspondence exists between guru-shishya pedagogy and cognitive apprenticeship's mechanisms of modelling, scaffolding, and fading, and that this correspondence offers real implementation guidance for competency-based reform. It argues equally strongly, drawing on the historical scholarship on caste-based exclusion in classical Indian education, that this pedagogical correspondence must not be allowed to import the guru-shishya system's exclusionary social structure into a policy explicitly committed to universal, equitable schooling. The paper concludes with concrete recommendations for curriculum bodies implementing NEP 2020's competency-based mandate.

Keywords: competency-based education; cognitive apprenticeship; guru-shishya paramparā; curriculum implementation; National Education Policy 2020; situated learning; educational equity

1. Introduction

India's National Education Policy 2020 and the National Curriculum Framework for School Education 2023 (NCF-SE 2023) commit the country's school system to a decisive shift away from rote, content-heavy instruction and toward competency-based education, in which learning outcomes are defined, taught, and assessed as demonstrable competencies rather than as accumulated content knowledge (National Council of Educational Research and Training, 2023). This reform agenda is frequently accompanied, in policy commentary and curricular advocacy, by an appeal to indigenous precedent: the guru-shishya paramparā, the traditional teacher-disciple relationship of classical Indian education, is regularly invoked as evidence that experiential, individualized, competency-oriented learning is not a foreign import but a return to an authentically Indian pedagogical inheritance.

This paper treats that invocation as a claim to be tested rather than a rhetorical flourish to be accepted. Two independent literatures make the test possible. The first is cognitive apprenticeship theory, developed within the learning sciences to explain how expert-guided, situated learning actually transmits complex skill, which offers a structural vocabulary for evaluating whether the guru-shishya model has genuine mechanistic content to contribute to curriculum design, beyond its symbolic appeal. The second is the substantial critical literature on competency-based education itself, which has for nearly half a century warned that decomposing expertise into lists of discrete, separately assessed competencies risks fragmenting the very knowledge and judgment it claims to build. Reading the guru-shishya model against both literatures at once allows this paper to ask a sharper question than either "was ancient Indian education good" or "is competency-based education good": specifically, does traditional Indian apprenticeship pedagogy offer a coherent corrective to the fragmentation risk that competency-based reform has struggled with elsewhere, and if so, on what terms can it be adopted without also importing the social structure that historically restricted who was allowed to learn.

The paper's argument has two parts held in deliberate tension. First, a genuine and specific pedagogical correspondence exists between the guru-shishya model's implicit teaching practices and the cognitive apprenticeship framework's account of modelling, scaffolding, and fading, and this correspondence offers real, non-decorative guidance for implementing competency-based curricula in a way that resists fragmentation. Second, the historical guru-shishya system was not a socially neutral pedagogical technique available to all; access to it was substantially structured by caste, and any contemporary curricular appeal to the tradition must address this history explicitly rather than pass over it in silence, particularly in a policy framework whose stated aim is universal and equitable education.

2. Background and Context

NCF-SE 2023 operationalizes NEP 2020 by organizing curriculum around a hierarchy running from aims of education through curricular goals to competencies to specific, assessable learning outcomes, replacing the previous content-recall emphasis with a system in which students' progress is tracked against named competencies through instruments such as the Holistic Progress Card and the Structured Assessment for Analysing Learning (National Council of Educational Research and Training, 2023). This approach descends from a distinct international lineage: competency-based education (CBE) was formally defined by Spady (1977) as a performance-oriented, outcomes-focused model that treats time as the variable and mastery as the constant, in explicit contrast to the traditional, time-based schooling it was designed to replace.

Alongside this technical, internationally derived reform architecture, NEP 2020-adjacent discourse frequently gestures toward the guru-shishya paramparā as an indigenous forerunner of the same values: individualized attention, learning by doing, and assessment through demonstrated capability rather than seat time. In the traditional gurukula system, a student resided with a teacher for an extended period, acquiring knowledge and skill through direct observation, participation in the teacher's household and practice, and graduated responsibility, with progression governed by the

teacher's judgment of readiness rather than by fixed examinations (Altekar, 1944). This structural resemblance to competency-based learning's mastery orientation is real, but its adequacy as a template for contemporary curriculum reform, and the social conditions under which it historically operated, have rarely been examined together in the policy literature that invokes it.

3. Review of Literature

Three bodies of literature bear on this inquiry. First, the theory of cognitive apprenticeship, developed by Collins, Brown, and Newman (1989), provides a structural account of expert-guided, situated learning organized around a sequence of teaching methods: modelling, in which the expert makes normally invisible thought processes visible to the learner; scaffolding, in which the expert provides support calibrated to the learner's current capability; and fading, in which that support is progressively withdrawn as the learner's competence grows. This framework was itself explicitly designed to recover what its authors saw as valuable in traditional craft apprenticeship while adapting it to formal schooling contexts (Collins, Brown, & Newman, 1989). Lave and Wenger's (1991) closely related concept of legitimate peripheral participation describes how novices become competent practitioners by moving from peripheral, low-stakes participation in a community's real practice toward fuller, more central engagement, a trajectory that similarly depends on the learner being embedded in the authentic practice of expertise rather than in an artificially decomposed curriculum.

Second, the literature on competency-based education itself is neither monolithic nor uncritical of its own premises. Spady's (1977) foundational definition treats competencies as demonstrable, assessable outcomes tied to explicit, agreed-upon standards, an approach whose appeal lies in its transparency and its promise of ensuring that certification tracks genuine capability rather than time served. But a substantial critical tradition, running from early critiques of performance-based teacher education through to contemporary vocational-education scholarship, has persistently warned that this same decomposition of expertise into discrete, separately certifiable competencies risks what Hodge (2016), reviewing several decades of this critique, calls a fragmenting effect: breaking coherent professional or academic judgment into atomized tasks that can be individually assessed but that do not, once assembled, reliably reconstitute the connected understanding a genuine expert possesses. This critique does not reject outcomes-orientation as such; it targets specifically the atomistic, checklist-style operationalization of competencies that many CBE implementations have adopted in practice.

Third, the historical scholarship on classical Indian education, most comprehensively synthesized in Altekar's (1944) survey of education in ancient India, documents the guru-shishya and gurukula system in detail while also establishing that access to advanced Vedic and Brahmanical education became, from a relatively early period, substantially restricted along caste lines, with Śūdras in particular excluded from the highest tiers of instruction available to Brahmins. This is not a marginal detail in the historical record; it is a structural feature of how the system that contemporary curricular rhetoric invokes actually operated for most of its documented history.

4. Research Gap

Three gaps follow. First, the policy and advocacy literature that invokes guru-shishya paramparā as precedent for NEP 2020's competency-based reform rarely engages the cognitive apprenticeship literature that could give the comparison genuine theoretical substance, leaving the invocation at the level of cultural gesture rather than curricular mechanism. Second, the well-developed critical literature on competency-based education's fragmentation risk (Hodge, 2016; and the tradition it reviews) has not, in the material available for this review, been brought into contact with the apprenticeship-style alternative that the guru-shishya comparison implicitly offers, despite cognitive apprenticeship theory having been developed in part as a response to exactly this kind of fragmentation. Third, and most consequentially, the historical scholarship on caste-based exclusion in classical Indian education (Altekar, 1944) is essentially absent from the NEP-adjacent literature that celebrates the guru-shishya tradition, creating a curricular narrative that risks presenting a historically exclusionary system as an uncomplicated model for a policy explicitly committed to universal access.

5. Research Questions and Objectives

The paper addresses four questions. First, what specific pedagogical mechanisms does cognitive apprenticeship theory identify, and to what extent does the guru-shishya model, as documented in the historical scholarship, instantiate those same mechanisms rather than merely resembling them at a rhetorical level? Second, what does the competency-based education critique literature identify as the central risk of competency-based reform, and does the apprenticeship-based alternative offer a theoretically grounded way to mitigate that risk? Third, what does the historical record show about who had access to the guru-shishya system, and what does this imply for how the tradition can and cannot be invoked in a policy framework committed to equity? Fourth, what concrete curriculum-design and assessment guidance follows for bodies implementing NEP 2020 and NCF-SE 2023's competency-based mandate?

6. Theoretical and Conceptual Framework

This paper uses cognitive apprenticeship theory as the analytic bridge between the guru-shishya tradition and competency-based reform, rather than treating either as self-explanatory. Modelling, scaffolding, and fading (Collins, Brown, & Newman, 1989) are treated as the specific, testable claims embedded in the more general idea of "apprenticeship," and the guru-shishya tradition's documented features, extended residence with the teacher, graduated responsibility, judgment-based rather than examination-based progression (Altekar, 1944), are read against these specific claims rather than against the vaguer notion of experiential or holistic learning that policy discourse typically invokes.

Against this, the competency-based education critique tradition, synthesized by Hodge (2016) around Broudy's early warning that decomposing tasks into documented components yields fragments of knowledge and skill without a

reliable way of reintegrating them into a whole, is treated as the standard against which any curricular implementation of NEP 2020's competency mandate should be tested. The central theoretical claim of this paper is that cognitive apprenticeship's emphasis on situating skill acquisition within authentic, holistic practice, with graduated responsibility rather than atomized task-lists, offers a structurally different route to competency demonstration than the checklist-style operationalization the critique literature warns against, and that the guru-shishya tradition is best understood, pedagogically, as a historical instance of this apprenticeship logic rather than as a free-standing alternative philosophy of education. Finally, Altekar's (1944) historical documentation of caste-restricted access is treated not as background color but as a constraint on the theoretical framework itself: any contemporary adaptation must be evaluated for whether it reproduces exclusion, not only for whether it reproduces pedagogical structure.

7. Methodology

This is a conceptual and comparative paper; it reports no primary data collection or classroom intervention. Its method is a structured three-way comparison: the documented features of the historical guru-shishya system (drawn from Altekar's, 1944, historical synthesis) are mapped against the specific mechanisms of cognitive apprenticeship theory (Collins, Brown, & Newman, 1989; Lave & Wenger, 1991), and both are read against the competency-based education critique literature (Spady, 1977; Hodge, 2016) to assess where genuine correspondence exists and where the comparison breaks down. Sources were selected to represent, wherever possible, the founding or most-cited statement of each theoretical position (Spady for CBE's definition, Collins, Brown, and Newman for cognitive apprenticeship, Altekar for the historical baseline) rather than derivative secondary literature, in order to ground the comparison in primary theoretical and historical statements rather than in policy paraphrase.

8. Analysis and Findings

8.1 Genuine structural correspondence. Read against cognitive apprenticeship theory's specific mechanisms, the guru-shishya model shows more than superficial resemblance. Extended residence with the teacher created sustained conditions for modelling, in which the learner observed expert practice directly and repeatedly rather than encountering it in isolated, textbook-mediated fragments; graduated responsibility within the teacher's household and practice functioned as a form of scaffolding, with the level of independent responsibility calibrated, at least in principle, to the learner's demonstrated readiness; and progression governed by the teacher's judgment of mastery, rather than by fixed-interval examination, corresponds structurally to fading, in which support is withdrawn as competence is demonstrated rather than on a predetermined schedule (Altekar, 1944; Collins, Brown, & Newman, 1989). This is a genuine, specific correspondence, not a loose analogy, and it distinguishes the guru-shishya comparison from vaguer appeals to "experiential learning" that could describe almost any pedagogy.

8.2 The fragmentation risk in NEP's own competency architecture. The same analysis, however, surfaces a tension inside NEP 2020 and NCF-SE 2023's own competency-based reform that the guru-shishya invocation does not resolve

and, if treated only symbolically, may obscure. The critique literature synthesized by Hodge (2016) warns specifically against curricula that decompose expertise into long lists of discrete, separately certified competencies, assessed through instruments like structured, item-based assessment, precisely the operational form that instruments such as SAFAL and competency-mapped progress cards risk taking if implemented mechanically. Cognitive apprenticeship's holistic, situated logic is in real tension with an atomized competency list; the guru-shishya comparison is pedagogically useful only if it is used to push implementation toward the former and away from the latter, a distinction that requires explicit curricular design choices rather than being guaranteed by cultural reference alone.

8.3 The equity constraint. The historical record is unambiguous that the guru-shishya and gurukula system, as it operated through most of its documented history, restricted access to advanced instruction substantially along caste lines, with Śūdras excluded from the highest tiers of Brahmanical education available to Brahmins (Altekar, 1944). This is a structural, not incidental, feature of the historical system, and it stands in direct tension with NEP 2020's explicit commitment to equitable and universal school access. A curriculum reform that adopts the guru-shishya model's pedagogical mechanisms, extended mentorship, graduated responsibility, judgment-based progression, without addressing this history risks two distinct errors: presenting a historically exclusionary system as an uncomplicated national inheritance, and failing to ask whether the resource intensity of genuine one-to-one or small-group apprenticeship, which was practically inseparable from its historical exclusivity, can be delivered equitably at the scale of a universal public school system without careful institutional redesign.

8.4 What does and does not transfer. Taken together, these findings suggest that what transfers usefully from the guru-shishya tradition to contemporary competency-based reform is a specific pedagogical logic, sustained modelling, calibrated scaffolding, judgment-based fading, rather than the institutional form in which that logic historically appeared. The institutional form, a single teacher with a small number of resident disciples selected along caste lines, does not transfer, and treating it as an aspirational model, rather than examining only its pedagogical mechanisms, would be both historically inaccurate and normatively inconsistent with NEP 2020's own stated commitments.

9. Discussion

This analysis supports a bounded but genuine claim: cognitive apprenticeship theory gives curricular substance to what is otherwise a largely symbolic appeal to guru-shishya paramparā in NEP-adjacent discourse, and that substance offers real guidance for avoiding the fragmentation risk that the competency-based education critique literature has identified in similar reforms elsewhere, including, plausibly, in aspects of NEP 2020's own assessment architecture if implemented mechanically. This is a genuine contribution, not a decorative one, because it specifies mechanisms, modelling, scaffolding, fading, that curriculum designers can build into specific competency modules, rather than leaving "be more like the gurukula" as an unactionable aspiration.

At the same time, the historical record imposes a real constraint on how far this correspondence can be pushed. The guru-shishya system's pedagogical intimacy and its social exclusivity were not incidental to each other in practice; a system organized around a single teacher and a small number of resident disciples, screened by caste, achieved its depth of mentorship partly because of its narrowness. Reproducing the pedagogical depth at the scale of universal public schooling is a genuine institutional design problem, not a matter of cultural fidelity, and NEP 2020's own equity commitments require that this problem be solved through means, smaller effective teacher-student ratios in critical modules, structured peer mentorship, technology-assisted scaffolding, rather than through nostalgic reference to a system that was never available to most of the population it purports to inspire.

A further point follows from the tension identified in 8.2: the competency-based critique literature's warning about fragmentation applies to NEP 2020's own implementation choices independently of the guru-shishya question, and curriculum bodies should treat that warning as a live risk to be actively managed, not as a problem solved by cultural framing. Invoking an indigenous precedent for holistic learning does not, by itself, prevent a competency framework from being operationalized in the atomized, checklist form the critique literature warns against; only specific design choices, of the kind cognitive apprenticeship theory can help identify, can do that.

10. Educational Implications

Several implications follow for bodies implementing NEP 2020 and NCF-SE 2023. First, where curricular documents invoke guru-shishya paramparā as precedent, they should specify the pedagogical mechanism intended, modelling, scaffolding, or graduated responsibility, rather than using the reference as an unelaborated cultural gesture; this is what would make the invocation curricularly actionable rather than symbolic. Second, competency modules, particularly in vocational and skill-based streams where apprenticeship-style learning is most directly applicable, should be designed around cognitive apprenticeship's sequence of modelling, coaching, scaffolding, articulation, reflection, and exploration (Collins, Brown, & Newman, 1989), with assessment tied to authentic, integrated performance rather than to long lists of separately certified sub-competencies. Third, assessment instruments such as SAFAL and the Holistic Progress Card should be reviewed specifically against the fragmentation critique (Hodge, 2016): where a competency framework decomposes complex capabilities into granular, separately scored items, curriculum bodies should ask whether the disaggregated scores can be meaningfully reassembled into a judgment about integrated capability, or whether the assessment structure itself is producing fragments that do not add up to the competence they claim to certify.

Fourth, and most importantly, any curricular material that draws pedagogical inspiration from the guru-shishya tradition should explicitly address its historical restriction along caste lines (Altekar, 1944), both as a matter of historical accuracy and because doing so is the only way to ensure that the mentorship-intensive elements of the model are deliberately redesigned for universal access, for example through structured, trained near-peer mentoring or small-

group coaching models, rather than implicitly reserved, as the historical system was, for whichever students already have the social or economic capital to access individualized attention.

11. Limitations

This is a conceptual and comparative paper; it does not evaluate any specific school's or state's implementation of NEP 2020's competency-based reforms empirically, and its claims about SAFAL or the Holistic Progress Card are risk assessments derived from the general CBE critique literature rather than findings from an audit of those specific instruments. Its historical account of the guru-shishya system relies substantially on Altekar's (1944) synthesis, a foundational but decades-old scholarly source; more recent historical scholarship may refine or complicate aspects of this picture, particularly regarding regional and sectarian variation, including the somewhat greater openness of Buddhist and Jain educational institutions relative to Brahmanical ones. The cognitive apprenticeship framework used here was developed primarily in Western educational-psychology contexts and applied here to a non-Western historical case by structural analogy; this analogy is defended on the grounds that the specific mechanisms identified, modelling, scaffolding, fading, are claimed by their originators to be general features of expert-novice teaching rather than culturally specific inventions, but this generality claim is itself a assumption inherited from the source literature rather than independently tested here.

12. Conclusion

A rigorous reading of the guru-shishya paramparā against cognitive apprenticeship theory finds a real, specific, and curricularly useful correspondence, one that can give NEP 2020's competency-based reform concrete guidance for resisting the fragmentation that has undermined similar reforms elsewhere. Realizing that contribution responsibly requires two disciplines that much current policy discourse has not yet combined: translating the tradition into specific, actionable pedagogical mechanisms rather than invoking it as cultural atmosphere, and confronting, rather than omitting, the caste-restricted access that historically defined who the tradition was actually available to. A curriculum reform that does both can draw genuine strength from India's own pedagogical history; one that does only the first risks empty symbolism, and one that omits the second risks quietly re-legitimizing exclusion in the name of heritage.

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