

ICT Integration in English Language Teaching in Indian Secondary Schools : A Thematic Analysis

Neerja Singh

Department of English, School of Media Studies and Humanities, Manav Rachna
International Institute of Research and Studies, Faridabad

Dr Shivani Vashist

Supervisor, Department of English, School of Media Studies and Humanities, Manav
Rachna International Institute of Research and Studies, Faridabad

Abstract

Government schools across Haryana have, in the last five years, moved from bare classrooms to smart boards, tablets, and built-in digital grammar modules, yet the presence of hardware has not automatically translated into changed classroom practice. This paper undertakes a thematic analysis of published research on information and communication technology (ICT) integration in English language teaching (ELT), with particular attention to the government secondary school context of Faridabad, Haryana. Following Braun and Clarke's six-phase framework, the review synthesises findings from institutional, cognitive, and pedagogical strands of the literature to identify four recurrent themes: infrastructural readiness, teacher cognition and resistance, pedagogical and material adaptation, and the evaluation of computer-assisted language learning (CALL) resources. A three-tier conceptual model is proposed to organise these themes, and three tables summarise the search strategy, the analytic process, and the thematic matrix. The paper argues that policy attention has disproportionately favoured infrastructural solutions while under-investing in teachers' technological pedagogical content knowledge and in the systematic evaluation of ready-made digital material, and it closes by outlining the implications of this imbalance for ongoing doctoral research in the field.

Keywords: ICT integration, English language teaching, thematic analysis, CALL evaluation, teacher cognition, Faridabad

INTRODUCTION

It has become something of a truism in Indian education policy circles that technology will fix what chalk and talk could not. The National Curriculum Framework of 2005 already argued for a central place for ICT in classroom transaction, and the implementation blueprint for the National Education Policy 2020, SARTHAQ, repeats the promise almost two decades later, calling for the “appropriate use of technology in all levels of education-to improve student learning outcomes, teaching learning and

evaluation processes at scale” (Government of India 228). Between these two documents lies a great deal of hardware: language labs, smart boards, tablets, and, in Haryana specifically, a 2021 partnership between the state government and Globus Infocom that equipped government schools with physical language laboratories carrying built-in grammar modules for English, Hindi, and Sanskrit. What the policy record does not settle, however, is whether any of this equipment changes how English is actually taught.

This is not a new anxiety. Scholars of educational technology have long distinguished between the mere availability of digital infrastructure and its meaningful use in the classroom (Prasad 589), and a substantial body of research now treats teachers, not machines, as the decisive variable in whether ICT integration succeeds or stalls (Hutchison and Reinking 314). The present paper takes stock of this research through a thematic lens, asking what recurring patterns emerge when studies of ICT in language teaching—drawn from international, national, and Haryana-specific contexts—are read together. Rather than reporting new primary data, it performs a qualitative synthesis of existing scholarship, organising the field’s insights into themes that can, in turn, inform an evaluative study of the grammar modules now sitting in Faridabad’s government school language labs.

The paper proceeds in five stages. It first locates the study within the theoretical vocabulary the field has developed—Davis’s technology acceptance model, Ely’s conditions for change, and Chapelle’s criteria for evaluating computer-assisted language learning (CALL) material. It then describes the thematic analysis methodology used to synthesise the literature, including the search strategy and coding procedure. The findings are presented as four themes, after which a three-tier conceptual model is proposed to integrate them. The paper closes with a discussion of implications for policy and for the doctoral research from which this review is drawn.

THEORETICAL FRAMEWORK

Three theoretical strands anchor this review. The first is Ely’s classic distinction, later refined by other scholars of educational change, between the external conditions that make innovation possible—funding, hardware, administrative will—and the internal conditions that make it likely to be sustained. Tsai and Chai extend this vocabulary by proposing a “third-order barrier,” arguing that even teachers who are well-resourced and personally willing to use technology may still lack the design thinking needed to adapt digital material to the specific demands of their classroom, their learners, and their subject (1058). This three-level distinction—infrastructural, attitudinal, and pedagogical—supplies the backbone of the thematic model proposed later in this paper.

The second strand is Davis’s technology acceptance model (TAM), which holds that a user’s intention to adopt a technology is shaped chiefly by two beliefs: perceived usefulness and perceived ease of use (320). Although TAM was developed for workplace software rather than classrooms, it has proved remarkably durable in

educational technology research because it gives empirical shape to something teachers have always said informally-that a tool has to feel both worth the trouble and manageable before it earns a place in daily practice.

The third strand is specific to language teaching. Chapelle's framework for evaluating CALL material distinguishes judgmental evaluation, which asks experts and teachers to appraise software and planned tasks against explicit criteria, from empirical evaluation, which examines what actually happens to learners' performance during a CALL activity (52). She proposes six criteria for judgmental evaluation-language learning potential, learner fit, meaning focus, authenticity, positive impact, and practicality (55)-of which language learning potential is treated as central because it asks whether an activity genuinely pushes learners to notice and produce target language forms, rather than merely digitising a worksheet. Puentedura's SAMR model, though developed outside language education, offers a compatible caution: technology use that only substitutes or augments existing tasks (turning a printed grammar drill into a clickable one) delivers little pedagogical gain compared with use that redefines the task altogether. Read together, these three frameworks suggest that ICT integration is not a single event but a layered achievement, and the thematic analysis below is organised to trace exactly that layering across the literature.

METHODOLOGY: A THEMATIC ANALYSIS APPROACH

This paper adopts thematic analysis, following the widely used six-phase model developed by Braun and Clarke, as its method of synthesis (79). Thematic analysis was chosen over a narrower systematic review because the aim here is interpretive rather than purely enumerative: the goal is to identify patterns of meaning across studies that use different methods, sample different populations, and were published across more than two decades, rather than to pool comparable statistics. This flexibility is precisely what makes thematic analysis suitable for a doctoral-stage literature synthesis that must speak across disciplinary boundaries-educational technology, applied linguistics, and organisational psychology-that do not always share a common empirical vocabulary.

The corpus for this review was assembled through purposive, criterion-based searching rather than an exhaustive database sweep, since the objective was thematic saturation on a bounded topic rather than a full systematic mapping of the field. Table 1 summarises the search parameters.

Table 1. Search strategy and inclusion criteria for the thematic corpus.

Parameter	Detail
Databases and sources consulted	JSTOR, Elsevier (ScienceDirect), Springer Link, Cambridge Core, Taylor & Francis Online, JETIR, and institutional/government policy documents (NCERT, Ministry

Parameter	Detail
	of Education)
Search terms	“ICT integration” AND “English language teaching”; “teacher perceptions” AND “educational technology”; “CALL evaluation”; “second-order barriers” OR “third-order barriers”; “digital equity” AND “school education”
Inclusion criteria	Peer-reviewed articles, book chapters, and government policy documents published 1983–2023; studies addressing teacher cognition, infrastructure, or material evaluation in K–12 or comparable settings; English-language sources
Exclusion criteria	Studies focused solely on higher education technology adoption unrelated to language teaching; purely descriptive vendor or product literature; sources without a clear conceptual or empirical contribution to ICT-in-ELT debates
Final corpus	14 core sources subjected to line-by-line coding, supplemented by policy documents for contextual grounding

Author’s own compilation

Once the corpus was assembled, analysis proceeded through the six phases Braun and Clarke describe, adapted here for a document-based rather than transcript-based corpus. Each source was read in full and re-read for familiarisation; sentences and paragraphs bearing on barriers, teacher beliefs, or evaluative criteria were then given open codes (for instance, “lock-and-key hardware,” “fear of student misuse,” “language learning potential”); codes were grouped into candidate themes; themes were reviewed against the full corpus for internal coherence and external distinctiveness; themes were named and defined; and the final write-up integrates them with the theoretical framework and the Faridabad policy context. Table 2 sets out this process alongside the analytic questions asked at each phase.

Table 2. The six-phase thematic analysis process (adapted from Braun and Clarke).

Phase	Analytic Focus	Guiding Question
1. Familiarisation	Close reading of all 14 sources; margin notes on recurring concerns	What is each source fundamentally arguing about technology and teaching?
2. Initial coding	Open, inductive coding of statements about barriers, beliefs, and evaluation	What specific claim or observation is being made, in the author’s own terms?
3. Searching	Clustering related codes into	Which codes recur across otherwise

Phase	Analytic Focus	Guiding Question
for themes	candidate themes across sources	unrelated studies?
4. Reviewing themes	Checking each candidate theme against the whole corpus and against the theoretical framework	Does this theme hold together internally, and does it stand apart from the others?
5. Defining and naming	Writing a working definition and a precise name for each theme	What, in one sentence, does this theme claim?
6. Producing the synthesis	Integrating themes into a coherent written account and a conceptual model	How do the themes relate to one another as a system, not a list?

Author's own compilation

Coding reliability was strengthened through a constant-comparison procedure: each new code was checked against previously coded material to see whether it extended an existing category or genuinely warranted a new one, and codes that appeared in only a single source were retained only if they illuminated a theme already grounded elsewhere in the corpus. This is, admittedly, a modest safeguard compared with the inter-rater reliability checks possible in a multi-coder team; the limitation is acknowledged later in the paper.

THEMATIC FINDINGS

Theme 1: Infrastructure Is Necessary but Never Sufficient

Nearly every source in the corpus opens with some version of the same observation: hardware provision has improved, and unevenly so. Prasad's survey of secondary schools finds persistent disparity in ICT facilities between urban and rural institutions and across school boards (589), a pattern that maps closely onto Faridabad's own mix of Model Sanskriti and other government schools spread across its urban and semi-rural subdivisions. Yet infrastructural presence is repeatedly shown to be a poor predictor of use. The recurring image across studies is of a valuable machine treated as an asset to be protected rather than a tool to be used-smart boards kept switched off, computer labs opened for a single shared period a week, tablets logged and locked away out of fear of damage. Stafford Ocansey and Sharma's needs-assessment of the DIKSHA platform in Maharashtra found enthusiasm for the initiative among stakeholders but also concrete gaps in pedagogic training that no amount of additional hardware could close. The theme that emerges, then, is not that infrastructure is unimportant-Resta and Laferrière list it as the first of five conditions for effective technology integration-but that it functions as a threshold condition rather than a sufficient one, a first-order barrier whose removal simply exposes the barriers beneath it.

Theme 2: Teacher Cognition as the Hinge of Integration

The second and most heavily populated theme in the corpus concerns what teachers themselves believe about technology. Applying Davis's TAM vocabulary, several studies find that teachers' perceived usefulness of digital tools is often only moderate even when their general belief that "technology should be integrated" is strong (Hutchison and Reinking 315). Hutchison and Reinking's national survey of 1,441 literacy teachers is instructive here: teachers reported lack of time to plan technology-based lessons, insufficient professional development, and uncertainty about how to assess students' digital work as the chief obstacles, ahead of any complaint about hardware itself. Knezek and Christensen frame this cognitive dimension memorably as a matter of "will (attitude) of the teacher, skill (technology competency), and technology tools (access to technology tools)" (327), implicitly ranking will and skill as prior to, and more decisive than, mere access. This theme also captures a specific anxiety noted in language teaching contexts: some English teachers are wary of built-in grammar- and spell-check functions on the ground that such tools might make learners intellectually "slack," a belief that, whether or not it is empirically justified, shapes classroom practice as powerfully as any infrastructural constraint.

Theme 3: Pedagogical Adaptation and the Third-Order Barrier

A smaller but conceptually pivotal cluster of sources argues that even confident, well-resourced teachers face a further hurdle: adapting generic digital material to the specific and shifting demands of a real classroom. Tsai and Chai's "third-order barrier" captures this precisely—no two classrooms are alike even when the target language, the teacher, and the institution remain constant, because learners differ, the language itself is dynamic, and classroom dynamics shift from one cohort to the next (1058). Warschauer and Healey's historical account of computer-assisted language learning reinforces the point from a different angle, showing that CALL activities have always trailed, rather than led, the pedagogical theory of their moment—moving from structural drill-and-practice, to communicative simulation, to today's integrative and mobile-assisted forms (57). The implication for this theme is that technology integration is not a one-time installation but an ongoing act of pedagogical translation, one that Puentedura's SAMR hierarchy captures when it warns that merely substituting a printed exercise with its digital twin redefines nothing about the learning task itself.

Theme 4: The Unfinished Business of Material Evaluation

The final theme concerns a gap rather than a finding: despite the proliferation of CALL software and, in Haryana's case, government-procured grammar modules, systematic evaluation of this material remains sparse. Chapelle observes that while there is no shortage of material available to the contemporary English teacher, comparatively little work has gone into developing rigorous evaluative principles for it (52–55). Jamieson,

Chapelle, and Preiss's contextual evaluation of Longman English Online demonstrates what a fuller judgmental-plus-empirical evaluation can look like, applying Chapelle's six criteria through parallel questionnaires for developers, teachers, and students, and arriving at an overall positive but nuanced verdict with specific areas flagged for revision. No comparable evaluation yet exists for the Globus Infocom grammar modules installed in Haryana's government school language labs, which is precisely the gap this theme identifies and the doctoral study from which this paper is drawn is designed to address. This theme also intersects with the broader literature on educational technology assessment; comparable calls for building structured, criteria-based evaluation into technology-enabled teaching appear in adjacent fields of media and communication pedagogy, where researchers have similarly argued that new measurement approaches must keep pace with changing classroom technology (Lal 271) and that digital competency itself needs to be assessed rather than assumed (Baidya et al. 210).

Table 3 consolidates the four themes, their conceptual anchors, and representative sources, offering a single reference point for the synthesis that follows.

Table 3. Thematic matrix synthesising the reviewed literature.

Theme	Conceptual Anchor	Representative Sources	Illustrative Insight
1. Infrastructure as threshold condition	First-order barriers (Ely; Resta and Laferrière)	Prasad; Stafford Ocansey and Sharma; Resta and Laferrière	Hardware access is uneven and, even where present, often under-used or restricted
2. Teacher cognition as hinge	Technology Acceptance Model (Davis); second-order barriers	Hutchison and Reinking; Knezek and Christensen; Zhao et al.	Perceived usefulness and confidence, not access, best predict actual classroom use
3. Pedagogical adaptation	Third-order barriers (Tsai and Chai); SAMR (Puentedura)	Tsai and Chai; Warschauer and Healey	Generic material must be continually re-shaped to fit a specific, dynamic classroom
4. Material evaluation gap	CALL evaluation criteria (Chapelle)	Chapelle; Jamieson, Chapelle, and Preiss	Judgmental and empirical evaluation of ready-made digital material remains rare

Author's own compilation

A THREE-TIER CONCEPTUAL MODEL OF ICT INTEGRATION

The four themes identified above do not sit side by side as unrelated observations; they

stack, each layer presupposing the one below it. Figure 1 proposes a three-tier model that brings this structure into view, deliberately borrowing Ely's and Tsai and Chai's language of "orders" of barrier while adding the evaluative dimension that Chapelle's framework contributes. At the base sits infrastructure and policy: without hardware, connectivity, and institutional training, no further layer can be meaningfully activated. The second tier is teacher cognition, where TAM's twin variables of perceived usefulness and perceived ease of use determine whether available infrastructure is actually engaged, and where confidence and openness to change either accelerate or stall adoption. The third tier is pedagogical and material adaptation, where teachers must continually fit, evaluate, and sometimes reject digital material against criteria such as learner fit, authenticity, and practicality. Only when all three tiers are functioning does the model's stated outcome-meaningful, learner-centred, ICT-integrated English language teaching-become achievable, and even then a dashed feedback arrow in the figure indicates that classroom experience should loop back to inform infrastructural and policy decisions, rather than treating integration as a one-way rollout from government to classroom.

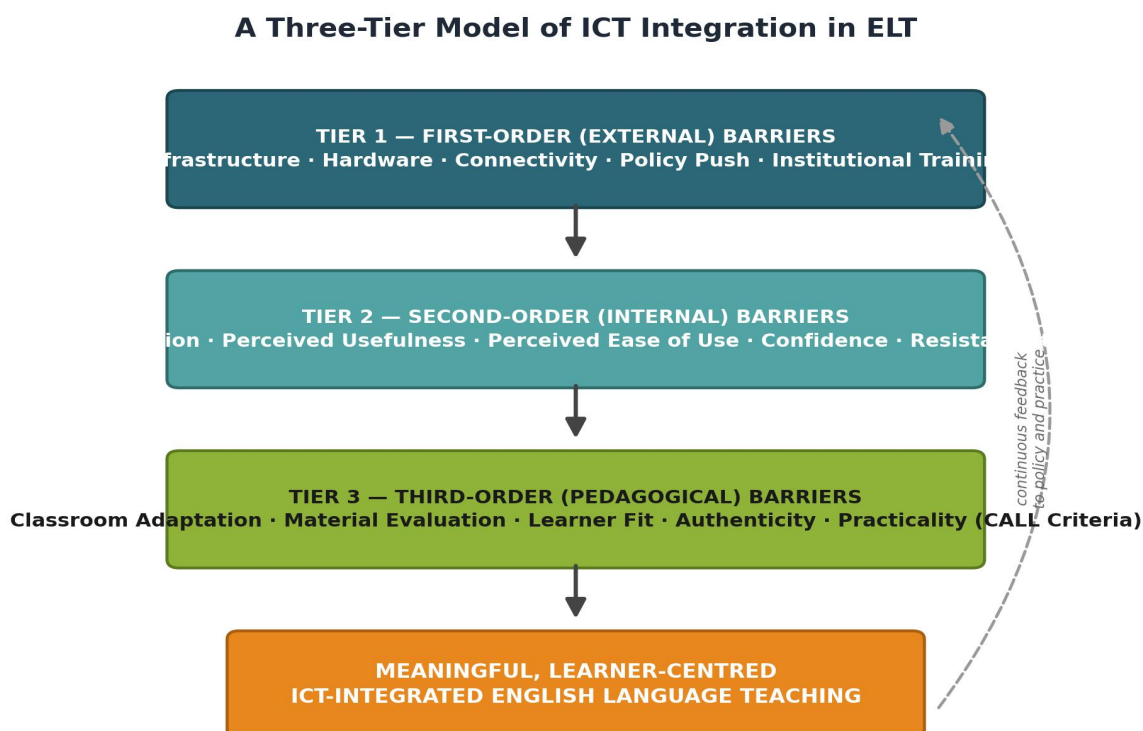


Figure 1. A three-tier model of ICT integration in English language teaching.

This model has a diagnostic use as well as a descriptive one. A programme that installs smart boards without teacher training is, on this model, intervening only at Tier 1 and

should expect limited change at the classroom level; a teacher-training programme that builds confidence but supplies no criteria for evaluating the resulting digital material addresses Tiers 1 and 2 but leaves Tier 3 untouched. Read this way, the persistent complaint that ICT initiatives in Indian schools “do not work” may be less a comment on technology itself than a symptom of interventions that stop short of the third tier-exactly the tier at which the evaluative study of Globus Infocom's grammar modules, discussed in Theme 4, is positioned to contribute.

DISCUSSION AND IMPLICATIONS

The four themes suggest a policy landscape that has been comparatively generous with Tier 1 investment-language labs, tablets, smart boards-and comparatively thin on Tiers 2 and 3. Haryana's “I Am Not Afraid of English” campaign and its 2021 partnership with Globus Infocom are, in this sense, textbook first-order interventions: necessary, visible, and politically legible, but not self-executing. The literature reviewed here indicates that without parallel investment in teachers' technological pedagogical content knowledge-not merely their ability to open a word processor or run a video call, but their capacity to judge whether a digital grammar exercise actually advances second language acquisition-infrastructure spending risks producing exactly the pattern several studies describe: valuable equipment sitting underused, or used in ways that merely digitise, rather than transform, existing practice.

The material-evaluation gap identified in Theme 4 carries a further implication that connects directly to teacher-facing initiatives beyond ELT itself. Recent work on designing structured training programmes for digital and AI literacy among school educators argues that competency frameworks, not one-off orientation sessions, are what sustain technology use over time (Aarzoo and Lal, “Designing” 108), and comparable work on the ethics of introducing artificial intelligence into K–12 systems in the Indian context cautions that technological ambition must be matched by attention to equity and to teachers' own preparedness (Deb et al. 170). Applied to the present review, this suggests that any evaluation of the Globus Infocom grammar modules should be paired with, rather than substituted for, an ongoing programme of teacher capacity-building-echoing the third and fourth themes' shared insistence that hardware, cognition, and pedagogical judgement must advance together rather than in sequence.

There is, finally, a methodological implication. Much of the existing research on ICT in Indian schools measures presence-how many labs, how many devices, how many trained teachers-because such counts are administratively convenient. The thematic analysis undertaken here suggests that presence indicators alone cannot answer the question that actually matters to learners: whether the digital grammar module in front of them is helping them learn English. Answering that question requires the kind of criteria-based, judgmental-and-empirical evaluation Chappelle and her colleagues modelled two decades ago, adapted now to a Haryana government school context that did not exist when that framework was first written.

LIMITATIONS

This review has the limitations common to any thematic synthesis conducted by a single analyst: the corpus, though purposively assembled, is not exhaustive, and coding decisions, while checked against the full corpus for consistency, were not independently verified by a second coder. The corpus also mixes international, national, and state-specific sources of very different vintages, from Davis's 1989 formulation of TAM to policy documents published in 2021; while this range is a strength for tracing the durability of certain themes, it also means some sources speak to contexts (workplace software adoption, for instance) only analogically related to Faridabad's government school classrooms. These limitations do not undermine the thematic patterns identified, but they do mean the three-tier model proposed here should be treated as a heuristic to guide the forthcoming empirical study rather than as a validated causal account.

CONCLUSION

The promise that technology will transform English language teaching in India's government schools is now old enough to be tested against two decades of research rather than taken on faith. That research, synthesised thematically here, tells a consistent story: infrastructure is a threshold, not a solution; teacher cognition determines whether that threshold is crossed; pedagogical adaptation determines whether crossing it produces genuine learning gains; and the evaluation of the digital material teachers are actually handed remains the field's least developed piece of the puzzle. For Faridabad's government secondary schools, where language labs built around Globus Infocom's grammar modules now sit alongside teachers whose outlook toward them has not yet been systematically studied, this last gap is not merely academic. The three-tier model proposed in this paper offers one way of holding infrastructure, cognition, and pedagogy together in a single frame, and the evaluative study it is designed to support aims to supply, at last, the kind of criteria-based judgment on classroom material that the literature has been calling for since Chapelle first wrote about it more than two decades ago.

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