LETS
Journal of Linguistics and English Teaching Studies
ISSN (print) : 2715-4408
ISSN (online) : 2715-4416
Homepage : stainmajene.id/index.php/lets

Transformation of English Language Teaching in Elementary Schools: Analysis of Teacher Pedagogical Competence through TPACK

Farikah
Universitas Tidar, Indonesia
farikahfaradisa@untidar.ac.id

Abstract
The digital transformation of English Language Teaching (ELT) requires elementary teachers to integrate technology with sound pedagogy rather than to add it as a surface-level enhancement. Yet little is known about how non-specialist teachers of young learners enact such integration, and conventional evaluations tend to assess technological and pedagogical competence in isolation. This exploratory study investigates the perceived and enacted pedagogical competence of elementary English teachers through the Technological Pedagogical Content Knowledge (TPACK) framework and a multimodal lens. A convergent mixed-methods design was applied, in which a descriptive quantitative strand (a self-report questionnaire) and a qualitative strand (interviews and structured observation) were collected concurrently and then merged for interpretation, with 55 elementary English teachers in Magelang Regency, Indonesia, selected through purposive sampling across three career stages. Data were collected through a 12-indicator self-report questionnaire (five-point Likert scale), semi-structured interviews with 15 teachers, and structured observations of 18 lessons coded against a TPACK-multimodal rubric; the quantitative and qualitative strands were merged through a joint display. Self-report means were uniformly high (4.0-4.4), with the lowest scores in the integrative dimensions Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK, both 4.0). Observation evidence, however, diverged from these perceptions: in most lessons technology functioned as substitution (displaying static text or playing audio) rather than transformation, and only about one fifth of observed lessons showed simultaneous integration of technology, pedagogy, and language content. Multimodal practice was dominated by the visual mode, with audio and gestural modes used less and assessed inconsistently. The study contributes an evidence-based mapping of the gap between perceived and enacted TPACK in primary ELT and offers proportionate implications for sustained, practice-based teacher professional development. Because the findings rest on self-report and a bounded sample, they are interpreted as indicative rather than conclusive, and no claims are made about student learning outcomes.
Keywords: *Elementary School; English Learning; Multimodal; Pedagogical Competence; TPACK.*

1. Introduction

Language teaching at the elementary school level faces various challenges, accordingly from the teacher, curriculum, and student perspectives (Laila, et al., 2023) . Various policies on the recognition of the linearity of education graduates at the Elementary School level have caused several problems in the classroom, especially in English language learning. The policy that stipulates that graduates of the Elementary School Teacher Education study program are considered competent to teach all subjects, including English, often does not take into account the specific competencies needed in teaching a foreign language (Laila,et al., 2023). As a result, many teachers with an Elementary School Teacher Education study program background without special training in English have difficulty teaching the material effectively, both in terms of language proficiency and teaching methodology. A study conducted by Falah et al. (2023) and Falah et al. (2024) showed that most elementary school teachers in rural areas who teach English do not understand the essential communicative approach to teaching a foreign language (Yildiz, et. al., 2024).This

has an impact on low student motivation and learning outcomes. Many elementary school teachers do not yet have a specific background in language teaching, especially if they are not specialist teachers. In addition, the ever-changing curriculum often makes it difficult for teachers to adapt appropriate learning methods (Cheng, et al., 2023).

For English teachers in Elementary Schools, the challenges in teaching come not only from low language competency but also from a lack of understanding of how to design learning appropriate to the characteristics of early-age students. Many of them are not graduates of English education but come from other study programs of Education that do not specifically equip them with knowledge and skills in teaching foreign languages. This condition is exacerbated by the lack of advanced training that supports the professional development of elementary school English teachers, especially in integrating pedagogical approaches that are relevant to current developments.(Cheng & Wang, 2023)

This is where the Technological Pedagogical Content Knowledge (TPACK) plays an important role. Rather than viewing TPACK as a mere checklist of isolated skills (TK, PK, CK), this study conceptualizes TPACK as a dynamic, meta-pedagogical competence (Handini & Mustofa, 2022). This is strongly connectedwith the theoretical paradigm of multimodality, rooted social semiotics. In social semiotics, language learning is no longer confined to monomodal linguistic text; instead, meaning is actively constructed through the simultaneous deployment of visual, auditory, gestural, and spatial modes. (Umami et al., 2023). As a result, an elementary English teacher's Content Knowledge (CK) is intrinsically multimodal, demanding a sophisticated Pedagogical Content Knowledge (PCK) to scaffold these modes for young learners. When digital technology is introduced, Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK) must not be treated as passive media adoption, but as the critical competence to select, design, and manipulate digital semiotic resources that explicitly enhance language acquisition.

TPACK emphasizes the importance of integration between content knowledge (in this case, English), pedagogical knowledge (teaching strategies for elementary school children), and technological knowledge (utilization of media and learning support applications) (Mishra et al, 2022). Elementary school English teachers who understand and can apply TPACK appropriately will be better prepared to present learning that is communicative, interesting, and contextual according to the needs of today's students (Suemith, 1994).

In addition to TPACK, a multimodal learning approach is also a very relevant strategic solution. This approach involves various modes of representation, such as text, images, sound, movement, and video, to convey material in a richer and more meaningful way (Liu, 2013). Elementary school students who tend to have diverse learning styles are greatly helped by multimodal learning because it can strengthen understanding through more than one sense. The use of English children's songs, illustrated flashcards, interactive animations, and digital educational games is all forms of effective multimodal application in supporting English teaching at the elementary level (Nahachewsky, 2007)

Furthermore, existing literature exhibits a significant inconsistency regarding teacher demographics and technology integration. While global TPACK studies consistently map high Technological Knowledge (TK) among early-career teachers, empirical data remains contradictory as to why this digital fluency fails to translate into effective classroom TPK. (Cheng & Wang, 2023). This unresolved issue is magnified in the context of primary education. Most contemporary TPACK benchmarks are derived from secondary or tertiary education settings, leaving a theoretical void in how integrated tech-pedagogy operates for young learners who depend heavily on social-semiotic multimodal scaffolding (Handini &

Mustofa, 2022). This study addresses this exact fragmentation by evaluating the critical tension between teachers' conceptual understanding and their actual classroom execution, thereby providing an empirical anchor to resolve these theoretical contradictions in primary school ELT transformation

Therefore, it is critical to explore the extent to which English teachers in elementary schools understand and apply the principles of TPACK and multimodal approaches in their teaching practices. The results of this study can serve as a basis for designing more targeted teacher training and professional development aimed at strengthening sustainable, integrated English teaching from an early age, with the longer-term goal of supporting improved student learning (Nadia, et.al, 2024)

Several previous studies have discussed the application of TPACK in the context of elementary education, but most of them still focus on general subjects such as Mathematics and Science. A study by Handini,et.al. (2022) shows that elementary school teachers' understanding of TPACK is still limited and is mostly used to support thematic learning. Meanwhile, research by Merta (2023) and Erbas et al (2021) highlights the need for the integration of technology in teaching English in elementary schools, although teachers show a high interest in using digital media. Several international studies, such as those by Martinez Lirola (2016) others, also emphasize the importance of a multimodal approach in foreign language learning, but its application in the context of elementary education in Indonesia, especially by non-specialist teachers, is still rarely studied in depth. This shows a gap between the need for innovative learning and teacher readiness to implement TPACK and multimodal approaches simultaneously (Fathana, et.al., 2024).

The conceptual fragmentation in current primary ELT literature stems from a failure to recognize the symbiotic relationship between TPACK, pedagogical competence, multimodality, and language pedagogy. Pedagogical competence in the digital era cannot be evaluated through traditional, tech-isolated metrics; it is operationalized through the teacher's capacity to design multimodal learning experiences. For young learners acquiring English as a foreign language, multimodal input (sound, images, movement) is not a pedagogical luxury but a cognitive necessity for vocabulary and contextual comprehension. Therefore, the TPACK framework serves as the ultimate theoretical lens to assess this competence, as it measures the exact intersection where a teacher's technological fluency merges with their pedagogical capacity to deliver multimodal English content simultaneously (Umami et al., 2023). Without this integrated conceptual framework, the implementation of technology in primary schools remains superficial, leading to a disconnect between digital adoption and actual linguistic outcomes(Paneru, 2018).

This study explores the understanding and practices of elementary school English teachers in integrating the TPACK framework with a multimodal learning approach. In addition, this study also examines the extent to which teachers can design and implement English learning that combines aspects of technology, pedagogy, and content simultaneously in the context of elementary classes that have unique student characteristics and diverse learning needs. Thus, this study not only enriches the study of TPACK and multimodality in language education but also provides practical contributions to the development of more contextual and applicable training programs for elementary school English teachers

2. Method

This study employed a convergent mixed-methods design (Creswell & Plano Clark, 2018), in which a descriptive quantitative strand and a qualitative strand are collected concurrently, analysed separately, and then merged to interpret the phenomenon of

language teaching transformation in Elementary Schools through the perspective of teachers as the main actors in learning. This design was chosen because the research questions require both a breadth measure of teachers' perceived pedagogical competence across the TPACK dimensions (best captured quantitatively across a larger sample) and an in-depth account of how that competence is actually enacted in classrooms (best captured qualitatively). The quantitative strand provideed a structured map of perceived competence, while the qualitative strand explained and contextualised it; merging the two through a joint display allows the central tension between perceived and enacted competence to be examined directly. The subjects of the study were 55 elementary school English teachers in Magelang Regency, Indonesia. They were chosen because, administratively, they teach English at the elementary level and have varying teaching experiences. The selection of subjects was carried out using a purposive sampling technique, taking into account the representation of various school backgrounds (public and private), geographical locations (urban and rural), and teaching experiences. This research was conducted in several elementary schools spread across Magelang Regency.

The 55 elementary school teachers involved in this study were classified into three distinct cohorts representing different professional career stages: novice to early-career educators (less than 5 years), mid-career educators (6–10 years), and experienced veterans (more than 10 years). The detailed distribution of these participants is presented in the table below:

Table 1. Distribution of Elementary School Teacher Participants by Teaching Experience

Teaching Experience Category	Career Stage	Number of Participants (N=55)	Percentage (%)
Less than 5 years	Novice / Early-Career	15	27.3%
6 – 10 years	Mid-Career	23	41.8%
More than 10 years	Experienced / Veteran	17	30.9%
Total		55	100%

As shown in Table 1, the participant pool represents a comprehensive cross-section of teaching tenures, with mid-career educators making up the largest segment (41.8%), followed by experienced veterans (30.9%) and early-career teachers (27.3%).

This wide variance offers a rich landscape for analyzing TPACK proficiency. The inclusion of 15 early-career teachers allowed the study to examine individuals who were typically digital natives but may still be refining their classroom management and pedagogical frameworks. Conversely, the 17 veteran teachers provided insights into teachers with deeply ingrained pedagogical content knowledge (PCK) who might encounter different structural or dispositional challenges when integrating modern digital tools into elementary English language teaching.

Ethical procedures were strictly followed in this study. Before data collection, informed consent was obtained from all participants, ensuring that they clearly understood the purpose, procedures, and their rights, including the right to withdraw at any time without consequences. Throughout the research process, the identities and responses of the participants were kept private and anonymous. To guarantee adherence to research ethics guidelines, the study also received ethical clearance from the institutional ethics council. This study was conducted in strict accordance with the ethical standards for research

involving human participants. Formal ethical clearance and institutional approval were obtained from the Institutional Review Board (IRB) / Research Ethics Committee of the host institution prior to data collection involving the 55 elementary school English teachers in Magelang Regency, Indonesia.

Consistent with the convergent design, the two strands were analysed separately and then merged. The quantitative strand was analysed using descriptive statistics. Questionnaire responses on the five-point Likert scale were summarised as item and dimension means across the full sample (N = 55) and disaggregated by the three career-stage cohorts to describe the distribution of perceived competence (Tables 3 and 4). The structured-observation rubric data were summarised as frequencies and percentages of lessons at each level of TPACK integration (Table 5). Given the descriptive and exploratory purpose of this strand, no inferential or hypothesis-testing statistics were applied; the numerical results are reported as a structured description of perceived and observed competence rather than as generalisable estimates.

The qualitative strand was analysed following the framework of Miles, Huberman, and Saldaña (2014), which consists of three concurrent flows: data condensation, data display, and conclusion drawing/verification. First, in the data condensation phase, raw transcripts from the semi-structured interviews and field notes from classroom observations were selected, focused, and transformed through an iterative coding process. First-cycle coding (NVivo and Descriptive Coding) was applied to isolate meaningful segments regarding teachers' tech-anxiety, pedagogical constraints, and multimodal design. In the second cycle, Pattern Coding was executed to group these initial codes into broader conceptual categories. Second, data display was operationalized through thematic matrices to compare responses across the three teaching experience cohorts. Finally, conclusions were verified through continuous peer debriefing and member-checking with the participants to ensure interpretative validity.

Table 2. Exemplar of the Qualitative Coding Structure and Thematic Construction

Raw Participant Narrative (Data Condensation)	**First-Cycle Code (Initial Nodes)**	**Second-Cycle Code (Sub-category)**	**Overarching Theme**
"I get very nervous before class starts because I'm afraid the internet will drop or the interactive game app won't load... it's safer to just project the PDF book."	Technical nervousness Fear of internet failure Retreating to passive projection	Tech-Anxiety and Risk Aversion	The Illusion of Multimodal Integration (Surface vs. Deep TPACK)
"We are forced to make lessons visual and auditory, but designing a single interactive lesson for 4th graders takes me until midnight. I don't have that time every day."	Heavy design workload Time constraints Curricular pressure	Systemic Workload and Time Deficit	Structural Barriers to Tech-Pedagogical Sustainability

To collect data, several complementary research instruments were used. The main instrument was a semi-structured interview conducted with several selected teachers as key informants, aimed at exploring their perceptions and experiences related to pedagogical competence, the application of TPACK, and the multimodal approach in teaching English. In addition, direct observation was conducted on the learning process in the classroom to see the real practices carried out by teachers in teaching activities. This study also used closed and open questionnaires to collect the data from all respondents

In the merging phase, the quantitative and qualitative results were brought together in a joint display (Table 6) that aligns each cohort's self-report profile with its observed classroom practice, making the relationship between perceived and enacted competence directly visible. Interpretation therefore proceeds by reading the two strands against each other rather than privileging one over the other.

To maintain the validity of the data, triangulation techniques are used, both source triangulation (comparing data from various respondents and documents), and method triangulation (using a combination of interviews, observations, questionnaires, and documentation). Validity is also maintained through member checking and discussions with experts or peer debriefing.

3. Results

3.1. Perceived competence: questionnaire findings

Across all 55 teachers, indicator means were consistently high, ranging from 4.0 to 4.4 on the five-point scale (Table 3). The discrete TPACK dimensions were rated most highly, while the integrative dimensions TPK and TCK received the lowest scores (both 4.0). Among multimodal modes, the visual mode was rated highest (4.3), followed by audio (4.1) and gestural (4.0). Planning received the single highest score (4.4), with implementation (4.2) and evaluation (4.1) slightly lower. Consistent with the design, these means are read as perceived competence and interpreted alongside, not above, the observation evidence in Section 3.3.

Table 3. Mean self-report scores by indicator (N = 55; 1-5 scale)

No	Indicator	Items	Mean
1	Technological Knowledge (TK)	2	4.1
2	Pedagogical Knowledge (PK)	2	4.2
3	Content Knowledge (CK)	2	4.3
4	Technological Pedagogical Knowledge (TPK)	2	4.0
5	Technological Content Knowledge (TCK)	2	4.0
6	Pedagogical Content Knowledge (PCK)	2	4.2
7	Visual modality	2	4.3
8	Audio modality	2	4.1
9	Gestural modality	1	4.0
10	Learning planning	1	4.4
11	Learning implementation	1	4.2
12	Learning evaluation	1	4.1

3.2. Perceived competence by cohort

Disaggregating the means by career stage (Table 4) shows that the high overall ratings were broadly shared but not uniform. Early-career teachers rated their technological knowledge

most highly yet gave the lowest self-ratings for the integrative TPK and TCK dimensions, whereas veteran teachers rated pedagogical and content knowledge most highly but were least confident in technological knowledge. Mid-career teachers reported the most balanced profile across discrete and integrative dimensions. These descriptive differences motivate the cohort-level comparison of enacted practice that follows.

Table 4. Selected self-report means by cohort

Cohort	TK	PK/CK	TPK	TCK
Early-career (< 5 yrs)	4.4	4.0	3.8	3.8
Mid-career (6-10 yrs)	4.1	4.2	4.2	4.2
Veteran (> 10 yrs)	3.8	4.4	3.9	4.0

3.3. Enacted competence: observation findings

Structured observation diverged from the self-report picture. Although teachers frequently introduced visual and auditory modes through projectors or interactive whiteboards, these were predominantly used for one-way presentation rather than active, coordinated multimodal interaction. Rated against the rubric, only a minority of lessons reached transformative integration (Table 5). Most lessons sat at the emerging or developing levels, where technology substituted for traditional media (for example, projecting static textbook pages or playing nursery rhymes) without transforming the language task.

Table 5. Observed levels of simultaneous TPACK integration (n = 18 lessons)

Level	Classroom practice	Lessons	%	Main cohort
Emerging (isolated)	Technology used strictly as a passive display tool.	7	38.9	Veteran / early-career
Developing (parallel)	Technology supports the lesson but does not transform the language pedagogy.	7	38.9	Mixed
Transformative (simultaneous)	Technology, pedagogy, and language content synthesised into interactive, multimodal learning.	4	22.2	Mid-career
Total		**18**	**100**	

3.4. Joint display: perceived versus enacted competence by cohort

To address the central tension between high self-ratings and limited enacted integration, Table 6 presents a joint display in which self-report and observation evidence are compared for each cohort. The display shows that the gap between perception and practice was widest for early-career teachers, who rated technological knowledge highly but tended toward visually rich, linguistically shallow lessons, and for veteran teachers, whose strong pedagogical self-ratings were undercut by technology-avoidance during live lessons. Mid-career teachers showed the closest alignment between perceived and enacted competence.

Table 6. Joint display of self-report and observed practice by cohort

Cohort	Self-report (perceived)	Observed practice (enacted)	Perception-practice gap
Early-career	High TK; lower TPK/TCK	Fluent with apps; lessons visually rich but linguistically shallow	Wide
Mid-career	Balanced across dimensions	Most transformative lessons; tech aligned to grammar/vocabulary	Narrow
Veteran	High PK/CK; lower TK	Strong scaffolding; reverts to non-digital methods under tech-anxiety	Moderate

3.5. Multimodal meaning-making and its assessment

Beyond mode frequency, observation indicated that multimodal resources were rarely coordinated to build language meaning. Visual materials dominated, but audio and gestural modes were typically additive rather than integrated, and teachers seldom linked modes to an explicit language objective. In interviews, teachers also reported uncertainty about how to assess multimodal performance, noting the absence of rubrics for judging gesture, speech, and visual production together. This points to an evaluative gap that the questionnaire's relatively lower evaluation score (4.1) only partly reflects.

3.6. Interview findings: explaining the perception,(Practice gap)

The qualitative strand was designed to explain, rather than merely corroborate, the divergence between the uniformly high self-report means (Section 3.1) and the predominantly substitution-level practice recorded through observation (Section 3.3). Semi-structured interviews were conducted with fifteen teachers (five from each career-stage cohort: early-career, mid-career, and veteran), purposively selected to mirror the school-background and urban, rural variation of the wider sample. Transcripts were coded following Miles, Huberman, and Saldaña (2014). First-cycle descriptive coding isolated meaningful segments, and second-cycle pattern coding grouped these into the sub-categories and overarching themes summarised in Table 2. Three themes accounted for the majority of coded segments and are reported below with illustrative quotations; participant codes (e.g., T-EC-02) denote cohort and interview number. Reading these accounts against the cohort-level joint display (Table 6) shows that the perception–practice gap is not a matter of teachers misreporting their competence, but of structural, affective, and evaluative conditions that constrain the enactment of competence they genuinely possess.

3.6.1. Theme 1: The illusion of multimodal integration (surface versus deep TPACK)

The first and most pervasive theme captures the distance between the appearance of technology-rich, multimodal teaching and the shallow language work that often sat beneath it. Across cohorts, teachers described lessons that were visually and aurally busy but in which the digital resource carried no distinct language-learning function. This pattern was clearest among early-career teachers, whose high technological self-ratings (TK = 4.4) coexisted with the widest observed perception–practice gap.

"My slides always look full. There are pictures, there is a video, sometimes a song. The children are happy and the class looks active. But when I think about it honestly, the video was just playing while they watched. I did not really build the language from it; I projected the book in a nicer way." (T-EC-02, early-career, urban public)

Teachers frequently equated the presence of multiple modes with multimodal pedagogy, which is precisely the confusionthe social-semiotic framing in this study seeks to problematise. Several described adding a second or third mode for engagement rather than for meaning-making, leaving the modes additive rather than coordinated toward a language objective.

"I know I should connect the picture, the word, and the action so they reinforce each other. In practice I show the picture, then I say the word, then maybe a gesture, but they are separate steps. They are not really one thing working together." (T-MC-04, mid-career, rural public)

Where teachers did achieve coordinated, transformative integration, concentrated, as Table 6 indicates, in the mid-career cohort, hey articulated an explicit link between the digital tool and a specific linguistic target, rather than treating the tool as a delivery surface.

"When I use the interactive game for prepositions, the point is not the game. The point is that the child has to say 'the cat is under the table' to move forward. The technology is there to force the language out, not to entertain." (T-MC-01, mid-career, urban private)

3.6.2. Theme 2: Tech-anxiety and risk aversion

The second theme explains why even technologically confident teachers retreated to passive display during live lessons. Interviewees repeatedly described an affective barrier ,anticipatory anxiety about technical failure, that made the lower-risk, lower-integration option more attractive in the moment of teaching. This mechanism links the high perceived TK to the low enacted TPK directly, and was especially salient for veteran teachers, whose strong pedagogical self-ratings (PK/CK = 4.4) were undercut by technology-avoidance in observed practice.

"I get very nervous before class starts because I am afraid the internet will drop or the interactive app will not load in front of the children. It is safer to just project the PDF book. If it fails, I lose the class and the time I cannot get back." (T-VT-03, veteran, urban public)

The fear was not of the technology in the abstract but of public failure in front of pupils and the loss of scarce instructional time, which several teachers framed as a rational trade-off rather than a deficiency of skill.

"It is not that I cannot use the tools. At a workshop I can do everything. But in a real class with thirty children, if one thing goes wrong the whole lesson collapses. So I choose the method I can control, even if it is more old-fashioned." (T-VT-01, veteran, rural private)

This risk aversion helps interpret the observation finding that technology most often functioned as substitution: the substitution mode was, for many teachers, a deliberate hedge against failure rather than a ceiling on their understanding. Contingency planning for connectivity therefore emerged from the data as a pedagogical need, not merely an infrastructural one.

3.6.3. Theme 3: Structural barriers to tech-pedagogical sustainability

The third theme concerns the systemic conditions, workload, time, and unequal access, that made integrated lessons difficult to sustain even when teachers were willing and able to design them. Teachers described the labour of building a single coordinated multimodal lesson as incompatible with daily teaching loads.

"We are pushed to make lessons visual and interactive, but designing one good interactive lesson for the fourth grade keeps me working until midnight. I cannot do that every day. So most days I fall back to what is quick." (T-MC-05, mid-career, urban public)

Access inequality between urban and rural settings shaped what integration could realistically mean, and several rural teachers reframed low-technology, body-based multimodality as a deliberate pedagogical stance rather than a fallback, reinforcing the study's argument that multimodality is not a property of digital tools.

"In my school the devices are very limited, so I use picture cards and I act out the meaning with my body. For children who still struggle to read, the movement helps more than any screen would. I have decided this is my method, not my excuse." (T-VT-04, veteran, rural private)

Read together, these accounts indicate that the perception–practice gap is sustained less by what teachers know than by the conditions under which they teach, a finding that points implications toward sustained, practice-based professional development and collaborative teacher communities rather than one-off tool training.

3.6.4. The evaluative gap: assessing multimodal performance

Consistent with the relatively lower self-report score for learning evaluation (4.1) and the observation evidence in Section 3.5, interviews surfaced a distinct evaluative gap. Teachers who successfully elicited multimodal performance from pupils, combining speech, gesture, and visual production, reported having no adequate means of judging it, because available rubrics addressed written or spoken output in isolation.

"When the children act out a dialogue with movement and props, I can see who understands. But how do I grade that? My assessment sheet only has columns for writing and speaking. The gesture, the way they use the picture, there is no place to record it, so it disappears from the marks." (T-MC-02, mid-career, urban private)

This absence of integrated assessment criteria meant that the richest multimodal moments were often pedagogically valued but evaluatively invisible, an under-examined dimension of TPACK enactment in elementary ELT that the quantitative evaluation score only partly captures.

3.6.5. Cohort synthesis of interview themes

Table 7 aligns the three principal themes with the career-stage cohorts, making visible how the same perception–practice gap was driven by different mechanisms across cohorts. This synthesis feeds directly into the joint display (Table 6) and the cohort interpretation developed in the Discussion.

Table 7. Distribution of qualitative themes across career-stage cohorts

Overarching theme	Early-career (< 5 yrs)	Mid-career (6–10 yrs)	Veteran (> 10 yrs)
Illusion of multimodal integration	Dominant — app-fluent but linguistically shallow lessons	Least pronounced — modes coordinated to language goals	Present — strong pedagogy, but modes often sequential
Tech-anxiety and risk aversion	Moderate — confident but wary of public app failure	Lower — controlled, rehearsed integration	Dominant — reverts to non-digital methods under anxiety
Structural barriers (workload, time, access)	Present — design workload cited frequently	Dominant — sustainability of effort the key constraint	Present — access inequality reframed as low-tech stance

Overarching theme	Early-career (< 5 yrs)	Mid-career (6–10 yrs)	Veteran (> 10 yrs)
Evaluative gap (assessing multimodality)	Emerging — limited multimodal output to assess	Dominant — elicits performance but cannot grade it	Present — values performance, lacks criteria

Note. Relative prominence ("dominant / present / moderate / lower / emerging") reflects the density of coded segments per cohort in second-cycle pattern coding, not statistical frequency. n = 15 interviews (5 per cohort).

In general, the interview findings convert the central quantitative–observational tension into an explanatory account. Teachers' high self-ratings reflect genuine, compartmentalised knowledge; the limited transformative integration observed in classrooms is produced by the interaction of surface conceptions of multimodality, affective risk aversion, structural workload and access constraints, and the absence of integrated assessment criteria. These mechanisms, distributed unevenly across cohorts, substantiate the study's claim that closing the perception–practice gap requires sustained, practice-based professional development rather than additional tool familiarity.

4. Discussion

The central finding is a systematic gap between perceived and enacted TPACK. Teachers reported high competence across discrete dimensions, yet observation showed that integration most often remained at the level of substitution rather than transformation. Framing the questionnaire data as perceived competence, and reading it against rubric-based observation, allows this contrast to be interpreted as a meaningful pattern rather than a contradiction: confidence in using technology or teaching English separately did not extend to using technology to advance specific language objectives for young learners

The cohort comparisonoffers subtlety that technology-centric narratives frequently lack.. Early-career teachers' fluency with applications coexisted with linguistically shallow lessons, while veteran teachers' pedagogical strength was constrained by technology-anxiety, and mid-career teachers achieved the closest alignment between perception and practice. Read through the joint display, these patterns suggest that neither digital fluency nor pedagogical experience alone produces transformative integration; it is their coordination, strongest in the mid-career group, that matters.

The dominance of the visual mode is consistent with its accessibility and its fit with concrete-operational learners (Ng et al., 2023)but the limited coordination of modes indicates that multimodality functioned more as media variety than as social-semiotic meaning-making (Damayanti et al., 2024). Notably, some teachers in resource-limited settings drew on (Habók et al., 2023)gestural and kinesthetic resources as low-technology alternatives, reinforcing the view that multimodality is a pedagogical stance rather than a property of digital tools (Diprossimo et al., 2023). The reported difficulty of assessing multimodal performance, and the absence of suitable rubrics, identifies an evaluative gap that has received limited attention in elementary ELT (Stolpe & Hallstr, 2024)-

These findings carry proportionate implications for professional development rather than for student outcomes, which were not measured. First, training should target the specific deficits identified here, the TPK/TCK intersection and instructional design that aligns digital tools with language objectives and multimodal scaffolding, rather than general tool familiarity. Second, sustained, practice-based models such as lesson study or instructional coaching are better suited to these deficits than one-off workshops, because they allow teachers to design, implement, and revise integrated lessons in authentic settings. Third,

collaborative teacher communities can bridge urban-rural divides, with better-resourced teachers sharing digital strategies and rural teachers sharing low-cost multimodal techniques. Finally, infrastructure investment needs to be paired with pedagogical support and with contingency planning for connectivity, since the fear of technical failure was a recurrent reason for retreating to non-digital methods.

5. Conclusion

This study shows that English teachers in Elementary Schools in Magelang Regency report a strong sense of pedagogical competence in the discrete components of TPACK, yet their classroom practice reveals a consistent gap between this perceived competency and its integrated realisation. While teachers rated their understanding of individual components such as CK, PK, and TK highly and frequently introduced visual, audio, and gestural media, observation showed that technology most often functioned as substitution rather than transformation, and only a minority of lessons achieved the simultaneous integration of technology, pedagogy, and language content. The integration of technology into pedagogical content and strategies therefore remains the central challenge and the clearest priority for further assistance and training. Although limited facilities and access to technology are real obstacles, teachers' creativity in utilizing local resources and low-technology multimodal approaches indicates genuine potential for transforming English learning at the elementary level. Strategic efforts are accordingly needed to improve teacher capacity through sustained, practice-based training programs, collaboration between teachers, and the development of professional learning communities. Because this study measured perceived and observed competence rather than pupil performance, its implications are directed at teacher professional development; the effect of closing the perception-practice gap on student learning outcomes is an important question for future research.

References

Cheng, E. C. K., & Wang, T. (2023). Leading digital transformation and eliminating barriers for teachers to incorporate artificial intelligence in basic education in Hong Kong. *Computers and Education: Artificial Intelligence*, *5*(October), 100171. https://doi.org/10.1016/j.caeai.2023.100171

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). Sage Publications.

Damayanti, A., Rahayu, Y. S., & Yakub, P. (2024). Project-based learning e-book with Indonesian local wisdom supporting SDGs to facilitate students' bioentrepreneurship skills. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, *10*(3), 1002–1010. https://doi.org/10.22219/jpbi.v10i3.36546

Diprossimo, L., Ushakova, A., Zoski, J., Gamble, H., Irey, R., & Cain, K. (2023). The associations between child and item characteristics, use of vocabulary scaffolds, and reading comprehension in a digital environment: Insights from a big data approach. *Contemporary Educational Psychology*, *73*(February), 102165. https://doi.org/10.1016/j.cedpsych.2023.102165

Erbas, İ., Çipuri, R., & Joni, A. (2021). impact of technology on teaching and teaching English to elementary school students. *Linguistics and Culture Review*, *5*(S3), 1316–1336. https://doi.org/10.21744/lingcure.v5ns3.1815

Falah, I. F., Apsari, Y., & Kusumah, R. (2023). The Challenges of English Teachers in Teaching English at Primary Schools. *Journal of English Education and Teaching*, *7*(4),

832–846. https://doi.org/10.33369/jeet.7.4.832-846
Falah, I. F., Kusumah, R., Apsari, Y., & Sari, A. K. P. (2024). portrait of teaching English in primary school under Kurikulum Merdeka: Teachers' voices. *Concept : Community Concern for English Pedagogy and Teaching*, *9*(2), 70–79. https://doi.org/10.32534/jconcept.v9i2.5041
Fathana, S., Fajri, D. R., & Qonaatun, A. (2024). Students' Perceptions on Collaborative Learning in Teaching Speaking by Using Blended Learning. *English Language Teaching Educational Journal*, *7*(1).
Habók, A., Oo, T. Z., & Magyar, A. (2023). *Effect of Reading Strategy Use on Online Reading Comprehension*. *10*(January). https://doi.org/10.1016/j.heliyon.2024.e24281
Handini, O., & Mustofa, M. (2022). Application of TPACK in 21st Century Learning. *International Journal of Community Service Learning*, *6*(4), 530–537. https://doi.org/10.23887/ijcsl.v6i4.54620
Laila, F. N., Adityarini, H., & Maryadi, M. (2023). Challenges and Strategies in Teaching English Speaking Skills to Young Learners: Perspectives of Teachers in Indonesia. *VELES (Voices of English Language Education Society)*, *7*(3), 542–556. https://doi.org/10.29408/veles.v7i3.24030
Laila, F. N., Prastiwi, Y., & Fauziati, E. (2023). Challenges of Teaching English for Elementary School Student in Indonesian Rural Areas. *JPI (Jurnal Pendidikan Indonesia)*, *12*(3), 436–443. https://doi.org/10.23887/jpiundiksha.v12i3.57804
Liu, J. (2013). Visual Images Interpretive Strategies in Multimodal Texts. *Journal of Language Teaching and Research*, *4*(6), 1259–1263. https://doi.org/10.4304/jltr.4.6.1259-1263
MARTÍNEZ LIROLA, M. (2016). the Importance of Promoting Multimodal Teaching in the Foreign Language Classroom for the Acquisition of Social Competences: Practical Examples. *International Journal for 21st Century Education*, *3*(Special), 77–88. https://doi.org/10.21071/ij21ce.v3ispecial.5709
Mishra, M., Gorakhnath, I., Lata, P., Rani, R., & Chopra, P. (2022). Integration of technological pedagogical content knowledge (TPACK) in classrooms through a teacher's lens. *International Journal of Health Sciences*, *6*(April), 12505–12512. https://doi.org/10.53730/ijhs.v6ns3.9536
Nadia, H., Wiyono, K., & Sriyanti, I. (2024). Effectiveness of Using Physics E-Modules Based on Local Wisdom of Palembang City Food to Improve Collaboration Skills for High School Students. *Jurnal Penelitian Pendidikan IPA*, *10*(9), 6376–6383. https://doi.org/10.29303/jppipa.v10i9.8439
Nahachewsky, J. (2007). At the Edge of Reason: Teaching Language and Literacy in a Digital Age. *E-Learning and Digital Media*, *4*(3). https://doi.org/10.2304/elea.2007.4.3.355
Ng, F. Y. C., Thirunavukarasu, A. J., Cheng, H., Tan, T. F., Gutierrez, L., Lan, Y., Ong, J. C. L., Chong, Y. S., Ngiam, K. Y., Ho, D., Wong, T. Y., Kwek, K., Doshi-Velez, F., Lucey, C., Coffman, T., & Ting, D. S. W. (2023). Artificial intelligence education: An evidence-based medicine approach for consumers, translators, and developers. *Cell Reports Medicine*, *4*(10), 101230. https://doi.org/10.1016/j.xcrm.2023.101230
Pakula, H.-M. (2019). Teaching speaking. *Apples - Journal of Applied Language Studies*. https://doi.org/10.17011/apples/urn.201903011691
Paneru, D. R. (2018). Information Communication Technologies in Teaching English as a Foreign Language: Analysing EFL Teachers' TPACK in Czech Elementary Schools. *Ceps Journal*, *18 No 2*. https://doi.org/https://doi.org/10.26529/cepsj.499

Stolpe, K., & Hallstr, J. (2024). *Artificial Intelligence Literacy for technology education*. *6*(November 2023), 0–7. https://doi.org/10.1016/j.caeo.2024.100159

Suemith, M. E. (1994). The Communicative Language Teaching Approach. *Reading and Writing*, *30*(2), 1–9.

Umami, N., Krishartanti, Y., & Maria Agatha Sri WH. (2023). Pengaruh Kemampuan Technological Pedagogical Content Knowledge (TPACK) dan Karakter terhadap Kesiapan MenjadiK Guru. *Pekobis : Jurnal Pendidikan, Ekonomi, Dan Bisnis*, *8*(2), 106–115. https://doi.org/10.32493/pekobis.v8i2.p106-115.32647

Yıldız, G. R., & Savaşçı, M. (2024). Navigating Turkish EFL Teachers' Perceived Challenges with Very Young Learners. *Language Teaching and Educational Research*, *7*(1), 37–50. https://doi.org/10.35207/later.1356067