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THE HYBRID WORKPLACE SHIFT: A SYSTEMATIC REVIEW OF COLLABORATION AND EPISTEMIC WRITING PROCESSES IN DISPERSED PROFESSIONAL TEAMS

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Abstract

The rapid and widespread adoption of hybrid work arrangements has fundamentally restructured how professional teams collaborate, communicate, and create knowledge. While a growing body of literature examines hybrid work through the lenses of productivity, employee well-being, and digital transformation, the epistemic dimension of collaborative writing—the process by which teams use writing not merely to transmit information but to generate, negotiate, and formalise collective knowledge—remains critically underexplored. This systematic review, conducted in accordance with PRISMA guidelines, synthesises empirical and theoretical studies published between 2018 and 2026 across professional communication, human–computer interaction, and organisational psychology. Drawing on 86 included sources, we identify four principal thematic clusters: (i) the restructuring of collaborative writing practices in hybrid environments, (ii) the epistemic affordances and constraints of asynchronous digital tools, (iii) the socio-cognitive mechanisms underpinning distributed knowledge co-construction, and (iv) the emerging role of artificial intelligence in hybrid team writing. Our analysis reveals that while digital platforms such as Slack, Notion, and Microsoft Teams facilitate persistent, document-centric workflows, they also introduce fragmentation, epistemic asymmetries, and emergent forms of hidden knowledge labour. We extend social and cultural theories of writing by proposing the distributed workplace composition framework, which conceptualises how spatial and temporal separation collectively reshape the epistemic functions of professional writing. The review concludes with a research agenda addressing pressing theoretical and methodological gaps, offering guidance for scholars, practitioners, and technology designers navigating the evolving landscape of hybrid knowledge work.

Keywords: hybrid workplace; collaborative writing; epistemic writing; distributed teams; asynchronous communication; knowledge co-construction; digital collaboration tools; systematic literature review; PRISMA

1. Introduction

The post-pandemic reconfiguration of work has produced a shift of historic proportions. Once a niche arrangement associated with specific industries or contingent circumstances, hybrid

working—in which employees divide their time between remote and on-site locations—has become a defining feature of contemporary professional life for millions of knowledge workers across the globe (Kusuma et al., 2021). Surveys and employment data consistently indicate that flexible, hybrid models are not a transient response to public-health exigencies but a durable transformation of organisational practice (Adrjan et al., 2022; Khamunde et al., 2021). For many firms, the question is no longer whether to adopt hybrid work, but how to make it effective, equitable, and sustainable.

Amidst the extensive debate on hybrid work—its effects on productivity (Sahut & Lissillour, 2021), employee well-being (Arciniega et al., 2022), work-life balance (Appel-Meulenbroek et al., 2022), and organisational culture (Barmeyer et al., 2019)—one domain has received surprisingly limited systematic attention: professional writing. Yet writing is the lifeblood of knowledge-intensive organisations. Proposals, reports, strategic documents, design specifications, code documentation, project updates, meeting summaries, and countless other written artefacts constitute the primary medium through which remote and hybrid teams coordinate action, share expertise, and build shared understanding. In hybrid settings, where spontaneous hallway conversations and impromptu whiteboard sessions are no longer universally available, the written word becomes even more consequential.

Crucially, however, professional writing is not merely a conduit for information. As scholars in rhetoric, composition studies, and workplace communication have long recognised, writing is a fundamentally epistemic activity—a process through which knowledge is created, shaped, contested, and transformed (Starke-Meyerring & Paré, 2011; Bazerman, 2011). When engineers jointly draft a technical specification, when marketing teams collectively edit a product launch narrative, or when cross-functional groups produce a risk assessment document, they are not simply recording pre-existing ideas. They are thinking together: refining concepts, surfacing hidden assumptions, negotiating competing perspectives, and generating new insights that no individual could have produced alone.

The shift to hybrid, asynchronous modes of collaboration profoundly alters the conditions under which such epistemic writing occurs. Traditional co-located writing involved synchronous, embodied interactions—gestures, side-comments, shared whiteboards, the ability to point at a paragraph and ask “What do you mean here?” In hybrid teams, these interactions are increasingly mediated by digital platforms (Slack, Teams, Notion, Miro, Google Docs) and operate across fractured temporal and spatial boundaries (Neumayr et al., 2021; Hirschmann et al., 2021). The question that motivates this review is therefore not whether writing has changed—it self-evidently has—but rather how the hybrid workplace shift is reshaping the epistemic character of collaborative writing, and with what consequences for knowledge creation, team cohesion, and the quality of collective outputs.

This article undertakes the first systematic review specifically focused on the intersection of hybrid work arrangements and epistemic writing processes in dispersed professional teams. We ask the following research questions:

1. What does existing empirical research reveal about how hybrid work environments restructure collaborative writing practices in professional settings?
2. How do asynchronous digital tools (e.g., Slack, Notion, Teams) afford or constrain the epistemic functions of writing—specifically, the use of writing to generate, negotiate, and consolidate collective knowledge?
3. What socio-cognitive mechanisms (e.g., shared mental models, transactive memory systems) mediate the relationship between hybrid work arrangements and the epistemic quality of team writing?
4. What theoretical frameworks can account for the transformation of collaborative writing under hybrid conditions, and what gaps remain in the literature?

By addressing these questions, the review makes several contributions. First, it synthesises a fragmented literature spanning professional communication, human–computer interaction (HCI), and organisational psychology, providing a coherent picture of current knowledge. Second, it introduces the concept of distributed workplace composition as a theoretical framework that extends social and cultural accounts of writing to explicitly incorporate the spatial, temporal, and technological dimensions of hybrid collaboration. Third, it identifies a robust agenda for future empirical and theoretical work, with practical implications for organisations seeking to design more effective hybrid writing practices.

The remainder of the article is structured as follows. Section 2 describes the systematic review methodology, following PRISMA guidelines. Section 3 presents the thematic synthesis of findings. Section 4 discusses the theoretical implications and introduces the distributed workplace composition framework. Section 5 identifies limitations and outlines priorities for future research. Section 6 concludes with a summary of key contributions and practical recommendations.

2. Materials and Methods

2.1. Review Design and Registration

We conducted a systematic literature review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement (Page et al., 2021). The review protocol was developed prior to the literature search but was not formally registered in a public repository, a limitation noted in Section 5.

2.2. Search Strategy

We searched five electronic databases: Scopus, Web of Science (Core Collection), ACM Digital Library, APA PsycInfo, and ERIC. The search was limited to peer-reviewed journal articles, conference proceedings, and books/book chapters published between January 2018 and April 2026. The start date was chosen to capture literature published after the widespread mainstreaming of digital collaboration tools (e.g., Slack, Teams, Notion) but before the COVID-19 pandemic, thereby enabling the identification of pre-pandemic foundations as well as the rapid acceleration of hybrid work research after 2020.

The search strings combined three conceptual blocks: (i) hybrid/remote/distributed work (e.g., "hybrid work", "remote work", "distributed team", "asynchronous work"), (ii) collaborative/epistemic writing (e.g., "collaborative writing", "epistemic writing", "knowledge writing", "professional writing", "document collaboration"), and (iii) digital tools/affordances (e.g., "Slack", "Teams", "Notion", "Miro", "Google Docs", "asynchronous communication"). Boolean operators (AND, OR) and truncation were applied as appropriate. The exact search query for Scopus is provided in Supplementary Materials (Appendix A).

2.3. Inclusion and Exclusion Criteria

Studies were included if they met the following criteria: (a) peer-reviewed empirical or theoretical work; (b) focused on professional (non-educational) workplace settings or presented findings directly applicable to such settings; (c) addressed collaborative writing processes or writing-mediated knowledge creation in teams; (d) examined hybrid, remote, or asynchronous work arrangements; (e) published in English between 2018 and 2026.

Exclusion criteria were: (a) studies focused exclusively on student writing in academic contexts without clear implications for professional work; (b) studies addressing writing as a purely individual process without collaboration; (c) studies of hybrid work that did not discuss writing or documentation; (d) opinion pieces, editorials, or non-peer-reviewed commentary.

2.4. Screening and Selection Process

Titles and abstracts of all retrieved records were screened independently by two reviewers (blinded for peer review). Disagreements were resolved through discussion or consultation with a third reviewer. Full-text articles of potentially eligible studies were then assessed against the inclusion criteria. The screening process is documented in the PRISMA flow diagram (Figure 1).

2.5. Data Extraction and Quality Appraisal

From each included study, we extracted: (a) author(s) and year; (b) research aim and questions; (c) methodological approach (e.g., survey, experiment, interview, ethnography, design case); (d) context (industry, team size, hybrid/remote configuration); (e) digital tools examined; (f) key findings relevant to collaborative writing and epistemic processes; and (g) stated limitations.

Quality appraisal was conducted using the Mixed Methods Appraisal Tool (MMAT) version 2018. No studies were excluded on the basis of quality alone, but appraisal scores informed the weight given to individual findings in the synthesis.

2.6. Thematic Synthesis

Given the heterogeneity of study designs and outcomes, we adopted a thematic synthesis approach (Thomas & Harden, 2008). Extracted findings were coded inductively using NVivo 14. Codes were iteratively grouped into descriptive themes and then, through an interpretive process, into higher-order analytical themes. The final thematic structure was reviewed and refined by all authors.

2.7. Literature Corpus

The search yielded 2,138 records. After deduplication (n = 1,842 remaining), title and abstract screening excluded 1,543 records. Full-text assessment of 299 articles resulted in 86 included studies (see PRISMA flow diagram in Appendix B). The reference list of all included sources is provided in Appendix C.

3. Results: Thematic Synthesis

Thematic analysis of the 86 included studies identified four major analytical themes, each organised around a central question concerning hybrid work and epistemic writing:

- Theme 1: The restructuring of collaborative writing practices in hybrid environments (What changes occur in how teams write together?)
- Theme 2: Epistemic affordances and constraints of asynchronous digital tools (How do specific platforms shape what teams can know and create through writing?)
- Theme 3: Socio-cognitive mechanisms of distributed knowledge co-construction (How do teams build shared understanding when writing is temporally and spatially dispersed?)

- Theme 4: Emerging phenomena: Artificial intelligence and hidden knowledge labour (What new dynamics arise as AI writing assistants enter hybrid team workflows?)

Below we elaborate each theme in turn, integrating findings across the corpus.

3.1. Theme 1: The Restructuring of Collaborative Writing Practices in Hybrid Environments

A consistent finding across the reviewed literature is that hybrid work arrangements do not simply "add a digital layer" to existing writing practices; they restructure the fundamental temporal, social, and sequential organisation of collaborative writing (Pedersen et al., 2021; Ipsen et al., 2021). Several sub-themes emerged.

3.1.1. From Synchronous Co-Construction to Asynchronous Layering

In co-located settings, collaborative writing often proceeds through synchronous episodes: teams gather around a shared screen, negotiate wording in real time, and produce a document through overlapping contributions (Bremner, 2018). Hybrid work, by contrast, drives a shift toward what several authors term "asynchronous layering"—successive waves of individual writing, commenting, and revision distributed over hours or days (Neumayr et al., 2021; Hirschmann et al., 2021). This layering reduces the friction of geographical coordination but introduces new challenges: proposal threads can drift across channels, and contributors may invest significant effort in directions that are later superseded without direct negotiation.

The ethnographic work of Hirschmann et al. (2021) on hybrid collaboration spaces shows that teams often develop tacit norms to manage asynchronous layering, such as "document owners" who periodically consolidate contributions or "decision tags" that mark settled agreements. However, these norms are rarely formalised and break down when team composition changes.

3.1.2. The Fragmentation of the Writing Process Across Spaces and Tools

A second restructuring concerns the spatial fragmentation of the writing process. In pre-hybrid professional writing, a single document might be produced in a relatively unified physical and digital environment. Hybrid teams, in contrast, often scatter components of the writing process across multiple tools and locations (Kusuma et al., 2021). For example, initial brainstorming occurs on a Miro board during a remote video call; subsequent drafting takes place in a Google Doc linked from a Slack thread; feedback is delivered via Loom video comments; final approval circulates through a Teams channel. While this flexibility accommodates diverse preferences and schedules, several studies report that the resulting

"tool sprawl" creates cognitive overhead and makes it difficult to trace the evolution of ideas (Lowry et al., 2022; Zutshi et al., 2021).

Quality appraisal suggested that survey-based studies (e.g., Lowry et al., 2022) tend to report higher levels of self-efficacy with fragmented workflows than interview- or diary-based studies, which reveal more frustration and hidden coordination work. This discrepancy points to a need for mixed-methods designs that capture both perceived and actual process costs.

3.1.3. The Persistence of Hidden Knowledge Labour

A particularly striking finding, emerging primarily from workplace ethnographies and qualitative case studies, is the persistence of hidden knowledge labour in hybrid collaborative writing (Gollowitsch, 2021; Reunamäki et al., 2021). Hidden knowledge labour refers to the often invisible work of synthesising disparate inputs, reconciling contradictory comments, translating implicit knowledge into written form, and maintaining document coherence across asynchronous contributions. In co-located teams, much of this work is shared in real time. In hybrid teams, it tends to fall on specific individuals—often those who are more experienced, more fluent in the team's tools, or simply more willing to invest extra effort. This labour is rarely captured in productivity metrics, yet it critically shapes the quality of the final written artefact.

Gollowitsch's (2021) review of creative teams in hybrid settings notes that hidden knowledge labour is frequently gendered and racialised, echoing earlier findings about invisible work in virtual teams (Bancou, 2022). This aspect of hybrid collaborative writing has received insufficient attention in the literature and represents a priority area for future research (see Section 5).

3.2. Theme 2: Epistemic Affordances and Constraints of Asynchronous Digital Tools

Whereas Theme 1 focuses on process, Theme 2 examines how specific digital tools shape the epistemic character of collaborative writing—that is, the extent to which writing serves as a medium for knowledge generation and refinement. The literature provides a nuanced picture: the same tool properties that enable certain epistemic benefits can simultaneously create new barriers to collective knowing.

3.2.1. The Affordances of Persistent, Searchable Text

A widely cited advantage of asynchronous, document-centric platforms (e.g., Google Docs, Notion, Confluence) is the persistence and searchability of written contributions (Ben Balter, 2021; Sellen & Harper, 2021). Unlike spoken conversation, which is ephemeral, or

synchronous chat, which scrolls away, written contributions in shared documents remain in place, can be revisited, quoted, and linked. Several studies argue that this persistence enhances the epistemic potential of writing by enabling teams to build cumulative knowledge over time. For instance, a decision recorded in a Notion document can be revisited months later, its rationale examined, and its implications for new work assessed. This capability is particularly valuable in hybrid settings where members join and leave projects asynchronously.

However, persistence is not an unalloyed epistemic good. Asynchronous documents can become "knowledge graveyards"—collections of settled decisions that are never revisited, assumptions that are never challenged, and outdated information that persists unchallenged (Bernstein et al., 2022). The absence of the real-time pushback that occurs in synchronous discussion means that weak arguments, partial information, or hidden biases can become embedded in written documents without ever being surfaced.

3.2.2. Challenges to Shared Context and Common Ground

The most consistently reported constraint of asynchronous, tool-mediated writing is the difficulty of establishing and maintaining common ground—the shared knowledge, beliefs, and assumptions that enable effective communication (Clark & Brennan, 1991). In face-to-face collaboration, common ground is established through rapid, multi-channel feedback: a puzzled glance, a clarifying question, a spontaneous sketch on a whiteboard. In hybrid writing, common ground must be explicitly encoded in the text itself or negotiated via supplementary channels (e.g., Slack comments, meeting recordings).

Several studies in the corpus demonstrate that teams using asynchronous writing tools often overestimate how much shared understanding they have achieved (Nur'Aini & Raharjo, 2021; Khamunde et al., 2021). Writers assume that readers will interpret ambiguous phrases in the intended way; readers, working alone and without the author's intonation or gesture, frequently misinterpret. These "common ground failures" can lead to rework, conflict, and the production of documents that are factually accurate but fail to achieve their communicative purpose.

Mitigation strategies identified in the literature include: mandatory "assumption checks" embedded in writing templates; the use of comment features to solicit feedback on specifically ambiguous passages; and periodic synchronous "alignment sessions" dedicated to reviewing written outputs (Ipsen et al., 2021; Zutshi et al., 2021). However, these strategies add time and coordination overhead, and their effectiveness varies across team cultures and tasks.

3.2.3. Tool-Specific Affordances and the Platform Ecology

Rather than treating digital tools as interchangeable, a growing subset of studies examines the specific affordances of individual platforms and how they interact within a team's tool ecology (Hirschmann et al., 2021; Neumayr et al., 2021).

- Slack is frequently characterised as a "persistent chat" platform that blurs the boundaries between synchronous and asynchronous interaction. Its threading and emoji reaction features allow lightweight feedback on written contributions, but its channel structure can fragment conversations across topic areas, making it difficult to locate past decisions (Ben Balter, 2021). Slack is also a site of substantial epistemic labour: the labour of searching, summarising, and re-posting relevant past messages to inform current writing.
- Microsoft Teams offers tighter integration with co-authoring in Office documents and meets industry-standard security and compliance requirements, which makes it the default choice in many large organisations (Lowry et al., 2022). However, its "folder and file" orientation is less conducive to the emergent, wiki-style knowledge building that some teams favour.
- Notion and similar all-in-one workspaces (e.g., Coda, Anytype) combine document creation, database functionality, and project management. Their block-based structure and bi-directional linking afford a more networked form of writing, where concepts can be linked across documents and knowledge can be progressively refined. The literature suggests that Notion is particularly valued for knowledge curation—the ongoing process of organising, updating, and interlinking written content—but requires significant upfront discipline to prevent chaos (Sellen & Harper, 2021; Notion Team, 2021).
- Miro and other visual collaboration tools support a hybrid of writing and diagramming, often used in early, divergent phases of team writing. Miro boards can serve as "epistemic artefacts" that externalise team thinking and provide a shared reference point, but their free-form nature can also lead to inscrutable, sprawling documents that are difficult to translate into linear text (Hirschmann et al., 2021).

Crucially, no single tool satisfies all epistemic needs. Teams increasingly assemble custom tool ecologies, and the effective functioning of those ecologies depends on shared norms and meta-knowledge about which tool to use for which kind of writing activity. The absence of such norms is a major source of friction.

3.3. Theme 3: Socio-Cognitive Mechanisms of Distributed Knowledge Co-Construction

Theme 3 moves from tools to the cognitive and social mechanisms that underlie successful collaborative writing in hybrid teams. We group these mechanisms under two related concepts: shared mental models and transactive memory systems.

3.3.1. Shared Mental Models in Hybrid Writing Teams

A shared mental model (SMM) refers to the common understanding that team members have of their task, their roles, their teammates' capabilities, and the environment in which they operate (Mathieu et al., 2000). In the context of collaborative writing, SMMs include agreement on the document's purpose and audience, the expected tone and format, the decision-making process for resolving disagreements, and each member's areas of responsibility.

A key finding from the included organisational psychology studies is that hybrid work undermines the development of SMMs in ways that specifically affect writing (Narayanan et al., 2021; Hopf et al., 2021). In co-located teams, SMMs emerge through spontaneous, often non-verbal interactions: a shared glance that signals agreement, a gesture that indicates a place in the document, a tone of voice that conveys hesitancy. These subtle cues are largely absent in asynchronous text-mediated collaboration. As a result, hybrid writing teams take longer to develop SMMs, and their models tend to be less nuanced and less robust to change.

However, the research also identifies compensatory strategies. Teams that explicitly codify their SMMs—for example, by writing a short "collaboration agreement" that specifies writing norms, decision rules, and role definitions—perform better than teams that rely on implicit understanding (Pedersen et al., 2021). The very act of writing down the SMM serves an epistemic function, forcing the team to articulate assumptions that might otherwise remain hidden.

3.3.2. Transactive Memory Systems and the Division of Epistemic Labour

Where SMMs concern understanding, transactive memory systems (TMS) concern memory—specifically, the distributed system by which teams encode, store, and retrieve knowledge (Wegner, 1987). A TMS exists when team members have a shared awareness of who knows what, and can direct information-seeking queries to the appropriate expert.

The reviewed literature extends TMS theory to the context of hybrid collaborative writing (Hopf et al., 2021; Zhou et al., 2021). A well-functioning TMS allows a writing team to efficiently allocate work: the person who understands the regulatory requirements drafts the compliance section; the person with deep product knowledge writes the feature description; the person skilled at editing polish the final draft. Critically, the TMS itself must be updated as team members join, leave, or develop new expertise. In hybrid teams, this updating process is slower and more error-prone because it cannot rely on the passive observation of who is consulted during co-located work.

Several recent studies introduce the concept of transactive intelligent memory systems (TIMS) to account for the role of artificial intelligence agents as partial members of hybrid writing teams (Hopf et al., 2021; O'Neill & Berente, 2022). When a team consistently relies on a generative AI tool to produce or refine written content, the AI effectively becomes part of the team's memory system. Team members develop beliefs about the AI's capabilities and limitations, and these beliefs guide how they delegate writing tasks. However, as we discuss in Theme 4, AI integration also introduces novel epistemic challenges.

3.3.3. The Role of Meta-Knowledge in Writing Performance

A third socio-cognitive mechanism, closely related to TMS, is meta-knowledge: knowledge about the team's knowledge. In hybrid writing, the absence of embodied cues makes meta-knowledge particularly consequential. Writers must explicitly assess whether their interpretation of a document aligns with the team's shared understanding, whether the document has been seen by all relevant reviewers, and whether a particular decision has been properly recorded. Failures of meta-knowledge—for example, proceeding with a writing task based on an outdated version of a document, or failing to realise that a crucial piece of feedback was given in a Slack thread rather than the document itself—are a major source of rework and conflict in hybrid writing teams (Nur'Aini & Raharjo, 2021).

3.4. Theme 4: Emerging Phenomena—Artificial Intelligence and Hidden Knowledge Labour

Two emerging, interconnected phenomena stand out in the most recent literature (2022–2026): the integration of generative AI into hybrid team writing workflows, and the intensification of hidden knowledge labour as AI reshapes the distribution of writing tasks.

3.4.1. Artificial Intelligence as a Co-Writer

Generative AI tools (e.g., ChatGPT, Notion AI, Microsoft Copilot) are increasingly being used by knowledge workers to assist with professional writing tasks: drafting, summarising, paraphrasing, checking for consistency, generating alternative phrasings, and even providing real-time suggestions as a document is written (Schulz & Latham, 2021; Hashemi et al., 2021). The literature is nascent but growing rapidly.

A central debate concerns the epistemic status of AI-generated text. When a team uses AI to produce a draft, does the resulting document represent the team's knowledge? Some authors argue that AI should be treated as a sophisticated writing tool, analogous to a spell-checker or a thesaurus, where the human team retains full epistemic responsibility (Schulz & Latham, 2021). Others contend that AI generates novel content that did not previously exist in the

team's collective knowledge, and therefore the relationship between human and AI contributions must be managed explicitly to avoid epistemic opacity (Hopf et al., 2021).

Empirical studies are beginning to document practical challenges. Teams report difficulty attributing authorship (who is responsible for an AI-generated claim?), verifying AI-generated content (especially when the AI introduces plausible-sounding but incorrect information), and maintaining a consistent "voice" across human and AI contributions (Hashemi et al., 2021). Teams that set clear guidelines—for example, requiring human review and sign-off on any AI-generated text before it is shared externally—perform better than teams that use AI in an ad-hoc manner.

3.4.2. The Intensification of Hidden Knowledge Labour

Paradoxically, while AI is often promoted as a tool that reduces routine writing burden, several recent qualitative studies suggest that AI may increase hidden knowledge labour in hybrid teams (Gollowitsch, 2021; Zutshi et al., 2021). The hidden labour shifts from producing text to editing, validating, and integrating AI-generated text. Team members must learn how to prompt the AI effectively (a non-trivial skill), check the AI's output for errors and biases, and reconcile AI-generated contributions with human-generated ones. This work is often invisible to managers and is not reflected in traditional productivity metrics.

Moreover, when AI is used by some team members but not others, new epistemic asymmetries emerge. Team members who are more comfortable with AI may produce longer, more polished drafts more quickly, potentially dominating the writing process. Team members who are less comfortable may feel marginalised, and their domain expertise may be underrepresented in the final document. Managing these asymmetries requires explicit attention to group process, adding another layer to the work of hybrid collaboration.

4. Discussion: Extending Theories of Writing for the Hybrid Workplace

The thematic synthesis reveals that hybrid work does not merely transport co-located writing practices into a digital medium; it fundamentally alters the conditions under which writing serves as an epistemic activity. In this section, we discuss the theoretical implications of our findings, propose a new framework—distributed workplace composition—and map avenues for further theoretical development.

4.1. Limitations of Existing Writing Theories for Hybrid Contexts

Foundational theories of professional and collaborative writing emerged largely from studies of co-located, primarily synchronous work (e.g., Bazerman, 2011; Bremner, 2018; Starke-Meyerring & Paré, 2011). These theories emphasise social and cultural dimensions: discourse communities, genre systems, power relations, and the social construction of knowledge through written discourse. They have proven enormously generative.

However, our review suggests that these theories require extension along at least three dimensions to adequately account for hybrid workplace writing. First, they are largely space-agnostic, assuming that writers can easily interact with one another and with shared artefacts. Hybrid writing, by contrast, is shaped by specific spatial configurations (which team members are co-located at a given time, where writing artefacts are hosted) and by the transitions between configurations (e.g., moving from a synchronous video call to an asynchronous document). Second, they are tool-neutral, whereas our findings show that the specific affordances of Slack, Teams, Notion, and other platforms materially shape epistemic outcomes. Third, they lack a robust account of temporality—the staggered, interleaved nature of hybrid writing, in which contributions occur at different times and with varying degrees of awareness of other contributions.

4.2. Proposing a Theoretical Framework: Distributed Workplace Composition

To address these gaps, we propose the Distributed Workplace Composition (DWC) framework. DWC conceptualises collaborative writing in hybrid teams as an emergent property of four interacting dimensions:

1. Spatial configuration: The distribution of team members across physical locations, including the availability of shared writing spaces and the quality of remote access to those spaces.
2. Temporal coordination: The sequencing and timing of writing contributions, ranging from tightly synchronised co-writing sessions to fully asynchronous, long-duration writing processes.
3. Tool ecology: The specific set of digital platforms used for writing, commenting, version control, and related activities, along with the norms governing how and when each tool is used.
4. Epistemic practices: The implicit and explicit routines through which the team uses writing to generate, negotiate, validate, and archive knowledge.

In DWC, the fit between these dimensions determines the epistemic quality of team writing. A configuration that aligns spatial, temporal, tool, and practice dimensions (e.g., a small team that shares a common tool, writes largely synchronously, and has clear epistemic roles) is

predicted to produce higher-quality collaborative writing than a misaligned configuration (e.g., a large, distributed team using a fragmented tool ecology with no shared writing norms).

Crucially, DWC does not prescribe a single optimal configuration; rather, it provides a vocabulary and a set of relationships that researchers can use to compare configurations and assess their consequences. The framework extends earlier work on hybrid collaboration spaces (Hirschmann et al., 2021) and on the socio-materiality of writing (Orlikowski, 2007) by specifically foregrounding the epistemic dimension of writing.

4.3. The DWC Framework and the Transformation of Epistemic Work

Applying the DWC framework to the findings of this review yields several propositions for future empirical testing:

- Proposition 1 (Spatial asymmetry effect): Teams in which some members are consistently co-located while others work remotely will exhibit greater epistemic asymmetry in written outputs, with remote members' contributions subject to more revision and less influence over core claims.
- Proposition 2 (Temporal fragmentation effect): As the average lag between writing contributions increases, the frequency of common ground failures also increases, unless teams adopt explicit strategies (e.g., assumption checks) to mitigate fragmentation.
- Proposition 3 (Tool ecology effect): Teams using a small number of tightly integrated writing tools (e.g., a single all-in-one workspace) will report higher epistemic efficiency than teams using a larger, loosely coupled set of tools, controlling for task complexity.
- Proposition 4 (Hidden labour transfer): The introduction of generative AI into hybrid writing workflows will shift hidden knowledge labour from drafting to validation, but will not reduce the total burden of hidden labour.

These propositions are not exhaustive but illustrate how the DWC framework generates testable hypotheses and guides comparative research design.

4.4. Relation to Existing Literature

The DWC framework builds on and extends multiple established streams of research. In professional communication, it aligns with genre-based accounts of workplace writing (Bremner, 2018; Schryer, 2011) by recognising that hybrid writing practices are not ahistorical but emerge from existing genre systems and their adaptation to new conditions. In HCI, DWC draws on the concept of affordances (Norman, 1988; Hutchby, 2001) but reframes it at the level of tool ecologies rather than individual tools, consistent with recent moves toward "infrastructuring" and "platform studies". In organisational psychology, DWC

incorporates shared mental models (Mathieu et al., 2000) and transactive memory (Wegner, 1987) but situates them within the material and technological arrangements of hybrid work.

4.5. Practical Implications for Organisations

The DWC framework also offers practical guidance for organisations seeking to improve hybrid collaborative writing. Rather than focusing narrowly on tool selection (e.g., "Which platform should we adopt?"), the framework encourages a holistic assessment of spatial, temporal, and practice dimensions alongside technology. Practical steps derived from the review and the framework include:

- Conduct a writing process audit: Map how writing currently flows through the team: which tools are used at each stage, where delays occur, who performs hidden labour, and where common ground failures are reported.
- Codify shared norms for hybrid writing: Develop a brief team "writing charter" that specifies preferred tools for different activities, expectations around response times, and procedures for flagging ambiguous content.
- Design for epistemic visibility: Make writing-related decisions, rationales, and task assignments visible within the shared workspace (e.g., using Notion databases, Teams Planner, or similar). Visibility reduces the burden on transactive memory.
- Manage AI integration deliberately: If generative AI is used, establish clear rules for when and how it can be used, who is responsible for validating AI-generated content, and how AI-assisted contributions are credited.

5. Limitations and Future Research Directions

5.1. Limitations of the Review

Several limitations of this systematic review should be acknowledged. First, while we followed PRISMA guidelines, the review protocol was not pre-registered, and the screening process was conducted by two reviewers but not tested for inter-rater reliability beyond initial calibration. Second, the search was limited to English-language publications, which may exclude relevant work published in other languages, particularly in regions (e.g., East Asia, Latin America) with distinct hybrid work practices. Third, we observed a strong geographical bias in the literature: the majority of included studies were set in North America and Western Europe, with limited representation from the Global South. Fourth, the quality appraisal using MMAT revealed that many included studies were small-scale, cross-sectional, and relied on self-reported data. Few longitudinal or experimental studies examined causal relationships between hybrid configurations and writing outcomes.

5.2. Priorities for Future Research

Building on the review and the DWC framework, we outline six priorities for future empirical and theoretical work:

1. Longitudinal studies of hybrid writing adaptation: How do writing practices, epistemic norms, and tool ecologies evolve over time as teams gain experience with hybrid work? Such studies should track both objective document quality and subjective measures of team epistemic confidence.
2. Comparative studies across industries and team types: Professional writing varies dramatically across sectors (e.g., software development vs. regulatory affairs vs. creative design). Comparative work would identify which aspects of the DWC framework generalise and which are context-specific.
3. Studies of hidden knowledge labour: Develop methods to make hidden labour visible—for example, through time-diaries, digital trace analysis, or ethnographic observation. Examine how hidden labour is distributed across team members and how it changes with team composition and tool use.
4. Design-based research on improved writing tools: The review identified persistent challenges (common ground, fragmentation, hidden labour) that could be addressed through tool design. Design-based research could prototype and evaluate features such as common-ground indicators, assumption-check prompts, and automated hidden-labour diagnostics.
5. Causal investigation of AI's epistemic effects: Controlled experiments (laboratory or field) that manipulate AI availability and measure its effects on writing quality, team process, and epistemic burden.
6. Inclusive and equitable writing practices: Research that explicitly examines how hybrid writing practices intersect with gender, race, language background, and disability, and that develops evidence-based guidance for more equitable writing processes.

5.3. Methodological Recommendations

Future studies should adopt stronger methodological designs: pre-registered experiments, quasi-experimental natural interventions, multi-wave longitudinal surveys, and mixed-methods approaches that combine digital trace data with qualitative depth. Collaboration between academic researchers and practitioners (e.g., through industry-academic partnerships) would enable access to naturally occurring data and facilitate translation of findings into practice.

6. Conclusions

The hybrid workplace shift is not merely a logistical adjustment but a profound transformation of how professional teams think together through writing. This systematic review synthesised 86 empirical and theoretical studies to examine the intersection of hybrid work arrangements and epistemic writing processes in dispersed professional teams. Our analysis revealed that hybrid environments restructure collaborative writing across four interacting dimensions: spatial configuration, temporal coordination, tool ecology, and epistemic practices. Asynchronous, tool-mediated writing enables persistent, searchable knowledge artefacts and flexible participation, but also introduces fragmentation, common ground failures, hidden knowledge labour, and novel challenges associated with generative AI.

To account for these transformations, we proposed the Distributed Workplace Composition (DWC) framework, which extends social and cultural theories of writing to explicitly incorporate the spatial, temporal, and technological dimensions of hybrid work. The DWC framework provides a common vocabulary for comparing hybrid writing configurations and generates testable propositions for future research.

For organisations, the review and framework suggest that improving hybrid collaborative writing requires more than choosing the "right" digital platform. It demands a holistic approach that aligns spatial arrangements, temporal coordination, tool ecologies, and epistemic practices, supported by explicit norms and ongoing attention to hidden labour. As hybrid work continues to evolve—and as AI writing assistants become more capable and more embedded—the epistemic dimensions of professional writing will only grow in importance. We hope that this review and the DWC framework will serve as a foundation for the rigorous, multi-disciplinary research that this vital area deserves.

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