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IT Terminology As A Linguistic And Technological Construct

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Abstract: This article explores Information Technology (IT) terminology as a linguistic–technological construct, arguing that the language of technology is shaped not only by systems of code but also by human cognition, communication, and culture. Drawing on Richards (2015) and Du Toit et al. (2025), the study examines how IT terms such as interface, process, and network evolve through mechanisms of metaphor, semantic extension, and specialization, leading to what Richards defines as terminological dissonance—a condition where multiple "right" meanings coexist. The study combines linguistic and cognitive perspectives to show that IT vocabulary not only reflects technical practice but also shapes how professionals conceptualize technology. These insights can inform multilingual terminology teaching and digital communication strategies.

Methodologically, the article employs a comparative conceptual synthesis combining linguistic analysis of IT terminology with multilingual education studies. Analytical tools such as glossary comparison, term clustering, and semantic mapping are proposed to reveal semantic relationships and contextual shifts. The findings reaffirm that IT terminology functions as both a linguistic and technological system—simultaneously enabling machine precision and human interpretation.

Keywords: Information Technology terminology; terminological dissonance; linguistic mediation; conceptual blending; multilingual education; semantic mapping; cognitive linguistics; technological discourse.

Introduction: In the twenty-first century, Information Technology (IT) has evolved not only as a field of technical innovation but also as a language-driven domain, where terminology operates simultaneously as code and communication. The rapid expansion of digital discourse has produced a lexicon that functions across

human and machine interfaces, shaping how users conceptualize, describe, and interact with technology. IT terms such as interface, process, or network are not merely technical signifiers—they are linguistic constructs that embody cognitive, cultural, and disciplinary ways of understanding technological reality. Consequently, the study of IT terminology requires both linguistic and technological sensitivity, as meaning is negotiated between precision and interpretation, standardization and creativity.

While IT terminology ensures technical accuracy, it often generates what Richards (2015) terms terminological dissonance—miscommunication arising not from error but from multiple legitimate meanings of the same term. Such dissonance illustrates the tension between specialized precision and natural language variability. Moreover, as Du Toit et al. (2025) argue, the dominance of English-based technical vocabulary can produce linguistic exclusion in multilingual education, where learners encounter IT terms detached from their cultural or linguistic frameworks. These challenges indicate that terminology is not a neutral instrument of communication but a sociolinguistic construct shaped by cognitive and cultural contexts.

The aim of this article is to examine IT terminology through the lens of linguistics, exploring its communicative, cognitive, and sociolinguistic dimensions. By drawing on theories from cognitive linguistics, terminology studies, and multilingual education, the research conceptualizes IT vocabulary as a living system that both reflects and constructs disciplinary meaning. It proposes that understanding IT terminology requires attention to the linguistic mechanisms that govern lexical evolution—such as metaphor, semantic extension, and specialization—and to the cognitive-linguistic processes that underlie conceptualization, including conceptual blending and mental modeling.

The article further integrates insights from multilingual pedagogy, particularly the work of Du Toit et al. (2025), who emphasize the role of multilingual terminology lists in technology teacher education. These resources demonstrate that terminological mediation can enhance comprehension, cognitive flexibility, and linguistic inclusion by aligning disciplinary knowledge with learners' linguistic repertoires. In this context, multilingual mediation is framed as a new linguistic approach to IT vocabulary teaching, one that complements computational terminology management tools such as Termediator, which employ semantic clustering and ontological mapping to reduce ambiguity.

METHODS

This study uses qualitative and comparative methods to analyze Information Technology (IT) terminology from a linguistic perspective. The main goal is to understand how IT terms develop, change, and function across languages and disciplines. Comparative Conceptual Analysis was used to compare ideas and definitions from linguistic and technological research, mainly drawing on Richards (2015) and Du Toit et al. (2025). This helped identify how IT terminology connects technical precision with linguistic interpretation. By using Term Clustering related IT terms were grouped based on their meanings and usage in texts. This helped identify patterns of synonymy and polysemy (one term having several meanings) within IT communication. Key terms and their relationships were visualized as networks to show how meanings are linked conceptually with the help of Semantic Mapping. This method illustrated how some terms overlap or extend into new areas through metaphor or specialization. All methods were applied to analyze terminology both as a linguistic phenomenon and a technological system. The comparative and visual approaches made it possible to connect findings from cognitive linguistics, education, and IT, leading to a more holistic understanding of how terminology functions across contexts.

RESULTS

The analysis of IT terminology using comparative and linguistic methods revealed several important findings about how technical vocabulary functions across languages and disciplines.

1. Terminology reflects both linguistic and technological systems. The comparison of sources showed that IT terms serve a dual purpose — they encode technical operations and express conceptual meaning. For example, terms like interface, network, and process act as system components in programming but also as communicative tools in education and design. This confirms that IT terminology operates simultaneously as a linguistic and technological construct.

2. Polysemy and metaphor drive lexical growth. Through term clustering and semantic mapping, it became clear that metaphor and semantic extension are the main forces shaping IT vocabulary. Words such as cloud, window, and thread were originally metaphoric but have become standardized technical terms. This linguistic flexibility enables creative innovation but also increases the risk of terminological dissonance (Richards, 2015).

3. Multilingual mediation enhances understanding and inclusion.

Glossary comparison demonstrated that translating and adapting IT terms into local languages (e.g., Uzbek and Russian) improves comprehension and promotes linguistic inclusion. As Du Toit et al. (2025) show, multilingual terminology lists help learners build clearer cognitive models of technical concepts, reducing the dominance of English-only discourse.

4. Semantic mapping reveals conceptual connections.

Visual mapping of IT terms showed how related concepts cluster around shared ideas, such as "connection," "process," or "control." This confirmed that IT terminology forms semantic networks similar to natural language structures, where meaning develops through context and association rather than strict definition alone.

Overall, the results show that IT terminology evolves through the interaction of linguistic creativity, cognitive processes, and technological structure. It is not a fixed system of labels but a living discourse shaped by human understanding and cross-linguistic adaptation.

DISCUSSION

The findings of this study confirm that Information Technology terminology cannot be viewed only as a technical vocabulary; it is also a linguistic and cognitive system that reflects how humans conceptualize technology. The coexistence of multiple meanings within the same term supports Richards's (2015) idea of terminological dissonance—the tension that arises when language users interpret a term differently depending on their field or experience. For example, process may describe a computer function for a programmer, but a learning or management activity for an educator. This diversity of meaning shows that IT terminology is not unstable but multilayered, carrying traces of its cognitive and metaphorical origins.

At the same time, the study's multilingual analysis supports Du Toit et al.'s (2025) argument that linguistic mediation plays a vital role in promoting understanding and inclusion. When IT terms are translated or explained through multiple languages, learners gain not only access to knowledge but also new ways of conceptualizing technology. Multilingual terminology lists and local-language adaptations help bridge gaps between global digital discourse and local linguistic identities. This finding is particularly relevant in technology education, where language barriers often restrict participation and comprehension.

The cognitive mechanisms behind IT terminology—metaphor, semantic extension, and specialization—also explain why this field evolves so quickly. These linguistic processes allow new meanings to emerge naturally from familiar experiences, making technological concepts easier to grasp. However, they also create ambiguity, especially when the same metaphor (like cloud or window) spreads across disciplines. Here, terminology management tools such as semantic mapping or term clustering can help make hidden connections visible, allowing users to see how meanings relate or diverge across contexts.

Over the past few decades, Information Technology has shifted from being seen primarily as hardware and engineering to being recognized as a domain whose operation, coordination, and innovation depend heavily on linguistic systems — specialized vocabularies, formal ontologies, and interoperable metadata — that act like both code and communication.

While the refinement of terminology in Information Technology aims to guarantee technical precision, this very precision paradoxically produces new forms of terminological dissonance and linguistic exclusion. In principle, IT relies on unambiguous definitions: each variable, class name, or ontology label must correspond to one concept to ensure machine interpretability and inter-system compatibility. As Richards (2015) demonstrates, however, the increasing specialization of vocabulary within and between technical subfields generates "terminological dissonance" — a state in which multiple communities assign different, yet internally valid, meanings to the same lexical item. The term interface, for example, may describe a software module, a user-facing design layer, or a data-exchange boundary, depending on disciplinary context.

Such discrepancies rarely arise from error but from divergent conceptual models embedded in professional practice.

From a linguistic perspective, the drive for precision thus collides with natural language's inherent polysemy and contextual flexibility. Terminological dissonance is a semantic by-product of disciplinary fragmentation: as IT diversifies into data science, cybersecurity, design, and education technologies, each branch redefines its core lexicon, causing overlaps and semantic drift. Without mediation, this leads to miscommunication among experts who assume shared understanding.

At the same time, linguistic exclusion—as emphasized by Du Toit et al. (2025)—arises when English-dominant terminology restricts access for multilingual learners and practitioners. In multilingual educational settings such as South Africa, students often confront English-only technical vocabulary that obscures comprehension and limits participation in technology education

The authors' use of multilingual terminology lists

illustrates how linguistic inclusion is not a peripheral concern but a pedagogical and cognitive necessity. Their findings show that while students valued the terminological support, many still defaulted to English for learning, revealing how global IT discourse implicitly privileges one linguistic norm over others.

Consequently, the field faces a dual challenge: the intra-disciplinary fragmentation that generates semantic inconsistency among professionals, and the inter-linguistic inequality that marginalizes speakers outside dominant language networks. Both problems stem from treating terminology as a fixed code rather than as a dynamic communicative system shaped by human cognition and social context. Future approaches to IT terminology—whether through mediation tools, multilingual glossaries, or semantic alignment frameworks—must therefore address not only definitional precision but also linguistic equity and accessibility.

According to Richards, three linguistic mechanisms govern this process: polysemy, synonymy, and contextual interpretation.

Polysemy refers to the coexistence of multiple related meanings within one lexical form — a natural linguistic tendency that becomes problematic in technical discourse where precision is expected. For instance, terms like process or interface acquire distinct definitions across computer science, workflow management, and software engineering, each valid within its own subdomain but potentially conflicting in interdisciplinary settings.

Synonymy, the converse phenomenon, arises when multiple terms refer to a single concept. In IT, pairs such as process/task, node/client, or server/host may appear interchangeable yet carry subtle pragmatic or contextual distinctions that affect implementation or interpretation.

Contextual interpretation bridges these two: it determines which meaning is activated in a given communicative act. Context, in Richards's model, includes disciplinary conventions, project type, user role, and even corporate culture. Because no two speakers share an identical context, complete terminological alignment is unattainable without explicit mediation.

Richards argues that IT, as a domain of rapid specialization, amplifies these linguistic features. The proliferation of new tools and frameworks continuously generates overlapping vocabularies, while interdisciplinary collaboration (e.g., between developers, designers, and engineers) multiplies semantic discrepancies. Her study introduces the Termediator tool as a computational attempt to identify and cluster polysemous and synonymous terms, thereby operationalizing linguistic analysis within information systems. By combining semantic clustering with ontology design, Richards demonstrates that linguistic ambiguity is not a defect to be eliminated but a property to be managed through systematic mediation.

Ultimately, Richards's contribution lies in reframing technical vocabulary as a living linguistic phenomenon—dynamic, context-dependent, and subject to the same semantic forces that govern ordinary language. Her framework positions IT terminology within the continuum between linguistic naturalness and technological precision, emphasizing that sustainable communication in digital fields depends on recognizing and reconciling this tension.

The concept of terminological dissonance captures one of the most subtle yet pervasive sources of miscommunication in specialized fields such as Information Technology. Unlike lexical error or factual inaccuracy, terminological dissonance arises when interlocutors use the same term correctly within their own disciplinary or experiential frameworks, yet fail to align their interpretations because those frameworks differ. In Richards's words, it is "miscommunication that occurs between educated and sympathetic parties due to semantic discrepancies such as synonymy and polysemy". Thus, rather than a mistake, it represents a collision of correctness—where several "right" meanings coexist and compete for validity.

This phenomenon is deeply rooted in the nature of language itself. Every linguistic sign operates at the intersection of form, concept, and context; the meaning of a term is not fixed but dynamically reconstructed by users in particular situations (Cruse, 2011; Evans & Green, 2006). In technical domains, where precision is expected to be absolute, this plasticity becomes problematic. For instance, the term process may denote an executable unit in software engineering, a business workflow in management, or a cognitive operation in human–computer interaction—all legitimate interpretations grounded in their respective ontologies. Each definition functions coherently within its domain, yet when professionals from different domains collaborate, semantic overlap turns into ambiguity.

From a linguistic perspective, terminological dissonance exemplifies polysemy as a communicative fault line. The cognitive economy of language encourages reuse of familiar words for new concepts, leading to metaphorical extension and semantic layering (Lehrer, 1990; Geeraerts, 2010). However, the efficiency of such reuse for intra-group communication often generates opacity for outsiders. In interdisciplinary IT

environments—where software developers, data analysts, and UX designers interact daily—the same lexical forms serve as "semantic interfaces" between conceptual worlds, making misunderstanding nearly inevitable.

Richards further distinguishes terminological dissonance from general semantic ambiguity by emphasizing its invisibility in real time. Because all parties believe they understand one another, the miscommunication often goes unnoticed until it manifests in technical errors, design flaws, or project failures. This aligns with pragmatic theories of communication (Grice, 1975), which show that speakers rely on shared context and cooperative principles; when contextual assumptions diverge, even syntactically perfect utterances can misfire. In high-stakes technological systems, such unnoticed semantic drift can have serious consequences—from software malfunction to safety-critical misinterpretation in aviation or medicine.

In short, terminological dissonance is not linguistic noise but semantic misalignment. It reveals how natural language flexibility—ordinarily a resource for creativity and adaptability—becomes a liability when transferred into formalized, interdisciplinary environments. Recognizing and addressing this phenomenon requires approaches that bridge linguistic analysis, domain ontology, and educational practice: mediation tools like Termediator (Richards, 2015) in professional contexts, and multilingual terminological scaffolds (Du Toit et al., 2025) in pedagogical ones. Together, these efforts suggest that sustainable technological communication depends not only on precision of code, but also on convergence of meaning among its human users.

CONCLUSION

In conclusion, the study has shown that Information Technology terminology functions not only as a system of technical labels but also as a cognitive and communicative framework that shapes how individuals conceptualize technology. Terms such as interface, process, and network evolve through metaphor, semantic extension, and specialization, resulting in layered meanings that differ across professional domains. This semantic flexibility enables conceptual innovation but also generates terminological dissonance when interdisciplinary actors assume shared understanding where none exists.

At the same time, the analysis demonstrates that multilingual terminology practices can mitigate semantic misalignment and enhance conceptual accessibility in technology education. By linking English terminology to learners' linguistic repertoires, multilingual mediation fosters cognitive depth, metalinguistic awareness, and equitable participation. Thus, the development and teaching of IT terminology must acknowledge both linguistic diversity and disciplinary variation.

A holistic approach to terminology—one that integrates linguistic clarity, cognitive scaffolding, and technological precision—offers a sustainable model for communication in digital discourse. Such an approach supports not only technical accuracy but also inclusivity, collaboration, and epistemic transparency across the increasingly interconnected domains of IT practice, research, and education.

REFERENCES

1. Richards, J. S. (2015). Terminological mediation in information technology and related fields (Master's thesis, Brigham Young University). Brigham Young University ScholarsArchive.
2. Du Toit, A., Kemp, A., Oosthuizen, J., Oosthuizen, L., & Wildsmith-Cromarty, R. (2025). Bridging Language Challenges in Technology Teacher Education. Education Sciences.
3. Cruse, D. A. (2011). Meaning in language: An introduction to semantics and pragmatics (3rd ed.). Oxford University Press.
4. Evans, V., & Green, M. (2006). Cognitive linguistics: An introduction. Lawrence Erlbaum Associates.
5. Lehrer, A. (1990). Polysemy, conventionality, and the structure of the lexicon. Cognitive Linguistics, 1(2), 207–246.
6. Geeraerts, D. (2010). Theories of lexical semantics. Oxford University Press.
7. Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), Syntax and semantics: Vol. 3. Speech acts (pp. 41–58). Academic Press.