

# Investigating Tantrayukti as a Framework for Knowledge-Building in ESL Writing

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## Abstract

Academic writing in ESL classrooms attempt to facilitate literacy skills, often considered general human cognitive capacities such as defining, explaining, organising, illustrating, justifying, inferring, and concluding. Although these activities do not belong to specific cultures and have been seen to recur across knowledge traditions, their recurrence does not imply that they are conceptualised, received, valued, presented, taught, or examined in identical ways. This paper outlines an exploratory study of Tantrayukti, a set of interpretive and compositional devices described in Indian śāstric traditions, using the first chapter of the Sūtrasthāna of the Caraka Saṃhitā as an initial corpus. The study examines if Tantrayuktis are merely Sanskrit labels for familiar discourse functions encountered in English academic writing or if they reveal situated configurations of knowledge-building that may not be explicit or present at all in dominant English academic-writing frameworks. The researcher adopted a five-stage data analysis method that combined functional coding, analysis of knowledge-organisation roles, multi-label Tantrayukti coding, relational and sequential analysis, and provisional pedagogical interpretation. Once a large corpus is analysed, the design intends to incorporate intercoder reliability and descriptive measures of frequency, density, co-occurrence, functional breadth, positional distribution, and transition patterns. It is hoped that the analysis will demonstrate whether the framework makes distinctive textual operations, constellations, and sequences available for representation and interpretation of meaning and, subsequently, for writing pedagogy.

**Keywords:** Tantrayukti; academic literacy; discourse functions; Indigenous Knowledge Systems; Caraka Saṃhitā; writing pedagogy; knowledge construction

## Introduction

Writing is more than a mere record of information; it determines the progress and development of a society by being able to preserve and share information. Writing, a component literacy skill, also determines who can participate in producing and preserving knowledge, whose voices get heard (Street, 1984). Writing instruction therefore needs to go beyond linguistic correctness and support students to enter disciplinary conversations such as what is an evidentiary mode of reasoning, what are illustrations that are recognised as evidence, and what forms of content and expression are granted social and cognitive legitimacy. Unfortunately, writing is taught through decontextualised units such as grammar, paragraph structure, topic sentences, evidence, explanation, and conclusion, prioritising alphabetic literacy, and students tested based on successful performance as though mastering writing means mastering only its technical repertoire.

Contemporary literacy research, however, has challenged this monolithic perspective. The academic literacies tradition now views writing as a socially situated practice shaped by cultures, institutional expectations, identity, agency, and power (Lea & Street, 2006; Street, 1984). The Multiliteracies framework initiated the expansion of literacy to literacies (plural), beyond alphabetic print to meaning-making across linguistic, visual, aural, gestural, spatial, and digital modes (New London Group, 1996; Cope & Kalantzis, 2009; Kress, 2010). Culturally sustaining pedagogy and translanguaging further questioned pedagogies that ignored learners cultural and linguistic resources, and made strong claims for learners home realities to be linked closely with classroom realities (García & Wei, 2014). In my related work, these perspectives are brought together to position culturally familiar artefacts, multilingual repertoires, and multimodal redesign as resources through which Indian learners can become authors rather than reproducers of English (Jose, 2025; Jose, in press).

In this paper, we examine the next stage; helping build learners' topic/ content schemata by expanding the resources available for writing/ composition does not automatically lead to facilitation of the actual process of writing. In other words, just because a writer has the content capital to write an essay does not mean they are also ready to organise those resources into a coherent text.

An analysis of writing tasks reveals that several tasks require learners to perform similar sets of cognitive operations – learners are asked to establish topics, define concepts, enumerate and elaborate content, connect ideas, justify, illustrate, derive implications, and reach conclusions. These cognitive activities appear broadly repeated across tasks. However, does their recurrence mean that they are neutral and universal? Or do these capacities get configured in different ways in different knowledge traditions?

This paper presents the rationale, methodology, and the results of a preliminary analysis of data (pilot study) as part of an exploratory investigation of Tantrayukti. The primary hypothesis is that the cognitive function may be universal but its rhetoric configuration might be culturally situated. The analysis asks what becomes visible when a set of classical Indian writing devices are examined to interpret their knowledge-building functions and not translated into familiar English equivalents.

## **Tantrayuktis**

Tantrayukti is an ancient Indian methodology serving as a systematic manual for the construction, interpretation, and analysis of scientific and theoretical treatises (Bhojraj, 2022). The term is a compound of *tantra* ("treatise, system, framework") and *yukti* ("method, logic, device, strategy"), and it broadly means "the methods of reasoning used to understand and explain a subject" (Lele, 1981). Tantrayukti, or methods of exposition, thus represents devices that help remove textual "blemishes"—such as contradiction, impropriety, or ambiguity—and seamlessly join intended meanings together.

Historically, the doctrine held sway for over 1,500 years as the standard for Indian scientific literature, with the oldest treatment found in the *Arthaśāstra* (32 devices), followed by seminal Ayurvedic texts like the *Caraka Saṃhitā* (36 devices) and *Suśrutasaṃhitā* (32 devices). Classical accounts vividly compare these tools to a lamp that illuminates the interior of a dark house or the sun that causes a lotus pond to blossom, enabling the reader to perceive hidden meanings and relationships that might otherwise remain obscured (Nagaraj, 2024).

Tantrayukti was originally described or applied in the following texts (Jayaraman, 2008):

1. Caraka Saṃhitā (Ayurveda)
  - Contains detailed references to *tantrayukti* as methods for interpreting medical texts.
  - The Śārīrasthāna and commentaries highlight how yuktis help in understanding sutras.
2. Sushruta Saṃhitā (Ayurveda)
  - Uses *tantrayukti* to explain surgical knowledge transmission.
3. Tantrayukti texts attributed to Dandin (7th century CE)
  - A standalone treatise outlining 32 yuktis (devices).
  - Forms the basis for later applications across disciplines.
4. Kāvyaadarśa (by Dandin) and other kāvya texts
  - Use reasoning devices in poetics and literary criticism.
5. Dharmashastra commentaries
  - Apply *tantrayukti* to interpret legal and ethical codes.

Definitions and/or interpretations of Tantrayukti have been attempted by scholars, old and new, in various ways – a “method of treatment,” a “plan of a treatise, a “method of theorisation,” and some even classifying the devices into Artha Yojana (an entity plan dealing with meaning and ontology) and Vakya Yojana (a structural plan dealing with linguistic organization and brevity) (Singh, 2003). These descriptions suggest that Tantrayukti concerns not merely textual form but the fundamental relationship between textual organisation and intelligibility. In contemporary scholarship, some researchers claim Tantrayuktis form part of an indigenous research methodology framework comparable to modern frameworks like IMRAD (Introduction, Methods, Results, and Discussion). Tantrayuktis are also seen as providing an indigenous metalanguage for describing “discourse functions” or recurring moves writers perform when constructing meaning, such as introducing, defining, justifying, and connecting ideas (Sharada and Pavani, 2026).

Given below is the complete list of 36 Tantryuktis adopted from Avhad et al. (2016).

| No. | Tantrayukti | Function / Name           |
|-----|-------------|---------------------------|
| 1   | Adhikaraṇam | Scope                     |
| 2   | Yogaḥ       | Rational linking          |
| 3   | Hetvārthaḥ  | Extension of arguments    |
| 4   | Padārthaḥ   | Import of words           |
| 5   | Pradeśaḥ    | Partial statement         |
| 6   | Uddeśaḥ     | Concise statement         |
| 7   | Nirdeśaḥ    | Detailed statement        |
| 8   | Vākyaśeṣaḥ  | Filling of ellipsis       |
| 9   | Prayojanam  | Purpose                   |
| 10  | Upadeśaḥ    | Authoritative instruction |
| 11  | Apadeśaḥ    | Adducement of reason      |
| 12  | Atideśaḥ    | Extension of instruction  |
| 13  | Arthāpattiḥ | Implication               |
| 14  | Nirṇayaḥ    | Conclusive statement      |
| 15  | Prasaṅgaḥ   | Contextual restatement    |
| 16  | Ekāntaḥ     | Categorical statement     |
| 17  | Naikāntaḥ   | Non-categorical statement |
| 18  | Apavargaḥ   | Exceptional statement     |
| 19  | Viparyayaḥ  | Statement of contrariety  |
| 20  | Pūrvapakṣaḥ | Statement of objection    |
| 21  | Vidhānam    | Systematic interpretation |
| 22  | Anumatam    | Concession                |
| 23  | Vyākhyānam  | Explanation               |

| No. | Tantrayukti  | Function / Name         |
|-----|--------------|-------------------------|
| 24  | Samśayaḥ     | Doubt                   |
| 25  | Atītāvekṣā   | Retrospective reference |
| 26  | Anāgatāvekṣā | Prospective reference   |
| 27  | Svasaṃjñā    | Technical terms         |
| 28  | Ūhyam        | Deduction               |
| 29  | Samuccayaḥ   | Collection              |
| 30  | Nidarśanam   | Illustration            |
| 31  | Nirvacanam   | Derivative definition   |
| 32  | Niyogaḥ      | Injunction              |
| 33  | Vikalpanam   | Alternative statement   |
| 34  | Uddhāraḥ     | Rational refutation     |
| 35  | Sambhavaḥ    | Reaffirmation           |
| 36  | Yukti        | Source of origin        |

### **The Study**

This paper puts forward the argument that the tantrayukti could be an instantiation of a culturally situated configuration of the cognitive capacity to structure or arrange claims logically and as such they might illustrate newer ways of performing familiar cognitive moves. The study therefore uses discourse analysis to examine how the tantrayuktis operate within their original textual contexts. Treating the English labels as provisional labels/ codes, the study examines how selected tantrayuktis operate within discourse, which devices occur together, what sequences they form, and what these patterns reveal about the construction of knowledge.

The goal is to investigate if tantrayukti provides something more than their English labels.

### **Tantrayuktis selected for the study**

The study currently focuses on nine tantrayuktis considered potentially useful for beginning writers. Based on the writer's experience teaching academic writing to undergraduate students across English and various foreign languages programmes, the tantrayuktis were selected for their relevance to basic knowledge-building activities such as establishing a subject, announcing and elaborating content, making concepts

intelligible, illustrating, connecting ideas, providing reasons, deriving implications, and reaching decisions. Their inclusion was therefore pedagogically motivated.

|                               |            |                    |
|-------------------------------|------------|--------------------|
| <b>Establishing Knowledge</b> | Adhikaraṇa | Scope              |
|                               | Uddeśa     | Preview            |
|                               | Padārtha   | Contextual meaning |
| <b>Developing Knowledge</b>   | Nirdeśa    | Detailed statement |
|                               | Nidarśana  | Illustration       |
|                               | Yoga       | Linking            |
| <b>Supporting Knowledge</b>   | Apadeśa    | Justification      |
|                               | Arthāpatti | Implication        |
| <b>Resolving Knowledge</b>    | Nirṇaya    | Resolution         |

In the table above, tantrayuktis are arranged to mirror the life cycle of academic discourse beginning ESL students are familiar with.

Each of them answers the following questions:

What am I writing about? (*Adhikaraṇa*)

What will I cover? (*Uddeśa*)

What exactly do my key terms mean? (*Padārtha*)

How do I develop the ideas? (*Nirdeśa*)

How do I make them understandable? (*Nidarśana*)

How do I organise them into a coherent whole? (*Yoga*)

How do I justify my claims? (*Apadeśa*)

How do I help readers infer connections and implications? (*Arthāpatti*)

What reasoned conclusion or resolution follows? (*Nirṇaya*)

## Research Design

The study uses a theoretically informed, exploratory mixed-method discourse analysis of the *Caraka Saṃhitā*. The analysis is guided by the traditional framework of Tantrayukti, which is used as an analytical lens to examine how the text organises, develops and communicates knowledge. It is not purely inductive because the tantrayukti categories precede the analysis and guide attention to chunks of discourse (Saldana, 2021). However, the coding act is not merely deductive matching because their functions and relationships are not assumed in advance (Krippendorff, 2018). Tantrayukti-guided coding is combined with functional discourse analysis, qualitative interpretation, and later, descriptive quantitative measures (not discussed in this paper).

Rather than treating tantrayuktis as isolated rhetorical devices, the study investigates how they function within larger discourse structures and how combinations of tantrayuktis contribute to knowledge construction.

The analysis therefore operates at two complementary levels:

- macro-discourse organisation, which examines the larger rhetorical stages through which the chapter progresses; and
- Tantrayukti analysis, which examines the local discourse strategies operating within those stages.

## **Research Questions**

The study is guided by the following questions:

RQ1. Which discourse functions and knowledge-organisation roles are performed in the selected sections (sthanas) of the *Caraka Saṃhitā*?

RQ2. How are the selected tantrayuktis textually realised, and how do their operations compare with provisional English discourse-function descriptions?

RQ3. Which tantrayuktis co-occur, and what does each contribute within recurring constellations?

RQ4. What recurring sequences of tantrayuktis can be identified across discourse units, and what knowledge-building processes do these sequences instantiate?

RQ5. What pedagogical possibilities can reasonably be proposed from the textual findings and which claims require subsequent classroom validation?

## **Pilot Study**

Verses 1–53 of the first chapter of the *Sūtrasthāna* was initially coded. While the verse is retained as the basic reference unit, it is not always the analytical unit. Since during preliminary readings it was observed that a single verse performed more than one discourse function, and at times a single function extended across several verses, it was decided that the text be divided into functionally coherent chunks.

A chunk is identified where there is a discernible shift in one or more of the following:

- topic or subtopic;
- dominant discourse function;
- stage in the development of knowledge;
- type of relationship among concepts;
- rhetorical or metadiscursive purpose.

Verse numbers however were retained and were attached to every chunk to preserve traceability to the source text.

### **Coding and analysis**

The analysis proceeded through four distinct questions:

1. What does this passage say?
2. What is this passage trying to achieve?
3. Which tantrayukti best explains that rhetorical move?
4. How does this passage fit into the chapter as a whole?

A multi-level discourse analysis was performed on the text at six interacting stages/levels:

1. Observable textual action (functional coding)
2. Knowledge-construction role (rhetorical contribution)
3. Tantrayukti interpretation (indigenous rhetorical framework)
4. Tantrayukti interaction (constellations and sequences)
5. Macro-discourse architecture (chapter organisation)
6. Pedagogical interpretation (writing and thinking implications – this will be elaborated only after the study is completed)

### **Stage 1: Functional coding**

Each sthana is parsed into discourse chunks, identified and coded according to its observable textual action, without reference to tantrayukti (see appendix 1). The coding at this stage remains descriptive and focuses on what the passage explicitly does in the immediate discourse. Some functional codes given here include introducing a topic, defining a concept, enumerating items, classifying entities, elaborating an earlier statement, explaining a relationship, etc.



## **Stage 2: Knowledge-organisation analysis**

The second stage examines the rhetorical contribution of the discourse chunk to the development of knowledge within the chapter. Rather than asking what the passage does locally, this stage asks how it advances the construction and organisation of the knowledge system.

Questions guiding this stage include:

- Does the passage establish a foundational concept?
- Does it connect earlier concepts into a coherent framework?
- Does it prepare the reader for a subsequent explanation?
- Does it resolve a conceptual issue?
- Does it complete one phase of the discourse and initiate another?

This stage therefore moves from describing textual actions to interpreting their contribution to the chapter's evolving discourse architecture.

## **Stage 3: Tantrayukti coding**

Asking the question, Which tantrayukti best accounts for this function, the discourse functions identified in the previous stages are interpreted through the selected tantrayuktis. Rather than treating tantrayuktis as predefined labels, the analysis asks which tantrayukti most adequately explains the rhetorical work performed by the passage. Where multiple rhetorical operations are simultaneously visible, multiple tantrayuktis may be assigned.

Because tantrayuktis may co-occur, the coding is multi-label rather than mutually exclusive.

## **Stage 4: Relational and sequential analysis**

The analysis then investigates how tantrayuktis work together. Because rhetorical organisation rarely depends on isolated discourse moves, the analysis proceeds to examine patterns of interaction among tantrayuktis.

## **Stage 5: Macro-discourse reconstruction**

Using the completed tantrayukti analysis, the broader discourse architecture of the chapter is reconstructed. The analysis identifies major discourse stages, examines the dominant tantrayukti constellations associated with each stage, and traces how the discourse progresses from one stage to the next.

## **Conclusion**

In an ESL classroom, allowing a student to utilise the rhetoric of their knowledge tradition not just recognises and values individual identities but also might make them

feel less alienated and give better agency. Tantrayukti, a situated epistemic configuration of universal human capacities to produce knowledge offers a promising framework for investigating this possibility. This paper argues that replacing English terminology with Sanskrit labels would not itself transform literacy instruction or decolonise ESL teaching. Consequential questions should be raised about how individual Tantrayuktis operate in discourse and what these patterns reveal about the organisation of knowledge.

This could help understand if the Tantrayuktis behave differently from their English labels and if their introduction could encourage more culturally responsive ways of teaching English academic literacy skills. From the ESL instructor's point of view, according to Lea and Street (2006), this could provide space for epistemic and rhetoric plurality – ways to widen students' repertoire, an act that is educationally valuable.

## References

- Avhad, A. D., Walinjkar, M., Vyas, H. A., & Dwivedi, R. R. (2016). Application of Tantrayukti (means of interpreting science) in research methodology. *Journal of Research in Traditional Medicine*, 2(3), 81–86.
- Bhojraj, K. G., & Mandal, S. K. (2022). Application of Tantrayukti in research methodology and statistics. *Aayushi International Interdisciplinary Research Journal*, 9(7), 31–36.
- Cope, B., & Kalantzis, M. (2009). "Multiliteracies": New Literacies, New Learning. *Pedagogies: An International Journal*, 4(3), 164–195.  
<https://doi.org/10.1080/15544800903076044>
- Dash, B., & Sharma, R. K. (Trans.). (1976–2002). *Caraka Saṃhitā: Text with English translation and critical exposition based on Cakrapāṇi Datta's Ayurveda Dīpikā* (7 vols.). Chowkhamba Sanskrit Series Office.
- Dash, B., & Sharma, R. K. (2004). *Charakasamhita by Agniveshatantra*, Vol-VII. Chaukhamba Sanskrit Series Office.
- Garcia, O., & Wei, L. (2014). *Translanguaging: Language, Bilingualism, and Education*. New York, NY: Palgrave MacMillan. <https://doi.org/10.1057/9781137385765>
- Jayaraman, M. (2008). *Tantrayukti - An ancient Indian Scientific & Theoretical Text Construction Manual*. Indiachapter.in  
<https://indiachapter.in/index.php?/user/article/2/2/20>

- Jose, K. (2025). Reimagining English literacy in India: Contextualising the multiliteracies framework. *International Journal of English: Literature, Language & Skills*, 14(2), 84–93.
- Jose, K. (in press). Culturally sustaining multimodal pedagogies in Indian ESL classrooms: Designing meaning across languages and cultures. Manuscript in press.
- Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.
- Krippendorff, K. (2019). *Content analysis: An introduction to its methodology* (4th ed.). SAGE.
- Lele, W. K. (1981). *The Doctrine of Tantrayukti-s*. Chaukhamba Surabharati Prakashan.
- Lea, M. R., & Street, B. V. (2006). The “academic literacies” model: Theory and applications. *Theory Into Practice*, 45(4), 368–377.  
[https://doi.org/10.1207/s15430421tip4504\\_11](https://doi.org/10.1207/s15430421tip4504_11)
- Nagraj, C., et al. (2024). Tantrayukti: An Ancient Technique to Formulate, Conceptualize and Comprehend a Treatise. *GAP GYAN*, VII(III).
- New London Group. (1996). *A pedagogy of multiliteracies: Designing social futures*. Harvard Educational Review, 66(1), 60–92.  
<https://newarcproject.pbworks.com/f/Pedagogy+of+Multiliteracies+New+London+Group.pdf>
- Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE.
- Singh, A., & Krishnan, K. S. (2003). Tantra Yukti: Method of theorization in Ayurveda. *Ancient Science of Life*, 22(3), 64–74.
- Street, B. V. (1984). *Literacy in theory and practice*. Cambridge University Press.
- Sharada, Y. S., & Pavani, J. R. (2026). Revisiting Tantrayukti: An Indigenous Framework for Knowledge Organization and Research Methodology. *IJDDT*, 16(40s), 1154-1164.

## Appendix 1

| Verses | Observation: What is the author doing?         | Open codes                             |
|--------|------------------------------------------------|----------------------------------------|
| 1–2    | Announcing the treatise and naming its subject | announcing; framing; topic declaration |

|       |                                                                        |                                                                       |
|-------|------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 3–5   | Introducing the origin of Ayurveda through a lineage narrative         | narrating; legitimising; attributing authority                        |
| 6–14  | Describing the crisis, gathering of sages and deliberation             | problematizing; contextualising; assembling expertise                 |
| 15–17 | Identifying disease as the central problem and the need for a solution | motivating inquiry; defining research problem; signalling next action |

### **Disclosure of AI Use in Manuscript Preparation**

The author used AI tools during the preparation of this manuscript for literature search support, assistance in cross-checking the consistency between in-text citations and the reference list, and for establishing intercoder reliability while coding data.

All conceptual arguments, interpretations, pedagogical frameworks, and final scholarly decisions remain the sole responsibility of the author. The author reviewed, revised, and verified all AI-assisted content and confirms responsibility for the accuracy and integrity of the manuscript.