The International Journal of Indian Psychology
ISSN 2348-5396 (Online) | ISSN: 2349-3429 (Print)
Volume 14, Issue 3, July- September, 2026
DIP: 18.01.118.20261403, DOI: 10.25215/1403.118
https://www.ijip.in

Research Paper

Gestalt-Inspired Whole-to-Part Analysis: Integrating Chunking and Meta-Prompting for Insightful Learning in AI-powered Large Language Models

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ABSTRACT

AI-embedded large language Models (LLMs) process any teaching learning input into mechanical form aligning with word to word manner. The students and teaching practitioners generally face immense difficulties as these models produce fragmented and incoherent pieces of text that lack deeper comprehension. They usually fail to internalize the bigger narrative behind a complex learning situation. This challenging situation can be truly addressed with the Gestalt psychological principle which strictly assumes that a learner can only understand a complex topic when the learning follows the rule of whole-to- the parts. This paper aims to propose a novel educationally grounded framework titled "Gestalt-inspired whole to part analysis for AI-mediated learning environment. This framework stresses on the effectiveness of Gestalt psychology in AI-driven learning output. This paper adopts a conceptual analytical method where, the principle of proximity and closure, the fundamental core of Gestalt psychology can optimize the learning productivity. This research study shows that the whole-to-part analysis prevents the AI-powered model from experiencing the confusion created out of disjointed context. This framework establishes the urgent need to curate the AI-based LLM models to achieve a form of insightful learning which strongly points out a sudden mental clarity on how discrete chunk of information connect to constitute a comprehensive whole. Henceforth, the framework provides an inherent human-centred blueprint for designing intelligent educational tools that can facilitate learners to become an insightful individual.

Keywords: *Gestalt psychology, Whole to Part Analysis, Large Language Models (LLMs), Insightful learning, Meta-prompting, AI-mediated Learning environment*

The successive infusion of artificial intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) has illuminated the debate on how the advance technologies expedite the organization, processing and deciphering the knowledge system. The functional core of these technologies lies in the large Language Models. These models with larger capacity of corpora have incapable capacity to produce larger amount of information in the form of text but with the limitation of its huge reliance on the reductionist word to word approach for the knowledge generation. These computational systems are capable of

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Received: July 01, 2026; Revision Received: August 22, 2026; Accepted: August 26, 2026

predicting each input and output precisely based on the probability statistics but often lack in the lenient mechanism of overall knowledge understanding. These models often encounter with the problems of losing the track of greater thematic context and information disjunction. This structural hindrance directly replicates a classic debate within the realm of educational psychological science between associationism which advocates the connection of granular form of information while the Gestalt psychology asserts that human perception generally conceptualizes learning as an integrated and structured whole (Koffka, 1935; Wertheimer, 1923). The contemporary education technology witnesses a severe architectural bias which creates a severe barrier in meaningful learning. The advanced LLM embedded AI learning platform operationalize the huge educational database and frequently dissects the complex educational data into arbitrary text based on the strict character counter or length of text rather looking into the conceptual dimension (Pinecone, 2025). This mechanistic functionalization often overlooks the wholesome logical argument, historical narrative or pedagogical lessons inherent in a specific database and often creates context devaluation (Singh et al., 2024). The learners and the educational practitioners mostly use these LLMs to produce massive information deck of disrupted knowledge which force the mechanical intelligence to produce fragmented knowledge chunk unable to grasp the overreaching knowledge landscape details. To bridge the gap this advanced learning mechanism must incorporate the leaning psychology to shift from bottom-ups sequence to top-down system aware learners (Bajohr, 2021). To address the gap, the system must adapt the human cognitive psychology to transit beyond the algorithmic orchestration to human centred learning paradigm. The Gestalt psychology is contradictorily aligned with the mechanism of LLMs as the psychology perceives the knowledge information as an integrated whole and provides the students the eternal ‘aha’ movement of insightful learning. The gestalt law of proximity and closure encloses the limitation of LLMs and turn them into an educational tool that enables the tools to grab the comprehensive learning goal. This research paper proposes a learning framework that inculcates the gestalt learning theory into the advanced language models to overcome the challenge of disconnected knowledge presentation to encompass the essence of integrated learning outcome.

Research Objectives:

The researchers have set two primary objectives:

- To develop a top-down, whole-to-part conceptual framework that integrates classical Gestalt principles (Prägnanz, Proximity, and Closure) with Large Language Model prompting and chunking strategies to preserve the knowledge integrity.
- To conceptualize how this integrated framework simulates "insight learning" in generative artificial intelligence, transitioning models from mechanical, word-by-word processing to holistic, meaningful comprehension within educational contexts.

METHODOLOGY OF THE STUDY

The research study employs a conceptual framework development methodology. It is a theoretical research design that systematically synthesizes the principle of cognitive psychology and computational linguistics to develop a novel framework. By configuring the psychological construct of gestalt learning into the operational functionalism of Large Language Models, the study proposes a top-down whole to part conceptual architecture. It will be based on available scientific research addressing this specific issue.

RESULT

This research study aims to develop Gestalt Inspired Whole to part analysis framework illustrates the enormous possibilities of Large Language Models (LLMs) from systematically transitioning linear data processors to the successful incubator of Insightful learning. This study utilizes qualitative conceptual analysis design; the analysis is evaluated through structural thematic validation, comparative cognitive mapping and pedagogical alignment. The researchers have organized the analytical finding according to the two primary research objectives.

Research Objective I: Developing a top-down, whole-to-part conceptual framework

- **Structural validation of the conceptual framework**

The primary outcome of this literature synthesis is a clear and structural divergence from the traditional form of using and associating LLM models into teaching learning practice. While the standard Large Language model based upon the logical assumption of bottom-up approach that comprehends naturally from sequential individual text combined (Bajohr, 2021), on the contrary the novel Gestalt-inspired framework establishes top-down cognitive architecture replicating the advanced organizer used in human instructional design (Jarc, 2018)

Table 1: Comparative framework illustration with the pedagogical alignment

Evaluation Criteria	Traditional models layouts	Developed GI-WPA framework	Pedagogical alignment
Instructional orientation	Traditional and Existing AI-embedded models introduces lesson and content segment based on the memorization of the facts without realizing and aiming for a systematic goal (Bajohr, 2021)	The proposed framework administers Top-Down approach that administers a macro-level concept map prior to presenting localized content details (Suzgun & Kalai, 2024).	Shifts the instructional experience from passive fact accumulation to deliberate goal-oriented comprehension.
Curricular segmentation	Traditional AI-embedded Language models split the reading content or textbook interpretation in rigid, arbitrary word limits or page counts (Pinecone, 2025)	The proposed framework classifies instructional chapters by content integration, by showing comprehensive lesson goals and complete learning goal	Preserves the narrative and logical integrity of learning units, systematically preventing contradictory curriculum issues.
Knowledge synthesis	The traditional language model compiles fragmented text together sequentially, causing cognitive load and context diffusion for learners (Singh et al., 2024)	This framework constantly keeps the bidirectional reflection from part to whole through macro level schema to meta level prompting.	This enables the LLMs to mimic the real classroom context where the learners attained insightful learning through sudden conceptual restructuring Rather than rote memorization

Therefore, the above mentioned table clearly illustrates how the proposed Gestalt-inspired Whole-to-part analysis framework can recalibrate the existing LLMs using the seminal Gestalt principle into function removing the barrier of passive receiving of disjointed atomistic information and thriving towards the broader purpose of learning attainment.

- **Operationalizing Gestalt laws as information scaffolding**

The above analysis indicates that when learners or practitioners face confusion in reading or understanding a topic, it is not actually the lack of facts but rather a result of unorganized and scattered presentation of learning material. According to the Gestalt psychology the law of organization helps learner in building a wholesome learning experience. While dealing with these LLMs as a learning collaborator, the learners witness systematic flow of organization but in disconnected form that somehow hinders their overall perception frame. These advance models can incorporate the natural psychological law of human perception to group the learning material in properly connected layout forms, the learning constraints can be systematically minimized (Wagemans et al., 2012)

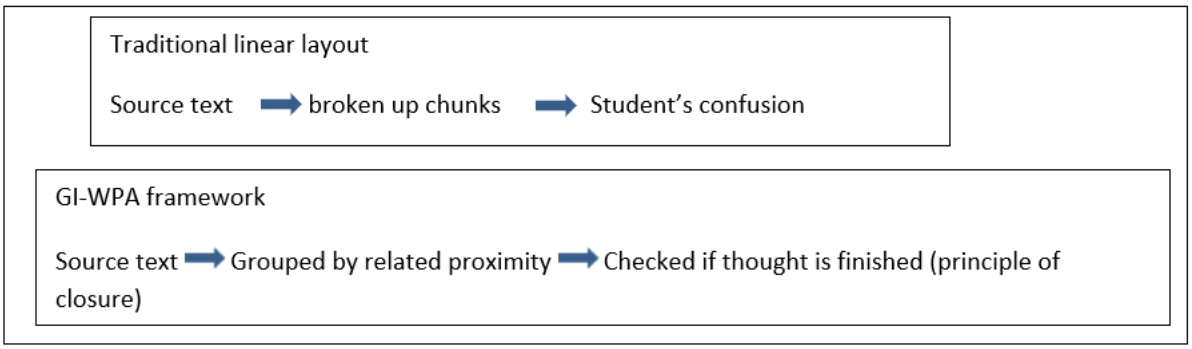

Figure 2: Comparative analysis of traditional and proposed GI-WPA framework

While training the AI-embedded large language models, the developers should incorporate law of proximity into the practice. The learning material can shift from rigid mechanical breaking of chunks towards meaningful concept grouping. Instead of cutting a comprehensive lesson design into fragmented source chunks, the law might enable the model to build a wholesome conceptual understanding (Singh et al., 2024). The models can ensure learners reading self-contained content through identifying and thematic pattern that immediately serves their purpose (Haskins & Haskins, 2023). This framework also structurally supported by the law of closure which is a fundamental constituent part of the Gestalt school of psychology. In a classroom setting, the learners generally loses the flow of comprehension if the core argument of the particularly text cut short (Koffka, 1935). The suggestive framework uses this principle of closure as a safety measure while using these LLM models in their learning journey. It ensures learner to go beyond the unfinished information or shorter chunk of information and perceive the whole background knowledge until the thematic saturation of the specific knowledge base. This procedure will closely align with the simple tendency of human mind to function with fully formed and logically complete ideas (Wertheimer, 1923).

Research Objective II: Impact of the framework on stimulating the Insight learning in the Educational Context

- **The Theoretical Model of Computational Insightful Learning**

The terminal goal of GI-WPA framework is to enhance non-linear learning, problem-solving, transiting beyond mere chunk-based information reception to broader conceptual attainment in the AI-mediated learning platform. The learners of contemporary age gains knowledge through the isolated chunks of facts provide by LLMs that lacks the depth of understanding the wholesome leaning experience. The framework addresses the limitation computationally by establishing iterative feedback loop between macro-prompting layer and micro-textual input (Zhang et al., 2023) that also signifies the ever-ending reciprocation of 'whole' and 'part' learning.

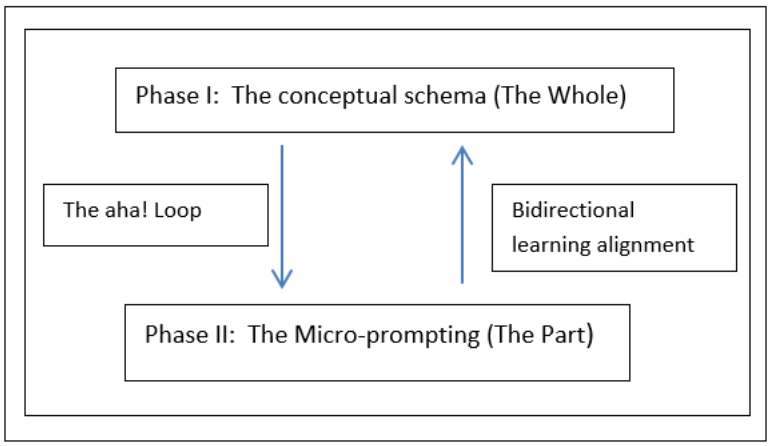

Figure 3: Iterative loop between whole and part of learning

This framework negates the usage of large language models as the mere stimulator of passive memory cache rather an active cognitive reinforcement. Instead of simply gathering instructional details as memory chunks, the learners can avail these models to perceive the greater conceptual understanding against the overreaching Gestalt or global schema. The learner through this rudimentary framework can properly evaluate how the localised part of learning clarifies the structural coherence of the whole on the contrary how the broader conceptual schema dynamically revises the meaning of individual part. This active tension directs to immediate cognitive restructuring of entire cognitive field of an individual learner (Zhou, 2026). When a piece of information supports the gap in broader learning map, these model yields to a systematic closure that perfectly resonates with the structural construct of Insightful learning and the cognition of complete learning.

- Educational and curricular implication: This framework solidifies a theoretical foundation when analysing through the instructional lens to design next-generation advanced mechanism tools in educational tools. The existing LLM-embedded classroom AI supplication disruptly present fragmented data based on basic search engine optimization that fails to grasp the learning continuum in the broader educational context. This framework emphasizes the inculcation of Gestalt psychology into the functionalism of prompt engineering that ensures the structural integrity of syllabus and curriculum integrity (Manickam, 2026). This framework advocates the systematic orchestration of these models to produce answer in respect

to broader conceptual landscape of the whole curriculum before answering and interacting with the students with specific required data that aligns with the psychological proposition of Gestalt principle. The systematic framework helps student to utilize this LLM-based AI application from mere automated glossary to active cognitive collaborator promoting inherent mastery and meaning learning in specific knowledge domain.

DISCUSSION

The proposition of the tentatively developed Gestalt inspired Whole to Part Analysis framework model for AI-mediated learning platform focuses on the critical psychological insight for educational technologists that comprehending a wholesome learning experience cannot be successful if short information is extracted as isolated facts ignoring the broader context. The existing large language models (LLMs) generate outputs based on the learners' need of information in the form of disjointed chunks and technical jargon which restraints learners to grab the overall conceptual understanding. Students might know the term for instance, but they profusely lack deeper understanding on how shorter constituent part creates greater knowledge coherence. This proposed framework stresses on the need of building a broader mental map by algorithm rather jumping into the specific detail first. This approach will eventually replace the algorithm based mechanical approach that reinforces the rote learning approach with top-down model of learning that replicates the natural human perceptions (Wertheimer, 1923; Koffka, 1935). A major contribution of this framework is that it recalibrates the complex information processing system through the gestalt theory of closure and proximity. Traditional educational technology often organizes the learning material into file size, character limits or page and word count (Pinecone, 2025). This mechanistic characteristic presented fragmented information that eventually created sense of disorientation among learners. The gestalt grouping rules of information tends to maintain the learning integrity in comprehensive manner (Singh et al., 2024). The LLMs models should focus on promoting the idea consistency so that the integrity in learning occurrence can be maintained. This will surely create a facilitating learning experience where the 'part' of learning tasks that maintain a direct and distinct connection to the 'whole'. Henceforth, this framework provides a clear conceptual understanding on how the algorithmic intelligence can stimulate the insightful learning which creates the classic 'aha' moment for learners and educational practitioners (Kohler, 1925). It purposefully shifts our attitude towards the adoption of LLM models which show that if these computational models are incorporated with human psychological principle, the results will be more structured and insightfully logical that genuinely supports deep rooted learning out of human-machine collaboration (Bajohr, 2021; Manickam, 2026).

Suggestion & Recommendations

Based on the Gestalt-inspired analytical framework, this research study recommends the educator, curriculum and textbook designer and educational technologists to create a better educational experience.

- Creating concept-based reading module that discourages the rigid counts of classwork and homework, rather focusing on creating learning tasks that embed the principle of closure and proximity in maintaining a holistic and balanced digital learning experience to maintain the continuation between traditional and artificial learning setting.

- The educational technologies and instructional designer should program and design a learning platform where the whole learning task will be presented before going into detailed task-specific context which supports the comprehensive learning attainment.
- The future LLM based conversational chatbots should be designed in a way where it provides an answer not as a isolated chunk but connects the answer to the core syllabus questions making the students to achieve the 'aha' moment which is signatory of Gestalt learning.
- This framework may support the teachers and instructional designers to train the AI models to use the meta-prompting to classify and organize the complex learning tasks into related chunks of concept clusters with structured scaffolding that leads to different learning paths.

Future Educational researchers should empirically test the framework in school and educational setting to understand whether this framework helps learners to learn the concept better than traditional learning. They can also verify the effectiveness of other learning theories in the backdrop of AI-mediated learning environment for optimizing better learning outcome in the age of automation.

CONCLUSION

This study has adequately established the Gestalt-Inspired Whole-to-part Analysis (GI-WPA) framework proposing an unconventional conceptual understanding the narrow the divide between algorithmic AI processing and cognitive psychology. This research moves away from word-by-word textual analysis and entirely focuses on building the theoretical pattern for top-down information processing in Large Language Models. This tentative model demonstrates that artificial intelligence is preoccupied with a globalized standard schema through task-independent meta-prompting by successfully deconstructing the localized context of knowledge without losing the grip of broader context. This framework operationalizes the Gestalt principles of proximity and closure and transcends beyond mere data-chunking algorithm processing towards meaningful educationally complete learning experience. The reciprocal algorithm structure provokes the system to trigger the non-linear insightful learning rather than anchoring the rote and linear learning strategy. This transitional educational shift modifies our understanding of generative AI from passive algorithmic educational tool into an active system-equipped knowledge collaborator. The research lacks empirical validation which needs rigorous experimental, longitudinal study to align a better learning outcome. The framework tries to validate a human-centred structural outline that guides for researchers and instructional designer that aims to frame next generation intelligent tutoring system that calibrates the logic, curate learning material and comprehend the huge information inculcating genuine insight.

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Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Pramanik, A. & Rani, A. (2026). Gestalt-Inspired Whole-to-Part Analysis: Integrating Chunking and Meta-Prompting for Insightful Learning in AI-powered Large Language Models. *International Journal of Indian Psychology*, *14*(3), 1366-1373. DIP:18.01.118.20261403, DOI:10.25215/1403.118