NEXIUS LABS

NEXIUS LABS RESEARCH PAPER / 2026

Validating the **DUO Framework**

A conversation-based approach to effective generative AI use

THE MODEL

Discover what matters. **Understand** the context and judgement. **Output** only after the thinking is clear.

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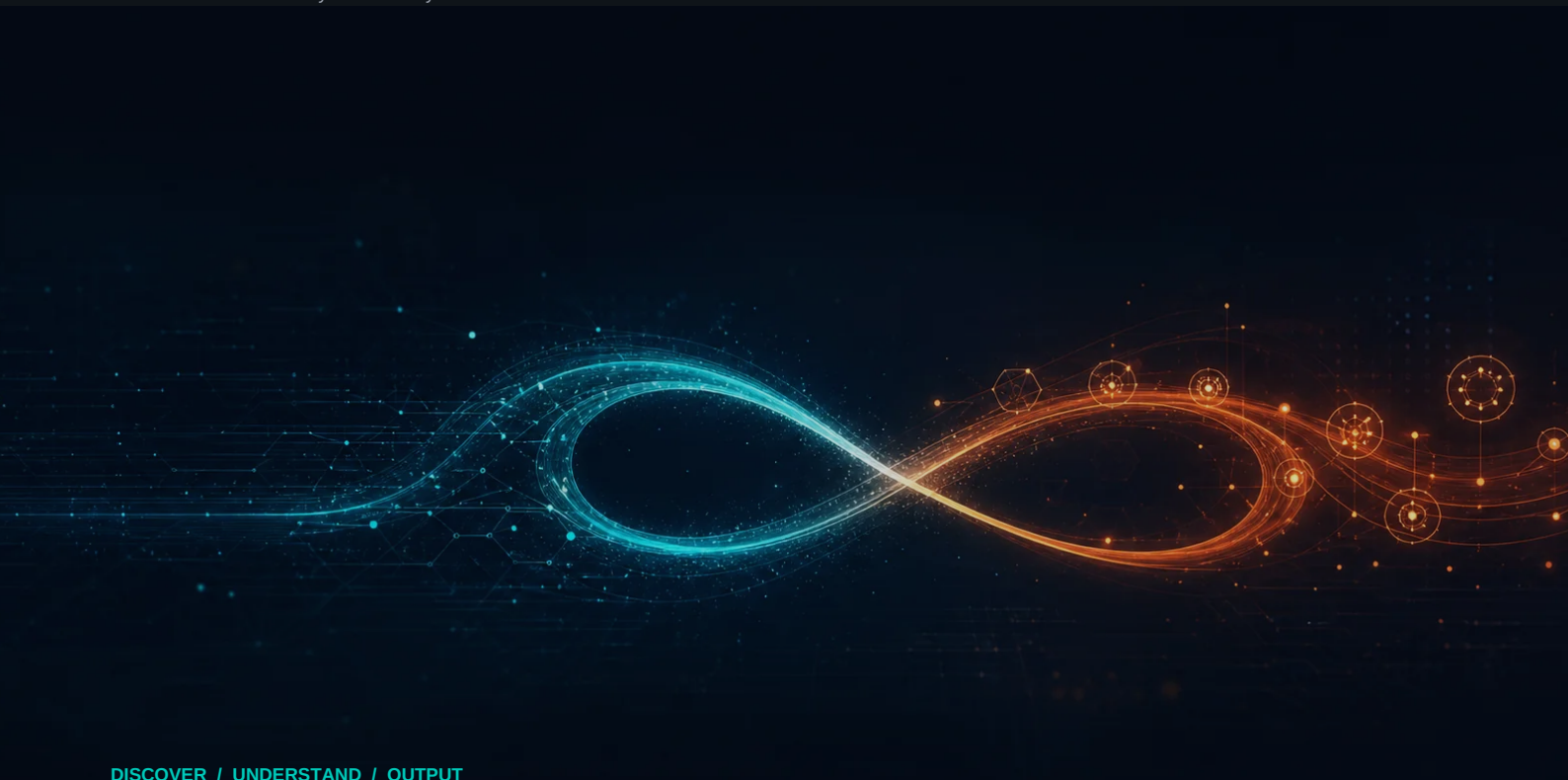

DISCOVER / UNDERSTAND / OUTPUT

THE CENTRAL ARGUMENT

Better output begins before the output.

This paper examines the DUO framework — Discover, Understand, Output — as a practical model for improving how professionals use generative AI tools such as ChatGPT. DUO proposes that users should not begin by asking AI to produce a final deliverable immediately. Instead, they should first use AI to discover the structure of a topic, then deepen their understanding through questioning and refinement, and only then request the final output. While DUO itself has not yet been empirically validated as a named framework, its logic is strongly supported by existing research on scaffolding, metacognition, iterative prompting, human-AI co-creation, and writing process theory. The paper argues that DUO is a useful instructional framework because it transforms AI use from one-shot prompting into a guided thinking process. This improves the relevance, quality, and contextual fit of AI-assisted work while reducing common risks such as generic output, shallow reasoning, and over-reliance on the model.

EVIDENCE STATUS

The logic is strongly supported by adjacent research. The named DUO framework itself has **not yet been empirically validated**.

FIVE THEORETICAL FOUNDATIONS

01 **Scaffolding theory**

02 **Metacognition**

03 **Iterative prompting**

04 **Human-AI co-creation**

05 **Writing process theory**

PRACTICAL PROMISE

Move professionals from one-shot prompting to a guided thinking process while keeping human judgement and accountability intact.

A THREE-STAGE CONVERSATION

Explore. Reason. Then produce.

Widen the map

Surface concepts, risks, options, missing information, and useful questions.

Build judgement

Question assumptions, compare options, ask for examples, and apply the material to context.

Create the artefact

Produce the memo, report, presentation, checklist, proposal, or other final deliverable.

OPERATING PRINCIPLE

The quality of AI output depends on the quality of the conversation that precedes it.

HUMAN ROLE

The AI expands and structures the work. The human evaluates relevance, accuracy, ethics, and final use.

01

Introduction

Generative AI tools have made it easier for users to produce written content, summaries, plans, presentations, and other professional outputs. However, many users interact with such tools through simple one-shot prompts, such as “write me a report” or “create a presentation”. Although this approach may generate a usable first draft, it often produces generic, poorly contextualised, or insufficiently reasoned work.

The DUO framework offers an alternative approach. It teaches users to work with ChatGPT through three phases: Discover, Understand, and Output. In the Discover phase, users ask the AI to map the topic, identify key issues, surface unknowns, and suggest relevant questions. In the Understand phase, users interrogate the response, apply it to their own context, challenge assumptions, and refine priorities. In the Output phase, users ask the AI to produce the final deliverable based on the clarified context and reasoning.

This paper argues that DUO is valid as a practical instructional framework because it is consistent with established principles in learning science and emerging research on human-AI interaction. Specifically, DUO aligns with five bodies of evidence: scaffolding theory, metacognitive learning, iterative prompting, human-AI co-creation, and process-based writing.

WHY THIS MATTERS

One-shot prompts may create usable drafts, but they often lack context, reasoning, and fit.

DUO LENS

01 Problem

02 Sequence

03 Evidence

02

The DUO Framework

DUO is based on a simple premise: the quality of AI output depends on the quality of the conversation that precedes it. Instead of treating ChatGPT as a tool that merely generates answers, DUO treats it as a thinking partner that can help users explore, reason, and then produce.

The first stage, Discover, widens the user's map of the topic. It helps the user identify relevant concepts, risks, options, common mistakes, and questions that may otherwise be missed. This is especially useful when the user is unfamiliar with the topic or does not yet know what information is needed.

The second stage, Understand, turns broad information into judgement. At this stage, the user asks follow-up questions, challenges the AI's assumptions, asks for examples, compares options, and applies the information to a specific context. This prevents the user from accepting the AI's first answer uncritically.

The third stage, Output, converts the refined understanding into a practical deliverable. This may be a memo, slide deck, report, checklist, email, proposal, script, or training handout. By delaying final production until after discovery and understanding, DUO increases the likelihood that the final output will be relevant, structured, and fit for purpose.

THE PREMISE

Treat generative AI as a thinking partner for exploration, reasoning, and production.

DUO LENS

01 Explore

02 Reason

03 Produce

03

Why DUO Is Supported by Scaffolding Theory

The Discover and Understand phases of DUO are closely aligned with the educational concept of scaffolding. Scaffolding refers to structured support that helps learners perform tasks or develop understanding that they may not be able to achieve independently at the beginning. Over time, the support can be reduced as the learner gains confidence and competence.

In DUO, ChatGPT acts as a flexible scaffold. During Discover, it helps users map unfamiliar territory. During Understand, it supports deeper reasoning through explanation, comparison, and challenge. However, the user remains responsible for judgement. This distinction is important: DUO does not ask users to outsource thinking to AI; it asks them to use AI to structure and improve their thinking.

This makes DUO especially suitable for professional training. Many professionals do not need complex prompt formulas at the beginning. They need a simple mental model that tells them what kind of conversation they are having with the AI. DUO provides that model by asking: am I discovering, understanding, or producing?

HUMAN CONTROL

AI provides structured support. The user remains responsible for judgement.

DUO LENS

01 Support

02 Practice

03 Judgement

04

Why DUO Is Supported by Metacognition

Metacognition refers to the ability to think about one's own thinking. It includes planning, monitoring, evaluating, and adjusting one's approach to a task. Effective learners and professionals do not simply produce answers; they ask whether they understand the problem, whether their assumptions are sound, and whether their approach is appropriate.

DUO embeds metacognition into AI use. The Discover phase encourages planning by asking what needs to be considered before work begins. The Understand phase encourages monitoring and evaluation by prompting users to question the AI's response, test assumptions, and decide what matters. The Output phase then benefits from this prior reflection.

This is one of DUO's strongest features. It helps prevent passive AI use. Instead of accepting the first answer, users are taught to engage actively with the model. They ask what could be wrong, what has been assumed, what is missing, and how the answer changes when applied to their situation. In professional settings, this is critical because accuracy, context, and judgement matter more than speed alone.

ACTIVE REVIEW

Plan, monitor, evaluate, and adjust before accepting the model's answer.

DUO LENS

01 Plan

02 Monitor

03 Evaluate

05

Why DUO Is Supported by Iterative Prompting

Prompt engineering research increasingly recognises that effective AI use is not only about writing one perfect prompt. It is also about refining instructions over multiple turns. Iterative prompting allows users to test, correct, narrow, expand, and improve the AI's responses.

DUO provides a simple structure for this iterative process. Discover prompts are broad and exploratory. Understand prompts are analytical and contextual. Output prompts are specific and production-oriented. This sequence mirrors how good human collaboration often works: first explore the issue, then clarify the judgement, then produce the deliverable.

This staged approach is likely to improve output quality because the AI receives better context by the time it is asked to produce final work. A vague one-shot prompt gives the model little information about the audience, purpose, constraints, risks, and desired structure. A DUO-based interaction supplies these details progressively. As a result, the final output is more likely to be useful and less likely to be generic.

CONTEXT BUILDS

Multiple turns progressively clarify audience, purpose, constraints, risks, and structure.

DUO LENS

01 Test

02 Refine

03 Specify

06

Why DUO Is Supported by Human-AI Co-Creation Research

Human-AI co-creation research treats AI not merely as an automation tool but as a collaborator in a creative or intellectual process. In this view, the best results often come from an exchange between human and AI: the AI generates possibilities, the human evaluates and directs, the AI refines, and the human makes final decisions.

DUO operationalises this co-creative model in a way that beginners can understand. Discover uses AI for divergent thinking, where the aim is to generate possibilities and surface options. Understand uses AI for evaluative thinking, where the aim is to compare, challenge, and refine. Output uses AI for convergent production, where the aim is to create a finished artefact.

This is valuable because it preserves the human's role. DUO does not imply that AI should decide what is true, important, ethical, or appropriate. Instead, it positions AI as a partner that can expand the user's thinking and accelerate drafting, while the human remains accountable for judgement and final use.

CO-CREATION

AI generates and refines possibilities. The human directs and decides.

DUO LENS

01 Generate

02 Direct

03 Decide

07

Why DUO Is Supported by Writing Process Theory

DUO also resembles established models of writing as a process. Strong writing rarely begins with a perfect final draft. It usually involves prewriting, organising, drafting, revising, and editing. DUO adapts this logic to AI-assisted work.

Discover functions like prewriting and research planning. It helps identify the scope, angle, audience, and possible structure. Understand functions like organising and critical development. It helps the user decide which points matter and how they relate to the purpose of the work. Output functions like drafting and polishing. It turns the prior thinking into a finished form.

This makes DUO useful not only for writing but also for presentations, proposals, meeting preparation, client communication, training materials, and internal documentation. The framework is simple enough for beginners but robust enough for professional use.

PROCESS OVER PROMPT

Strong work develops through exploration, organisation, drafting, and revision.

DUO LENS

01 Prewrite

02 Develop

03 Draft

08 PRACTICAL BENEFITS

Five ways DUO improves professional AI use.

DUO addresses several common weaknesses in AI use.

01

Less generic output

First, it reduces the risk of generic output. Generic prompts tend to produce generic responses. By requiring users to discover and understand before producing, DUO encourages context-rich interaction.

02

Stronger judgement

Second, it improves user judgement. The Understand phase teaches users to question assumptions, compare options, and apply information to their own situation. This is particularly important in professional work, where the correct answer often depends on context.

03

Less over-reliance

Third, it reduces over-reliance on AI. DUO explicitly keeps the user in control. The AI supports thinking, but the user decides what is relevant, accurate, and appropriate.

04

Easier to teach

Fourth, it makes AI easier to teach. Many prompt frameworks require users to remember multiple components such as role, task, context, examples, format, and constraints. DUO is simpler. Users only need to remember the sequence: explore first, reason second, produce third.

05

Better deliverables

Fifth, it supports better final deliverables. By the time the user reaches Output, the AI has received more information about the purpose, audience, priorities, and constraints. This improves the likelihood of a practical and usable result.

09

Limitations

Although DUO is supported by adjacent research, it should not be overstated as a scientifically proven framework unless tested directly. Existing research supports the principles behind DUO, but not necessarily the exact three-stage model or its specific naming.

There are also practical limitations. DUO depends on the user's willingness to engage actively. If users skip the Understand phase or accept AI responses without review, the benefits are reduced. DUO also does not remove the need for factual verification, especially in legal, financial, medical, tax, regulatory, or technical contexts.

Finally, DUO may be less necessary for very simple tasks. If the user only needs a quick rewording or a basic format conversion, a full Discover-Understand-Output process may be excessive. The framework is most useful when the task requires judgement, context, structure, or quality.

DO NOT OVERSTATE

Adjacent research supports the logic, not proof of the exact named framework.

DUO LENS

01 Verify

02 Participate

03 Proportion

10 NEXT RESEARCH STEP

Move from theoretical support to measurable validation.

01

Study 01 / Compare prompting approaches

To validate DUO more formally, future research could compare three groups of users completing the same professional task. The first group would use a one-shot prompt. The second group would use a conventional prompt template. The third group would use the DUO process. The outputs could then be assessed for relevance, clarity, structure, contextual fit, originality, and factual accuracy. Researchers could also measure user confidence, perceived usefulness, time taken, and ability to explain or defend the final output. Such a study would show whether DUO produces measurably better results than common prompting approaches.

02

Study 02 / Measure human learning

A second study could examine learning outcomes. Participants could use ChatGPT to learn a new topic through either one-shot prompting or DUO. They could then complete a task without AI assistance. If DUO users perform better, this would suggest that the framework improves not only AI output but also human understanding.

MEASURES TO INCLUDE

Relevance / clarity / structure / contextual fit / originality / factual accuracy / confidence / time / ability to explain the result

11

Conclusion

DUO is a practical and theoretically grounded framework for using ChatGPT and similar generative AI tools. Its central argument is that users should not jump straight to output. They should first discover what matters, then understand and refine the material, and only then produce the final deliverable.

Although DUO has not yet been directly validated as a named framework, its structure is strongly supported by existing research on scaffolding, metacognition, iterative prompting, human-AI co-creation, and writing processes. Its greatest strength is that it changes the user's mindset. ChatGPT is not merely a machine for producing answers. Used well, it is a partner for exploration, reasoning, and creation.

For professional audiences, this distinction matters. The goal is not to make people dependent on AI. The goal is to make them better thinkers, better reviewers, and better producers of work. DUO provides a simple, memorable, and practical way to teach that shift.

THE SHIFT

Use AI to become a better thinker, reviewer, and producer of work.

DUO LENS

01 Think

02 Review

03 Create

REFERENCES

Research foundations and further investigation.

NAMED SOURCES

01 Don-Yehiya, S., Choshen, L., & Abend, O. (2023). Human learning by model feedback: The dynamics of iterative prompting with Midjourney.

02 Li, H., Leung, J., & Shen, Z. (2024). Towards goal-oriented prompt engineering for large language models: A survey.

WIDER LITERATURE DESCRIBED IN THE PAPER

Scholarly work on metacognitive scaffolding and reflective prompts supports the use of structured questioning to improve learning and problem-solving.

Recent research on human-AI co-creation supports the view that AI tools are most useful when they support both idea generation and refinement rather than functioning only as output machines.

Recent reviews of prompt engineering support the importance of task-specific instructions, context, and iterative refinement in improving the usefulness of large language model outputs.

CAREFUL INTERPRETATION

The source paper distinguishes between evidence that supports DUO's underlying logic and direct empirical validation of DUO as a named framework.