Reimagine Google Docs as a writing improvement platform with Pronto

Pronto for Google Docs helps every teacher help every student become a better writer.

Research is clear on the three key mechanisms that improve student writing standards. **Pronto** embeds these key mechanisms into Google Docs to help every English and Humanities educator improve student English writing skills in the platform they use everyday.

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AI keeps moving yet many things stay the same

It seems like every day there is a new layer of AI technology released, ready to inject new excitement into our current lives, create newer and yet fewer jobs, and power up new industries while wiping out others. Keeping up with the possibility of opportunity is cognitively exhausting.

In the education sector, knowledgeable voices are emerging as cautious evaluators of Artificial Intelligence (AI). While AI creators explore opportunities to support education, some educators are expressing concerns about the implications of AI being used in classrooms.

These differing positions divert energy away from the true momentum and trust that need to develop between AI developers and educators. **How can AI help to *build, scale and support sustainable learning and teaching environments* that lift core student skills?** Right now there are millions of teachers and learners who could be supported by AI technology integrated with pedagogically sound research. How can AI technology best support teachers and students in resource-limited educational environments, beyond the well-funded institutions? McKinsey sums all of this up – "No AI risk equals no AI reward". Finding the balance is a process that is underway with many educators and researchers.

This paper considers current education research on improving English writing skills and introduces **Pronto. Pronto** is an AI-powered extension that integrates research founded principles into Google Docs, the most used text editor in the world.
The mission of **Pronto** is to align purposeful AI with research to help teachers and students excel at a very difficult and important job – lifting writing skills, in ways that research confirms work.

We have spent a good part of the last five years researching how we can help every language learner improve their ability to write better. We believe this work matters. Literacy skills are the keystone for educational and vocational success. Unfortunately, evidence suggests that written literacy skills are globally in decline, despite the vast investment of governments to lift them. With strong cognitive correlations to writing, this puts reading skills in a related synchronous decline. It's a challenging situation for many educational systems and students, but this is our current reality. Isn't this the big issue we should be addressing and the problem we should be looking to solve?

Google Docs is 'the' base platform

Google Docs was first released on March 9, 2006, making it now over 18 years old. It is a free, web-based word processor that is part of Google's suite of applications. Users create, edit and store documents in various fonts and file formats, and access them from any device with an internet connection and web browser. It is also available in 100 languages, making it one of the most widely used apps in the world for creating and presenting text. This article is written in Google Docs (just saying).

Along our journey, I have asked many people, "What is the big attraction that Google Docs has over Microsoft Word and Apple Pages?" The answer is always the same – "Google Docs is simple to use, works well with students and gets the job done". With powerful document collaboration and sharing, Google Docs is a valued cloud app for education because it helps people get their job done, simply and reliably.

> *"Google Docs is simple to use and gets the job done."*

This inspired us to combine our **Scribo AI** platform skills into an instantly deployed collaborative app able to work inside and alongside Google Docs. Our mission is clear – to help educators and students improve English writing skills by giving everyone access to integrated AI for good combined with what research says works.

The extension is named **Pronto**, derived from the Latin *'promptus'* meaning '*exposing to view, in readiness'*. Having built the **Scribo** writing improvement platform with AI for the past five years, our experience is represented in **Pronto** as a highly functional Google Docs Chrome extension**.**

- **Pronto** gives teachers full control over bringing supportive AI into their teaching context, embedded in Google Docs as the delivery platform.
- **Pronto** keeps teachers in full control of the level of AI used to motivate and lift student progress through feedback and personalization.

Leveraging the reach of Google Docs, **Pronto** helps to deliver a rich source of English writing feedback for students, and an even richer source of insights for teachers.

> Pronto delivers a rich source writing feedback for students, and an even richer source of insights for teachers.

What does it take to build strong English writing skills?

Professor Paul D. Deane's book, "Achieving Equity in School Writing", delves into the persistent gaps in writing achievement among different student demographics. The book attributes these disparities to opportunity gaps, which reflect the systemic failure of educational institutions to deliver equitable instruction in writing.

Deane's comprehensive insights and links to research highlight nine mechanisms needing action to improve student writing –

- increase writing motivation
- improve self-regulation of writing
- develop deeper knowledge about writing and writing strategies
- develop deeper content knowledge
- improve idea generation
- increase effective working memory capacity
- strengthen language skills
- improve transcription skills
- improve reading skills

In the book, each of these mechanisms are supported by a variety of research studies, including meta-analyses that establish the efficacy and effect size of each specific intervention.

For teachers to address all research mechanisms and causal interrelationships one-on-one is a big job. The fact remains that writing is a critical 21st Century skill (Yancey, 2009; Perin, 2013) and the ability to write well is crucial in a variety of professional roles (College Board, 2004; Rios,Ling, Pugh, Becker, & Macall, 2020).

Deane argues that there is no single solution to addressing all of these mechanisms. It takes a multi-faceted and sustained effort to create an educational environment where all students have the opportunity to become competent writers. This level of research highlights there is an obvious disconnect and superficiality emerging between the topical application of AI via GPT technology and what it actually takes to improve student writing.

The following causal schematic from Deane's book sums up the nine mechanisms to improve student writing. This analysis, correlated to research, proves that building English writing skills is an integrated and complex process. In the

schematic, labelled the 'Theory of Equitable Development of Writing Expertise', the thicker the arrow, the stronger the causal relationships and impact on writing performance.
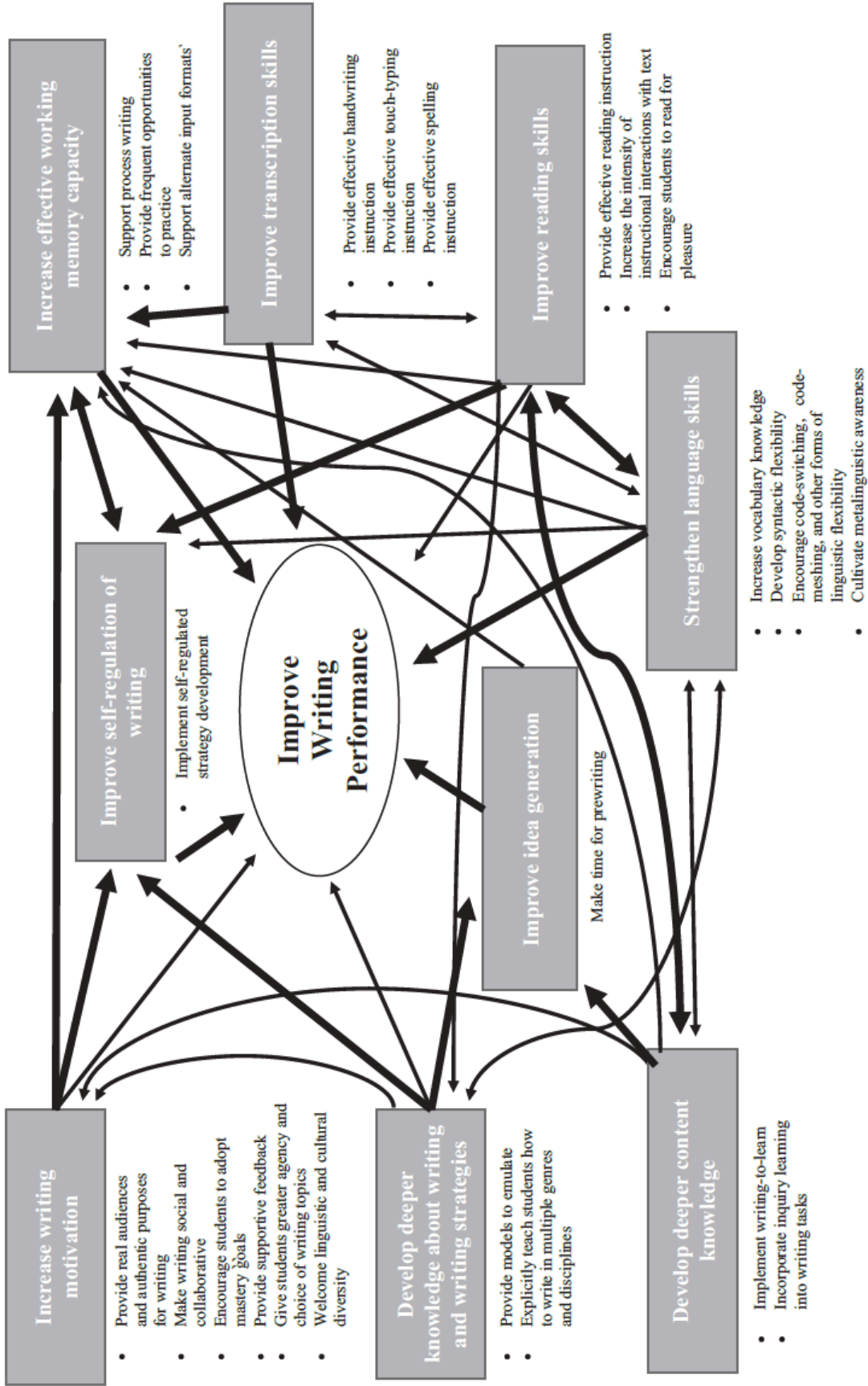
Figure I.1. Theory of Action for Equitable Development of Writing Expertise. Causal relations that have a stronger direct impact upon writing performance are shown with wider arrow

Three high impact mechanisms from research are supported in Pronto

Seeing where effort and teaching methods need focus based on research is one thing; implementing that research in the classroom to achieve the same results is another. Bridging this gap between research and practice is a constant challenge for every teacher.

Working with Google Docs as a baseline, **Pronto** aligns the equity of access in Google Docs with a purpose-built extension to help implement three key research mechanisms. Across the identified nine mechanisms identified by Deane, we have aligned **Pronto** to three mechanisms that deliver the highest observed effect sizes.

Google docs and **Pronto** improve student writing performance

1. **Increase student motivation to write**. These strategies mostly involve changes that make writing more meaningful, make students more comfortable writing in the classroom, and encourage them to focus on mastery goals with supportive feedback. Research suggests the strongest effect sizes come from adult-teacher feedback. Graham, Harris, and Hebert (2011) found strong overall effects for adult feedback (ES= 1.01)

2. **Self-regulated strategy development (SRSD)** consistently shows a strong impact on student learning. **SRSD** targets not only self- regulation, but also genre knowledge (through *direct instruction*), strategy development (through *direct instruction and scaffolded learning activities*), and motivation *(through a gradual release model designed to increase students' sense of self-efficacy)*. Graham and Perin (2007), reported a SRSD effect size of 0.82.

3. **The impact of word processing.** Morphy and Graham (2012) found a very large impact of word processing on student motivation to write (ES= 1.42). At similar proficiency levels, digital writing is significantly faster and requires less effort than writing by hand. It enables faster revision processes, and simplifies sharing and collaboration.
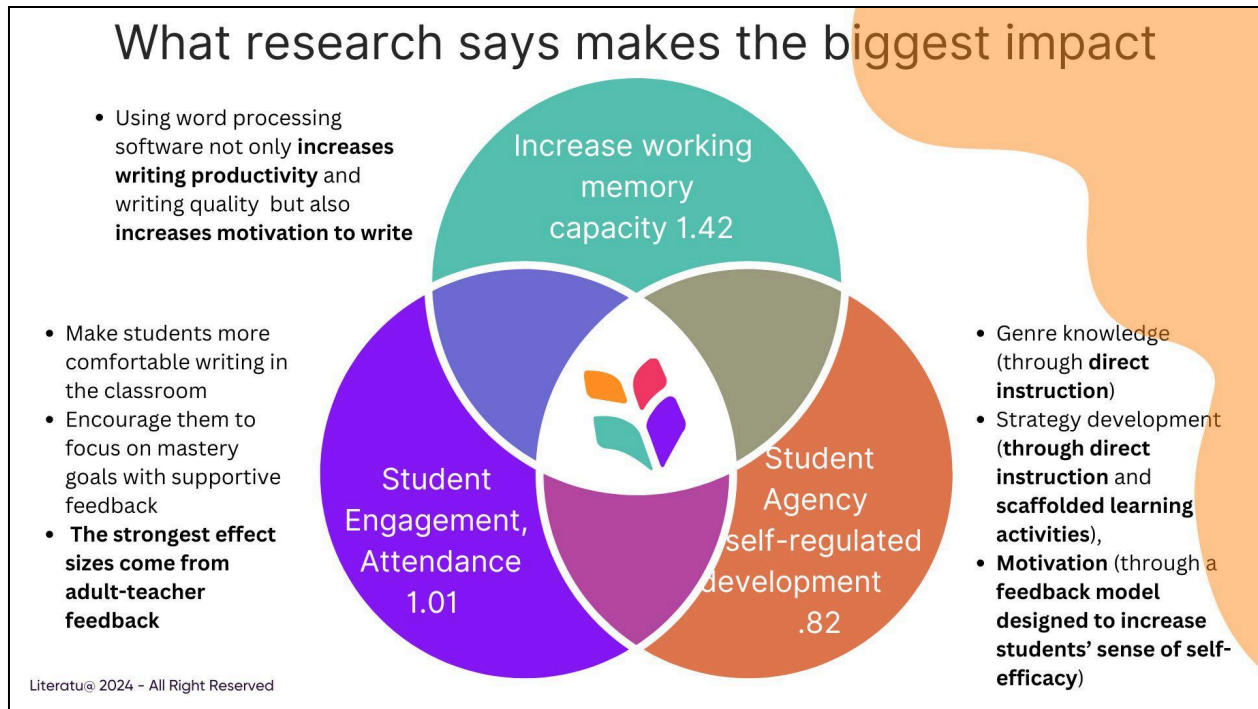
Our core functionality is based in researched pedagogy

Google Docs combined with **Pronto** supports three high impact mechanisms making a level of improvement in writing more possible to achieve. Students increase their motivation to write, word processing becomes a source of improvement, more than a presentation layer, and students receive feedback and support to help them self-regulate their development as they write. Of course the ultimate outcome is that teachers have more time with better insights, reducing the workload that naturally follows an increase in student writing cadence.

An introduction to Pronto

Pronto is a purpose-built Chrome extension, integrated into the Google Docs workspace. The objective of **Pronto** is to help teachers implement research proven mechanisms to help students improve English writing skills. Research is easily read and acknowledged but remains very hard to execute in classrooms. **Pronto** solves this problem.

Integration in the Google Docs application makes **Pronto** immediately accessible and useful to every teacher.

Pronto Capability	Research alignment
All corrections are linked to ERRANT categories, building a reportable taxonomy to classify and report remediation.	ERRANT (Error Annotation Toolkit) is a toolkit designed for annotating and correcting grammatical errors in text. This research-based toolkit from Cambridge establishes a standardized taxonomy for Grammar, Punctuation and Spelling errors, classifying all corrections into 28 categories across three corrective actions to be taken. Pronto classifies all corrections to this standard taxonomy, highlighting to students and teachers where misunderstandings need more attention and remediation in detail. Pronto gives teachers instant metrics on student and class progress. This supports intentional teaching, encourages students to focus on mastery goals with supportive feedback and encourages students to write more.
Align writing texts to teacher defined rubrics, standards and curriculums.	Teachers link writing tasks to state standards. Pronto tracks and scores student progress against linked standards over time, highlighting gaps in knowledge and achievement. This promotes student self-regulation and builds genre specific knowledge in line with standards and curriculum outcomes.
Align student text to specific and intentional feedback goals that activate targeted feedback by genre, subject and grade level.	Teachers link specific feedback priorities to student writing tasks to manage the cognitive load of feedback and align learning to the goals of teaching. Too much feedback can be overwhelming, targeted trusted feedback grows student skills. With targeted feedback, students have the motivation to write and focus on mastery goals. All feedback is managed through the Google Docs comments feature enabling faster revision processes, with simplified sharing and collaboration.

Pronto Feature	Research alignment
Connect a feedback navigator for teachers and students to address categories of errors logically and in sequence.	Reducing cognitive load is a big part of self regulated strategy development. Feedback without categorization and priority increases cognitive load as students jump between suggestions and contexts. Pronto organizes feedback into research based categories with full explanations for each feedback item offered. Students can address corrections in a cluster of focused and similar edits.
Align all writing profiles to teacher nominated standards and curriculums	Teachers link writing tasks to detailed state standards. Pronto scores student progress against the standard for each text. As data is collected, Pronto highlights gaps in knowledge and risk of underachievement at student, class and district levels.
Students are familiar with Google docs and the support offered through well known collaboration features.	Students are comfortable and safe working in Google Docs. Word processing technology that enables faster revision processes, while simplifying sharing and collaboration, increases student motivation to write.
Teachers access immediate statistics and insight metrics.	Pronto classifies ERRANT based insights to help teachers target teaching to lift and reward student motivation. Progress and feedback can be explained to students in a gradual release model designed to increase students' self-efficacy and highlight opportunities for improvement.

Extended Research discussion

Three important mechanisms deliver the highest effect sizes from research findings. The impact of these mechanisms and how they are delivered in Pronto are discussed.

1. Increase writing motivation

There is little chance to improve student writing skills without students writing more. While motivating students to write more is the first challenge, teachers shiver at the thought of more marking and grading feedback from more student texts.

Increasing student motivation covers six steps –

1. Write for authentic purposes and real audiences
2. Make writing social and collaborative
3. Encourage students to adopt mastery goals
4. Provide supportive feedback
5. Give students greater agency and choice of writing topics
6. Embrace linguistic and cultural diversity

Direct teacher input is always required to initiate and coordinate student engagement, and this is not going to change. The direct support extended to teachers to increase engagement is where **Pronto** helps.

Google Docs supports one of these steps by helping to make writing social and collaborative.The remaining five are left for teachers to work out. Here is the state of play.

Element	Teacher Led	Google Assist	Pronto support
Write for authentic purposes and real audiences	Y		Y
Make writing social and collaborative	Y	Y	Y
Encourage students to adopt mastery goals	Y		Y
Provide supportive feedback	Y		Y
Give students greater agency and choice of topics	Y		Y
Embrace linguistic and cultural diversity	Y		Y

How Pronto helps

Pronto delivers additional capabilities inside Google Docs, allowing teachers to align writing engagements through targeted writing profiles. Profiles establish a context around the text purpose, the audience, the subject, topic, genre and grade level of the writing engagement. Each student text links to a profile. All features of Google Classroom remain as is.

Writing profiles also link to state and curriculum standards and teacher nominated goals to specifically manage feedback delivery and track progress. These important links guide the level and type of feedback created by the Additional Instructor (AI) capability, embedded in **Pronto**.

Detailed marking rubrics can be linked to the writing profile to generate a detailed formative aligned score with feedback to guide teachers and students as writing happens.

*Importantly, **Pronto** allows teachers to explicitly direct AI to deliver specific levels of feedback and support, subject to the exact context, goals and objectives of*

what teachers are teaching.

Adult feedback has a 1.01 effect size and therefore significant impact on student self-directed learning and progress.

Keep in mind that an effect size of 1.01 means that 95% of average students receiving feedback can exceed 84% of students not receiving feedback. Put another way, students can move from average to above average, one standard deviation up, following adult human feedback.

2. Self-regulated strategy development (SRSD)

SRSD consistently shows strong impacts on student learning targeting not only self-regulation, but also:

- genre and discipline knowledge (through *direct instruction*)
- strategy development (through *direct instruction and scaffolded learning activities*)
- motivation (through a sustained feedback model designed to increase *students' confidence and self-efficacy*)
- target feedback to help students manage their cognitive load as they build skills.

Graham and Perin (2007), reported a SRSD effect size of 0.82.

SRSD suggests that instead of juggling multiple goals and standards, students should tackle one subtask at a time, achieve their immediate goals, and move on to the next. Optimising pedagogy and instruction with targeted feedback helps to manage the working memory load where only a small amount of information is processed at one time.
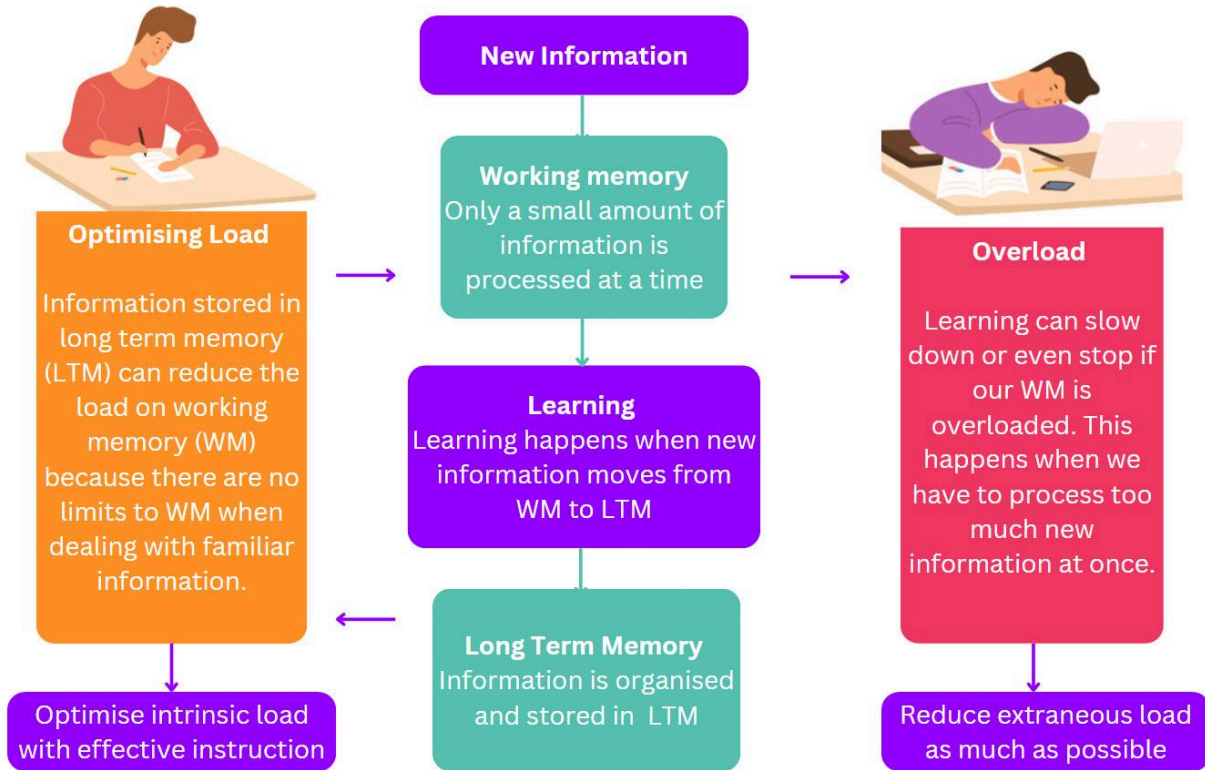
Cognitive load theory

Natalie Wexter (*The Knowledge Gap 2019)* identifies that to help students write well, it's important to help then manage and optimise cognitive load. Writing effectively deepens knowledge and enhances analytical skills, however students need a foundational knowledge of a topic to start processing new information. Writing not only requires them to recall and connect important information in their own words, but also factor in the constructs and rules of English writing. Supporting this process is a critical step in streaming working memory assets into long term memory.

Beyond direct instruction, students need 'deliberate practice' and repeated practice of complex tasks with promptly delivered targeted feedback (Wexter 2019). Wexter suggests that this transference of working memory to long term memory should start at the sentence level because sentences are fundamental to good writing and help manage cognitive load. Deliberate practice should also extend to all subjects beyond English Language Arts to reinforce writing

strategies, because students who can self-regulate in this process increase motivation and self-directed strategy development.

Pronto helps students develop self-regulated strategies through the live document connection created between teachers and students in a continuous stream of instruction and feedback.

Teachers deliver faster targeted feedback to increase motivation, confidence and student self-efficacy.

Element	Teacher Led	Google Assist	Pronto support
Genre and discipline knowledge (through *direct instruction*)	Y		Y
Strategy development (through *direct instruction and scaffolded learning activities*)	Y		Y
Motivation (through a sustained feedback model designed to increase *students' confidence and self-efficacy*)	Y		Y
Streamline cognitive load	Y		Y

Feedback from teachers is the highest value in the writing improvement process. Creating targeted feedback for each student however is an infinite process, bounded by finite time constraints.

3. The Impact of word processing

For some educators, this may be an unexpected research finding.
Morphy and Graham (2012) found a very large impact of word processing on student motivation to write (ES=1.42). At similar proficiency levels, digital writing is significantly faster and requires less effort than writing by hand. It enables faster revision processes, and simplifies sharing and collaboration.

Progress made in the features and functions of word processing platforms since 2012 has arguably lifted this effect size simply through device accessibility, functional enhancements and more internet access.

Google Docs, as a widely used technology in education, opens a consolidation opportunity for teachers. The platform is accessible, ready to go and known by teachers and students. This is where the usefulness of Google Docs to support writing improvement stops.

The impacts word processing can have on writing improvement include –

- Incorporate interactive feedback into writing tasks
- Support process writing
- Support frequent opportunities to practise
- Increase the intensity of instructional interactions with text
- Simplify sharing and collaboration, increase cadence of practice

Element /Impact	Google Assist	Pronto support
Incorporate faster feedback into writing tasks		Y
Support process writing diversity		Y
Support frequent opportunities to practice	Y	Y
Increase the intensity of instructional interactions with text		Y
Simplifies sharing and collaboration, increases cadence of practice	Y	Y

Conclusion

There is no single solution to improving writing skills. Each day, it is the teacher's challenge to engage, coach and grow English writing skills. It's a tough job that places a high cognitive load on both students and teachers.

Nonetheless, equitable writing instruction occurs when schools motivate students to strive for excellence, equip them with the necessary knowledge they need to succeed, provide time and space for reflection and writing, and deliver timely personalized feedback to guide essential writing skills.

While research details nine mechanisms to target and grow writing skills, as a starting position, teachers should focus on integrating three that account for the biggest effect size outcomes. Increasing student motivation and engagement, fostering self regulated strategy development and engaging students with word processing opportunities to write, will help to improve writing standards. All carry very high effect sizes.

Pronto Artificial Intelligence (AI) supports teachers with important resources to help students improve writing feedback and guidance in a writing context. Establishing a writing profile links intentional context to the LLM interaction. Passing student text blindly to an LLM will always generate 'something' in response. This pass through and hope approach opens AI interaction risk, leaving AI unattended with an anonymous piece of text and hoping for the best.

> The best feedback is personal, deployed for each student at the right place, at the right level, at the right time.

Pronto allows teachers to configure a pedagogical context around all AI interactions in which teachers define the genre, class, subject, age of students, applicable state standards and specific feedback elements that are appropriate for use.

Pronto also allows specific grading rubrics to link with the text to suggest rubric grades and feedback for teacher consideration. **Pronto** takes all actions and returns all feedback inside the Google Docs application, keeping teachers and students in a familiar environment with powerful capabilities. Keeping students in their own writing and providing instruction through their work is a powerful development of self regulation and developing a student's own efficacy. This level of parameterisation and context increases AI feedback success, able to guide students, lift student motivation and help to build self improving writing strategies.

Pronto runs as a Chrome extension, available for teachers from the Chrome store. There is a student version due out in August 2024. **Pronto** is the starting point for many teachers to harmonise an AI relationship and understanding of what is possible in the secure surrounds of Google Docs. There is no 'system to learn', simply time savings to be had alongside giving students highly valuable feedback to enhance motivation and self directed learning. From Pronot, teachers head to

Scribo, our English writing improvement platform with more features and workflows to further build and enhance learning.

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