The Point of PowerPoint Is to Use All Its Power
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THESIS

As centerpieces of so many teaching pedagogies today, PowerPoints possess the potential to garner huge learning gains if only educators would be more willing to explore all of PowerPoint's bells and whistles.

ABSTRACT

PowerPoints are important, even crucial, centerpieces of pedagogy for many instructors who strive to maximize learning outcomes through multimedia. And yet, many well-intentioned, educator-generated lists of PowerPoint "dos-and-don'ts" are so proscriptive as to discourage the fullest exploration of all its bells and whistles. By contrast, both the intentions of PowerPoint's inventor and the findings of brain scientists affirm that the intentional use of PowerPoint's elaborative capabilities can significantly improve learning. That is, beyond standardized PowerPoint templates and text-heavy bullet points, the addition of images, transitions, and animations can result in huge cognitive gains.

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In 2012, Microsoft estimated that PowerPoint, originally released in 1987 for Mac users, had been installed on more than one billion personal computers worldwide. Ironically, it was Steve Jobs who once declared, "People who know what they're talking about don't need PowerPoint" (Gaskins). Despite this clarion rebuke, the nearly universal use of PowerPoint in today's classrooms has arguably rendered it the most vital piece of equipment in our pedagogical tool kit. Indeed, some instructors in certain disciplines who, three decades ago when PowerPoint was invented, would have never dreamed of using any sort of visual materials in their classes at all (except perhaps chalkboards) now feel substantial pressure from both students and peers alike to use PowerPoint all the time. And yet, as one media analyst opined, despite the delivery of hundreds of PowerPoint presentations around the world every second, 99 percent of them suck (Desjardins).

Famously, "Death by PowerPoint" is a phenomenon not unfamiliar to our students because, while PowerPoint slides in and of themselves might or might not be badly designed, their misuse by teachers as mere teleprompters spotlights another fundamental problem with PowerPoint—a notable degree of reluctance to explore all the options embedded within PowerPoint. A willingness to experiment with more of the tabs and buttons and drop-down lists of PowerPoint—beyond standardized templates and bullet points—holds huge potential learning benefits for our students.

The widely held conception that PowerPoint talks should simply be a series of discrete, static slides presented linearly remains firmly entrenched in our collective educational mindset as the preferred mode for classroom usage. This paper challenges that all-too-common characterization of PowerPoint's

best use as a pedagogical tool by revisiting the words and intentions of the people who know PowerPoint the best—the people who invented it and the people who first mastered its versatility and also alerted us to the challenges it presents. They warn us that, *while we shape our PowerPoints to fit our talks, we allow our talks to be shaped by PowerPoint* equally as much, if not more so—that is to say, by our (usually low) level of familiarity with and reluctance to explore all the capabilities of PowerPoint (Gold).

> ## What are our learning goals?
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> While we shape our PowerPoints to fit our talks, we allow our talks to be shaped by PowerPoint equally as much, if not more so – that is to say . . . shaped by our (usually low) level of familiarity with and our reluctance to explore all the capabilities of PowerPoint.
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> Rich Gold · "Reading PowerPoint"
> *Working with Words and Images: New Steps in an Old Dance* · Nancy Allen (ed)
> (2002) Santa Barbara: Praeger / Ablex Publishing

The top wizard behind the invention of PowerPoint—Robert Gaskins—coined the term "PowerPoint" at that one place and time in which all good ideas seemingly are conceived—while taking a shower. The "power" part of the term, he suggested, was not meant to connote "powerful" but "**empowerment**," for it allowed the originators of content to control the entirety of their own presentations, to create personally and directly everything they needed in the way of any and all presentation materials. Gaskins was determined to *make easy things easy and hard things possible*.

However, because he had imagined PowerPoint to be the new default visual aid for traditional business meetings, he was befuddled by the quick, widespread pace of its adoption by virtually everyone else from politicians and clergymen to lawyers and military officers. And, at first, he was especially mystified by its use in the classroom, echoing the concerns of other multimedia critics. They regarded the cognitive style of PowerPoint—regimented bullet points, fragmented narrative, style over

> ## So, why would we ever use PPT to teach?
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> **PowerPoint's** inventor was mystified by its rapid adoption by educators because its **cognitive style** [regimented bullet points, fragmented narrative, style over substance, decorative backgrounds] **is antithetical to** those **core learning objectives** that are normally pursued through more credible teaching methods – fulsome exposition, nuanced questioning, analytical reasoning, critical thinking.

substance, fast pace, decorative background images—to be particularly antithetical to those core student learning objectives that normally have been pursued through more credible teaching methodologies—fulsome exposition, nuanced questioning, analytical reasoning, critical thinking, verifiable research, and so on (Tufte).

Nevertheless, as Gaskins worked over the years refining new versions of PowerPoint to match the growing needs of **all** its users, he always rejected appeals from by some PowerPoint users to limit the number of options or formats so as to force good PowerPoint design on everyone else. Such rules, Gaskins countered, would prevent some non-standard but otherwise legitimate, special-task uses of PowerPoint. Instead, he held education to be the solution to bad PowerPoint presentations (Gaskins).

Growing more attuned to the fatal flaws inherent to badly conceived PowerPoint lectures, well-intentioned educators eventually developed lists of PowerPoint "dos and don'ts" themselves—lists that are, however, generally couched in terms of what not to do.

The Dos and Don'ts of PowerPoint

- Don't read your PowerPoint word-for-word
- Don't convey more than one main idea per slide
- Don't use more than # bullet points per slide
- Don't use more than # words per bullet point
- Don't use novelty, script, or serif fonts
- Don't use fonts smaller than # points
- Don't use more than # different font colors
- Don't use more than # colors in the overall color palette
- Don't use more than # images per slide
- Don't use GIFs or other cheesy images
- Don't use dissolves, transitions, animations, or things that spin
- Don't use sound effects

In defiance of these injunctions, this paper contends that the proscriptive nature of many such lists discourages the creative yet pedagogically-sound deployment of those very PowerPoint options that could actually resuscitate deadly dull PowerPoint-enhanced lectures and

The Dos and Don'ts of PowerPoint
Do remember that . . .

- the "power" in PowerPoint was meant to connote empowerment
- the designers of PowerPoint rejected appeals to limit its options
- PowerPoint has come to have many legitimate non-standard uses
- PowerPoint has all sorts of special-task bells and whistles
- the judicious use of those PowerPoint options promotes learning
- the eye goes to the picture – Pictorial Supremacy Effect
- pictures are processed more quickly than words
- elaborated media and dual-coded information trump text alone
- the brain is wired to pay attention to things that move
- PPT focuses attention in one unifying direction – learning community
- the presenter's verbal gloss is crucial to a successful PowerPoint

simultaneously foster much more active (not mindless) processing of course content by students while still in the classroom. In fact, the literature on "brain science" substantiates the efficacy of using, albeit in judiciously designed combinations, all the "bells and whistles" of PowerPoint at one time or another and to a much greater extent than the authoritative "best practices" lists decree.

Understanding what "brain science" research tells us about the use of PowerPoint and multimedia generally empowers both teachers and students alike (Wilson). For the long-term retention of information, text has been demonstrated to be especially effective when the information being conveyed is a list of words or a set of instructions (Najjar); but it is easily trumped by the synchronous
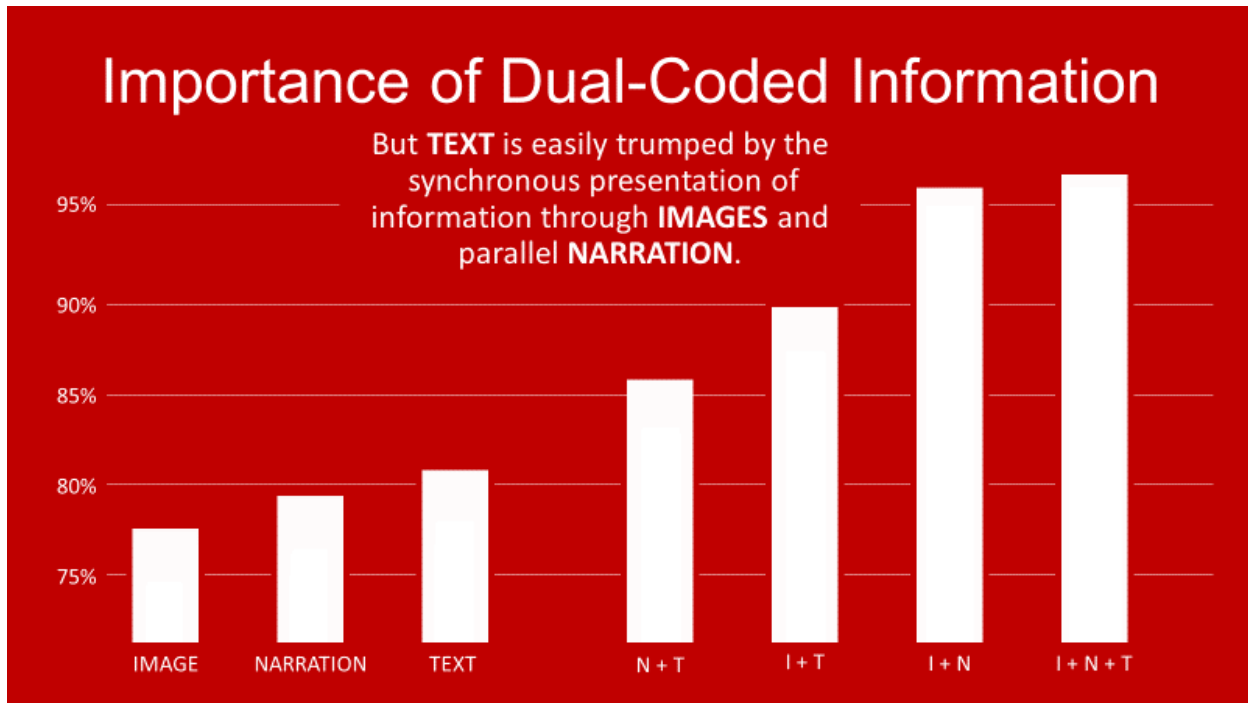
presentation of information through visual imagery accompanied by parallel auditory narration (Nugent).

Gwen Nugent is Research Professor at the Nebraska Center for Research on Children, Youth, Families and Schools at the University of Nebraska-Lincoln. Among her areas of research emphasis is the design and evaluation of mediated instruction. In 1982, five years before the release of PowerPoint, she published the results of a media research study in which fourth-to-sixth graders were evaluated on their ability to assimilate information presented as an iconic system (images), a linguistic print system (text), a linguistic audio system (narration), or some combination of those three systems. In the end, seven different "instructional treatments" were prepared—all based on what was originally a nonverbal (unnarrated) film presenting imagery about the life of a cheetah: (1) image alone, (2) narration alone, (3) text alone, (4) narration + text, (5) image + text, (6) image + narration, and (7) image + narration + text.
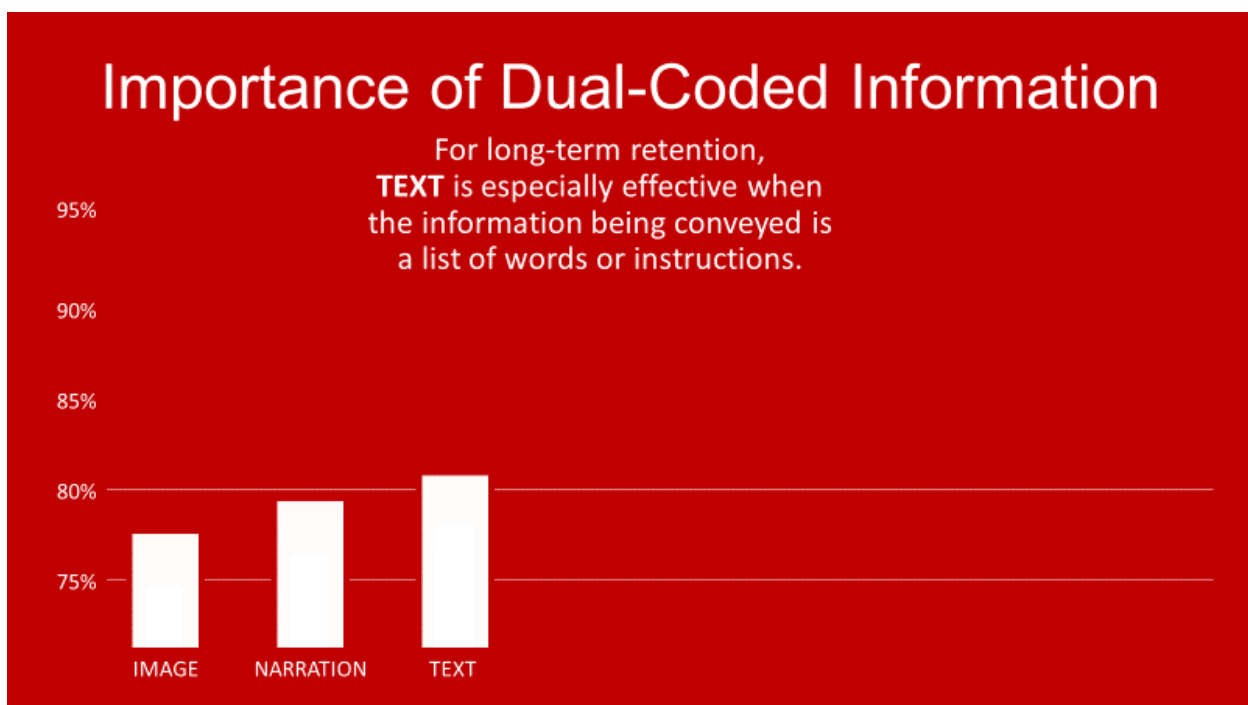
The data collection instrument was comprised of 23 multiple-choice questions. These pencil-and-paper tests were distributed among 178 students such that each of the seven "treatments" quizzed an average of about 25 students (a control group of an additional 23 students took the quiz without having viewed or heard any of the "treatments").

The results of Nugent's study generally supported her original hypothesis that a dual-coded presentation of information would be superior to any one of the three single-coded "treatments." In particular, a combination of images + narration far surpassed any of the single-system "treatments" by at least 15 percentage points (when the scores for the 23-question quiz were adjusted to a 100-point grading scale)—in other words, the equivalent of at least one full letter grade and a half higher on average than any of the single-system "treatment" letter grades. And even though the other two dual-coded "treatments" scored lower than the image + narration "treatment," they also produced notably better results than any of the single-system "treatments."

Importance of Dual-Coded Information

But **TEXT** is easily trumped by the synchronous presentation of information through **IMAGES** and parallel **NARRATION**.

Interestingly enough, the combination of the two linguistic systems (the text + narration "treatment") scored lowest among the dual-coded (as well as the triple-coded) "treatments" probably because of their structural redundancy. That is, text and narration both structure information in the same way, through words. Can this finding be the root cause of "Death by PowerPoint"—the verbatim reading out loud of text-heavy slides?

On the other hand, when both images plus either text or narration were employed together, students had evidently understood how to use each to its best advantage—balancing the focused, specific nature of text and/or narration against the broader, referentially replete character of images. That is, if students should have encountered any ambiguities in their study of the material, each system could clarify the other. The iconic system served as an immediately comprehensible reference point for the linguistic system, and the linguistic served as a focusing agent for the iconic. The lesson here for PowerPoint end users is to give dominance to image + narration as they conceive, design, and create each slide of a PowerPoint presentation.

The other big takeaway of Nugent's study for PowerPoint end users is that as media systems (images, text, narration) are added to each other in different combinations, student scores approach 100 percent—what Nugent calls a movement toward the mastery of material (Nugent).

Other studies have also demonstrated that text and concurrent oral narration are not just less effective than images but far less effective than images. Three days after information is transmitted orally in the classroom, students remember 10 percent of it; recall jumps up to 65 percent if a picture is added (Medina). In short, we learn better and more quickly when presented with visual information because pictures inherently contain more features that can be accessed for mental processing than do words (Najjar).
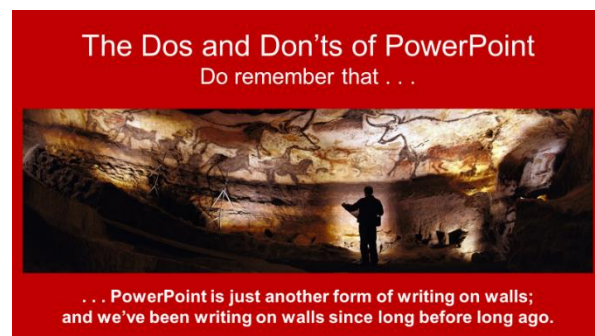
The eye goes to the picture—the Pictorial Supremacy Effect—even when small and crowded all around by non-pictorial information (Medina). However, the caveat here is that the elaborative use of text alongside images may not promote learning as well as images used alone because, as dual-coding theory suggests, when text and images are both presented visually on the same PowerPoint slide, the brain's visual channel of information processing becomes overloaded (Smith-Peavler). Still other research studies tell us that visual information is recalled three times better than oral information, but visual imagery and oral together is six times better than oral alone (Doyle).

Significantly, low-aptitude (low-prior knowledge) students benefit the most from class sessions that leverage the elaborative possibilities embedded within PowerPoint's dizzying profusion of compositional options, buttons, and tabs (Najjar).
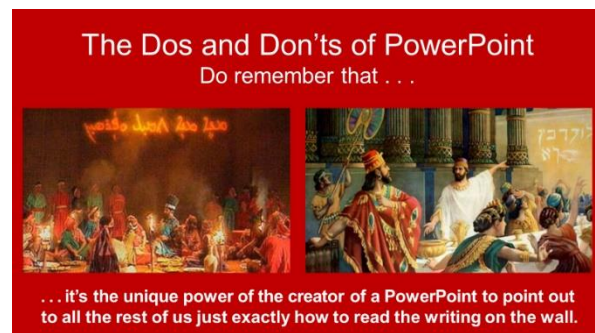
The upshot here of all these findings is that dual-coded information does generally, but not in all cases, lead to improved learning. Therefore, in any elaborative approach to the composition and use of PowerPoint slides, we need to take special care to insure that information presented in one medium— let's say textual—needs to support or extend, not distort or jumble, the information presented in either of the two other—narrative or pictorial—media (Najjar).

Additionally, we know that the human brain is wired so that we pay lots of attention to things that move (Medina). Therefore, transitions, animations, and GIFs can be effective when used in ways that grab our attention, focus our thoughts, or signal a change in information (Kosslyn). So, when using PowerPoint for the very first time, "think billboards" while composing any individual PowerPoint slide but then, over time and with experience and patience, graduate to "think movie opening title sequences" instead.

At the same time, we need to be cognizant of a caveat with respect to dynamic PowerPoints and low-spatial ability students who wrestle with increased extraneous cognitive loads whenever images are added to text. However, if a teacher directs the attention of all students where and when and how to look, the divide between high- and low-spatial ability students narrows considerably, allowing everyone in class to concentrate on the message (Wilson).

The Dos and Don'ts of PowerPoint
Do remember that . . .

. . . PowerPoint is just another form of writing on walls; and we've been writing on walls since long before long ago.

The Dos and Don'ts of PowerPoint
Do remember that . . .

. . . it's the unique power of the creator of a PowerPoint to point out to all the rest of us just exactly how to read the writing on the wall.

This last point punctuates the most important aspect of truly successful PowerPoint presentations—the presenter—and the one truly cardinal rule of PowerPoint that also happens to be the most violated—the absolute necessity for a coherent verbal gloss. Disjointed slides do not matter as much as one might suspect so long as the verbal gloss flows. It is the heartbeat of the presentation. It is the role of the presenter to explain the writing on the wall. Even after having already skimmed much of any one slide's content as soon as it appears on the screen, the audience is still in need of someone—the presenter—to help them fully comprehend it all.

It was Rich Gold, media guru, who penned one of the earliest, most thorough, and still most insightful assessments of PowerPoint. In particular, he emphasized that, because of its popularity as an increasingly pervasive form of communication, it is uniquely capable of building like-minded communities. If a teacher's PowerPoint presentation can focus everyone's attention in the same unifying direction, then a community of learners will coalesce (Gold).

The implications of these critiques and "brain science" findings for the regular classroom use of PowerPoint are huge. They urge less dependence on slide-after-slide bullet points and lobby for more emphasis on educational empowerment through the dexterous and strategic use of color, size, typeface, imagery, space, hierarchy, alignment, balance, movement, pacing, tone, and character—all eminently effective tools that PowerPoint affords us if only we choose to use them thoughtfully and intentionally instead of avoiding them entirely (Clem).

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Do you need help introducing new features into your old PowerPoints? Then click the "Help" button in the PowerPoint tool bar. Alternatively, there are many fine video tutorials available to you online. One of my favorite sites is the YouTube video channel "Technology for Teachers and Students." The instructions are easy to understand, the narration is clear and well-paced, and the visuals are conceived so as to be easily comprehended. Although the site includes tutorials for other programs, a direct link to this site's complete playlist for PowerPoint tutorials in particular can be reached by highlighting either one of the two web addresses below and then copying and pasting that URL into your search bar:

http://bit.ly/2PaOmRZ

https://www.youtube.com/playlist?list=PL_iwD7O7FG7g4pUk1A5eeRG9MWqVe7FAX