

Recontextualising PowerPoint in higher education: Teacher perceptions and pedagogical affordances

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Despite the widespread use of PowerPoint in higher education, little is known about how teachers perceive and use its pedagogical affordances – the potential actions enabled by its features. This qualitative case study examined the perceptions and slide design practices of three Business English teachers at a Thai university. Drawing on affordance theory, cognitive load theory and the cognitive theory of multimedia learning, data were collected through interviews, observations and slide analyses. The findings reveal distinct pedagogical approaches: Teacher A favoured a textbook-driven minimalist design to reduce cognitive load; Teacher B utilised multimedia-rich slides to promote interactive and culturally contextualised learning; and Teacher C adopted a task-focused minimalist approach, aligning slides with real-world communication scenarios. The study highlights that the instructional value of PowerPoint depends on teachers' pedagogical priorities, emphasising the need for a purposeful alignment between slide design and teaching objectives. Implications include the strategic integration of multimedia to enhance student engagement without overwhelming learners. The study also discusses limitations and suggests directions for future research on multimedia in language teaching.

Implications for practice or policy:

- Teachers should align PowerPoint design with teaching goals, balancing multimedia and minimalism to enhance learning.
- Teacher training should integrate affordance theory and design principles to enhance PowerPoint use.
- Curriculum developers could provide templates with real-world tasks for authentic language practice.
- Institutions should promote teacher reflection to align slide features with learning outcomes.

Keywords: PowerPoint, pedagogical affordances, teacher perceptions, multimedia learning, instructional design, qualitative case study

Introduction

PowerPoint is widely used in higher education (Baker et al., 2018; Kara-Mohamed, 2025; Zemuy et al., 2024). Its popularity is partly attributable to the software's multimodal affordances, which enable teachers to combine text and images with spoken explanation to support communication in presentations (Hallewell & Crook, 2020). However, the pedagogical effectiveness of PowerPoint remains contested, and research suggests moving beyond simple presence-absence comparisons to examine how teachers integrate PowerPoint features in ways that support students learn (Baker et al., 2018). Moreover, teachers' slide design and delivery practices can influence the effectiveness of PowerPoint-supported instruction (Bland et al., 2024; Zemuy et al., 2024). Nevertheless, little research has delineated how teachers design and use PowerPoint in practice or how these slide design practices are enacted in classroom settings. This suggests a gap in understanding exactly what teachers do with PowerPoint and how they do it to support learning, which the present study sought to address.

In light of this gap, one useful conceptual lens for analysing PowerPoint's pedagogical role is the notion of affordances. From an ecological perspective, Gibson (1979) defined affordances as the possibilities for action that the environment (including objects and tools) offers to an organism. Norman (1988) brought affordances into the design context and highlighted that what matters for usability is what actions users perceive to be possible; he later explicitly framed this emphasis as perceived affordances (Norman, 1999).

In the context of PowerPoint, this distinction is crucial: while the software affords multimodal presentation, its pedagogical value depends on how teachers design and deliver PowerPoint-based lectures – such as organising content, using visuals effectively and fostering interaction – rather than on the mere availability of features (Zemuy et al., 2024). However, relatively little is known about how teachers themselves conceptualise PowerPoint’s pedagogical affordances or how they incorporate slide design principles into their instructional strategies. Therefore it is essential to understand teachers’ viewpoints on what PowerPoint enables them to accomplish (or not accomplish) in their specific teaching contexts.

To address this need, the present study explored how three Business English teachers at a Thai university perceived and used PowerPoint in pedagogically purposeful ways. In particular, it investigated their views on PowerPoint’s affordances and examined how their perceptions influenced their slide design choices and classroom implementation of the software. By focusing on their perspectives, this qualitative inquiry reveals how they adapted and recontextualised PowerPoint’s capabilities to serve their English language teaching objectives. This approach offers valuable insights into how affordances are realised in context, since the tool’s educational potential is actualised through teacher agency and design decisions rather than being inherent in the software itself. Consequently, this study demonstrates how these teachers harness PowerPoint’s affordances to support student learning in a language classroom setting. In doing so, it contributes to a deeper understanding of the interplay between digital presentation tools and pedagogy by showing that the impact of PowerPoint in higher education depends on how its features are perceived, adapted and aligned with instructional goals.

Theoretical framework

To interpret how teachers perceive and use PowerPoint in the classroom, this study drew on three complementary theoretical perspectives: affordance theory (Gibson, 1979; Norman, 1999), cognitive load theory (CLT; Sweller, 1988, 2010) and the cognitive theory of multimedia learning (CTML; Mayer, 2021). Affordance theory helps explain how teachers recognise and act on the perceived possibilities offered by PowerPoint’s features. CLT provides a lens for evaluating how slide design affects learners’ mental processing capacity, while CTML offers principles for combining words and visuals to support meaningful learning. Together, these theories offer a comprehensive framework to analyse not only what teachers do with PowerPoint but also why certain design choices may support or hinder learning. The following sections elaborate on each of these theoretical foundations and their relevance to slide-based instruction.

Affordance theory

In educational settings, affordance theory examines the possibilities for action and learning that technologies make available to users within specific contexts. Researchers have developed frameworks to categorise different types of affordances for learning. For example, Kirschner et al. (2004) argued that computer-supported collaborative learning environments comprise technological, social and educational affordances. Social affordances support learners’ interaction, while educational affordances describe how an instructional artefact or intervention enables particular learning behaviours within a given context. Drawing on this categorisation, Xue et al. (2023) identified a range of educational affordances of a university online platform but found that the platform played a limited role in increasing learners’ social presence – illustrating how affordance analysis can reveal a tool’s strengths and limitations in practice.

In recent decades, the concept of affordances has been widely applied to understand interactions between people and technology (Nagy & Neff, 2015). In educational contexts, this perspective foregrounds teachers’ roles in translating technical features into pedagogical opportunities. For example, Chen (2022) showed that teachers exercised agency by leveraging and adapting digital affordances, translating technical resources into meaningful learning opportunities amid evolving pedagogical goals and contextual constraints. This aligns with the view of teachers as designers of technology-enhanced learning (Kali et al., 2015) who actively shape classroom tool use by selecting, configuring and orchestrating technologies so that particular affordances become salient and actionable for learners.

In addition, scholarship has cautioned against treating affordances as fixed properties of technology (Davis, 2020). Instead, affordance analysis has shifted from asking what objects afford to examining how they afford, for whom and under what circumstances (Davis, 2020). Extending this dynamic view, Johannessen (2024) proposed the concept of anticipated affordances to explain how affordances may be anticipated and negotiated by different actors even before they have direct experience with a new technology. Together, these critiques support a more contextualised, user-centred view of affordances, focusing on how they emerge through use in classroom settings.

As a result of these evolving insights, affordance theory can serve as a practical framework for guiding educational technology design and practice. It offers a lens for examining the balance between what a technology could enable and how it is implemented in context. This framing underscores that a tool's educational impact is not inherent to the tool itself but arises from the interplay between its features, users' perceptions and the context of use. Ultimately, an educational technology's impact depends as much on how it is used as on its design features. In this study, PowerPoint's features were treated as potentialities realised through teachers' enactment. Accordingly, the analysis examined three teachers' use of PowerPoint to ask what it afforded, how those affordances were enacted and under what conditions. This framework guided the analysis, attributing divergent outcomes to teacher-tool-context configurations rather than to the tool itself.

CLT and CTML

Effective multimedia instruction draws on both CLT and CTML. CLT, first fully articulated by Sweller (1988) and continually refined (Sweller, 2010; Sweller et al., 2019), conceptualises learning in terms of human cognitive architecture and the capacity limits of working memory. CLT distinguishes three types of cognitive load: intrinsic load (the inherent complexity of the content, i.e., how many elements must be processed simultaneously); extraneous load (the cognitive burden caused by irrelevant or suboptimal instruction); and germane load (the mental effort devoted to processing the material and forming meaningful knowledge structures). The central aim of CLT-based design is to minimise extraneous load and manage intrinsic load so that learners can devote more resources to germane processing. In other words, by reducing unnecessary mental work and optimising how essential information is presented, limited working memory capacity can be allocated to learning-relevant processing rather than avoidable processing. CLT therefore provides guidance for aligning instructional design with cognitive limitations and informs many practical principles for effective teaching.

Complementing CLT, CTML provides research-based principles for designing effective multimedia instruction (Mayer, 2021). It assumes learners process information through two separate channels: a visual (pictorial) channel and an auditory (verbal) channel. Each channel has limited capacity, and meaningful learning requires active cognitive processing. From these assumptions, CTML posits that learners learn more deeply from words and pictures together than from words alone. However, multimedia supports learning only when it is relevant and instructionally aligned; extraneous or poorly aligned media can overload processing capacity or distract learners.

CTML outlines several key principles for multimedia learning (Mayer, 2021). Learners understand more deeply when words are paired with relevant visuals than from words alone (multimedia principle). Any material that does not serve the learning goal should be removed to reduce extraneous processing (coherence principle). Complex content is better delivered in short, learner-paced sections rather than all at once (segmenting principle). CTML also emphasises guiding attention with cues (signalling principle). Identical verbal content should not be presented simultaneously in both narration and on-screen text (redundancy principle), and explanations of graphics are often more effective when delivered through spoken words than through extensive on-screen text (modality principle). Together, these CTML principles aim to reduce extraneous cognitive load and support learning-relevant processing, thereby translating the cognitive constraints emphasised in CLT through actionable multimedia design guidelines (Clark & Mayer, 2023).

Analysis framework

Building on insights from CLT and CTML, this study developed an analysis framework that links PowerPoint's key affordances to well-established cognitive principles. Teachers' use of PowerPoint can be understood in terms of four pedagogical affordances – multimedia integration, content chunking, sequential disclosure and visual signalling – each corresponding to a design strategy enabled by the software's features. These categories translated abstract theory into observable practice. Viewing teachers' slide design choices through this theoretical lens enabled this study to interpret how their practices realise or overlook the tool's pedagogical potential. In short, the framework connected what teachers did with slides to why those choices mattered for learning, grounding practical slide design tactics in cognitive theory.

This integrated framework provided a clear path to addressing the study aim by explicitly linking concepts to practice. First, it highlighted which affordances each teacher perceived and prioritised in relation to their teaching goals, revealing how each teacher conceptualised PowerPoint's role in instruction. Second, comparing each teacher's slide designs and in-class slide use against these research-based principles showed the extent to which their practices aligned with or diverged from the tenets of CTML and CLT. Finally, the framework shed light on any gaps between PowerPoint's technical possibilities and its pedagogical use in context – that is, where technical affordances were (or were not) translated into perceived and enacted educational affordances. These focus areas guided the analysis of the data. Table 1 provides an overview of the four focal affordances, including each affordance's instructional purpose, an illustrative classroom application and the theoretical principles that underpin its pedagogical value.

Table 1
PowerPoint's key pedagogical affordances

Affordance	Instructional purpose	Pedagogical application	Supporting principles
Multimedia integration	Support understanding and retention by integrating brief text, relevant visuals and (when appropriate) narration.	Pair concise on-screen keywords with relevant images or animations and a brief spoken explanation (e.g., narrating an animation while showing key terms).	Multimedia principle, modality principle
Content chunking	Break complex information into manageable units to support comprehension and reduce the risk of overload.	Distribute content across a sequence of slides or short bullet sets, each addressing one idea at a time.	Segmenting principle
Sequential disclosure	Pace information and guide attention by revealing content progressively.	Reveal keywords, steps or short bullet points one by one as they are explained, rather than displaying the full text at once.	Redundancy principle, segmenting principle
Visual signalling	Direct attention to essential information and reduce distraction.	Use cues such as highlighting, arrows or bolding to mark key points or relevant parts of a diagram (e.g., highlighting the label being discussed).	Signalling principle, coherence principle

Methodology

This study adopted a qualitative case study design (Yin, 2017) to examine how three teachers used PowerPoint in the same Business English course at a Thai university. Treating the course as a bounded

system enabled an in-depth exploration of a contemporary phenomenon – PowerPoint slide use – within its classroom context. This design was well suited to addressing the “how” and “why” questions, revealing not only how each teacher designed and used slides but also why certain affordances were embraced or overlooked. Moreover, the design aligned with the theoretical framework: by situating teachers’ perceptions and actions within a detailed context, the study enabled a more grounded interpretation of how PowerPoint’s affordances were realised in relation to personal and environmental factors.

Research setting and participants

This study was conducted in a Business English course, which was divided into six sections and taught by six different teachers, for non-English majors at a Thai university. The course coordinator provided all teachers with a standardised syllabus and textbook to guide instruction but allowed considerable flexibility in selecting methods, materials and pacing. Although PowerPoint use was common, it was not compulsory; therefore, slide use varied among teachers. Furthermore, the university did not require students to purchase the textbook; in practice, many students did not have a copy.

Of the six teachers invited, three volunteered to participate (hereafter, Teachers A–C), while three declined for personal reasons. All participating teachers were experienced PowerPoint users and no design guidelines were imposed on them, allowing their slideshows to reflect individual preferences. Because all three taught different sections of the same course – following the same syllabus and textbook – the study combined a shared curricular context with meaningful variation in instructional style. Moreover, each teacher provided informed consent for interviews and video-recorded classroom observations and the study received approval from the university’s ethics committee.

Data collection

Data were collected using three primary methods, corresponding to three data sets: PowerPoint slideshows, classroom teaching videos and teacher interviews. Triangulation across these data sources was used to develop a comprehensive understanding of each teacher’s slide design and use, capturing not only perceptions and plans but also classroom enactment. One PowerPoint slideshow was collected from each teacher – specifically, the slideshow corresponding to the video-recorded class session. Each slideshow represented the complete content of a lesson as prepared by the teacher. The slides were examined to identify design choices and the affordances employed.

Classroom videos were recorded with consent, capturing one lesson per teacher to observe slide use in authentic teaching practice. Each video corresponded to the analysed PowerPoint slideshow, linking planned design to actual delivery while documenting teacher talk, student interactions and slide navigation. The analysis focused on whether teachers adhered to the planned slide sequence, deviated from it or improvised, and whether they read from the slides, paraphrased them or used them primarily as a visual backdrop.

Each teacher participated in two 60-minute semi-structured interviews – one conducted before the recorded lesson and the other afterward. The pre-lesson interview elicited the teacher’s planned use of slides, pedagogical goals, perceived affordances and anticipated challenges, providing context for subsequent observations. The post-lesson interview elicited reflection on deviations from the original plan, situational factors influencing slide use and the perceived effectiveness of specific PowerPoint features. All interviews were conducted in English, audio-recorded with consent and transcribed for analysis, yielding aligned accounts of both intended and enacted PowerPoint practices.

Data analysis

This study employed thematic analysis in its reflexive form (Braun & Clarke, 2006, 2019) to identify patterns across multiple data sources – PowerPoint slideshows, classroom videos and teacher interviews. This approach was selected for its systematic yet flexible process, which supported the identification of both expected and unexpected themes in teachers’ use of PowerPoint. We coded the data set and

engaged in ongoing reflexive dialogue (rather than calculating inter-coder reliability) to deepen interpretation, interrogate assumptions and refine analytic decisions. Consistent with Braun and Clarke's (2019) guidance, our subjectivity was treated as an analytic resource, and transparent reflexive decision-making was prioritised over metrics of coding agreement.

Throughout the analysis, an audit trail was maintained to document coding decisions, refinements to the evolving coding framework and analytic memos, thereby enhancing transparency and rigor. The analysis followed Braun and Clarke's (2006) six-phase approach and proceeded iteratively and non-linearly. The key steps were as follows:

1. Familiarisation with data: Both of us immersed ourselves in the data set by reading interview transcripts, examining all PowerPoint slideshows and repeatedly viewing classroom video recordings. This phase supported a deep contextual understanding of each teacher's approach and enabled initial observations of PowerPoint use.
2. Initial coding (deductive and emergent): Initial codes were generated across the entire data set through multiple readings and viewings, combining theory-informed coding with open coding. Coding began with a set of sensitising categories derived from the study's framework on PowerPoint's pedagogical affordances. Specifically, four a priori codes – multimedia integration, content chunking, sequential disclosure and visual signalling (see Table 1) – were used to capture instances in which slides or teacher talk reflected these commonly discussed affordances. Using these a priori codes, approximately 60% of the coded observations fell within these categories at this stage. This estimate is offered descriptively to indicate the coverage of the initial sensitising framework, rather than to quantify the relative importance of themes. The remaining observations were revisited recursively to identify patterns that extended beyond the initial framework. Through open coding, additional features and uses of PowerPoint were identified that were not captured by the initial categories.
3. Theme development and expansion: After the initial coding cycle, some coded segments did not align well with the four a priori categories. These segments were revisited to develop candidate themes that captured additional patterns of meaning. Several emerging patterns were teacher-specific, reflecting distinctive design strategies or priorities. For example, one teacher's slides followed a minimalist, textbook-driven approach; another emphasised a structured, iterative design; and the third emphasised task-focused authenticity linked to real-world scenarios. These patterns were developed into additional thematic codes to capture nuances not addressed by the initial affordance categories. All codes (a priori and emergent) were organised within a shared, evolving coding framework that was continually refined and documented.
4. Reviewing and refining themes: We organised related codes into candidate themes and iteratively reviewed them against the data set. Regular discussions were held to compare interpretations, reconsider boundaries between themes, merge overlapping themes and refine or discard themes that lacked sufficient grounding in the data. Divergent interpretations were treated as prompts for further reflexive consideration and for refining theme definitions. Each iteration of the coding framework was documented and dated, forming a clear audit trail.
5. Defining and naming final themes: Once the thematic structure was finalised, each theme was clearly defined and given a concise name. The analysis yielded the four affordance-informed themes used as sensitising categories (see Table 1), as well as additional teacher-specific themes. The teacher-specific themes and their associated key insights (organised by the teacher) are summarised in Table 2.
6. Producing the report: In the final phase, the analysis was synthesised into a narrative account that integrated themes with illustrative examples from all data sources. During writing, earlier phases were revisited as needed (e.g., rechecking transcripts to verify quoted extracts and revisiting theme labels to ensure alignment with the presented evidence).

Throughout the analytic process, the approach remained reflexive and iterative. The phases were not treated as strictly linear; earlier steps were revisited when new insights emerged or when interpretations required verification against the data. By drawing on slide content, classroom observations and interview

accounts, the analysis captured both shared patterns of PowerPoint use and each teacher's distinctive approach, providing a basis for understanding how PowerPoint's pedagogical affordances were perceived and realised in context.

Table 2
Three teachers' specific themes and key insights

Teacher	Teacher-specific themes	Key insights
Teacher A	Minimalist layout and colour scheme	Slides rely heavily on blank templates, sparse visuals and textbook screenshots.
	Textbook-driven content	Slides adhere strictly to the syllabus and textbook preserve consistency but leave limited room for adaptation.
	Embedded answer-reveal animations	Slides use answer-reveal animations to reinforce a question-and-answer rhythm, prioritising incremental feedback over extended elaboration.
Teacher B	Structured and iterative design	Slides use a tri-colour scheme and recurring textbook screenshots to create a coherent, step-by-step learning progression.
	Incremental engagement and feedback	Slides use click-triggered interactions (e.g., highlighting, checkmarks) to gamify exercises and sustain active engagement.
	Contextualised cultural focus	Slides embed cultural content (e.g., gift-giving customs), linking linguistic lessons to real-world contexts.
Teacher C	Minimalist visual identity	Slides use subdued colours and a simple vertical-bar design, prioritising textual clarity over decorative elements.
	Bullet-point driven organisation	Slides break down complex topics using square bullets for main ideas and dash for sub-points.
	Task-focused authenticity	Slides emphasise real-world scenarios (e.g., the Work and Travel Programme and interview preparation) to make learning more practical and authentic.

Findings

Drawing on the analysis of how Teachers A, B and C leveraged four focal pedagogical affordances – multimedia integration, content chunking, sequential disclosure and visual signalling – together with teacher-specific themes that emerged from the data, Table 3 synthesises each teacher's key slide-design features and the underlying rationales for their PowerPoint use. These findings show that distinct pedagogical beliefs and contextual factors shaped both slide design and its classroom realisation across the three cases.

Table 3
Three teachers' PowerPoint key design features and rationale

Teacher	Design features	Rationale
Teacher A: Textbook-driven minimalism	Textbook-driven	Prioritise textbook screenshots for familiarity and alignment with course materials.
	Exercise-centred focus	Prioritise textbook exercises over explanations; streamline practice for time efficiency.
	Sequential answer disclosure	Use incremental animations (e.g., "fly-in" text) to prompt critical thinking and engagement.

Teacher	Design features	Rationale
Teacher B: Multimedia-rich and interactive design	Minimalist visual design	Use plain backgrounds and red highlights to emphasise clarity; avoid decorative elements to focus on core content.
	Multimedia integration	Embed audio or video (e.g., cultural clips) to contextualise learning and avoid passive listening.
	Blended content chunking	Combine textbook screenshots with tables and layered visuals; omit irrelevant exercises to reduce cognitive load.
	Multi-layered visual signalling	Use colour-coding (orange, red, yellow) and bold text to highlight grammar rules and guide attention.
	Incremental engagement	Gamify exercises with click-triggered feedback (e.g., checkmarks) to sustain active participation
Teacher C: Task- focused minimalism	Cultural contextualisation	Link language lessons to real-world communication (e.g., gift-giving video) to foster cultural competency.
	Minimalist design	Avoid multimedia; prioritise simplicity and direct instruction as a supplementary tool.
	Hierarchical bullet points	Structure content with bullets or dashes to break down complex topics (e.g., email structure).
	Verbal pacing and flexibility	Manage pacing verbally; add impromptu slides as a “digital blackboard” for clarifications.
	Real-world task focus	Anchor slides in practical scenarios (e.g., interview preparation) to emphasise professional communication.

Teacher A: Textbook-driven minimalism

Teacher A’s slide design exemplified textbook-driven minimalism ranging from limited multimedia use to controlled content pacing and visual simplicity. Her 17 slides deliberately excluded audio and video, relying almost entirely on static screenshots of textbook pages for content. As a result, each slide closely mapped onto a corresponding textbook page, so her content chunking mirrored the book’s sequence and enabled students to follow the lesson even without physical copies. Consistent with this stance, she adopted an intentionally sparse template with almost no decorative elements – apart from a simple title slide, nearly every slide presented only essential text alongside a textbook screenshot on a plain white background – reflecting her view that “clarity is more important than aesthetic variety”. This unadorned layout kept attention on instructional content and effectively turned PowerPoint into a digital surrogate for the textbook. Teacher A herself emphasised this textbook fidelity: “I follow the textbook closely because I’m unsure if students already have it. I use screenshots directly so they feel familiar, and it’s easier for them to follow along”.

In addition, within this textbook-aligned minimalist design, Teacher A’s sparing use of animation served two targeted instructional functions. First, to maintain student focus and preserve thinking time, she implemented sequential disclosure: after posing a question, answers appeared incrementally in red with each click rather than all at once, operationalising her “think first, then reveal” approach to foster engagement and critical thinking. Second, consistent with her emphasis on practising textbook exercises, she organised the slideshow around a stable question–answer rhythm reinforced by these reveal animations, thereby delivering immediate feedback and incremental reinforcement while remaining tightly bounded by the textbook. She deliberately limited PowerPoint’s interactive features to this use: “I only use animations to reveal answers, as too many animations can cause students headaches” – which kept extraneous cognitive load low and attention centred on core content. Moreover, the primary visual signalling was the use of red font to highlight correct answers in those textbook screenshots. Teacher A chose this colour cue for its high visibility and as “a marker of teacher authority”, ensuring key information

stood out clearly without cluttering the slide. Overall, her design choices illustrate how she leveraged PowerPoint as a straightforward extension of the textbook, prioritising familiarity and controlled pacing over multimedia enrichment.

Teacher B: Multimedia-rich and interactive design

Teacher B designed her 18 PowerPoint slides to support multimedia-rich, interactive learning. While she incorporated textbook screenshots for continuity, she enhanced them with embedded audio clips and a short video on cultural norms to provide contextualised listening input and cultural input. Slide content was carefully chunked through tables, text overlays and visual layering, helping students process tasks in stages. She selectively omitted textbook materials that did not align with the course outcomes, maintaining a focused progression. Sequential disclosure played a central role: click-triggered animations revealed highlights or answers incrementally, allowing students to engage with content step by step. This was reinforced by embedded media controls, which she used to manage pacing and encourage active comprehension. Visual signalling techniques – such as orange text for prompts, red for feedback and highlights for grammar points – directed attention to key elements. Text formatting (bold, italics and underlining) and annotations further supported cognitive clarity, offering multiple channels for emphasis without cluttering the slides. Her consistent use of a tri-colour visual scheme and the repeated use of textbook screenshots across multiple slides created coherence and familiarity.

These visual patterns were paired with incremental engagement strategies, such as interactive prompts (“Close the book and just listen”) and click-based feedback (e.g., check marks or revealed phrases), which transformed slide navigation into an active process. As she noted, “I only use animations to reveal key points or answers gradually, ensuring clarity rather than just adding flashy effects”. Her approach blended gamified interaction with instructional purpose. A defining feature of her practice was cultural contextualisation. She embedded a video on English gift-giving customs to link language instruction with authentic social settings. “This goes beyond just vocabulary,” she explained, “it shows students how to use language appropriately in real contexts”. These elements underscore how Teacher B viewed PowerPoint not merely as a content display tool but as a dynamic, interactive medium for scaffolding language, culture and engagement.

Teacher C: Task-focused minimalism

Teacher C adopted a task-focused minimalist approach to slide design. His slides deliberately minimised multimedia integration and sequential disclosure. Instead, he relied on verbal pacing rather than on-slide animations to manage information flow, and he used restrained visual signalling and a stable bullet-point hierarchy as the primary means of content chunking. Across his 12 slides, he used a single image depicting the parts of an email and no audio, video or animations; all bullet points were displayed simultaneously, while pacing and emphasis were conveyed verbally – consistent with his view that, “PowerPoint is just a support tool; teaching itself is the priority”. A muted blue title slide and beige content slides with a thin vertical bar provided visual continuity without drawing attention to form. Signalling was clear and minimal. Large, bold titles anchored each slide; square bullets marked primary ideas; indented dashes marked sub-points. Colour and italics signalled instructional contrasts only when needed (e.g., red to distinguish “direct” versus “indirect”) and font size encoded hierarchy – “the bigger the text, the more important it is”. For example, a slide on email etiquette might present a main point about formality levels, followed by specific examples of formal versus informal phrasing, italicised or colour-coded to illustrate the difference. This bullet-point-driven organisation broke complex topics into digestible pieces and guided students from general principles to concrete examples.

Content ordering followed a straightforward progression: the slideshow moved from email basics (Slides 2–5) to guidelines on tone and appropriate email closings (Slides 6–7), then to an authentic email task and interview preparation (Slides 8–12). Each slide followed a consistent title-and-bullets format, aligning with his preference for creating custom PowerPoints rather than relying on textbook pages. He also made adjustments in real time when clarification was needed: “I teach at my own pace. If I need to emphasise something or clarify questions, I just add a new slide and type it out, like a digital blackboard”. More

importantly, Teacher C prioritised real-world relevance: one slide sequence asked students to draft an inquiry email for a “Work and Travel” programme – selected because “work and travel are very popular now” and because he wants learners to “use this knowledge in the future, even though it is not a requirement”. After presenting the key language points (e.g., appropriate use of direct versus indirect questions), he transitioned to worksheets and small-group activities, allowing students to practise in context. Overall, Teacher C deliberately forwent extensive multimedia in favour of clear, purposeful design and realistic tasks, treating PowerPoint as a supportive backdrop while learning took place primarily through discussion and hands-on practice. This pattern positions PowerPoint less as a multimedia delivery system and more as a task scaffold that supports applied practice.

Discussion

The three teachers in this study used PowerPoint in markedly different ways – one as a straightforward content outline, another as an interactive multimedia aid and the third as a scaffold for hands-on tasks. These contrasting approaches highlight that the educational value of PowerPoint is not inherent in the software but depends on how its affordances are used in alignment with a teacher’s goals and teaching style. The discussion is organised around three key themes: how each teacher recontextualised the tool’s affordances; the spectrum of slide use ranging from passive content delivery to active learning; and the influence of each teacher’s pedagogical beliefs on their use of PowerPoint. Finally, the discussion moves to the practical implications of these findings, acknowledges its limitations and suggests directions for future research.

Pedagogical recontextualisation of affordances

Each of the three teachers – Teacher A, Teacher B and Teacher C – demonstrated that the perceived usefulness of a tool is shaped by users’ perceptions of how it can support their practice within specific work contexts (Chounta et al., 2022). Teacher A followed the textbook closely and used minimalist slides as a simple outline to ensure clarity and cover all required content. This strategy aligns with CLT by minimising extraneous material to ease students’ cognitive load (Sweller, 2010), but it left limited room for contextualisation or interaction. She essentially treated PowerPoint as a one-way delivery tool. By contrast, Teacher B combined images and short video clips with concise on-screen text to create an engaging learning environment. She also revealed information gradually and used signalling cues to guide attention – consistent with principles of multimedia learning (Mayer, 2021), particularly the multimedia and signalling principles. Balancing rich media with clear organisation, Teacher B sustained student engagement while avoiding cognitive overload. Meanwhile, Teacher C adopted a “digital blackboard” strategy, using sparse slides (often just a prompt or simple visual) to scaffold hands-on tasks. He organised activities into a slide-by-slide progression, giving students time to process each part – consistent with the segmenting principle (Mayer, 2021).

Together, these cases show that PowerPoint’s affordances are not fixed properties of the software but are realised in relation to the teacher’s intent. The same platform functioned as a minimal outline (for Teacher A), an interactive multimedia canvas (for Teacher B) or a task organiser (for Teacher C). This underscores the contextual nature of PowerPoint’s pedagogical value: outcomes vary depending on how teachers design and deliver PowerPoint-based lectures and on the teaching strategies they adopt (Zemuy et al., 2024).

Multimedia and pedagogical intent

The teachers’ practices highlighted a tension between passive content delivery and active learning. Teacher A’s text-heavy, lecture-style slides kept students in a passive note-taking role. By contrast, Teacher B and Teacher C used PowerPoint as a springboard for active learning. Their slides served as prompts for interaction, exploration and problem-solving rather than merely presenting information. A meta-analysis found no significant advantage of PowerPoint-supported lectures over traditional

instruction for students' cognitive learning, particularly among university students; accordingly, using PowerPoint alone may not automatically improve learning outcomes (Baker et al., 2018).

Any benefits of PowerPoint hinge on how it is used pedagogically. For example, Teacher B and Teacher C actively engaged students with their slides, whereas Teacher A remained in a passive "chalk and talk" mode – suggesting that how technology is integrated depends on teachers' pedagogical approaches, not on the mere presence of technology (Bice & Tang, 2022). Teacher B's gradual reveal of content with pertinent visuals illustrated effective multimedia use. By engaging students' visual and verbal processing and using cues to guide attention, her approach aligns with multimedia learning principles and may support understanding (Mayer, 2021). By breaking complex tasks into guided, step-by-step activities, Teacher C gave students time to process each stage and make decisions, consistent with a segmented approach to instruction (Mayer, 2021). At the same time, the tasks directed students to generate their own answers and solutions, positioning them as agentic co-constructors of knowledge.

Multimedia can be a double-edged sword. If poorly implemented, rich media can distract or overwhelm learners. The coherence principle suggests that learning is more effective when extraneous material is excluded (Mayer, 2021), because irrelevant words, images or sounds can distract learners and increase extraneous processing. The key takeaway is that multimedia-rich slides need a clear pedagogical purpose; otherwise, attempts to shift from passive delivery to active learning can backfire by introducing unnecessary distraction.

The role of teacher perceptions

Teachers' perceptions shaped how PowerPoint was used in the classroom. Teacher A perceived effective teaching as clear and comprehensive coverage of textbook content; accordingly, she used slides as a well-organised outline for straightforward delivery. Teacher B perceived learning as requiring engagement and interaction; therefore, she treated slides as a multimedia canvas, integrating images, short video clips and questions to stimulate discussion. Teacher C perceived effective instruction as emphasising authentic language use and learner autonomy, so he kept slides minimal – often limited to prompts or simple visuals – to scaffold tasks and position students as active problem-solvers. These contrasting uses align with research showing that technology integration is guided by teachers' perceptions of technology integration, including perceived value, expectancy for success and self-perceived ability (Bowman et al., 2022; Cheng et al., 2020). For example, educators with more student-centred beliefs are more likely to integrate technology in interactive, learner-driven ways (Bice & Tang, 2022).

In this study, the same PowerPoint software served as a different pedagogical tool in each teacher's hands, shaped by distinct perceptions and instructional priorities. This highlights the adaptability of PowerPoint's affordances: it can function as a traditional lecture aid or as a platform for interactive, task-based learning, depending on teachers' perceptions and pedagogical intent. Accordingly, efforts to evaluate or strengthen PowerPoint-supported instruction should foreground teachers' pedagogical intent and how they perceive the tool's affordances, rather than assuming that the technology itself will generate learning benefits.

Practical implications

The findings offer several practical implications for educators aiming to optimise PowerPoint use in the classroom. First, contextual alignment is essential. Slide design should be tailored to course objectives and content demands. For example, content-heavy courses may benefit from a minimalist slide style (as seen with Teacher A) that emphasises clarity and reduces cognitive load. In contrast, skills-based classes might adopt a more task-focused design as in Teacher C's approach, incorporating step-by-step prompts or hands-on exercises to enhance applied learning. Second, teachers should employ multimedia strategically to advance instructional goals. For instance, animations or videos should clarify complex processes or illustrate key concepts rather than serve as mere decoration, as demonstrated by Teacher B's practice of integrating visuals and brief animations.

Furthermore, slide design should strike a balance: minimalist slides can include occasional visuals or questions to sustain attention, whereas media-rich slides should remain focused and purposeful. In practice, this means integrating media to support the lesson narrative without overwhelming learners or running counter to cognitive load principles. Finally, teachers' perceptions are pivotal to effective technology integration. Professional development should address teachers' value beliefs about instructional technology use in addition to enhancing technical skills, so that technology integration is more purposeful and instructionally aligned (Bowman et al., 2022). In PowerPoint-focused professional development, this aim can be operationalised through structured reflection on how specific slide design and delivery practices align with instructional priorities.

Limitations and future directions

This study's small sample size – only three teachers from a single institution – limits the generalisability of the findings. The narrow scope means that the observed patterns may not represent all teaching contexts. Additionally, the absence of student data makes it impossible to draw conclusions about actual learning outcomes or student perspectives. These limitations indicate that the results should be interpreted as exploratory and context specific. Nevertheless, focusing on a few cases allowed for a more nuanced exploration of how pedagogy and technology interact, yielding insights that broader surveys might overlook.

Future research should build on these insights by including a wider range of participants across diverse disciplines and institutions. Incorporating student feedback or performance data would help evaluate how different slide design choices influence engagement and comprehension. Mixed-methods studies could quantify the impact of design approaches while still capturing qualitative depth, and longitudinal research might track how teachers' slide design practices and pedagogical beliefs evolve as they continue to use the technology .

Conclusion

This study illustrates that teachers' pedagogical priorities significantly shape how they recontextualise PowerPoint's affordances in practice. Each of the three cases exemplifies a distinct approach – minimalist, multimedia-enriched and task-focused – highlighting that the tool's educational impact depends more on intentional pedagogical alignment than on any inherent feature of the software. This finding underscores the need to adapt technology use to fit each teaching context and pedagogical philosophy. Despite the limited sample, the study contributes to the field by providing concrete, case-based evidence of how teachers' perceptions mediate technology integration. By viewing affordances as relational and negotiable, teachers are encouraged to move beyond seeing PowerPoint as a static presentation tool and instead use it as a dynamic medium for pedagogical innovation. Ultimately, effective PowerPoint use is not about flashy features or technical prowess but about how thoughtfully educators harness the tool to support learning goals.

Author contributions

Pengfei Zhao: Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review and editing; **Richard Watson Todd:** Conceptualisation, Methodology, Supervision, Validation, Writing – review and editing.

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