6. Breaking from PowerPoint's Defaults: A New Workshop Model Encourages Presenters to Adopt Best Practices in Presentation Slide Design

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Abstract: Although technical communication researchers have established strong theoretical and empirical support for best practices in presentation slide design, encouraging presenters to adopt these best practices has been a challenge. To establish how best to encourage presenters to adopt new slide design models, we compare presentation slides created by students in a senior capstone Chemistry course over three iterations of presentation design workshop: a no-workshop control condition, an original, in-class workshop, and a revised workshop that assigned high-quality videos and a short task working with students' own presentations in advance of our in-class presentation. While our original, in-class workshop had no discernable impact on students' presentations, our revised workshop resulted in almost all students adopting best practices in slide design. Compared to those in the control and original workshop conditions, students in the revised workshop produced slides that were rated higher in coherence and professional design and in following the assertion-evidence model of slide design. However, these changes did not result in students creating presentations that better followed scientific organizational principles. While slide coherence, professional design, and the assertion-evidence model were all highly correlated with one other, they were not correlated with the overall organization of the presentation.

Keywords: PowerPoint, presentation slide design, assertion-evidence model

Complaining about PowerPoint has become a cliché. Despite countless books, websites, and videos on slide design, there is widespread agreement that most presentations are ineffective. Several prominent executives and groups—including the CEOs of Amazon and LinkedIn, former government and military directors, and academic research groups—have banned PowerPoint from their meetings (Yu, 2014). Describing a semi-annual survey that asks audiences to volunteer

what annoys them about PowerPoint presentations, presentation consultant Dave Paradi concludes that most presentations are "brain dumps" of presenter knowledge that can overload the audience.

Of course, the problem is not so much with PowerPoint as a communication medium as it is with the way people use it. As has been frequently noted in Technical and Professional Communication (TPC) scholarship (e.g., Alley et al., 2006; Garner et al., 2009; Neeley et al., 2009), PowerPoint's defaults encourage writers to use a short topical phrase as the heading and bullet-point lists in the body of the slide. Designers, researchers, and other experts have been vocal in proposing other alternatives to this default—most notably the assertion-evidence (A-E) model of PowerPoint design. The A-E model consists of creating a slide with a single main point, summarized in a complete sentence in the slide heading. The body of the slide then provides evidence for this assertion, ideally in the form of visual evidence. Figure 6.1 illustrates the difference between a default PowerPoint slide and one that follows the A-E model.

The A-E model of slide design takes advantage of principles from the Cognitive Theory of Multimedia Learning (e.g., Mayer 2002; 2005)—most notably the dual coding principle, which suggests that our brains process visual and verbal information in differing, but complementary, ways (Clark & Paivio, 1991). According to dual coding theory, when our brains attempt to process two verbal inputs simultaneously (as we do when listening to someone present a text-heavy slide), comprehension decreases because the two verbal inputs—listening and reading—compete with one another. By contrast, when we try to process verbal and visual inputs simultaneously (such as when we listen to a speaker present a graph or image), comprehension increases because these two types of information are processed in different channels of our brains. By encouraging presenters to reduce the amount of text on the slide and to emphasize visuals, the A-E model reduces the cognitive load required to understand new content.
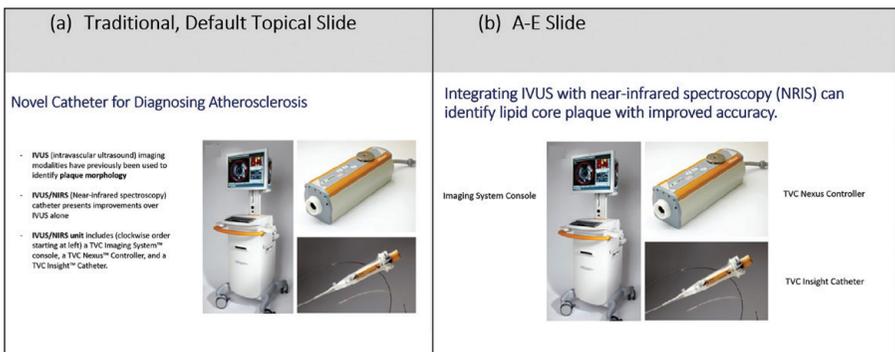

Figure 6.1. (a) A default topical slide based upon a student presentation. (b) A revised version of this slide in the Assertion–Evidence format. Image and content from Ma et al. (2016).

The A-E model does not abandon text altogether. By starting the slide with a single-sentence overview, the A-E model follows cognitive theory principles, helping audiences form a coherent understanding of the main point. This coherence helps audiences deeply and actively process and integrate new and old information (Rudolph, 2017). The sentence heading in the A-E model acts like a well-designed summary of the content to follow—a strategy that reduces cognitive load and helps readers actively process text (Sascha Schneider et al., 2018).

Not only does the A-E model follow sound principles from the Cognitive Theory of Multimedia Learning, but its use has been validated in several quasi-experimental research studies. In one classroom study, Geoscience students participated in lectures taught with presentation slides in one of two formats: either a traditional topic-subtopic format relying on short, disconnected phrases (i.e., the PowerPoint default) or the A-E format with full sentences and visual evidence. Students taught with the A-E slides performed significantly better on multiple choice exam questions than those taught with traditional topic-subtopic slides. When surveyed, the students reported preferring the A-E slides over the traditional topic-subtopic design at a rate of 7:1 (Alley et al., 2005). A separate study found that engineering students taught using slides following the A-E model performed better on tests than those taught the same content using traditional slides (Garner & Alley, 2013). The same was true of computer science students (Wolfe et al., 2006).

Research has also found that students using the A-E model to create their own presentations demonstrated better comprehension of the material than those constructing slides using a traditional format (Garner & Alley, 2016). Most recently, a study of PhD engineering students found that those using the A-E model to present advanced research to faculty and industry experts were perceived as creating stronger presentations than those using other presentation formats (Wolfe et al., 2024).

However, despite the strong theoretical and empirical evidence supporting the A-E model, instructors and trainers frequently report difficulty in getting individuals to change their presentation habits. Adopting the A-E structure requires multiple changes in how presenters think of presentations: (1) the presenter needs to reconceptualize their presentation as a story where each slide presents a single memorable idea in this story (versus creating a data dump of information on a topic); (2) the presenter needs to summarize this main idea in a complete sentence at the top of the slide, thereby breaking prevailing conventions of PowerPoint design where most headings are only a few words; (3) finally, presenters need to learn to present without the crutch of reading their text off of the screen. Inexperienced presenters often find this presentation style challenging to implement and anxiety-producing to deliver.

In a survey of instructors teaching the A-E model, Kathryn Neeley and colleagues (2009) found that most instructors reported that audiences were initially receptive to the A-E model, but expressed resistance when it came time to

actually adopt the structure. The most common reason for this resistance was that the structure required more time of the presenter than the default. Presenters also feared that they would stand out or be penalized for violating common conventions. As one instructor working in a professional setting commented, "In many organizations, there is a very, very strong PowerPoint culture that rejects change or anything that is different from what the group is accustomed to" (Neeley et al., 2009, p. 352). Lori B. Miraldi (2021) echoed this point in her study of the diffusion of the A-E model in organizations, noting that workplace norms play a significant role in the extent to which this model is adopted throughout an organization. This resistance perhaps helps explain why an analysis of over 2,000 slides from technical presentations found that almost two-thirds used some variation of the PowerPoint default (Garner et al., 2009), despite ample anecdotal and empirical evidence that this default is ineffective.

These findings support our own experience teaching this model via a Writing Across the Curriculum center at a research university. As with the instructors in Neeley et al (2009), we found that students who attended the many workshops we gave on the model were very interested in and receptive to our material, but when it came to actually using the model in their own presentations, they had difficulty implementing it. Even when instructors changed their grading rubrics to require the A-E model for their presentations, a significant portion of students failed to use it. When some students who worked with our tutors received feedback that they were not using the model, they seemed surprised that we actually wanted them to use complete sentences in the headings: these students had taken our advice to use visual evidence, but not the sentence assertions. For some students, this resistance seemed due to a reluctance to break from PowerPoint's familiar default. Others, however, had difficulty summarizing their slide content in a complete sentence. In some cases, as the instructors in Neeley et al (2009) reported, this was because they did not fully understand the content they were presenting. In other cases, students simply had difficulty thinking of their presentation slides as containing a single main message that helps communicate a story about their work.

After several years of teaching the model in classes, only to realize that many students did not implement it in their own presentations, we decided to change our approach. Our original classroom workshop introduced students to the A-E model and asked them to apply it to a set of instructor-provided slides followed by discussion. Our new approach involved assigning homework in advance of our workshop. We created two short videos for students to watch (six and two minutes long), had students complete a short exercise to share in class, and then asked each student to create 3–5 slides for their own upcoming presentation using the model. We then dedicated class time to reviewing the video concepts, adding new information, and peer reviewing student work. This new instructional approach has several advantages—including more time on task and students working with their own presentations rather than instructor-provided material—but requires much more coordination and effort to implement effectively.

In what follows, we first present our new instructional approach in more detail, describing the videos we created and the theory behind their construction. We then report the results of a quasi-experimental study showing that our new model greatly increased the number of students using the A-E model in their presentations. In addition, we present new data shedding light on how the A-E model affects other aspects of slide design commonly associated with high-quality slides. We end by discussing how our instructional materials can be adopted in other contexts.

This research follows Chris Lam and Joanna Wolfe's (2023) call for more quasi-experimental research in TPC. Quasi-experimental research involves investigating a hypothesis by comparing two or more groups on a number of outcome variables. According to Lam and Wolfe (2023), quasi-experimental research is particularly helpful to individual instructors who want to validate or challenge whether their teaching methods are effective. In addition, quasi-experimental research helps a field by providing replicable, aggregable data that can help establish best practices.

In this quasi-experimental study, we investigate the following hypotheses:

- **Hypothesis 1:** Our revised workshop, which involves assigning student prework in advance of the workshop, will lead to an increased number of presentations using the A-E model compared to our original in-class-only workshop and to a control group of no workshop.

- **Hypothesis 2:** Our revised workshop will lead to presentations that are ranked highly on other aspects of presentation quality (including coherence, professional design, and effective organization) compared to our original workshop and to a control group of no workshop.

- **Hypothesis 3**: Use of the A-E model will be positively correlated with other aspects of presentation quality (including coherence, professional design, and effective organization).

■ The Original and New Workshop Models

We taught presentation slide design using our original workshop model for a five-year period, presenting to thousands of students in nearly 100 classes. Our original workshop began by showing students some typical poorly designed slides and asking them to volunteer their impressions. We then presented the A-E model, summarized the theory and research supporting the model, and then discussed "before" and "after" slides redesigned to follow the A-E model. These example slides were typically tailored to reflect the class content. We then engaged students in hands-on practice by giving them a series of ten slides describing an informal study and asking them to redesign four of these slides. After this independent work, we asked students to share their redesigns and compared these to our own revisions. This sharing activity gave us opportunities to discuss

the pros and cons of different design options and students typically asked lots of nuanced, specific questions about slide design.

As noted earlier, student engagement was typically high during the original workshop, and students were largely receptive to our content. However, despite this positive reception, many students failed to implement the A-E model in their own class presentations—even when use of the A-E model was an item on the presentation rubric. We spoke with several instructors who were our most enthusiastic supporters to brainstorm a better workshop model.

Our new workshop model consisted of assigning videos and exercises as prework and peer-reviewing student work in class. Our first step in designing this new model involved creating the prework videos and exercises. While other videos on the A-E model existed, these videos were long, often twenty to thirty minutes, and featured a "talking head" style of presentation that prior research suggests may be less engaging than other presentation styles (Guo et al., 2014). We therefore opted to create our own video following what research indicates is best practice in educational videos.

In an analysis of over 6.9 million video-watching sessions on educational platforms, Philip Guo and his collaborators (2014) found that student engagement peaked at six minutes, regardless of video length. Students engaged with the content of shorter videos significantly more than the content of longer videos. Other factors positively correlated with student engagement include using animated tutorials where narrators situate themselves "on the same level" as the student rather than talking at the student in "lecturer mode" and using a fast speech rate of above 185 spoken words per minute. Petra ten Hove and Hans van der Meij's (2015) study of popular YouTube instructional videos likewise found that videos with a faster speaking rate (over 170 words per minute) were more popular than those with slower narration, and that popular instructional videos had more text than unpopular videos and included a mix of static and dynamic images.

Our videos attempted to follow the guidelines suggested by this research. Both of our videos were under six minutes and used what José Miguel Santos-Espino et al. (2016) call a "board style" video that features static images and animations. Board style videos are more common than speaker-focused videos in engineering and science, our target audience. We also used complete sentences to keep our video style in line with the A-E model. The video narration used a cheerful, fast-talking narrator who spoke at a rate of approximately 180 words per minute.

Our first six-minute video introduced students to the A-E model and the theory and research supporting it. This video engaged learners by posing questions, moving between bad and good examples of slide design, and asking learners to reflect on their own experience. Following the first video was a short exercise in which students generated potential sentence headings for three slides. This exercise was followed by a second two-minute video segment discussing common exceptions to the A-E model and addressing common questions we had fielded from students in prior workshops.

After watching the videos and completing the short exercise, students were instructed to create four slides using the A-E model for their upcoming presentation. Key to our workshop model is that this assignment was submitted for a grade, ensuring that nearly all students completed their slides before class.

The in-person workshop consisted of a quick review of the video content and pre-work exercise, additional details about the research supporting the A-E model, and additional tips on slide design (such as recommendations for font size and case). The rest of the class period was spent peer-reviewing the slides students brought in for homework and then describing how to organize the presentation as a whole. In the Chemistry class discussed below, this organizational content included covering the Introduction-Method-Results-Discussion (IMRD) and Create a Research Space organizational schemas for presenting scientific research (Reineke et al., 2019; Swales, 2008).

◼ Methods: Assessing the Workshop

To assess the effects of our revised workshop against our prior workshop (and against a control of no workshop), we analyzed the presentation slides of Chemistry students over three different iterations of a capstone course: prior to implementing our workshop, with our original workshop, and with our redesigned workshop. Three independent raters blind to the conditions evaluated the anonymized presentation slide decks on five criteria. These ratings were then analyzed for differences between conditions. All requirements of our University Human Subjects IRB board were followed (IRB STUDY2020_00000281).

◼ The Class and Assignment Context

Chemistry 402 is a required seminar that Chemistry students take in the Spring of their senior year. As part of the seminar requirement, these seniors present a 15-minute technical talk to undergraduates and guests of the Chemistry Department. This course is cross-listed with Chemistry 302, a one-unit seminar taken by junior Chemistry students. These juniors attend weekly seminars and complete evaluation forms providing feedback to presenters. During the three years that this study took place, enrollment in Chemistry 402 ranged from 16 to 26 students.

One to two senior presentations per week were scheduled. Students who had completed an undergraduate research project were encouraged to present on their research. Students who did not have independent research were required to represent a technical talk on a Chemistry topic sufficiently in depth to be appropriate as a capstone requirement. Students interpreted this requirement in various ways: 37% presented on a single research study or interrelated series of studies, 33% synthesized various research studies on a topic, and 30% chose a topic that could not be considered research (such as visualization techniques for classifying fingerprints).

Presenters received feedback on their oral delivery and speaking style, the organization and content of the talk, the quality of their visual aids, and their fielding of questions. In addition to the presentation, each student was required to submit an abstract of approximately 200 words.

Experimental Conditions

We have data from three iterations of the course:

- In the *no workshop* semester, students did not receive a workshop on presentation slide design.
- In the *original workshop* semester, students participated in the original workshop described above, where they learned about the model in class and practiced applying it in a short exercise. In addition to the A-E model, the workshop briefly covered the Introduction-Methods-Results-Discussion (IMRD) structure for organizing scientific papers and the Create a Research Space (CARS) structure for organizing a scientific introduction (see Swales, 2008).
- In the *redesigned workshop* semester, students participated in the redesigned workshop described above. These students watched two short videos, completed a short exercise, and prepared four slides using the A-E model for their final presentation. They also received instruction on the IMRD and CARS organizational structures for scientific research.

Data Sources and Analysis

We randomly selected nine anonymized student presentations from each of the three conditions, for a total of 27 presentations. Three technical communication instructors, who were not privy to the presentation conditions, scored the presentations on five criteria: how closely the slides followed the A-E model, whether or not the slides cohered around a clear purpose, how professional the slides appeared, whether or not the presentation followed the IMRD structure common to scientific research, and whether or not the introduction was effectively presented. Each criterion was evaluated on a four-point scale. Table 6.1 defines our five ratings criteria. Our complete slide rating rubric can be found in the appendix.

Agreement among our three raters was calculated using Intraclass Correlation Coefficient (ICC). ICC is a common measurement of inter-rater reliability, indicating the extent to which ratings from a group of judges hold together. Values range from -1.0 to 1.0, with a value of 1.0 indicating perfect agreement among raters. We report the values for ICC Class 2 for the reliability of the mean of k ratings (Shrout and Fleiss, 1979). ICC levels above .60 are considered good. Table 6.1 shows that our reliability ranges from .62–.97, indicating that our ratings are sufficiently reliable to proceed with analysis.

Table 6.1. The Five Ratings Criteria and Consistency among Raters Using ICC (2, k)

Criterion	To receive a top score a presentation should….	Interrater Reliability
Follows A-E model	Excluding overview and transition slides, at least 85% of the body slides have a complete sentence assertion that encapsulates the slide's main idea	0.97
Coherence	On at least 85% of the body slides, the text and images clearly work together to support a common main point	0.70
Professional design	Over 90% of the slides are legible, uncluttered, and have a professional layout	0.67
Follows IMRD order	Clear signaling of all four IMRD elements in correct order	0.62
Effective Introduction	Contains all of the following Statement of the topic significance Attempt to explain the knowledge gap the presentation is filling Clear statement of the question governing the presentation	0.68

In calculating our results, we averaged the scores of all three raters and used a general linear model of regression in SAS to assess differences in workshop conditions. We also calculated correlations among the five criteria in SAS to shed additional light on how instruction in the A-E model may have impacted other elements of students' slide designs.

▊ Results

Table 6.2 shows that while our original workshop had almost no observable effects on students' presentations, our revised workshop resulted in significant improvements in students' slides. While only one of the nine presentations from the original workshop was judged as using the A-E model, eight out of nine presentations from the revised workshop used the A-E model on the majority of their content slides, $F(2, 26) = 35.37$, $p < .001$. Thus, Hypothesis 1, that the revised workshop would increase uptake of the A-E model, was fully supported.

Hypothesis 2, that the revised workshop would lead to improvements in other aspects of slide quality, was partially supported. Compared to students in the no workshop and original workshop conditions, students in the revised workshop had slides that were rated as more coherent, $F(2, 26) = 9.43$, $p < .01$, and more professionally designed, $F(2, 26) = 8.91$, $p < .01$. However, there was no change in students' use of scientific organizational principles. To test whether students' lack of adherence to scientific organizational principles might be due to some presentations lacking a clear research base, we reran the analyses to remove the non-research presentations. Even when non-research presentations were removed from

the analysis, any changes to students' use of scientific organizational principles were slight and non-significant (IMRD Order: 2.9 for no workshop vs. 3.2 for revised workshop; Effective Intro 2.7 for no workshop vs. 3.0 for revised workshop). Thus, the workshop improved slide coherence and design, but did not produce significant improvements in overall presentation structure.

Table 6.3 presents correlations for all study variables for just the research and synthesis presentations (i.e., non-research presentations are excluded). Table 6.3 partially supports hypothesis 3—that the A-E model would be correlated with other elements of slide quality. The A-E model was strongly correlated with rater perceptions of slide coherence and rater perceptions of slide design. However, implementation of the A-E model was not significantly correlated with either use of IMRD organization or a strong introduction. Adding the non-research presentations into the model did not change the results. Thus, while instruction on the A-E model helped students produce more coherent individual slides, it did not necessarily seem to encourage them to consider how those slides were organized.

Table 6.3 also shows that coherence and professional design were strongly correlated with each other, but neither was correlated with use of the IMRD order or an effective introduction. In addition, Table 6.3 indicates that following an IMRD structure and having an effective introduction were strongly correlated. These findings should not be surprising, since the criteria to some extent overlap (i.e., well-designed slides should be coherent; part of following IMRD structure is creating an effective introduction).

Table 6.2. Average Slide Ratings (1 = Poor; 4 = Excellent) by Workshop Condition

Condition	Use of A-E model	Coherence	Professional Design	IMRD Order	Effective Intro
No workshop	1.1	2.2	2.2	2.7	2.6
Original workshop	1.4	2.3	2.0	2.5	2.5
Revised workshop	3.4**	3.1**	2.9*	2.8	2.5

*$p < .01$; **$p < .001$

Table 6.3. Pearson's Correlations for Rating Criteria
for the Research and Synthesis Presentations

	Use of A-E Model	Coherence	Professional Design	IMRD Order	Effective Intro
Use of A-E model	1.00				
Coherence	.75**	1.00			
Professional Design	.72**	.84**	1.00		
Follows IMRD	.17	.36	.10	1.00	
Effective Intro	.16	.27	.13	.63*	1.00

*$p < .01$ **$p < .001$

▉ Discussion

One of the biggest challenges in improving presentation slides lies in getting presenters to abandon old habits and adopt new methods. Supporting Hypothesis 1, we found that introducing students to the A-E model in advance of class and requiring them to bring a small number of slides based on their own work to the workshop session greatly increased the number of students who used the A-E model in their course presentations. While no students in the control group, and just over 10% of students in the original workshop, used the A-E model on the majority of their slides, nearly 90% of the students in the revised workshop did so. Thus, Hypothesis 1 was supported.

Partially supporting Hypothesis 2, we found that slides created by students in the revised workshop were perceived as more coherent and more professionally designed than those of students in the original-workshop and no-workshop conditions. Likewise, partially supporting Hypothesis 3, we found that use of the A-E model, slide coherence, and professional design were all highly correlated. These finding suggests that the A-E model imposes a heuristic on presentation creators that encourages them to follow other, related elements of good slide design. Because the A-E model encourages less text, presentation creators must think carefully about what their slides' message should be, thus encouraging coherence, and the sparing use of text and effective use of images are both elements of good slide design.

However, in partial contradiction to Hypotheses 2 and 3, the A-E model did not appear to influence the overall organization of presenters' slides as a whole. In fact, ratings of the A-E model, coherence, and professional design—while highly correlated with one another—were only weakly and non-significantly correlated with IMRD organization or creation of an effective introduction, suggesting that focusing on principles of individual slide organization has minimal impact on the overall order and structure of the presentation as a whole.

We should note that students did receive instruction in both IMRD organization and creating effective introductions in both the original and revised workshops, but this instruction only took place in class. None of the pre-work in the revised workshop touched on conventional scientific organizational principles. It may be that our in-class instruction needed to improve to provide more guidance on how to apply these organizational principles to synthesis projects. However, this finding might also suggest that in-class instruction alone may not be sufficient to effect major changes in presenters' slide design practices.

There are many reasons why our revised workshop may have increased uptake of the A-E model. Among the factors that changed from our original workshop were:

- Students were introduced to the A-E model in high-quality short videos and then again in an in-class lecture, thereby increasing and reinforcing their exposure to the material. Some research has found that supplementing in-class learning with short videos leads to gains in student learning (Lancellotti et al., 2016).

- Students worked with their own material rather than instructor-provided material in applying the A-E model. This use of students' own material likely helped ensure that they would be able to understand exactly how to apply new slide model to their own content.
- Students started by completing just four A-E slides to be used in their final presentation, which may be less intimidating than creating an entire presentation in an unfamiliar format.
- Students received feedback on their slides using the model, which may have reinforced their commitment to continue using the A-E model.
- Students who did not use the model effectively received early peer feedback, allowing them to correct their usage.
- Seeing their peers use the model and improve their own slides may have increased students' self-efficacy in their own ability to use the A-E model since research has shown that seeing a novice perform an unfamiliar task and correct their mistakes can lead to more learning gains than watching an expert or doing the task oneself (Raedts et al., 2006; Rijlaarsdam et al., 2008).

While there is nothing in our study design that can tell us which of these factors was most influential in changing student practices, what is clear is that their combination changed presenter behavior and improved the quality of their presentations.

This study, of course, is small and suffers from the limitations (and naturalistic advantages) of most quasi-experimental classroom projects. Most notably, there was far more heterogeneity in the topic focus of student presentations than we would have liked (a challenge we try to tease out in our results). There was also great variability in when students presented, although it is unclear how this timing affected student uptake: some students presented almost immediately after our workshop, while others presented months later, but with the benefit of seeing the presentations that went before them. The course was cross-listed so that students in their junior year saw the presentations of their upper-classmates, which could have influenced their behavior the following years (although this is an unlikely explanation since there were virtually no A-E presentations to observe). All of these variables could be controlled with a true, experimental laboratory study, but with the disadvantage that the way individuals behave in a lab when they are highly aware that they are being studied is very different than how individuals behave in naturalistic settings, such as creating presentations for course credit.

Another, perhaps larger limitation is that we did not have the opportunity to observe or record students' actual delivery. Thus, we have no data on how the A-E model affected presentation delivery or how the A-E model influenced audience reception of presenters' work (though refer to J. Wolfe et al., 2024 for a pilot study on this audience reception of research presentations using the A-E model). Future research should examine these and other variables related to presentation quality.

Implications for Practice and Future Avenues for Investigation

First, we encourage other instructors and practitioners to use our materials. Our workshop videos, exercises, and the slides we use in our in-class workshop can be accessed at https://wacclearinghouse.org/tpw/liminality/. Watching the videos, completing a short exercise, and developing four slides based on the presenters' work takes most learners 30–40 minutes. We hope that our results have shown that this prework is worth the investment.
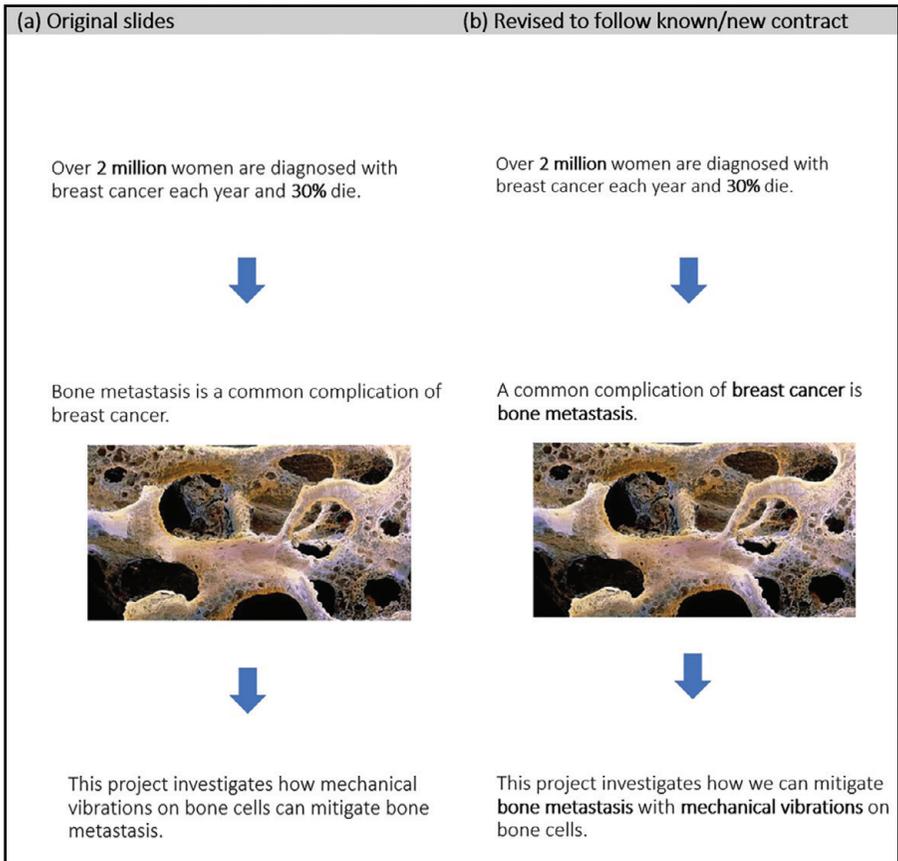

Figure 6.2. Applying the Known/New Contract to Slide Design: (a) Slides that do not follow the known/new contract; (b) slides that have been revised to place known information that has already been introduced to audiences at the beginning of the single-sentence heading. New information is placed at the end of the sentence. By encouraging presenters to begin their sentence headings with information that connects to the previous slide, we may be able to encourage presenters to move from thinking about the coherence of individual slides to coherence across sequences of slides.

Our results also suggest that more work is needed to teach presenters principles that will help them organize their overall presentations. One strategy that may be useful in bridging the organizational principles of individual slides with the organization of the entire presentation is the known/new contract (also called the given/new and old/new contract). This principle has been taught in many writing style guidebooks (e.g., Williams, 1989; Wolfe & Reineke, 2025) and we have found it useful in helping presenters think through the relationship between one slide and the next. For instance, Figure 6.2 illustrates the difference between slides that do and do not follow the known/new contract. The known/new contract reinforces the principle of coherence that is already embedded into the A-E model. As presenters move from thinking about individual slides to sequences of slides, they can then be introduced to strategies for structuring the entire presentation.

Our workshop model might also be usefully applied to other communication topics. The typical in-class workshop introduces learners to topics and practices them in class. Our revised, flipped workshop moves the initial instruction and implementation to pre-work. The workshop is then dedicated to reviewing student work, correcting their understanding and application, and extending their knowledge base. This model requires much more effort on the workshop organizer, including creating high-quality workshop materials and communicating the pre-work to students. However, the improvements in student work can lead to greater learning gains. Future work will be needed to tell which topics and principles are most worth this additional investment in effort.

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■ Appendix

Table 6.4. Scoring Rubric for the Presentation Slides

Criterion	A score of four	A score of 3	A score of 2	A score of 1
A-E model	Over 85% of content slides have a complete sentence *assertion that encapsulates the main idea	50–85% of content slides have a complete sentence assertion that encapsulates the main idea	Few slides have complete sentence assertion that encapsulates main idea	Almost no slides have complete sentence assertion
Coherence	> 85% of text and images on the slide clearly work together to support a main idea	50–85% of text and images on the slide clearly work together to support a main idea	25–50% of text and all images clearly work together to support a main idea	< 25% of text and all images clearly work together to support a main idea
Professional Design	Overwhelming majority of slides are professional with appropriate quantity of text and images and all text and images are legible	Most slides are professional with appropriate quantity of text and images. All slides are legible	Some completely illegible or unprofessional slides, but most are ok	The majority of slides are overly cluttered, illegible or unprofessional

Criterion	A score of four	A score of 3	A score of 2	A score of 1
Follows IMRD	Has clear signaling of all four IMRD elements that are generally in the expected order.	Has weaker signaling of IMRD elements but is clearly making an attempt	Has very confusing signaling of IMRD elements	Has virtually no attempt at IMRD
Effective Introduction	Clearly describes the significance of the research or topic, identifies a gap in previous research/knowledge and has a clear research or other governing question	Is missing one of the elements of a 4-point response	Is missing two of the elements of a 4-point response	Has none of the elements articulated in the 4-point response.

Note: Must be a complete sentence. Headings missing verbs do not count.