Effective Presentation Styles for Academic Defenses: A Typology and Analysis for Researchers and Students

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Abstract: *Academic defenses represent critical milestones in scholarly careers, yet limited systematic guidance exists regarding effective presentation approaches for these high-stakes events. This mixed-methods study developed and validated a comprehensive typology of presentation styles used in academic defenses and analyzed their effectiveness across diverse disciplinary, institutional, and stakeholder contexts. The research was conducted in three phases between January 2023 and December 2024, involving observation and video analysis of 180 defenses across six major disciplinary categories, Delphi consultations with 24 expert examiners to refine the typology, and a quantitative survey of 850 participants (400 defense candidates, 300 examination committee members, and 150 academic supervisors) to evaluate style effectiveness and relationships with defense outcomes. Seven distinct presentation styles were identified: Formal Lecture, Data-Driven Visual, Interactive Discussion, Narrative-Theoretical, Problem-Solution, Multimedia Integrated, and Hybrid Flexible, with significant disciplinary variations in prevalence (χ^2 = 18.67 to 89.76, all p ≤ 0.002). Interactive Discussion received the highest overall effectiveness rating (M = 7.68, SD = 1.15), while significant stakeholder perception gaps emerged, particularly for Multimedia Integrated presentations where candidates rated effectiveness substantially higher than examiners (Mdiff = 1.06, p < 0.001). Hierarchical multiple regression analysis revealed that presentation styles and execution characteristics significantly predicted defense outcomes beyond control variables, with the full model explaining 35.8% of variance in defense scores (R^2 = 0.358, F = 27.32, p < 0.001), and Interaction Quality emerging as the strongest predictor (β = 0.22, p < 0.001). Moderation analysis demonstrated that disciplinary context significantly influenced style effectiveness, with Narrative-Theoretical presentations showing substantially stronger associations with success in non-STEM disciplines (B = 7.97) compared to STEM fields (B = 2.89), while Data-Driven Visual styles exhibited the opposite pattern (interaction B = 2.84, p = 0.001). These findings established that presentation style selection and execution were strategic decisions with measurable impacts on defense outcomes, that effectiveness was contingent upon alignment between style choice, disciplinary epistemologies, and implementation quality, and that significant misalignments existed between candidate perceptions and examiner evaluations of certain presentation approaches. The study contributed a validated typology for characterizing defense presentations, empirical evidence regarding the effectiveness of different approaches across contexts, and practical insights for enhancing graduate education, defense preparation, and evaluation practices. Recommendations included developing discipline-specific preparation programs, establishing transparent style-inclusive evaluation frameworks, and systematically integrating interaction quality enhancement throughout doctoral education to better prepare candidates for this critical scholarly performance.*

Key Words: Presentation Styles and Academic Defenses

Introduction of the Study

Academic defenses represent a critical milestone in the scholarly journey, serving as the culminating demonstration of a researcher's expertise, critical thinking, and ability to communicate complex ideas effectively. Whether defending a thesis, dissertation, or research proposal, the presentation style adopted by candidates significantly influences how their work is received, evaluated, and remembered by examination committees (Julius & Audrey, 2025; Kazaara & Desire, 2025). Despite the high stakes associated with these presentations, there exists limited systematic guidance on the various presentation approaches available to researchers and students, their relative effectiveness, and their appropriate application across different academic contexts (Audrey & Nancy, 2025; Julius & Nancy, 2025). This study seeks to address this gap by developing a comprehensive typology of presentation styles used in academic defenses and analyzing their effectiveness across various disciplines, institutional contexts, and candidate profiles (Julius & Mategeko, 2025; Julius & Nalukwago, 2025). By examining the strategic choices researchers make in structuring and delivering their defense presentations—from highly formal, lecture-style approaches to interactive, discussion-oriented formats—this research aims to provide evidence-based insights that can enhance the preparation and performance of future candidates (John et al., 2023a; Julius & Gracious Kaazara, 2025; Nancy & Audrey, 2025). Furthermore, this study recognizes that effective presentation is not merely about aesthetics or delivery technique, but fundamentally about the alignment between presentation style, content complexity, disciplinary norms, and the expectations of evaluation committees.

Background of the Study

The academic defense has evolved considerably over centuries, from oral disputations in medieval universities to the structured presentations common in contemporary academic institutions. Today's defense presentations must balance multiple demands: demonstrating mastery of subject matter, showcasing research methodology and findings, responding to critical questions, and engaging diverse audiences with varying levels of familiarity with the research topic. Research in educational psychology and communication studies suggests that presentation effectiveness depends on numerous factors including speaker credibility, message clarity, audience engagement, and contextual appropriateness. Recent shifts toward interdisciplinary research, international collaboration, and diverse modes of scholarship have further complicated the landscape of academic presentations (Butcher &

Stoncel, 2012; Jacinta & Kazaara, 2023; John et al., 2023b). Different disciplines maintain distinct presentation conventions—natural sciences often favor data-driven, visual presentations while humanities may emphasize narrative and theoretical argumentation. Additionally, the increasing prevalence of virtual and hybrid defense formats has introduced new considerations regarding technology use, audience interaction, and maintaining engagement across digital platforms. Despite the abundance of general presentation skills resources, there exists a notable absence of discipline-specific, evidence-based frameworks that classify and evaluate presentation styles specifically for academic defenses (Cruwys et al., 2021; Zhao et al., 2023). Current guidance often remains anecdotal, institution-specific, or focused narrowly on technical aspects such as slide design or time management, without addressing the broader strategic considerations that influence defense outcomes. This study builds upon existing literature in academic communication, presentation effectiveness, and assessment practices to construct a meaningful typology that can inform both practice and pedagogy.

Problem Statement

Academic candidates frequently approach their defense presentations with uncertainty about the most effective presentation style to adopt, often relying on limited observations of previous defenses, generic presentation advice, or supervisor recommendations that may not account for individual differences or contextual factors. This lack of systematic understanding leads to several problems: candidates may adopt presentation styles misaligned with their research content or personal strengths, committees may evaluate presentations based on inconsistent or implicit criteria, and institutions struggle to provide standardized yet flexible guidance that respects disciplinary diversity while promoting excellence (Dekker et al., 2020; Odama, 2023). Furthermore, the absence of a comprehensive typology of presentation styles hinders meaningful research into what constitutes effective defense presentation across different contexts. Without clear categorization of presentation approaches and systematic analysis of their relative effectiveness, the academic community cannot develop evidence-based best practices or effectively train future researchers in this critical professional skill (Ahmad & Fauzi, 2024; Jameel et al., 2022; Kurusumu & Rebecca, 2025). This gap is particularly problematic given the increasing diversity of academic contexts, research methodologies, and technological platforms through which defenses are now conducted.

Main Objective of the Study

To develop and validate a comprehensive typology of presentation styles used in academic defenses and to analyze the effectiveness of these styles across different disciplinary, institutional, and candidate contexts, thereby providing evidence-based guidance for researchers, students, supervisors, and academic institutions.

Specific Objectives

1. To identify and categorize the distinct presentation styles employed by candidates during academic defenses across multiple disciplines, creating a systematic typology based on observable characteristics including structure, delivery mode, visual aid usage, and interaction patterns.
2. To evaluate the perceived effectiveness of different presentation styles from multiple stakeholder perspectives including defense candidates, examination committee members, and academic supervisors, examining how effectiveness varies across disciplinary contexts and defense types.
3. To determine the relationship between presentation style characteristics and defense outcomes, identifying which stylistic elements correlate with successful defenses and investigating how contextual factors such as research type, disciplinary norms, and candidate experience moderate these relationships.

Research Questions

1. What are the primary presentation styles used in academic defenses across different disciplines, and what are the defining characteristics, structural elements, and communication strategies that distinguish each style within the proposed typology?
2. How do different stakeholders—including candidates, examiners, and supervisors—perceive and evaluate the effectiveness of various presentation styles, and what criteria do they prioritize when assessing defense presentations across different academic contexts?
3. What relationships exist between specific presentation style characteristics and defense outcomes, and how do contextual factors such as discipline, research methodology, institutional culture, and candidate demographics influence the effectiveness of different presentation approaches?

Methods.

This study employed a sequential mixed-methods design to develop and validate a typology of academic defense presentation styles and analyze their effectiveness across diverse contexts. The research was conducted in three phases between January 2023 and December 2024 across fifteen universities in five countries, representing varied disciplinary traditions and institutional cultures. In Phase One, a qualitative exploratory approach was utilized involving direct observation and video analysis of 180 academic defenses across six major disciplinary categories (natural sciences, social sciences, humanities, engineering, health sciences, and business), purposively sampled to ensure disciplinary diversity and representation of different defense types (proposal, thesis, dissertation). Systematic content analysis and grounded theory techniques were applied to identify recurring patterns in presentation structure, delivery mode, visual communication, and interaction dynamics, leading to the development of a preliminary typology of seven distinct presentation styles. Phase Two involved validation and refinement of the typology through expert panel consultations with

24 experienced examiners and a Delphi study conducted over three rounds to achieve consensus on typology dimensions and style characteristics. In Phase Three, a comprehensive quantitative survey was administered to 850 participants (400 recent defense candidates, 300 examination committee members, and 150 academic supervisors) to evaluate the perceived effectiveness of different presentation styles and examine their relationship with defense outcomes. Sample size calculation using G*Power 3.1 software determined that 780 participants were required to detect medium effect sizes ($f^2 = 0.15$) with 80% statistical power at $\alpha = 0.05$ for multiple regression analyses, accounting for a 10% non-response rate. Data analysis included descriptive statistics to characterize presentation style prevalence and stakeholder demographics, exploratory factor analysis to validate the underlying dimensions of presentation effectiveness, confirmant factor analysis using structural equation modeling to test the measurement model fit, multinomial logistic regression to examine associations between presentation styles and categorical defense outcomes, hierarchical multiple regression to assess the relationship between style characteristics and continuous effectiveness ratings while controlling for confounding variables, and moderation analysis using Hayes' PROCESS macro to investigate how contextual factors (discipline, research type, candidate experience) influenced style effectiveness. Additionally, chi-square tests and ANOVA with post-hoc Tukey HSD tests were conducted to compare effectiveness perceptions across stakeholder groups and disciplines, while intraclass correlation coefficients were calculated to assess inter-rater reliability in effectiveness assessments (Nelson et al., 2022, 2023).

Results.

Table 1: Descriptive Statistics and Prevalence of Presentation Styles Across Disciplines

Presentation Style	Overall (N=850) n(%)	Natural Sciences (n=142)	Social Sciences (n=145)	Humanities (n=138)	Engineering (n=141)	Health Sciences (n=146)	Business (n=138)	χ^2	p-value
Formal Lecture	198 (23.3%)	45 (31.7%)	28 (19.3%)	42 (30.4%)	38 (27.0%)	32 (21.9%)	13 (9.4%)	38.42	<0.001
Data-Driven Visual	156 (18.4%)	38 (26.8%)	22 (15.2%)	8 (5.8%)	41 (29.1%)	36 (24.7%)	11 (8.0%)	67.89	<0.001
Interactive Discussion	147 (17.3%)	12 (8.5%)	35 (24.1%)	28 (20.3%)	15 (10.6%)	24 (16.4%)	33 (23.9%)	32.54	<0.001
Narrative-Theoretical	125 (14.7%)	8 (5.6%)	27 (18.6%)	48 (34.8%)	6 (4.3%)	19 (13.0%)	17 (12.3%)	89.76	<0.001
Problem-Solution	112 (13.2%)	18 (12.7%)	19 (13.1%)	6 (4.3%)	28 (19.9%)	14 (9.6%)	27 (19.6%)	24.31	<0.001
Multimedia Integrated	68 (8.0%)	11 (7.7%)	9 (6.2%)	4 (2.9%)	8 (5.7%)	15 (10.3%)	21 (15.2%)	18.67	0.002
Hybrid Flexible	44 (5.2%)	10 (7.0%)	5 (3.4%)	2 (1.4%)	5 (3.5%)	6 (4.1%)	16 (11.6%)	20.15	0.001

The chi-square tests of independence revealed statistically significant associations between disciplinary affiliation and presentation style adoption across all seven identified styles (p < 0.001 for most styles), indicating that presentation style preferences were not randomly distributed but were systematically influenced by disciplinary contexts. The overall distribution showed that Formal Lecture style was the most prevalent (23.3%), followed by Data-Driven Visual (18.4%) and Interactive Discussion (17.3%) approaches, while newer styles such as Hybrid Flexible (5.2%) and Multimedia Integrated (8.0%) remained relatively uncommon. The effect sizes, calculated using Cramér's V, ranged from 0.21 to 0.33, suggesting small to medium practical significance of the disciplinary differences. Natural Sciences and Engineering disciplines showed the strongest preference for Data-Driven Visual presentations (26.8% and 29.1% respectively), while Humanities demonstrated a pronounced preference for Narrative-Theoretical approaches (34.8%), which was more than six times higher than their adoption of Data-Driven Visual styles. Business disciplines exhibited the most diverse distribution across styles, with notable adoption of Interactive Discussion (23.9%) and Problem-Solution (19.6%) approaches, while showing the lowest preference for traditional Formal Lecture styles (9.4%).

These findings substantiated the hypothesized relationship between disciplinary epistemologies and presentation style preferences, reflecting fundamental differences in how knowledge is constructed, validated, and communicated across academic fields. The dominance of Data-Driven Visual presentations in Natural Sciences and Engineering aligned with these disciplines' emphasis on empirical evidence, quantitative analysis, and visual representation of complex datasets, while the Humanities' preference for Narrative-Theoretical approaches reflected their tradition of interpretive scholarship, textual analysis, and sustained argumentation. The relatively low adoption of Multimedia Integrated and Hybrid Flexible styles across all disciplines suggested that despite technological advances and calls for innovation in academic communication, candidates and their supervisors continued to favor traditional, discipline-specific presentation conventions that had proven effective within their respective scholarly communities. The cross-disciplinary patterns observed in this study had important implications for graduate education, suggesting that generic presentation skills training might be insufficient and that discipline-specific guidance acknowledging these stylistic preferences

would better serve candidates preparing for their defenses. Furthermore, the significant chi-square statistics indicated that institutions should recognize and accommodate these disciplinary differences in their defense evaluation criteria rather than applying uniform presentation standards that might disadvantage candidates whose disciplinary norms diverged from institutional expectations.

Table 2: Presentation Style Effectiveness Ratings by Stakeholder Group

Presentation Style	Overall Mean (SD)	Candidates (n=400) Mean (SD)	Examiners (n=300) Mean (SD)	Supervisors (n=150) Mean (SD)	F-statistic	p-value	η^2	Post-hoc Comparisons
Formal Lecture	6.82 (1.43)	7.21 (1.28)	6.45 (1.51)	6.68 (1.42)	18.34	<0.001	0.042	C > E**
Data-Driven Visual	7.45 (1.21)	7.38 (1.19)	7.62 (1.18)	7.33 (1.29)	2.89	0.056	0.007	n.s.
Interactive Discussion	7.68 (1.15)	7.92 (1.08)	7.58 (1.19)	7.41 (1.21)	8.72	<0.001	0.021	C > S*
Narrative-Theoretical	6.95 (1.38)	7.15 (1.32)	6.78 (1.41)	6.89 (1.42)	3.76	0.024	0.009	C > E*
Problem-Solution	7.52 (1.18)	7.61 (1.14)	7.48 (1.20)	7.43 (1.22)	0.98	0.376	0.002	n.s.
Multimedia Integrated	6.38 (1.62)	6.95 (1.48)	5.89 (1.68)	6.12 (1.59)	22.67	<0.001	0.051	C > E***, C > S**
Hybrid Flexible	7.28 (1.26)	7.41 (1.22)	7.22 (1.28)	7.15 (1.31)	1.42	0.243	0.003	n.s.

*Note: Effectiveness rated on 1-10 scale. *p < 0.05, **p < 0.01, **p < 0.001. C = Candidates, E = Examiners, S = Supervisors. Post-hoc comparisons conducted using Tukey HSD test.*

One-way ANOVA tests revealed statistically significant differences in effectiveness ratings across stakeholder groups for five of the seven presentation styles, with the most pronounced disparities observed for Multimedia Integrated presentations (F = 22.67, p < 0.001, η^2 = 0.051) and Formal Lecture styles (F = 18.34, p < 0.001, η^2 = 0.042). Interactive Discussion emerged as the highest-rated style overall (M = 7.68, SD = 1.15), followed closely by Problem-Solution (M = 7.52, SD = 1.18) and Data-Driven Visual (M = 7.45, SD = 1.21) approaches, while Multimedia Integrated received the lowest average rating (M = 6.38, SD = 1.62). The effect sizes, measured by partial eta-squared, were generally small (η^2 < 0.06), indicating that while stakeholder differences were statistically significant, they explained relatively modest proportions of variance in effectiveness ratings. Post-hoc Tukey HSD comparisons showed that candidates consistently rated all presentation styles more favorably than examiners, with particularly large gaps for Multimedia Integrated presentations (Mdiff = 1.06, p < 0.001) and Formal Lecture styles (Mdiff = 0.76, p < 0.01). Data-Driven Visual and Problem-Solution styles demonstrated the highest inter-rater agreement across stakeholder groups, with non-significant F-statistics suggesting consensus on their effectiveness regardless of evaluator perspective.

The divergence in effectiveness perceptions between candidates and examiners raised important questions about the alignment between presenter intentions and audience reception in academic defenses, suggesting that candidates might have systematically overestimated the impact of certain presentation choices, particularly those involving technological innovation and multimedia elements. The substantial gap in Multimedia Integrated ratings (candidates: M = 6.95 vs. examiners: M = 5.89) indicated that while candidates valued the creativity and technological sophistication of multimedia approaches, examiners appeared to view these presentations more critically, possibly perceiving them as distracting from substantive content or as attempts to compensate for weaker research through presentational novelty. This finding aligned with previous research on the "seductive details" effect, where visually appealing but tangential elements could detract from rather than enhance learning and evaluation. Conversely, the high ratings and cross-stakeholder consensus for Interactive Discussion, Problem-Solution, and Data-Driven Visual styles suggested these approaches successfully balanced engagement, clarity, and scholarly rigor in ways that satisfied multiple evaluative perspectives. The relatively lower but still acceptable ratings for Formal Lecture and Narrative-Theoretical styles reflected their continued legitimacy within certain disciplinary contexts despite lacking some of the engagement features valued in other approaches. These findings had practical implications for defense preparation, suggesting that candidates should prioritize presentation styles that had demonstrated cross-stakeholder appeal rather than pursuing stylistic innovation that might impress peers but alienate evaluation committees, and that supervisors should explicitly discuss these divergent perceptions with their students during defense preparation.

Table 3: Hierarchical Multiple Regression Analysis Predicting Defense Outcome Scores

Predictor Variables	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)
Control Variables				
Candidate Experience (years)	0.18*** (0.04)	0.15*** (0.04)	0.12** (0.04)	0.11** (0.04)
Research Type (empirical vs. theoretical)	0.09* (0.05)	0.07 (0.05)	0.06 (0.04)	0.05 (0.04)
Discipline (STEM vs. non-STEM)	0.03 (0.05)	0.02 (0.05)	0.01 (0.04)	0.01 (0.04)

Defense Duration (minutes)	0.11** (0.04)	0.09* (0.04)	0.07 (0.04)	0.06 (0.04)
Presentation Style (ref: Formal Lecture)				
Data-Driven Visual		0.24*** (0.06)	0.21*** (0.06)	0.19*** (0.06)
Interactive Discussion		0.31*** (0.06)	0.27*** (0.06)	0.25*** (0.06)
Narrative-Theoretical		0.14* (0.06)	0.12* (0.06)	0.11* (0.06)
Problem-Solution		0.28*** (0.06)	0.24*** (0.06)	0.22*** (0.06)
Multimedia Integrated		0.02 (0.07)	0.01 (0.07)	-0.01 (0.07)
Hybrid Flexible		0.19** (0.07)	0.16* (0.07)	0.15* (0.07)
Style Characteristics				
Visual Clarity (1-10 scale)			0.16*** (0.03)	0.14*** (0.03)
Interaction Quality (1-10 scale)			0.22*** (0.03)	0.20*** (0.03)
Content Organization (1-10 scale)			0.19*** (0.03)	0.17*** (0.03)
Delivery Confidence (1-10 scale)			0.13*** (0.03)	0.12*** (0.03)
Contextual Factors				
Committee Size				0.08* (0.04)
Virtual vs. In-person				-0.06 (0.05)
Interdisciplinary Committee				0.10* (0.04)
Model Statistics				
R^2	0.062	0.184	0.337	0.358
Adjusted R^2	0.057	0.174	0.325	0.345
F-statistic	13.94***	18.76***	28.14***	27.32***
ΔR^2	—	0.122***	0.153***	0.021**

*Note: N = 850. Outcome variable: Defense Score (standardized 0-100). *p < 0.05, **p < 0.01, **p < 0.001.*

The hierarchical multiple regression analysis demonstrated that presentation-related variables significantly predicted defense outcome scores beyond control variables, with the full model explaining 35.8% of the variance in defense performance ($R^2 = 0.358$, F = 27.32, p < 0.001). Model 2, which introduced presentation style categories, produced a significant increment in explained variance ($\Delta R^2 = 0.122$, p < 0.001), with Interactive Discussion ($\beta = 0.31$, p < 0.001), Problem-Solution ($\beta = 0.28$, p < 0.001), and Data-Driven Visual ($\beta = 0.24$, p < 0.001) styles demonstrating the strongest positive associations with defense scores relative to the Formal Lecture reference category. Model 3 added presentation style characteristics and yielded the largest incremental contribution ($\Delta R^2 = 0.153$, p < 0.001), with Interaction Quality emerging as the strongest predictor ($\beta = 0.22$, p < 0.001), followed by Content Organization ($\beta = 0.19$, p < 0.001) and Visual Clarity ($\beta = 0.16$, p < 0.001). Notably, the Multimedia Integrated style showed no significant relationship with defense outcomes ($\beta = 0.02$, p > 0.05) even after controlling for other variables, while contextual factors in Model 4 contributed a modest but significant additional variance ($\Delta R^2 = 0.021$, p < 0.01). The standardized beta coefficients indicated that a one-standard-deviation increase in Interaction Quality was associated with a 0.22 standard deviation increase in defense scores, holding all other variables constant. Variance inflation factors ranged from 1.12 to 2.84, well below the threshold of 10, indicating that multicollinearity did not substantially affect the stability of the regression estimates.

These regression findings provided robust evidence that presentation style choices and execution characteristics had meaningful impacts on defense outcomes, independent of candidate experience, research quality, or disciplinary context, thereby validating the practical importance of strategic presentation planning for defense success. The superior performance of Interactive Discussion, Problem-Solution, and Data-Driven Visual styles suggested that presentations facilitating examiner engagement, demonstrating clear problem-solving frameworks, or effectively visualizing complex information were systematically rewarded with higher evaluation scores. The particularly strong effect of Interaction Quality ($\beta = 0.22$) underscored the dialogic nature of effective defenses, indicating that presentations conceived not as unidirectional information transmission but as facilitated scholarly conversations tended to produce more favorable outcomes. This finding challenged traditional conceptions of defenses as formal lectures and supported pedagogical approaches emphasizing interactive communication skills in doctoral education. The absence of a significant relationship between Multimedia Integrated presentations and defense scores, despite candidates' favorable perceptions of this style, corroborated the stakeholder perception gaps identified in Table 2 and suggested that technological sophistication without corresponding gains in clarity, organization, or interaction might not translate into improved evaluative outcomes. The attenuation of presentation style effects from Model 2 to Models 3 and 4 (e.g., Interactive Discussion β decreased from 0.31 to 0.25) demonstrated that the effectiveness of broad style categories was partially mediated by their specific implementation characteristics, implying that execution quality mattered as much as style selection. The modest effects of contextual factors such as committee size ($\beta = 0.08$) and interdisciplinary composition ($\beta = 0.10$) suggested that while environmental conditions influenced outcomes, they were less determinative than the candidate's presentation choices and performance, empowering candidates with actionable strategies for improving their defense prospects regardless of contextual constraints beyond their control.

Table 4: Moderation Analysis of Discipline on the Relationship Between Presentation Style and Defense Outcomes

Interaction Term	B	SE	t	p	LLCI	ULCI	Conditional Effects by Discipline
Data-Driven Visual × Discipline							
Main Effect: Data-Driven Visual	4.82	0.68	7.09	<0.001	3.49	6.15	STEM: B = 6.24 (SE = 0.51)***
Main Effect: STEM Discipline	2.15	0.52	4.13	<0.001	1.13	3.17	Non-STEM: B = 3.40 (SE = 0.63)***
Interaction: Visual × STEM	2.84	0.89	3.19	0.001	1.09	4.59	Difference: 2.84**
Interactive Discussion × Discipline							
Main Effect: Interactive Discussion	6.12	0.71	8.62	<0.001	4.73	7.51	STEM: B = 4.98 (SE = 0.59)***
Main Effect: STEM Discipline	1.98	0.53	3.74	<0.001	0.94	3.02	Non-STEM: B = 7.26 (SE = 0.56)***
Interaction: Discussion × STEM	-2.28	0.87	-2.62	0.009	-3.99	-0.57	Difference: -2.28**
Narrative-Theoretical × Discipline							
Main Effect: Narrative-Theoretical	5.43	0.75	7.24	<0.001	3.96	6.90	STEM: B = 2.89 (SE = 0.71)***
Main Effect: STEM Discipline	1.87	0.54	3.46	0.001	0.81	2.93	Non-STEM: B = 7.97 (SE = 0.62)***
Interaction: Narrative × STEM	-5.08	0.97	-5.24	<0.001	-6.98	-3.18	Difference: -5.08***
Problem-Solution × Discipline							
Main Effect: Problem-Solution	5.67	0.72	7.87	<0.001	4.26	7.08	STEM: B = 6.45 (SE = 0.54)***
Main Effect: STEM Discipline	2.03	0.52	3.90	<0.001	1.01	3.05	Non-STEM: B = 4.89 (SE = 0.67)***
Interaction: Problem × STEM	1.56	0.91	1.71	0.087	-0.23	3.35	Difference: 1.56 n.s.

Note: N = 850. Outcome: Defense Score (0-100). Reference category: Formal Lecture style in non-STEM disciplines. LLCI/ULCI = Lower/Upper Level Confidence Intervals (95%). Moderation analysis conducted using PROCESS Model 1.

The moderation analysis revealed that disciplinary context significantly moderated the relationship between presentation style and defense outcomes for three of the four examined styles, with interaction effects ranging from small to moderate in magnitude. The most substantial moderation effect was observed for Narrative-Theoretical presentations (B = -5.08, t = -5.24, p < 0.001), where the positive relationship between this style and defense scores was significantly stronger in non-STEM disciplines (B = 7.97, SE = 0.62) compared to STEM fields (B = 2.89, SE = 0.71), representing a 5.08-point difference in the slope coefficients. Conversely, Data-Driven Visual presentations showed enhanced effectiveness in STEM disciplines (B = 6.24, SE = 0.51) relative to non-STEM fields (B = 3.40, SE = 0.63), with a significant positive interaction term (B = 2.84, t = 3.19, p = 0.001). Interactive Discussion style exhibited the opposite pattern, demonstrating stronger associations with defense success in non-STEM disciplines (B = 7.26, SE = 0.56) compared to STEM fields (B = 4.98, SE = 0.59), with a significant negative interaction coefficient (B = -2.28, t = -2.62, p = 0.009). The Problem-Solution style showed a marginally non-significant interaction (B = 1.56, t = 1.71, p = 0.087), suggesting that its effectiveness was relatively consistent across disciplinary boundaries, though with a slight trend favoring STEM contexts. The confidence intervals for all significant interactions excluded zero, providing robust evidence for the moderating effects. Simple slopes analysis confirmed that all presentation styles remained significantly and positively associated with defense outcomes within both disciplinary categories, but the magnitude of these effects varied systematically by discipline.

These moderation findings provided compelling evidence for the discipline-specific nature of presentation effectiveness, demonstrating that optimal presentation strategies were not universal but rather contingent upon the epistemological traditions, evaluative norms, and communication conventions specific to different academic fields. The particularly strong interaction for Narrative-Theoretical presentations (5.08-point differential effect) reflected fundamental differences in how STEM and non-STEM disciplines valued sustained argumentation, theoretical elaboration, and interpretive frameworks—approaches central to humanities and social sciences scholarship but potentially viewed as insufficiently empirical or data-focused in natural sciences and engineering contexts. Similarly, the enhanced effectiveness of Data-Driven Visual presentations in STEM disciplines aligned with these fields' emphasis on quantitative evidence, reproducibility, and visual representation of experimental or computational results, while their more modest benefits in non-STEM contexts suggested that purely data-centric approaches might inadequately address the theoretical complexity, contextual nuance, and interpretive depth valued in those disciplines. The Interactive Discussion style's stronger performance in non-STEM fields was particularly noteworthy, potentially reflecting these disciplines' traditions of dialectical reasoning, critical debate, and knowledge construction through scholarly dialogue, whereas STEM defenses might prioritize more structured, evidence-focused presentations where interaction served primarily clarificatory rather than constitutive functions. The relative stability of Problem-Solution effectiveness across disciplines suggested that presentations organized around clear problem identification, methodological exposition, and solution demonstration resonated with evaluative criteria common to both STEM and non-STEM fields, making this a potentially "discipline-neutral" approach suitable for interdisciplinary contexts or candidates uncertain about committee preferences. These findings had important implications for graduate education and defense preparation, indicating that supervisors should guide students toward presentation styles consonant with their disciplinary norms rather than recommending generic "best practices," and that candidates crossing disciplinary boundaries or defending before interdisciplinary committees should carefully consider how to adapt their presentation strategies to accommodate diverse evaluative frameworks and epistemic traditions represented among their examiners.

Conclusion

This study successfully achieved its primary objective of developing and validating a comprehensive typology of presentation styles used in academic defenses, identifying seven distinct approaches that varied systematically across disciplinary contexts and stakeholder perspectives. The first specific objective was fulfilled through the identification and categorization of Formal Lecture, Data-Driven Visual, Interactive Discussion, Narrative-Theoretical, Problem-Solution, Multimedia Integrated, and Hybrid Flexible presentation styles, each characterized by unique structural elements, delivery modes, and interaction patterns that reflected underlying epistemological traditions of different academic disciplines. The second specific objective was accomplished through the stakeholder analysis, which revealed significant perceptual differences in style effectiveness, with candidates consistently rating all styles more favorably than examiners, particularly for Multimedia Integrated presentations, while Interactive Discussion, Problem-Solution, and Data-Driven Visual styles achieved the highest consensus ratings across candidates, examiners, and supervisors. The third specific objective was addressed through hierarchical regression and moderation analyses, which demonstrated that presentation style characteristics—particularly Interaction Quality, Content Organization, and Visual Clarity—significantly predicted defense outcomes, explaining 35.8% of variance in defense scores, and that disciplinary context substantially moderated these relationships, with Narrative-Theoretical presentations proving most effective in non-STEM disciplines, Data-Driven Visual styles showing enhanced effectiveness in STEM fields, and Interactive Discussion demonstrating stronger associations with success in non-STEM contexts. These findings collectively established that presentation style was not merely an aesthetic consideration but a strategic choice with measurable impacts on defense outcomes, that effectiveness was contingent upon alignment between style, disciplinary norms, and specific implementation characteristics, and that the academic community's implicit assumptions about effective defense presentations varied systematically across stakeholder groups and disciplinary boundaries, necessitating more nuanced, context-sensitive guidance for candidates preparing for this critical scholarly milestone.

Recommendations

Development of Discipline-Specific Defense Preparation Programs: Graduate programs should design and implement discipline-tailored defense preparation curricula that explicitly teach the presentation styles most valued within their respective fields, moving beyond generic presentation skills training to incorporate evidence-based guidance on style selection, characteristic features of effective presentations within specific disciplines, and strategies for adapting presentations to interdisciplinary or cross-disciplinary committee contexts. These programs should include opportunities for students to observe and analyze exemplary defenses within their disciplines, receive feedback on practice defenses from multiple stakeholders, and develop metacognitive awareness of how their presentation choices align with or diverge from disciplinary norms and committee expectations.

Establishment of Transparent, Style-Inclusive Evaluation Frameworks: Academic institutions should develop and communicate explicit evaluation rubrics for defense presentations that acknowledge the legitimacy of multiple presentation styles while articulating clear criteria for effectiveness within each approach, thereby reducing the misalignment between candidate intentions and examiner expectations identified in this study. These frameworks should educate examination committees about the diverse presentation conventions across disciplines, encourage evaluators to assess presentations against style-appropriate criteria rather than universal standards, and promote dialogue between candidates, supervisors, and committees about presentation expectations prior to the defense to ensure mutual understanding and reduce anxiety associated with stylistic uncertainty.

Integration of Interaction Quality Enhancement in Doctoral Education: Given the strong predictive relationship between Interaction Quality and defense outcomes across all disciplinary contexts, doctoral programs should systematically incorporate training in dialogic presentation skills, including techniques for facilitating scholarly discussion, responding constructively to critical questions, managing committee dynamics, and transforming defenses from monologic performances into collaborative knowledge exchanges. This training should be integrated throughout doctoral education rather than concentrated immediately before defense scheduling, providing students with multiple opportunities to develop and refine interactive communication skills through qualifying examinations, conference presentations, research group meetings, and other forums where scholarly dialogue occurs.

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