

Zoom Me In, Zoom Me Out, Zoom Me All About: Graduate Students' Perceptions of Zoom Meetings in Online Graduate Programs

Alicia Shaw
Arkansas State University

Annette Hux
Arkansas State University

Audrey Bowser
Arkansas State University

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This quantitative study examined the perceptions of online graduate students regarding Zoom meetings conducted within their courses. The population included all students enrolled in online graduate educational leadership courses at a four-year university. Using convenience sampling, the final sample consisted of 217 graduate students who completed all survey items ($N = 227$ consenting participants total). An anonymous online survey of 12 items was distributed via Qualtrics. The first four questions collected demographic information; the remaining eight addressed perceived engagement, reasons for limited engagement, and overall perceptions of Zoom meetings. Descriptive statistics, multiple regression analysis, and analysis of variance (ANOVA) were used to analyze data in response to three research questions. Results indicated that liking the Zoom format and attendance frequency were the strongest predictors of perceived Zoom meeting value. Gender and education level did not significantly predict Zoom perceptions.

Keywords: Zoom, videoconferencing, graduate student, quantitative study, multiple regression, technology acceptance

INTRODUCTION

When Aretha Franklin (1985) recorded Who's Zoomin' Who?, the question of who is observing whom had little to do with virtual classrooms, yet the phrase has taken on renewed meaning in an era of ubiquitous videoconferencing, where questions of connection, engagement, and instructional presence have become central concerns in higher education.

The rapid expansion of online graduate programs, accelerated dramatically by the COVID-19 pandemic, has positioned platforms such as Zoom as primary instructional environments for thousands of graduate students and faculty.

Short History Lesson

Imagine, if you will, a time when all academic classes were taught in a classroom with the teacher standing in front of the room, lecturing, and/or writing things on a chalkboard that students would need to remember for testing. Students are seated in nice uniform rows with pencils in hand, and paper and textbooks lying in front of them on the desk. I know, it sounds almost as if it is something from the Dark Ages or the Stone Age. In fact, this is exactly how students were taught at one time. Fast forward to those same students sitting in a college classroom, again listening to every single word the professor says, taking notes in hopes of passing a test at some point. They may even be lucky enough to have a small tape recorder with which they can actually record the professor, if the professor allows it. Now, let's fast-forward again to those same students taking courses for a graduate degree. But now their classroom is not a dusty, dingy room in an old building. Their classrooms are in their own homes. Their classrooms are their living rooms, dining rooms, kitchens, or bedrooms. Instead of the professor standing in front of a classroom, lecturing on content and writing a seemingly never-ending list of things for the students to copy down, the professors are now on the screen of the students' computers right in their own homes. Every student can now see the professor for their online course in real-time. Well, you ask, how is this great phenomenon possible? It is all possible thanks to the technology that is available to every student, as long as they have internet and a computer. It all began with a phone and someone thinking how much more efficient it would be if everyone in a meeting could use their phones all at the same time. From that point on, we had the introduction of teleconferencing. Soon after, the idea of videoconferencing was born, or as many of us know it now, Zoom (Zoom is not the only platform for videoconferencing; however, it is the focus of this study).

Here and Now

Synchronous videoconferencing has become a central feature of online graduate education, particularly in programs that rely on discussion, collaboration, and professional interaction. In educational leadership preparation, platforms such as Zoom are often used to support instructional presence, peer dialogue, and faculty-student connection. Despite the widespread use of Zoom in online programs, less is known about how graduate students in educational leadership contexts perceive its value and how their experiences and participation patterns shape those perceptions.

The use of synchronous technology in higher education reflects a broader transformation in how teaching and learning are delivered. Traditional models of instruction were once defined primarily by physical classrooms, face-to-face lectures, and scheduled in-person interaction between professors and students. Over time, advances in communication technology expanded the possibilities for teaching beyond the walls of the classroom. What began as correspondence learning later evolved into online course management systems and, eventually, real-time virtual interaction through videoconferencing. As a result, graduate students who once gathered in campus classrooms may now participate in courses from home, offices, and schools across a wide geographic area while remaining connected to instructors and classmates through live digital platforms.

Videoconferencing itself has a long technological history, but its instructional use has grown especially rapidly in recent years. Platforms such as Zoom, Microsoft Teams, Skype, and WebEx have created new opportunities for institutions to facilitate real-time communication in online environments. In graduate education, these tools have helped faculty provide immediate feedback, host class discussions, model professional communication, and create more interactive learning experiences than were possible in earlier forms of fully asynchronous instruction. In online educational leadership programs, synchronous meetings can be particularly valuable because they offer space for case-based discussion, collaborative analysis, reflective dialogue, and other forms of professional exchange that are central to leadership development.

The role of videoconferencing in higher education has expanded dramatically in the past few years as colleges and universities have shifted instruction to remote formats. Zoom has become one of the most

widely used platforms for sustaining course delivery, faculty-student interaction, and program continuity. Although the rapid move to remote learning was initially driven by necessity, the use of synchronous videoconferencing did not disappear when emergency conditions eased. Instead, Zoom and similar platforms became normalized within many online and hybrid graduate programs. For educational leadership faculty, this normalization has raised important questions not only about access and logistics, but also about the instructional quality and perceived value of live online meetings.

Existing research suggests that students' experiences with Zoom are mixed. Some students report that synchronous meetings increase convenience, connection, and opportunities for real-time interaction. Others describe videoconferencing as tiring, repetitive, or less engaging than intended, particularly when meetings are overly lecture-based or used too frequently without variation in instructional design. Concerns about "Zoom fatigue," reduced motivation, camera use, and passive attendance have become common in discussions of online learning. At the same time, much of the literature has focused on participation patterns, technology adoption, or general online learning experiences rather than on how graduate students themselves evaluate the instructional value of Zoom in program-specific contexts.

This gap is particularly important in educational leadership preparation. Leadership programs are not simply content-delivery systems; they are professional learning environments that emphasize dialogue, problem solving, reflection, collaboration, and the development of leadership identity. Synchronous meetings in these settings may serve functions that go beyond routine class attendance. They may support professional discourse, strengthen cohort relationships, and provide opportunities for candidates to practice the communication and interpersonal skills expected of school and district leaders. If students view Zoom meetings as meaningful and worthwhile, then synchronous sessions may enhance online leadership preparation. If they view them as unhelpful, repetitive, or disconnected from learning, then faculty may need to reconsider how such meetings are structured and facilitated.

Another important issue involves the assumptions educators make about participation in virtual settings. Instructors may interpret visible behaviors, such as camera use or verbal contributions, as evidence of engagement, while interpreting camera-off behavior as disengagement. Yet research increasingly suggests that students' reasons for limited visual participation are often complex and shaped by privacy concerns, work environments, caregiving responsibilities, self-consciousness, and technology limitations. As a result, understanding students' perceptions of Zoom requires attention not only to whether they attend synchronous meetings, but also to how they experience them and what factors influence their sense of value.

Guided by the Technology Acceptance Model (Davis, 1989) and the Community of Inquiry framework (Garrison et al., 2000), this study examines graduate students' perceptions of Zoom meetings in online educational leadership programs. These frameworks provide a useful basis for understanding how students' attitudes toward technology, patterns of participation, and experiences of interaction may shape their perceptions of instructional value. In particular, they suggest that students may be more likely to value Zoom when they perceive it as useful, engaging, and supportive of meaningful teaching and learning.

The purpose of this quantitative study was to examine graduate students' perceptions of the value of Zoom meetings in online educational leadership programs and to determine whether demographic, behavioral, and experiential variables predicted those perceptions. Specifically, the study explored whether gender, education level, number of Zoom-based courses taken, attitudes toward Zoom, attendance, camera use, and black-screen behavior were associated with students' perceptions of Zoom meetings. By focusing on graduate students enrolled in online educational leadership coursework, this study contributes to the growing literature on synchronous online learning. It offers practical implications for leadership faculty, instructional design, and program improvement.

THEORETICAL FRAMEWORK

This study is grounded in a hybrid theoretical framework drawing from the Technology Acceptance Model (TAM) and the Community of Inquiry (CoI) framework to explain graduate students' perceptions of Zoom meetings in online teacher preparation and educational leadership programs.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (Davis, 1989) posits that individuals' adoption and sustained use of technology are primarily influenced by perceived usefulness and perceived ease of use, which shape attitudes toward the technology and subsequent behavioral intentions. TAM has been widely applied in higher education research to explain faculty and student engagement with learning management systems, videoconferencing platforms, and other instructional technologies.

In the context of this study, TAM provides a theoretical explanation for why students' liking of Zoom and their attendance behaviors are central predictors of perceived value. When students perceive Zoom meetings as useful for learning and interaction, they are more likely to view the platform positively and engage consistently. Conversely, repeated exposure without perceived instructional benefit may reduce favorable attitudes, offering a theoretical lens for understanding the small negative relationship observed between the number of Zoom-based courses taken and students' preference for the format.

Community of Inquiry (CoI) Framework

To complement TAM's focus on technology adoption, the Community of Inquiry (Garrison et al., 2000) framework provides a pedagogical lens for understanding synchronous videoconferencing functions within online learning environments. CoI conceptualizes effective online learning as the intersection of teaching presence, social presence, and cognitive presence.

Zoom meetings serve as a mechanism through which teaching presence (instructional facilitation and organization) and social presence (visibility, interaction, and relational connection) are enacted in online courses. Garrison et al. (2000) found that computer conferencing demonstrated considerable potential to create an educational community of inquiry and to mediate critical reflection and discourse. Students' attendance, participation, and perceptions of value are therefore not merely technological responses but reflections of how effectively Zoom meetings foster meaningful interaction and engagement.

Integrated Framework and Application to the Study

By integrating TAM and CoI, this study positions graduate students' perceptions of Zoom meetings as the result of both technology acceptance processes and pedagogical engagement mechanisms. TAM explains how attitudes and behavioral experiences shape perceived value, while CoI explains how instructional design and interaction influence engagement within synchronous environments. Together, these frameworks provide a conceptual foundation for examining why behavioral variables, such as liking Zoom and attending meetings, are stronger predictors of perceived value than demographic characteristics.

REVIEW OF LITERATURE

Synchronous Online Learning in Graduate Programs

The expansion of online graduate programs has led to increased reliance on synchronous videoconferencing platforms to support interaction, engagement, and instructional presence. Research indicates that synchronous sessions can enhance students' sense of connection and immediacy when thoughtfully integrated into online courses (Garrison et al., 2000; Massner, 2022). However, the effectiveness of videoconferencing depends largely on instructional design, facilitation strategies, and students' perceived value rather than on the mere presence of technology.

Student Engagement and Perceptions of Videoconferencing

Empirical studies examining videoconferencing in higher education consistently show mixed student perceptions. While many students report that platforms such as Zoom increase accessibility and real-time interaction, others experience disengagement, fatigue, or reduced motivation over time (Castelli & Sarvary, 2021; Walker, 2020). Research suggests that students are more likely to value synchronous meetings when they perceive them as purposeful and interactive rather than as passive lecture substitutes. Factors such as course design, session length, interactivity, and students' external environments play a significant role in shaping perceptions. Studies show that students do not want to hear the instructor read materials or repeat

material already presented in the course. Majewska and Zvobgo (2023) found that students in synchronous online courses preferred interactive and engaging instructional practices over passive lecture-based videoconferencing. Participants emphasized the need for discussion, breakout activities, and varied instructional methods, while criticizing monotonous and lengthy online lectures that diminished attention and engagement.

In the field of education, specifically graduate-level educational leadership preparation programs, synchronous learning has additional implications. Students are not only learning content-focused material, but they are also future practitioners. The courses offer “boots on the ground” activities that prepare them to be administrators. The field-based work in educational leadership courses can often be frustrating and overwhelming for students. They quickly begin to realize there is so much more to being an administrator than they ever realized. Videoconferencing is a place where students can discuss those frustrations, etc., in a safe environment and may even find solutions to help them in their work. Videoconferencing provides opportunities for students to meet with others to discuss issues related to their specific educational setting and to find common ground with students from across their state and the country. Videoconferencing sessions often model instructional strategies, communication norms, and professional behaviors that candidates can apply in their own K–12 or higher-education settings.

Because online programs are general in nature (in our study, we examine educational leadership programs), the online platform allows students from all backgrounds and teaching situations to come together in one remote space. The videoconferencing platform allows students the opportunity to share ideas, collaborate, and discuss common issues within their educational setting. Since educational leadership preparation programs are often built around field-based work, rather than the old “Sit and Git” type of course, the videoconferencing platforms allow for discussions regarding the field experiences.

Zoom Fatigue and Repeated Exposure

Although this research does not specifically address it, there is an emerging body of literature regarding Zoom fatigue. Therefore, the authors felt it was important to address it as part of the review of pertinent literature.

Zoom Fatigue is characterized by cognitive overload, diminished attention, and emotional exhaustion associated with prolonged videoconferencing use (Wiederhold, 2020). Studies suggest that frequent synchronous sessions without variation in instructional approach may contribute to declining satisfaction and engagement over time. Many students take several courses at a time, creating a situation where they are asked to attend virtual meetings more than once a week. Zoom fatigue can also be exacerbated when students pursue multiple degrees, often without taking a break.

Wiederhold (2020) noted that communication over videoconferencing platforms is not truly real-time, and the brain’s inability to process familiar social cues during video calls contributes to heightened cognitive load. It is easy to see students interrupt each other, as well as the instructor, due to the delay in timing. This issue can create stress and anxiety, thus adding to Zoom fatigue.

Technology Acceptance in Online Learning Environments

Technology acceptance research consistently demonstrates that perceived usefulness and positive attitudes toward instructional technologies are stronger predictors of engagement than demographic variables such as gender or age (Davis, 1989). Studies applying TAM in online learning contexts show that students’ satisfaction and continued use are driven primarily by experiential and affective factors. This literature supports the inclusion of behavioral and attitudinal variables, such as liking Zoom and attendance frequency, as meaningful predictors of perceived value. However, this study will compare some of the demographic variables to determine the possibility of recent changes in attitudes based on demographic variables.

Gaps in Literature

Despite the growing body of research on online learning and videoconferencing, limited attention has been given to graduate students’ perceptions of Zoom within large-scale distance educational leadership

programs. Many studies focus broadly on technology use or participation rates, with less emphasis on how students evaluate the instructional value of synchronous meetings or how repeated exposure shapes attitudes over time. Additionally, few studies integrate technology acceptance and pedagogical engagement frameworks when examining synchronous learning environments. Addressing this gap, the present study applies a hybrid theoretical lens to examine behavioral, demographic, and experiential predictors of graduate students' perceptions of Zoom meetings in online educator preparation programs.

Purpose and Significance of the Study

The purpose of this quantitative study was to determine online graduate students' perceptions of Zoom meetings and to examine how graduate students in online educational leadership programs experience and perceive synchronous videoconferencing. Most prior research has examined technology adoption broadly or addressed participation rates and fatigue without capturing graduate students' nuanced perspectives on the instructional value of Zoom meetings. This study sought to capture students' perceptions and examine how synchronous meetings affect engagement, learning, and connection with peers and faculty. By focusing on these perceptions, the study offers evidence that can help faculty make informed, data-driven decisions about program improvements and the future use of videoconferencing in online graduate programs.

Research Questions and Hypotheses

The researchers developed three research questions and corresponding null hypotheses:

***RQ1.** To what extent does gender predict graduate students' perceptions of Zoom meetings in online graduate programs?*

Null Hypothesis: A student's gender does not predict perceptions of Zoom meetings.

***RQ2.** Is the number of online courses taken by graduate students a predictor of perceptions of the Zoom format?*

Null Hypothesis: The number of Zoom-based courses taken is not a predictor of perceptions of the Zoom format.

***RQ3.** Does the level of education of graduate students significantly impact their perceptions of the Zoom format?*

Null Hypothesis: The level of education of graduate students does not significantly impact their perceptions of the Zoom format.

METHOD

Research Design

This study employed a quantitative, cross-sectional survey design to examine graduate students' perceptions of Zoom meetings in online educational leadership courses. Descriptive statistics and multiple regression analysis were used to analyze data in response to the three research questions.

Participants

The population for this study included all graduate students enrolled in online educational leadership courses at a four-year university in the United States. A convenience sampling method was employed to recruit participants from among students enrolled in online educational leadership courses during the study period. Graduate students enrolled in the program represent several different states across the United States.

Of the 235 individuals who accessed the survey, 227 provided consent to participate ($Q1 = 1$). Of those, 217 completed all survey items relevant to the study's dependent variables ($Q6, Q7, Q8, Q12$). The analytic

sample for the full multiple regression model was $N = 215$ due to listwise deletion of cases with missing data on Q5 or Q9. Demographic characteristics of the sample are reported in Table 1. The majority of participants identified as female (65.6%) and were enrolled at the master's degree level (42.3%).

Participation was voluntary. No personally identifiable information, including IP addresses, was collected.

Instrumentation and Data Collection

Data was collected using an anonymous online survey developed by researchers and distributed through a Qualtrics link. The survey consisted of 12 items (see appendix). The first item confirmed participant consent. Items 2 through 4 collected demographic information (education level, grade level taught, and gender). Items 5 through 12 focused on Zoom-related behaviors, engagement, and perceptions, including the number of Zoom-based courses taken, format preference, attendance frequency, camera usage, black screen usage, reasons for non-attendance, reasons for black screen use, and overall perceived value of Zoom meetings.

Validity and Reliability

Content validity was established through a review of relevant literature on synchronous online learning, technology acceptance, engagement, and videoconferencing in higher education. Faculty with experience teaching graduate-level online courses provided expert feedback on item clarity, relevance, and alignment with theoretical constructs.

Construct validity was evaluated through alignment with established theoretical frameworks and exploratory factor analysis, which revealed two interpretable constructs: (1) Zoom Avoidance/Disengagement and (2) Zoom Satisfaction/Participation. Internal consistency reliability was assessed using Cronbach's alpha. The scale demonstrated acceptable reliability ($\alpha = .70$), which is generally considered adequate for exploratory studies or newly developed instruments in educational research.

Data Analysis

Descriptive statistics were computed for all survey items, including means, standard deviations, medians, and frequency distributions (see Tables 2 and 6). Multiple regression analysis was used to examine behavioral and demographic predictors of perceived Zoom meeting value (RQ1, RQ2, RQ3; see Tables 3 and 4). A one-way ANOVA was conducted to test for differences in Zoom format perceptions across education levels (RQ3; see Table 5). All statistical analyses were conducted using SPSS. An artificial intelligence-assisted writing tool was used to support the organization and professional presentation of findings; all statistical procedures and interpretations were conducted and verified independently by the research team.

Limitations and Delimitations

Limitations

This study has several limitations. First, the use of a convenience sample drawn from a single institution and academic program limits the generalizability of findings. Second, all data were self-reported and may be subject to response or social desirability bias. Third, the cross-sectional design captures perceptions at a single point in time and does not account for changes in attitudes over prolonged exposure. Finally, regression models produced low R^2 values, indicating that the included predictors explained only a modest proportion of variance in students' perceptions.

Delimitations

The study was intentionally limited to graduate students enrolled in online educational leadership courses at one four-year university. Only Zoom was examined as the synchronous videoconferencing platform; comparisons with other tools were beyond the scope of the study. Participation was restricted to students who voluntarily completed the survey.

FINDINGS

To address the research questions, multiple regression analyses were conducted to examine whether gender, number of Zoom-based courses taken, and level of education predicted students' perceptions of Zoom meetings. A one-way ANOVA was used to test differences in perceptions across education levels. Descriptive statistics and frequency distributions were computed for all key variables.

Both statistical significance and effect sizes were examined. While some predictors reached statistical significance, all three simple regression models produced low R^2 values (ranging from .000 to .023), indicating that demographic predictors, gender, education level, and number of courses explained only a small proportion of variance in students' Zoom perceptions. The full regression model predicting perceived value from behavioral variables produced a more meaningful $R^2 = .212$.

TABLE 1
PARTICIPANT DEMOGRAPHIC CHARACTERISTICS (N = 227)

Variable	Category	n	%
Gender	Male	67	29.5
	Female	149	65.6
	Other / prefer not to say	1	0.4
	Missing / not reported	10	4.4
Education Level	Level 1 (e.g., Bachelor's/MSE)	48	21.1
	Level 2 (e.g., Master's)	96	42.3
	Level 3 (e.g., Ed.S.)	64	28.2
	Level 4 (e.g., Doctoral)	9	4.0
Grade Level Taught	Elementary (K–5)	73	32.2
	Secondary (6–12)	130	57.3
	Higher education / other	14	6.2

Note. Education level and grade level category labels should be verified against the original Qualtrics codebook, as the raw data uses numeric codes. Percentages may not add up to 100 due to missing data.

Descriptive statistics (Table 2) indicated that the majority of students reported liking the Zoom format ($M = 1.34$, $SD = 0.56$), with 70.0% selecting the most favorable response. Camera usage was high ($M = 3.98$, $SD = 1.15$), while black screen usage was moderate ($M = 2.49$, $SD = 1.33$). Most students reported attending Zoom meetings with moderate-to-high frequency ($M = 3.09$, $SD = 1.13$). Perceived value was similarly favorable ($M = 1.55$, $SD = 0.88$), with 70.5% rating Zoom meetings as valuable.

TABLE 2
DESCRIPTIVE STATISTICS FOR KEY STUDY VARIABLES

Variable	n	M	SD	Mdn	Mode	Min	Max
Zoom-based courses taken (Q5)	216	3.51	1.07	3	3	1	5
Like Zoom format (Q6)	217	1.34	0.56	1	1	1	3
Attendance frequency (Q7)	217	3.09	1.13	3	4	1	5
Camera usage (Q8)	217	3.98	1.15	4	5	1	5
Black screen usage (Q9)	216	2.49	1.33	2	2	1	5
Perceived value of Zoom (Q12)	217	1.55	0.88	1	1	1	3

Note. M = mean; SD = standard deviation; Mdn = median. Lower scores on Q6 (range 1–3) and Q12 (range 1–3) reflect more favorable perceptions. Q5, Q7, Q8, and Q9 use a 5-point frequency scale (1 = Never to 5 = Always).

RQ1: Gender as a Predictor of Zoom Perceptions

Regression analysis indicated that gender was not a statistically significant predictor of students' perceptions of the Zoom format ($B = -0.152$, $SE = 0.081$, $t = -1.872$, $p = .063$, $R^2 = .016$). Therefore, the null hypothesis for RQ1 was retained.

RQ2: Number of Courses as a Predictor of Zoom Perceptions

A statistically significant negative relationship was found between the number of Zoom-based courses taken and students' preference for the Zoom format ($B = -0.079$, $SE = 0.035$, $t = -2.245$, $p = .026$, $R^2 = .023$). Students with more Zoom course experience were slightly less likely to report liking the format. Thus, the null hypothesis for RQ2 was rejected. However, the explained variance was modest, indicating that the effect, while statistically significant, was small in practical terms.

RQ3: Education Level as a Predictor of Zoom Perceptions

Results showed no significant relationship between education level and perception of the Zoom format ($B = -0.011$, $SE = 0.047$, $t = -0.240$, $p = .811$, $R^2 = .000$). The one-way ANOVA confirmed that there were no significant differences in Zoom format preferences across education groups ($F(3, 213) = 1.969$, $p = .120$, $\eta^2 = .027$). Therefore, the null hypothesis for RQ3 was retained.

TABLE 3
MULTIPLE REGRESSION ANALYSIS PREDICTING PERCEIVED VALUE OF ZOOM MEETINGS (Q12)

Predictor	B	SE B	β	t	p
Intercept	0.529	0.440	—	1.203	.230
Zoom-based courses taken (Q5)	-0.072	0.051	-.088	-1.405	.161
Like Zoom format (Q6)	0.469	0.104	.299	4.512	< .001
Attendance frequency (Q7)	0.176	0.053	.227	3.344	.001
Camera usage (Q8)	0.020	0.066	.027	0.309	.758
Black screen usage (Q9)	0.009	0.056	.013	0.153	.879

Note. N = 215 (listwise deletion). $R^2 = .212$. Bold values indicate statistical significance ($p < .05$). β = standardized regression coefficient.

TABLE 4
SIMPLE REGRESSION RESULTS FOR RESEARCH QUESTIONS 1–3

Research Question / Predictor	B	SE B	t	p	R^2
RQ1: Gender (Q4) → Zoom Format Preference (Q6)					
Intercept	1.646	0.146	11.270	< .001	.016
Gender	-0.152	0.081	-1.872	.063	
RQ2: Courses Taken (Q5) → Zoom Format Preference (Q6)					
Intercept	1.612	0.130	12.410	< .001	.023
Courses taken	-0.079	0.035	-2.245	.026	
RQ3: Education Level (Q2) → Zoom Format Preference (Q6)					
Intercept	1.363	0.103	13.210	< .001	.000
Education level	-0.011	0.047	-0.240	.811	

Note. Bold values indicate statistical significance ($p < .05$). For RQ1, gender was coded 1 = Male, 2 = Female; the single participant coded as Other was excluded from the regression. Null hypotheses for RQ1 and RQ3 were retained; null hypothesis for RQ2 was rejected.

TABLE 5
ONE-WAY ANOVA: ZOOM FORMAT PREFERENCE (Q6) BY EDUCATION LEVEL

Source	df	SS	MS	F	p	η^2
Between groups	3	1.801	0.600	1.969	.120	.027
Within groups	213	64.964	0.305	—	—	—
Total	216	66.765	—	—	—	—

Note. η^2 = eta squared (effect size). The result was not statistically significant. Effect size ($\eta^2 = .027$) indicates a small practical effect.

TABLE 6
SURVEY ITEM RESPONSE DISTRIBUTIONS FOR ZOOM BEHAVIOR AND PERCEPTION VARIABLES

Item	1	2	3	4	5	n valid
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	
Q5: Zoom-based courses taken	10 (4.6)	18 (8.3)	88 (40.7)	53 (24.5)	47 (21.8)	216
Q6: Like Zoom format	152 (70.0)	56 (25.8)	9 (4.1)	—	—	217
Q7: Attendance frequency	17 (7.8)	61 (28.1)	43 (19.8)	78 (35.9)	18 (8.3)	217
Q8: Camera on (face visible)	10 (4.6)	22 (10.1)	20 (9.2)	76 (35.0)	89 (41.0)	217
Q9: Black screen usage	61 (28.2)	71 (32.9)	22 (10.2)	42 (19.4)	20 (9.3)	216
Q12: Perceived value of Zoom	153 (70.5)	8 (3.7)	56 (25.8)	—	—	217

Note. Values represent n and the percentage of valid respondents. Dashes indicate the response option was not applicable for that item's scale. For Q6: 1 = Yes, I like it; 2 = It's OK; 3 = No, I don't like it. For Q12: 1 = Yes, valuable; 2 = Neutral; 3 = Not valuable. For Q5, Q7, Q8, Q9: 1 = Never to 5 = Always.

OVERALL SUMMARY OF FINDINGS

The full regression model (Table 3) demonstrated that liking the Zoom format (Q6; $\beta = .299$, $p < .001$) and attendance frequency (Q7; $\beta = .227$, $p = .001$) were the strongest and only statistically significant predictors of perceived Zoom meeting value. Camera usage and black screen behavior were not significant predictors. The model explained 21.2% of the variance in perceived value ($R^2 = .212$).

Demographic predictors—gender, education level, and number of courses taken—showed weak or non-significant relationships with overall Zoom perceptions (Table 4). The small but statistically significant negative relationship between the number of Zoom-based courses taken and format preference (RQ2; $p = .026$, $R^2 = .023$) is consistent with literature on Zoom fatigue, suggesting that repeated exposure without variation in instructional approach may modestly diminish enthusiasm over time.

IMPLICATIONS AND RECOMMENDATIONS

Implications

The findings of this study offer important implications for online graduate education, particularly regarding the instructional use of videoconferencing platforms. Results suggest that students' perceptions of Zoom are shaped primarily by their emotional engagement and usage patterns—specifically, whether they like the format and whether they attend consistently—rather than by demographic characteristics or technical behaviors such as camera usage. This highlights the importance of designing virtual learning experiences that foster positive attitudes, interactive environments, and consistent engagement.

The small but significant negative relationship between the number of Zoom-based courses taken and format preference suggests the potential onset of Zoom fatigue with repeated exposure. This implies that while Zoom remains a valuable instructional tool, its overuse without pedagogical variation may contribute to decreased student satisfaction over time.

Recommendations for Practice

Based on the results, the following recommendations are offered for institutions, faculty, and instructional designers:

1. Foster positive Zoom experiences through breakout rooms, polls, and student-led discussions to make synchronous sessions more dynamic and engaging.
2. Encourage consistent attendance by reinforcing the instructional value of synchronous participation.
3. Avoid overreliance on Zoom by alternating with asynchronous content and varied delivery methods to mitigate potential fatigue.
4. Maintain flexibility regarding camera use, as camera presence and black screen behavior were not significant predictors of perceived value.
5. Invest in early orientation and training on Zoom features to support positive initial attitudes and long-term engagement.

Recommendations for Future Research

Future research should consider:

1. Longitudinal studies tracking changes in Zoom perceptions across multiple semesters to explore how fatigue develops over time.
2. Qualitative research to capture in-depth student experiences and motivations behind format preferences.
3. Comparative studies examining Zoom versus other synchronous platforms (e.g., Microsoft Teams, Google Meet) to identify platform-specific effects.
4. Studies examining instructor variables such as facilitation style, course design, and session structure as moderators of student perceptions.
5. Cross-institutional and geographically diverse samples to enhance generalizability.

CONCLUSION

This study found that graduate students generally perceive Zoom as a valuable and effective tool for online learning, particularly when they favor the format and attend sessions consistently. Demographic factors such as gender and education level did not significantly influence these perceptions, nor did technical behaviors such as camera use. A small but statistically significant negative relationship between cumulative Zoom course experience and format preference suggests the potential for diminishing enthusiasm with repeated exposure, consistent with the Zoom fatigue literature.

As higher education continues to evolve in a post-pandemic environment, these findings underscore the importance of intentional, engaging, and student-centered design in virtual learning environments. Videoconferencing platforms such as Zoom should be employed thoughtfully, with pedagogical strategies that sustain student interest, promote interaction, and reduce the risk of fatigue over time.

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APPENDIX

Survey Instrument

The following survey instrument was used to collect data regarding graduate students' perceptions of Zoom meetings in online courses.

- Q1. Your participation in this survey is voluntary. No personally identifiable information will be stored. All responses are strictly confidential. Please indicate your willingness to participate in this survey.
- Q2. Level of education?
- Q3. Indicate which of the following grade levels is appropriate for your work level.
- Q4. Please indicate your gender.
- Q5. How many courses have you taken online using Zoom?
- Q6. Do you like the Zoom format?A
- Q7. How many times do you attend scheduled Zoom meetings in your courses?
- Q8. How many times do you have your camera on with your face visible?
- Q9. How many times do you only show the black screen and not your face?
- Q10. What is the reason you only show the black screen with your name?
- Q11. If you do not attend meetings, what is the main reason?
- Q12. Do you feel that Zoom meetings are overall valuable?