

An Analytical Examination of VoiceThread Engagement Patterns of Pre-and In-Service Teachers in an ESL Graduate Course: Investigating Posting Frequencies, Response Modalities, and Demographic Influences

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ABSTRACT

This study analyzes graduate students' engagement with VoiceThread, a multimodal discussion platform that blends audio, video, and text. Drawing on data from 94 pre- and in-service teachers enrolled in an eight-week online *English Language Development* course, we examined three dimensions of participation: posting frequency, response length, and modality choice. Descriptive statistics, Pearson's correlation, and ANOVA were employed to analyze 1,128 student comments across six sections. Results revealed a strong preference for audio contributions, which comprised 83% of postings and totaled more than 40 hours of discourse. A small but significant correlation indicated that frequent posting was associated with slightly longer responses, while variation in audio length across sections indicates the influence of instructor presence. High-engagement sections, where instructors modeled active use of the platform, yielded richer and longer contributions compared to low-engagement sections. These findings suggest that while VoiceThread's affordances facilitate interaction, meaningful engagement is shaped less by the tool itself than by instructional design and teaching presence.

Keywords: VoiceThread, student engagement, instructor presence

Introduction

Education rarely stands still. In recent decades, classrooms that once revolved around textbooks, chalkboards, and fixed routines have been given new life through the rapid growth of digital tools. For instance, online platforms can connect people across time and place and extend the boundaries of learning well beyond the walls of the classroom. Therefore, teachers are encouraged to adopt technology for their pedagogy rather than treat it as an optional add-on, while students, in turn, find themselves engaging with content and each other in many new ways with the help of technological tools. Among the technological platforms that have gained a foothold in higher education and teacher preparation programs is VoiceThread. Research across disciplines has confirmed that VoiceThread, a multimodal platform, can reduce transactional distance, stimulate collaboration, and promote autonomy (Bodis et al., 2020; Glick, 2021; Merriam & Hobba-Glose, 2021).

VoiceThread, with its blend of audio, video, and text, moves interaction beyond the flatness of text-only forums as it encourages participants to contribute with tone, gesture, and pace. These affordances, scholars suggest, can create the possibility for more meaningful exchanges and reflective learning communities (Acosta & Parra, 2023; Ching & Hsu, 2013; Delmas, 2017). In the context of an *English Language Development* course designed to prepare future teachers of English language learners (ELLs) in the U.S. P–12 classrooms, VoiceThread has been integrated not simply as a tool, but as a core element of pedagogy. Students are asked to comprehend content, share experiences, respond to peers, and critically reflect on teaching practice in ways that mirror the collaborative demands of 21st-century classrooms (Hawk & Coriasco, 2024; Sharoff, 2022).

However, enthusiasm for new platforms does not eliminate important questions, such as how students use such tools when they become part of coursework. Do the promised benefits of meaningful interaction translate into practice? Prior research has noted the

potential of multimedia platforms to support learning collaboration among learners and teachers (Brunvand & Byrd, 2011). However, less is known about the patterns of such participation within specific teacher education contexts. Some quantitative studies, for example, highlight how VoiceThread-mediated peer and self-assessment can yield measurable gains in oral proficiency and self-efficacy (Liao, 2025), while others show that reflective speaking tasks often remain at surface levels despite positive learner attitudes (Sojisirikul & Chanchula, 2023). Building on these insights, this study examines the following three dimensions of student engagement with VoiceThread in an *English Language Development* course: *the frequency of postings and responses, the relationship between postings and response length, and the proportion of contributions made in audio, video and text format.*

Literature Review

Digital tools have greatly influenced how teaching and learning take place in online higher education courses. VoiceThread (VT) is one of these tools and has become an important platform for interaction between students and instructors (Ching & Hsu, 2013; Delmas, 2017; Utami & Santosa, 2023). It encourages communication that feels more immediate and personal, strengthening the learning experience in virtual classrooms.

Multimodality of VoiceThread as An Interactive Tool

The value of VoiceThread as a multimodal interactive tool in online education is well documented (Brunvand & Byrd, 2011; Ching & Hsu, 2013; Saçak & Kavun, 2023; Utami & Santosa, 2023). Research shows that it creates a lively communication channel between students and instructors. The platform allows for the exchange of ideas, feedback, and discussion in an asynchronous setting. Multimodal responses in VoiceThread include audio, video, and text, which makes the interaction richer and more flexible. These modes give students different ways to contribute and allow teachers to respond in formats that fit varied

learning preferences. Research shows this variety strengthens the learning experience (Dugartsyrenova & Sardegna, 2017; Mejia, 2020). Each mode allows students to express themselves differently. Audio and video bring tone and presence. Text offers clarity and precision. Together, they support different learning preferences and add depth to classroom exchanges. This flexibility also makes the environment more inclusive, since students can choose the format that best matches their comfort and needs.

Ching and Hsu (2013) investigated graduate students' experiences using VoiceThread in an online course and found that half of the students felt more connected with their peers due to the multiple modes of interacting with their peers using VoiceThread. Utami and Santosa (2023) did a systematic review on the studies related to the use of VoiceThread to improve English as a foreign language speakers' (EFL) spoken English, and found that VoiceThread significantly contributed to the improvement of learners' spoken English, particularly because of its video and audio recording functions for interactions and feedback.

Student Engagement and Community Building through VoiceThread

Research has shown that VoiceThread helps instructors and students create a community in online courses with more student engagement (Chen & Bogachenko, 2023; Delmas, 2017; McMurray, 2024; Rabu et al., 2025; Walden & Hale, 2025). Student engagement on VoiceThread can be seen in both the frequency and the length of postings. These measures give a clear signal of participation in the learning process (Delmas, 2017; Fox, 2017). Both the number and the length of posts demonstrate the involvement of students in a course. These patterns can act as a barometer of involvement, linking the quantity of interaction to the quality of engagement with the course.

Compared with text-based discussion boards, VoiceThread allows students to feel the presence of their peers and instructor with the audio and video formats, and thus students turned out to participate more with VoiceThread in the online course, which contributes to

building an online community (Chen & Bogachenko, 2023). Delmas (2017) found that the majority of graduate students in the study felt more connected to their classmates and their instructor using VoiceThread and that VoiceThread helps create a sense of community among them.

More work is needed to understand how low and high levels of engagement shape the way students use VoiceThread. Prior research points to a complex relationship between engagement and posting patterns (Joiner & Patterson, 2019; Stamps & Opton, 2019). Some groups may post often but write briefly, while others may post less but offer richer comments. These differences suggest that targeted interventions may help teachers encourage more balanced and meaningful participation.

Research Gaps

VoiceThread has numerous benefits in online education, but important gaps remain. Most studies are qualitative, investigating instructors' and/or students' perceptions on using VoiceThread in their coursework (e.g., Ching & Hsu, 2013; Delmas, 2017; Gonzalez & Moore, 2018). A few studies are quantitative showing that VoiceThread contributes to students' oral English proficiency (Ibañez Vallejos, 2024; Liao, 2025). However, studies have not fully examined students' VoiceThread posting behavior. Therefore, our study fills in the gap by examining how patterns of VoiceThread posting behavior relate to different levels of participation and learning in virtual classrooms.

Methodology

The study used a quantitative design and collected data from 11 VoiceThread presentations of 94 graduate students, who were mainly pre-service or in-service teachers, across six sections of a graduate online ESL course. Both researchers, who worked as the teaching assistants of the graduate course, recorded all postings and responses in a Google Spreadsheet to maintain consistency and accuracy. They counted the number of posts,

measured the length of responses, and noted the format students used, including texts, audios, and videos. Institutional Review Board (IRB) approval was secured to meet ethical standards for research with human participants.

The data for this study were derived from VT interaction in an eight-week online *English Language Development* course offered in Fall 2023 (see Table 1). Curriculum-wise, each week is divided into two parts: Monday to Wednesday and Thursday to Sunday. The course is designed to build foundational knowledge and practice in second language instruction for P–12 settings. It primarily focuses on the early and middle stages of language development in children and adolescents. VoiceThread, the focus of this study, accounts for 40% of the assignments used to assess students' overall performance in the course.

Across the eight weeks, VoiceThread plays a central role in promoting discussion and reflection and is linked to the weekly content; each week, students' and instructors' interaction was recorded on a Google Spreadsheet by the researchers. The discussions progress in sequence, starting with questions such as “Who are ELLs?” and then shifting to legal issues, teacher knowledge, and case studies, including *Secrets of a Wild Child*. Later weeks address theories of cognition, oral language research, program models for bilinguals, and testing requirements (See table 1). The course closes with work on reading strategies and advocacy for ELLs. This structure helps participants connect theory with practice while they reflect on the needs of English learners across different contexts.

The study included 94 graduate students. Most were white female in-service teachers; specifically, we had 85 females, 8 males, and one nonbinary participant. Elementary school teachers comprised the largest group, accounting for 46.8 per cent of the total. English Language teachers, including those in dual language and bilingual roles, made up 30.9 per cent. The group was therefore weighted toward those working in the early grades. Other groups of participants include middle and high school teachers, graduate students, and a few

working in administration and higher education. During the self-introductions, participants shared their expectations for the course. Many wanted to strengthen their knowledge of ELL teaching methods and explore new tools that could support diverse learners. Others focused on applying cultural content in lessons and creating a conducive learning environment. Personal aspirations also emerged. A few participants wanted ELL certification and knowledge to advance their careers.

The data were analyzed with SPSS and Excel, drawing on descriptive statistics, Pearson's correlation, and one-way ANOVA. These methods are used to identify general patterns of participation, test relationships between variables, and compare differences across groups (Fraenkel et al., 2019).

Table 1

Weekly Themes of the English Language Development Course

Week	Theme
1A	Who are ELLs?
2A	History of Federal, State, and Local Laws and Policies for ELLs
2B	What do teachers need to know about language?
3A	Secrets of a Wild Child
4A	Cognitive Language Acquisition Theories
4B	Oral Language Development Research
5A	Program Models for Emergent Bilinguals
6A	Critical look at ELL testing requirements
6B	Reading <i>To, With and By</i> ELLs; Reading research for ELLs
7A	Writing Research, development, Standards, and Instruction for ELLs
8AB	Advocacy for ELLs

Results

Frequency of VoiceThread Postings and Responses

Findings show that VoiceThread engagement in the ESL course shows that students strongly favored the audio format for interaction over video and text formats (see Figure 1). Audio comments were the dominant mode, taking up 83%, with 941 out of 1,128 total comments. This far exceeded video comments at 13% (146) and text comments at 4% (41).

Video was used less often, and text was rare. This distribution suggests that students favour the ease and speed of speaking over writing or recording videos. The low number of text responses may reflect the fact that many students used the smartphone app, which made speaking more convenient than typing. Moreover, audio also stood out when measured by the total length (see Table 2). Students produced 941 audio comments that together reached 40 hours and 45 minutes. In contrast, video comments added up to only 5 hours and 29 minutes.

Figure 1

Frequency of Threads

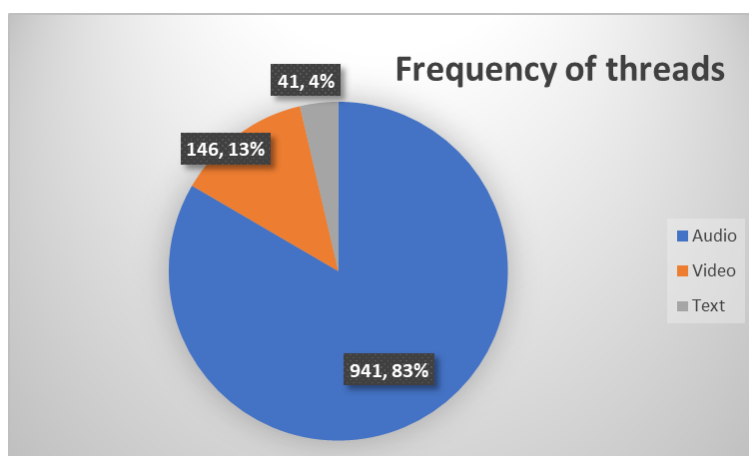


Table 2

Frequency of VoiceThread Engagement (n=94)

Week	Audio (Count)	Video (Count)	Text (Count)	Avg. Comment Counts	Avg. Audio (min)	Avg. Video (min)	Total Audio (hh:mm:ss)	Total Video (hh:mm:ss)
Week 1 A	90	18	1	3.28	1.38	1.66	4:47:30	1:01:04
Week 2 A	88	13	5	3.90	2.26	2.10	5:24:02	0:39:15
Week 2 B	86	16	8	3.75	2.13	2.29	5:04:10	1:01:31
Week 3 A	91	14	5	2.38	2.12	1.90	3:28:22	0:14:00
Week 4 A	92	16	2	2.19	2.22	2.11	3:22:00	0:18:20
Week 4 B	81	15	5	2.14	2.07	2.58	2:51:15	0:24:00
Week 5 A	87	13	3	2.56	2.42	3.13	3:25:00	0:31:14
Week 6 A	83	14	3	2.50	2.22	2.04	3:18:42	0:32:42

VoiceThread Engagement Patterns

Week 6 B	85	13	5	2.98	2.22	1.97	4:01:05	0:28:05
Week 7 A	88	12	1	2.45	2.09	3.10	3:30:35	0:19:00
Week 8 AB	70	2	3	1.04	2.90	2.86	1:15:00	0:02:00
Total	941	146	41	2.65	2.18	2.34	40:45:15	5:29:02

Average comment counts and lengths show a similar pattern. Students posted an average of 2.65 posts per week. The course required a minimum of two VTs for each lecture, which means that students slightly surpassed the threshold. Video posts averaged 2.34 minutes, while audio posts averaged 2.18 minutes. Video was less frequent, but when used, it was longer, which suggests deeper effort. Audio was the steadier choice across weeks. The highest average came in Week 2A (3.90). The lowest came in Week 8AB (1.04). These patterns suggest that audio provided convenience, while video invited more effort when students chose that mode.

Table 3

Average Comment and Audio Length Per VoiceThread Across Course Sections

Section	<i>n</i>	Comment Count (Mean)	Audio Length (Mean)
Section A	19	2.5879	1.6012
Section B	18	2.6152	2.528
Section C	16	2.5784	1.9353
Section D	16	2.8931	1.8094
Section E	12	2.5027	2.098
Section F	16	2.7996	1.4286
Total	94	2.6699	1.8944

Table 3 shows that students posted an average of 2.67 comments per section, with small variation across groups. Section D had the highest average comment count (2.89), while Section E had the lowest (2.50). Audio length also differed. Section B students produced the longest audio responses at 2.53 minutes on average, while Section F produced the shortest at 1.43 minutes. These patterns suggest that, although comment frequency was

fairly steady across sections, the amount of detail students provided in their audio responses varied more noticeably.

Relationship between the Students' Postings on VoiceThread and the Length of Their Responses

We also investigated whether students who posted more often on VT also gave longer audio responses. Pearson's correlation showed a small but positive link ($r(92) = .206$, $p = .046$) (see Table 4). This means that students who posted more frequently tended to leave slightly longer audio comments. The relationship was statistically significant, but it was weak. Other factors, such as individual communication style or the nature of the assignment, may have shaped response length in important ways. The pattern suggests that more frequent posting can support profound discussion, but the effect is modest.

Table 4

Pearson Correlation between VoiceThread Posting Frequency and Average Audio Length ($n = 94$)

Variables	<i>r</i>	<i>p</i>	<i>M</i>	<i>SD</i>
VT thread counts × Average audio length	0.206	.046*	28.23	9.26
Average audio length	—	—	1.89	0.78

Note. $p < .05$.

Proportion of Student Responses in the Course Delivered in Audio Compared to Video Format

We also compared student response patterns in sections with high and low instructor engagement. Students in high-engagement sections posted an average of 2.98 comments per VT, while those in low-engagement sections posted 2.50 (see Table 5). Instructors also differed sharply, with high-engagement instructors averaging 14.09 comments compared to 7.29 in low-engagement sections. Student responses reflected these contrasts. For instance, students' audio comments in high-engagement sections were longer, with an average of 2.09 minutes, compared to 1.42 minutes in low-engagement contexts. Video comments followed

the same pattern. Students in high-engagement sections produced video comments averaging 1.24 minutes, while students in low-engagement sections averaged only 0.19 minutes. Instructors in low-engagement sections also provided no video comments at all, further underlining the difference in participation across the groups.

Table 5

High Versus Low Engagement Patterns on VoiceThread

Attributes	High Engagement Section (Students)	High Engagement Section (Instructor)	Low Engagement Section (Students)	Low Engagement Section (Instructor)
Average comment counts per VT	2.98	14.09	2.5	7.29
Average length of audio comments	2.09	2.3	1.42	0.29
Average length of video comments	1.24	2.1	0.19	0

A one-way ANOVA was conducted to determine if average comment counts per VT differed significantly among the six course sections (see Table 6). Results indicated no statistically significant differences, $F(5, 88) = 0.50, p = .776$, suggesting consistency in the average number of comments students made across all sections. This finding is insightful despite variations in individual teaching styles or minor differences in course dynamics, and overall student engagement in terms of posting frequency remained remarkably uniform. Consequently, instructors might consider other factors (i.e., modality of responses or depth of interactions) rather than merely focusing on quantity when aiming to enhance student engagement.

Table 6

One-Way ANOVA for Average Comment Counts per VoiceThread among Course Sections

Source	SS	df	MS	F	p
Between Groups	1.64	5	0.33	0.50	.776
Within Groups	57.84	88	0.66		

Total	59.48	93
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Note. $p > .05$, indicating no significant differences.

A one-way ANOVA tested whether the average length of audio comments differed across the six course sections (see Table 7). The results showed a statistically significant difference, $F(5, 88) = 5.15, p < .001$, with a moderate effect size ($\eta^2 = .226$). This means that students did not all use audio in the same way. Some sections produced longer and more developed comments than others. The variation may point to the influence of instructor style, class culture, or task design.

Table 7

One-Way ANOVA for Average Audio Length per VoiceThread among Course Sections

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η^2
Between Groups	10.2	5	2.04	5.15	< .001	0.226
Within Groups	34.74	88	0.4			
Total	44.94	93				

Note. $p < .001$, indicating significant differences; η^2 denotes a moderate effect size.

Discussion

This study examined VoiceThread engagement patterns among graduate students enrolled in an *English Language Development* course for pre-and in-service teachers. The study found that among the three VT formats - audio, video, and text, students favored the audio format the most, which dominated both the frequency (at 83%) and the lengths of their postings (totaling 40 hours and 45 minutes). Speaking is often faster than typing, and adds tone and presence, which text alone cannot capture. This aligns with the findings that students consider the multimodality of VT helpful for them to connect to each other and convey their emotions, better than the text-only discussion forum format (Ching & Hsu, 2013; Delmas, 2017). Ching and Hsu's (2013) study on VoiceThread also showed that students used the audio format the most, followed by the video and text formats.

The results also show that with more frequent posts, students tended to have slightly longer lengths of their audio posts as well. The correlation between posting frequency and response length was small but statistically significant. Students who posted more often tended to provide slightly longer audio comments. Although the effect was weak, it aligned with previous research suggesting that repeated interaction can encourage reflective and collaborative learning (Fox, 2017; Stamps & Opton, 2019). This finding also points to the role of habits, primarily that students who regularly engage may gradually expand the depth of their responses.

Instructor engagement also emerged as an important factor in this regard. In sections where instructors posted more frequently, students also contributed more comments and longer responses. We found that the more voice threads an instructor posted and responded to students, the more the students were engaged. For example, among the six sections, on average, in audio format, the highest engaged section had the instructor post 14.09 times and students 2.98 times, and the lowest engaged section had the instructor post 7.29 times and students 2.5 times. This implies that instructor engagement can lead to better student performance in online classes. This phenomenon supports the existing work on instructor presence, which has been found to influence participation, motivation, and satisfaction in online courses (Roque-Hernández et al., 2023; Sharoff, 2022). In other words, when instructors model active use of the platform and provide timely feedback, students are more likely to reciprocate with effort and consistency (Carless & Winstone, 2023). In contrast, sections with less instructor presence showed shorter and fewer responses, which reinforces the idea that teaching presence is central to sustaining dialogue in virtual classrooms (Garrison et al., 2010).

The preference for audio responses and the relatively steady posting rate also point to the practical choices students make. Most were practicing teachers, many of whom balanced

coursework with professional duties. Convenience, therefore, may have been a deciding factor. As other studies have shown, working professionals in graduate programs often adopt technologies in ways that minimize time while still meeting course requirements (Nguyen et al., 2022; Qureshi et al., 2023). The use of the VT mobile app, which made audio posting simple, likely encouraged these patterns of learning practice. Meanwhile, the variation across course sections in audio length, though not in frequency, could suggest that classroom culture and instructor style play a role in shaping learners' engagement.

In contrast, video postings were relatively rare, a trend also observed in prior research where students reported anxiety and workload concerns with video production (Chang & Windeatt, 2023). The significant ANOVA result for audio length indicates that some sections promoted more elaborate responses than others. This resonates with Liao's (2025) quantitative evidence, where structured peer/self-assessment scaffolds yielded higher oral proficiency scores ($F(1,34) = 15.603, p < .001, \eta^2 = .32$), suggesting that the way instructors frame expectations, instructional design, task framing, and feedback practices influence learners' engagement (Clark & Mayer, 2023). In other words, when students perceive that longer, more detailed responses are valued, they may be more willing to extend their contributions. Sojisirikul and Chanchula's (2023) analysis of 156 VT reflections showed that without explicit prompting, 80% of responses remained at non-reflective levels; such an issue calls for instructional design rather than platform affordances alone to drive learning depth.

Conclusion and Implications

This study contributes to the growing body of research on VoiceThread by providing quantitative evidence of how graduate students in a teacher education program engage with multimodal discussion platforms. Results revealed a strong preference for audio contributions, a modest but significant link between posting frequency and response length, and notable differences in depth of engagement influenced by instructor presence. These

findings, therefore, echo prior work and show that multimodal tools alone do not guarantee meaningful interaction; rather, the extent and quality of instructor scaffolding determine whether students move beyond surface participation toward more reflective contributions. For example, in sections where instructors modeled active engagement by posting detailed audio responses and timely feedback, students reciprocated with longer, more thoughtful contributions. This phenomenon suggests that deliberate instructor presence can shift participation from routine compliance to meaningful academic dialogue.

Our study has implications for the practices of online instructors to engage their students via VT or other engagement platforms. Firstly, as our findings show that audio was the dominant format among the three formats - audio, video and text, instructors may consider diversify the requirements of the format choice of students' postings from week to week to encourage more videos and texts, as various formats/video format can contribute to community building in online courses when students do not have an opportunity to meet each other in person (Chen & Bogachenko, 2023; Delmas, 2017). Secondly, instructors who engaged more in the course with more responses to their students on VT ended up with more student engagement. Therefore, online instructors are encouraged to model for their students and show their presence, which can help make the class more engaging.

Furthermore, for teacher preparation programs, this study suggests that instructional design should integrate VT training, explicit prompts, feedback cycles, and modeling to leverage VT's affordances fully. In practice, this might mean requiring students to post an initial audio response and then a follow-up peer reply each week by using rubrics to promote meaningful reflection, and having instructors record model responses that demonstrate how to connect theory with classroom experience. Since this study was limited to a single program context, future research could compare outcomes across disciplines and explore ethnographic narratives to better understand how habits of participation improve over time. The current

study supports that technology is most useful for online learning and whatnot when paired with purposeful pedagogy, which could be delivered by improving teaching presence as a central driver of engagement in digital learning spaces.

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