

# The Use of a Voice-Based Response System for Online Discussion Forums

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As enrollment in distance education courses continues to increase, it is clear that online course delivery is here to stay. And all online courses today utilize a web- or cloud-based Learning Management System that includes a text-based discussion forum, commonly called a 'discussion board', which is the primary mode of communication within the course site. This study investigates the use of voice-based technology as an alternative to typing in text for submitting discussion posts. An 18-question survey was administered to in-service and pre-service teachers enrolled in two online graduate educational technology courses. The results were somewhat mixed, but overall, the participants provided positive feedback when utilizing a voice-based application to complete online class discussions. Ninety-four percent of the participants had never used the voice-based application before, which likely accounted for some portion of the less-than-positive feedback.

Keywords: distance education, educational technology, learning management systems, voice-based response technology, web-based technology, Web 2.0 tools, online discussion forum, discussion board, student engagement, community building

## INTRODUCTION

In today's distance learning environment, it would be difficult to find online courses that are not housed within a web- or cloud-based Learning Management System (LMS). LMSs such as Blackboard™, Moodle™, Desire2Learn™, and Canvas™ have become the standard delivery platforms for virtually all distance education courses. Moreover, every online learning platform features a *text-based* discussion forum, commonly referred to as a 'discussion board', which is the primary mode of communication within the course site. All online instructors have access to a discussion forum that they can utilize at their discretion. This asynchronous tool provides the functionality for online discussions and is designed to replace the face-to-face interaction found in a traditional classroom setting. The discussion forum has both its advocates and antagonists; its benefits and limitations (see e.g., Andresen, 2009). The following review of the literature provides a brief overview of the burgeoning of online education, then an examination of a recent alternative to text-based input into a discussion forum.

The purpose of this study was to explore the use of voice technology as an alternative to typing text for completing discussion assignments in online courses, and to determine if the use of a voice response system, 1) increases the sense of community; 2) increases engagement; and 3) makes it easier to participate in online course discussions.

## LITERATURE REVIEW

### *THE CURRENT STATE OF ONLINE EDUCATION*

In the 2018 report by the *Babson Survey Research Group* on the state of online learning in U.S. higher education, it was reported that distance education enrollments have increased for the fourteenth straight year. Over 6.35 million Fall 2015 to 2016 students took at least one online course, representing 31.6% of all students. About 3.0 million took *all* their courses at a distance, and a little over 3.35 million took *some* of their courses at a distance (Seaman, Allen, & Seaman, 2018).

In an earlier Babson Survey (2016) it was reported that 77.1% of the chief academic leaders at institutions offering distance courses consider online education a critical component of their long-term strategy. That report also found that 71.4% of academic leaders rated online education "...as good as or better than face-to-face instruction" (Allen, & Seaman, 2016, p. 29). With almost one in three college students taking some of their college courses online, it is undisputable that online education is an entirely mainstream course delivery format. In fact, it would be difficult to find an institution with overall enrollment above 1,500 students that does *not* have online course offerings (Allen, & Seaman, 2016).

### *LEARNING MANAGEMENT SYSTEMS*

Within this delivery format, all online courses today, as mentioned above, are housed within a web-based or cloud-based Learning Management System (LMS). And every LMS platform supports an asynchronous discussion tool whereby comments and responses are entered via keyboard. So pervasive is this online communication tool that a brief historical overview is warranted, prior to examining the focus of this study – an alternative to text-based input.

### *OVERVIEW OF ONLINE FORUMS*

The bulletin board systems which began in the late 1970s were the first formal online discussion tools (Edwards, 2005). The *Usenet* news system, which started in the early 1980s, was in a format similar to email, but allowed users to post messages which could be read by many users rather than a single recipient. "In the 1990s the Usenet system and bulletin board systems sort of evolved, merged, and changed to give us Internet forums, also known as message boards or discussion boards" (Edwards, 2005, ¶4). This technology, or a variation of it, has been incorporated into all learning management systems in use today.

Many proponents of online delivery consider discussion forums the "heart" of an online course (Kelly, 2008, ¶2). Additionally, many online instructors believe discussion forums to be one of the most powerful tools available in online communication, taking the place of the face-to-face interaction found in seated classrooms. When correctly implemented, online discussions can significantly increase student interaction, lead to higher levels of student engagement, and lessen the isolation or psychological distance sometimes experienced in online courses (see e.g., Brinthaup, Fisher, Gardner, Raffo, & Woodard, 2011; Mayes, Luebeck, Ku, Akarasriworn, & Korkmaz, 2011). Pedagogically, discussion forums can facilitate collaboration, critical thinking, promote reflective

learning, and demonstrate accomplishments toward the achievement of learning outcomes (Rizopoulos & McCarthy, 2008-2009). Online communication can also ‘bring out’ the shy or hesitant learner who might otherwise be unwilling to contribute to a face-to-face classroom discussion. Discussion activities can include class introductions or ‘icebreakers’; discussions about course-related material; current events; specific topics, questions or clarifications associated with assignments, projects, or exams; in-depth reflections, and small group discussions, among other activities.

There are also logistical reasons for the wide-spread use and popularity of text-based discussion tools. Primary among these is the fact that an online discussion is an *asynchronous* tool. Regardless of their time zone or location, online students can contribute during the hours that best accommodate their personal and professional schedules, since learning online, at its inception, was designed and touted to be “learning anywhere, any time” (Bertram, 1999, p. 662).

Finegold and Coke (2006) conducted a study reviewing the attitudes of over 300 postgraduates and found that the discussion *board* (as it is often referred to) “...offers a useful platform for student interaction” (p. 213). Additionally, Chang (2009) found that online learners preferred online discussions and perceived higher levels of interaction in regard to three parameters – instructor engagement, learner engagement, and instructional tool preference.

#### ISSUES WITH DISCUSSION FORUMS

As with any educational technology, the discussion forum is not without its opponents. Morris and Strommel (2013) state,

...even as we hope teachers will recast and remix the tools they’re asked to use, this is not generally the case with discussion forums. Instead of providing fertile ground for brilliant and lively conversation, discussion forums are allowed to go to seed. They become over-cultivated factory farms, in which nothing unexpected or original is permitted to flourish. Students post because they have to, not because they enjoy doing so. And teachers respond (if they respond at all) because they too have become complacent to the bizarre rules that govern the forum (§6).

A common problem with online discussions is that some students might interject unfocused or off-topic dialogue, more akin to a chat or text message than a formal writing assignment. However, if the instructor sets clear expectations, posts a rubric, and monitors the discussions, this typically can be mitigated early in the semester. Also, a commonplace student ploy is to wait until other students post to see what has already been written i.e., the later posts all sound suspiciously similar to the earlier posts. To alleviate this issue, Blackboard™, the LMS currently with the largest market share and installed base (Hill, 2017), now has an optional setting that does not allow students to see their classmates’ posts until after *everyone* has posted. The only problem with enabling this feature is that if one or more students do not post, the system does not allow the rest of the class to ever see their classmates’ posts.

Regardless of one’s opinion of the usefulness (or lack thereof) of the LMS-based online discussion forum, it is clear that this communication tool has become a fixture in the distance learning scheme of things, on all platforms. Many faculty use the discussion forum as their primary course tool. Some only use it as an introduction or ‘ice breaker’ activity at the beginning of the semester. And even if an instructor does not use the discussion forum for graded assignments, the tool can still be used to allow students to communicate amongst themselves, share files, and it even can be used to turn in assignments – although the latter is not a recommended use of the tool since everyone can access the forum, and consequently every submitted assignment.

### *VARIOUS IMPLEMENTATIONS OF VOICETHREAD*

While this study investigated the use of VoiceThread, one of many voice tools available, to complete discussion board assignments rather than typing in responses, the current literature indicates that VoiceThread also is being used across many disciplines. In one study, VoiceThread was utilized for listening comprehension of college students studying Arabic in a foreign language course. The researcher found “The data indicated that the use of VoiceThread on a weekly basis had a significant impact on students’ listening comprehension after 10 weeks” (Mango, 2016, p. 47).

Gillis, Luthin, Parette, and Blum (2012), studying the development of receptive and expressive language skills in early childhood education, found that VoiceThread “...holds potential to support children’s learning and...has unique features that support Universal Design for Learning” (p. 203). Universal Design for Learning is a set of principles for curriculum development that give all individuals equal opportunities to learn (see [www.udlcenter.org](http://www.udlcenter.org)). They further state that VoiceThread is easy to implement, and can provide meaningful learning activities.

In a study by Hannans (2018) a nursing program successfully utilized VoiceThread to replace face-to-face clinical post conferences or CPCs. Holding asynchronous online conferences via VoiceThread gave students time for reflection, captured facial cues, tone, and peer-to-peer connections, which previously could only be accomplished during a traditional face-to-face conference.

Similarly, in a study outside of Higher Ed, an Extension professional used VoiceThread for focus group interviews instead of conducting face-to-face interviews. The researcher found that “VoiceThread helps practitioners and participants be responsible with time and financial resources and allows participants to respond in ways that are most comfortable for them” (Mott, 2018, p. 4).

### *HOW VOICETHREAD WORKS*

Recently, voice tools have come to the forefront as a possible alternative method for completing discussion assignments. These *voice-based* applications can allow students to respond to a forum vocally rather than by typing text. There are a number of technologies that can facilitate voice responses such as Blackboard Collaborate™ Voice Authoring (formerly Wimba Voice), Vocaroo, and VoiceThread, among others.

VoiceThread was chosen for this research project to facilitate voice-based responses to discussion forums for two online education courses. VoiceThread, developed at the University of North Carolina, is a media aggregator which allows the user to add a voice annotation to a document, slide presentation, video, or photo collection (“7 Things,” 2009). This researcher utilized VoiceThread because it is easy to use; it is free (although there are limitations with the free version); and is compatible with Blackboard, the LMS used at the researcher’s institution.

VoiceThread offers three input options for posting: voice, video, or text; thus, providing the user with multi-modal communication channels. A webcam would be required for users wishing to utilize the video feature. In this study, the students could choose either the voice or video input feature.

The instructor creates an account on the product website and is provided with a link, which this researcher then posted on their LMS course site. Students must create an account to participate. Since this voice tool is web-based, there is no download or software installation needed. The only additional requirement is a microphone, which is inexpensive, and is already built into tablets and all newer laptop computers.

The actual discussion question(s) are added to slides (see Figure 1) created in VoiceThread. That is to say, the VoiceThread discussion forum is external to the LMS

discussion forum, which is not utilized. The students only need to be logged into Blackboard in order to access the link to VoiceThread. Students click on the link to access the VoiceThread account, then respond *verbally* to the discussion forum questions. As students post their discussion responses, their account icon appears on the left, indicating they have replied (see Figure 1).

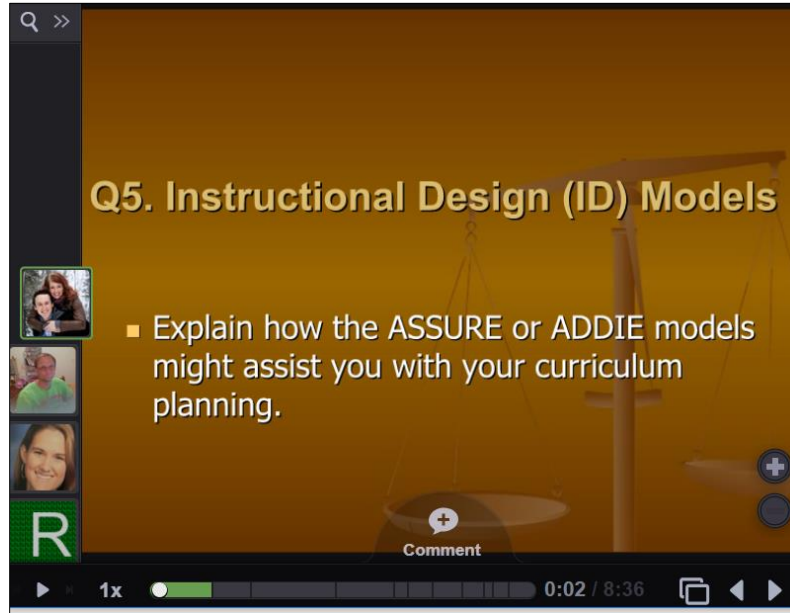


Figure 1. VoiceThread Sample Screenshot.

## RESEARCH QUESTIONS

Three research questions were developed for this study:

1. Does the use of VoiceThread in an online discussion forum increase the sense of community?
  2. Does the use of VoiceThread in an online discussion forum increase engagement?
  3. Does VoiceThread make it easier to participate in online course discussions?
- The following section delineates the methodology utilized in this research project.

## METHODOLOGY

### THE SURVEY

An 18-question online survey (Appendix) was developed in Survey Monkey® that included four demographic questions; 13 questions addressing the use of VoiceThread to respond to discussion forums; and one open-ended question about the overall experience of using VoiceThread.

The purpose of the survey was to provide responses to the demographic and research questions, as well as insights into student preferences concerning voice-based discussion responses. There were 13 total non-demographic items which were scored on a five-point Likert Scale including SA (Strongly Agree), A (Agree), N (Neither Agree nor Disagree), D (Disagree), and SD (Strongly Disagree). (See legend under Table 1.) These questions were designed to measure the student responses to the research questions.

## PROCEDURES

The researchers used VoiceThread in two online courses for the entire semester as an alternative to inputting text-based responses to required Discussion Board assignments in Blackboard. At the end of the semester, the link to the online survey described above was distributed to the participants via the institution's email system.

Clicking on the link took the participants to the first page of the survey which was the electronic consent form. The form described the conditions of participation which included that: 1) the survey was completely voluntary; 2) the participant could opt out at any time before or during the survey by simply closing their browser; and 3) the survey was completely anonymous i.e., the data collected would only be used in aggregate, so no individual participant could be identified. To give their consent, the participants clicked on "Next" to access the survey. Thus, they could not start the survey without first giving consent.

## RESULTS

### SAMPLE POPULATION DEMOGRAPHICS

This study consisted of 62 participants, most of whom were in-service teachers in two online graduate educational technology courses at a Midwest university. Several were pre-service undergraduates taking the course as a cross-listed 500-level course.

The four demographic questions requested information concerning the participants: 1) gender; 2) experience with online courses; 3) age; and 4) experience with VoiceThread. There were 40 females (64.52%) and 22 males (35.48%) who participated in the study.

Experience with online courses varied. Twelve (19.35%) participants had taken only one online course; 12 (19.35%) had taken two online courses; 5 (8.06%) had taken three; and 33 participants (53.23%) were veterans of four or more online courses.

The age range of the participants varied widely as well. Two students (3.23%) were 18-22 years of age; 24 (38.71%) were 23-30 years old; 20 participants (32.26%) fell in the 31-40 age range; and 16 (25.81%) were over the age of 40. The age groupings started with the traditional undergraduate college age of 18-22, and the second grouping represents a typical graduate student age range. After that, the age ranges were grouped for convenience.

For 58 (93.55%) of the participants, this was their *first* experience using VoiceThread. Only four of the participants (6.45%) were already familiar with VoiceThread.

*Research Question 1. Does the use of VoiceThread in an online discussion forum increase the sense of community?*

The first set of non-demographic survey questions addressed *sense of community*, the results of which are listed in Table 1. A clear majority (64%, 67%, and 65% strongly agree/agree) believes that hearing responses rather than reading text created more of a sense of purpose; improved awareness of emotion in responses; and created more of a sense of community.

Table 1. *The Survey Results of Using VoiceThread: Building a Sense of Community via Discussion Forums*

Survey Question	SA	A	N	D	SD
Hearing the voice of my classmates rather than reading text comments created more of a sense of shared purpose (we're all in this together.)	22.95 %	40.98 %	27.87 %	4.92 %	3.28 %

Hearing the voice of my classmates gave me a greater awareness of any emotion/passion in their responses, as compared to reading text comments.	27.87 %	39.34 %	19.67 %	8.20 %	4.92 %
Overall, I found that hearing/seeing my classmates created more of a sense of trust, respect, and support among us as a class.	30.00 %	35.00 %	21.67 %	6.67 %	6.67 %

[Legend for all tables: SA=Strongly Agree; A=Agree; N=Neither Agree nor Disagree; D=Disagree; SD=Strongly Disagree]

*Research Question 2. Does the use of VoiceThread in an online discussion forum increase engagement?*

The second set of non-demographic questions on the survey addressed *engagement* and the results are listed in Table 2. Forty-four percent of the participants found it easier or faster to provide a voice response, while 37% did not. Also, using this voice-based response system did not result in more frequent or longer responses. A little more than half (about 55%) found it easier to listen to, rather than read discussion comments. While about 47% believe the discussions were of higher quality because of the use of this voice-based response tool, 16% did not, and 37% had no opinion.

Table 2. *The Survey Results of Using VoiceThread: Engagement in Discussion Forums*

Survey Question	SA	A	N	D	SD
I found that speaking (recording) a response with VoiceThread is easier or faster than typing one.	16.13 %	27.42 %	19.35 %	27.42 %	9.68%
I found myself commenting <i>more often</i> when speaking a response than when typing one.	11.29 %	12.90 %	30.65 %	35.48 %	9.68%
I found myself making <i>longer</i> comments when speaking a response than when typing one.	19.67 %	26.23 %	26.23 %	21.31 %	6.56%
I found it easier to listen to discussion comments than reading them.	22.58 %	32.26 %	17.74 %	14.52 %	12.90 %
Overall, I believe the quality of the discussions were higher because of the use of VoiceThread.	19.35 %	27.42 %	37.10 %	8.06 %	8.06%

*Research Question 3. Does VoiceThread make it easier to participate in online course discussions?*

The third set of non-demographic questions on the survey addressed *ease of participation* in the discussion threads, the results of which are listed in Table 3. This section had mixed results. While almost half (about 48%) found it easier to follow the threads of voice-based responses, 29% of the participants did not, and about 23% had no opinion. Approximately 42% found it easier to understand voice-based responses, while 29% did not, and almost 23% had no opinion. Regarding the students' *preference* for hearing rather than reading text, about 37% preferred listening, while about 34% preferred reading text responses, and 29% had no opinion. In terms of using a microphone and verbalizing their responses rather than typing them, 29% of the users preferred speaking their responses, while about 42% did not, and 29% had no opinion either way.

Table 3. *Ease of Participation Using Voice-based Discussion Responses*

Survey Question	SA	A	N	D	SD
I found it easier to <i>follow the thread(s)</i> of spoken responses than reading them.	17.74 %	30.65 %	22.58 %	17.74 %	11.29 %
I found it easier to <i>understand the content</i> of spoken responses than written ones.	16.13 %	25.81 %	29.03 %	22.58 %	6.45 %

I prefer <i>hearing</i> online discussion threads to reading them.	16.13 %	20.97 %	29.03 %	17.74 %	16.13 %
I prefer <i>speaking</i> my online discussion responses to typing them.	14.52 %	14.52 %	29.03 %	27.42 %	14.52 %

#### *Overall Experience with VoiceThread*

The last question in the survey was open-ended and asked if the *overall experience* of using voice-based responses improved the online discussion experience. (See Table 4 below.) About 61% responded positively (strongly agree/agree) while only 14.5% did not. About 24% had no opinion.

Table 4. *Overall Experience Using VoiceThread*

Survey Question	SA	A	N	D	SD
Overall, I believe VoiceThread improves the online discussion forum experience as compared to text-only discussion forums.	25.81 %	35.48 %	24.19 %	6.45 %	8.06 %

## DISCUSSION

Community building is recognized as a best practice in online education that contributes to student satisfaction, persistence, and helps mitigate an often felt sense of isolation by online students (Cooper, 2015; Delmas, 2017). In the first set of non-demographic questions, participants believe hearing responses rather than reading text created more of a sense of community. Intuitively it stands to reason that hearing a classmate's voice, rather than just reading conventional text would be more engaging. In a study by Ching and Hsu (2013) the participants concurred, stating they felt more connected to their peers, and that the voice tool enabled them to communicate non-verbal cues such as personality and emotion, which the researchers believe contributes to a better overall understanding and interpretation of the responses.

In the second set of survey questions, 37% of the participants did not find it easier or faster to provide a voice response. This is not surprising and very likely is a consequence of the fact that this was the first time most of the participants (about 94%) had ever used VoiceThread. As with any software, continued use would increase familiarity and proficiency with the application, which would to some extent mitigate this outcome. Over half of the participants had no opinion or did not believe the discussions were of higher quality. It is possible that they found it difficult to *compare* the quality of the discussions using text-based versus voice-based responses as the criteria.

Concerning the third set of survey questions, the results were relatively even, except for a clear preference for using text-based, rather than voice-based responses. The ubiquitous use of text-based communication – instant messaging, email, and social media – is very likely the explanation for this preference. While additional use and familiarity with VoiceThread (or any voice-based technology) might alter this outcome, some of Ching and Hsu's (2013) participants also expressed a preference for using text. "Interestingly, students reported that they actually preferred to use text discussion if given a choice because text-based discussion allows more time to structure responses and is more convenient to use" (Ching & Hsu, 2013, p. 302). In the same study, "Students were also found to be self-conscious about how one sounded in the audio" (Ching & Hsu, 2013, p. 302).



As indicated by the last (closed-ended) item on the questionnaire, well over half (61%) of the participants responded positively to the use of a voice-based response system. This indicates that overall, VoiceThread did provide a positive learner experience relative to responding to online discussion forums.

The final question of the survey was open-ended and provided a place for participants to (optionally) make written comments. These comments provided by the participants also were mostly positive. Excerpts include: "...it is easier and faster to respond"; "I love voice thread [sic] and will recommend it to other online instructors"; "I liked seeing the person's picture while either hearing or reading their comments" (as mentioned, VoiceThread adds each student's picture to the forum when they respond); "This was my first experience. I enjoyed it"; "I thought this was a very neat tool for pulling the class together for an online discussion. It felt like we were more of a group"; "I found Voice Thread to be much more enjoyable than just reading others' text"; "I liked Voice Thread, but when I make a comment, I really think about what I'm saying".

There were some less than positive comments. Several students stated that sometimes it loaded slowly, but this was very likely an infrastructure or individual computer issue rather than a problem with the VoiceThread application. Other comments included: "VoiceThread would be a useable tool for a smaller class room (say 5-7 people) But with more then [sic] 10, you are unable to keep up with the flow of conversation"; "...sometimes, the speaker have [sic] a long time presentation which is hard to follow"; "I will admit that I had a difficult time understanding the foreign students"; "I found that it was very difficult to use...I would be pestered by emails if anyone posted to the same question I did"; and likely the most constructive criticism: "...there needs to be a hierarchy of threads so that replies directly follow main posts rather than threaded by time of posting. This lack of back and forth is a major detriment to the program". What follows next, are some closing thoughts provided by these researchers.

## CONCLUSION

New digital tools enter the educational technology arena almost daily, and few professional educators have the time or inclination to explore them all. Nevertheless, given the extensive use of the discussion forum as the primary communication tool in virtually all online courses, the possibility of a technology that offers students an alternative to generating text-based responses was one these researchers found intriguing and worthy of investigation. This pilot study provided a substantial amount of information that hopefully other online educators will find useful when deciding whether or not they might offer their online students the option of making voice-based responses to their discussion forums.

As mentioned, there are a number of different voice-based response systems one can consider, and these researchers are not advocating the use of the product chosen for this study over any of the other options. VoiceThread was chosen because it is a free cloud-based application that does not require a download; users simply create a VoiceThread account.

Again, VoiceThread offers three input options for posting: voice, video, or text. So, one consideration is whether or not the instructor wants to offer more than one input channel, or only offer the participants one of the three options. To keep things relatively uncomplicated, likely the simplest choice in a pilot of this technology would be to require the students to all use the same option, but that would be at the researcher's discretion. Another consideration is whether or not to require a time limit to each voice response. VoiceThread does not have a timer function, but the instructor could include a time limit in their rubric in order to avoid overly lengthy verbal responses.

Overall, the findings have been positive about the use of voice tools for discussion responses. As McCormack (2010) states “VoiceThread is a high-quality tool that can increase reflection responses and the ability to respond more fully, suggesting important implications for educational practice” (p. 164).

#### *FUTURE RESEARCH*

Further research would add to the existing body of literature, and hopefully provide insights into why certain results in the current study were received e.g., why ease of participation scores were not higher. Utilizing different products may result in one application being preferable over others. At most institutions however, cost is always a factor, and testing out multiple voice-based systems may not be possible due to cost. VoiceThread has a free, single instructor license (a site license is available); while other applications, such as Blackboard Collaborate™ Voice Authoring, has significant expense associated with their use.

Another interesting area of future research would be to determine if responding to discussion forums via a voice-based technology is preferred by different classifications of students e.g., undergraduates versus graduate students. Or how the age of the participants might impact preference. In this study, almost half of the participants were what Prensky (2001a) calls *digital natives* (the generation that grew up with digital technology), so one might intuitively think that this group would be very amenable to voice-based over text-based input, however that did not appear to be a significant factor in this study.

At the risk of sounding somewhat like stereotyping, it also would be interesting and informative to learn if different majors were more amenable to verbal responding e.g., English or drama majors, as compared to hard science majors. There are numerous other variables one could consider when developing another study of this type.

Returning to our earlier discussion about community building, Delmas (2017) states the research involving VoiceThread for use in online courses has focused primarily on students’ perspectives regarding the tool,

However, insight into instructors’ experiences with VoiceThread would also be valuable. Because of the importance of pedagogy and course design in online student retention, future research might investigate VoiceThread’s role in the creation of community through teaching presence. The results of this study indicate that the use of VoiceThread in online learning environments is warranted as a valuable tool to help create a sense of community (p. 599-600).

Similarly, Mango (2016) states, “The increased understanding of how teachers integrate technology in their disciplines...may serve to guide other teachers to implement similar technology tools in their own classrooms, which could benefit educators” (p. 50). Thus, these researchers strongly encourage future research in this area of non-text-based response applications, and look forward to seeing how other researchers and educators might implement and make use of voice-based response systems in their online courses.

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## APPENDIX

### SURVEY QUESTIONS

#### Demographic Data

1. Please indicate your gender:      Female      Male
2. How many online courses have you completed? 1    2    3    4 or more
3. Please indicate your age: 18-22    23-30    31-40    Over 40
4. Is this online course your first experience with VoiceThread?    Yes    No

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SA=Strongly Agree; A=Agree; N=Neither Agree nor Disagree; D=Disagree; SD=Strongly Disagree

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SA    A    N    D    SD

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#### Sense of Community

5. Hearing the voice of my classmates rather than reading text comments created more of a sense of shared purpose (we're all in this together.)
6. Hearing the voice of my classmates gave me a greater awareness of any emotion/passion in their responses, as compared to reading text comments.
7. Overall, I found that hearing/seeing my classmates created more of a sense of trust, respect and support among us as a class.

#### Engagement

8. I found that speaking (recording) a response with VoiceThread is easier or faster than typing one.
9. I found myself commenting *more often* when speaking a response than when typing one.
10. I found myself making *longer* comments when speaking a response than when typing one.
11. I found it easier to listen to discussion comments than reading them.
12. Overall, I believe the quality of the discussions were higher because of the use of VoiceThread.

#### Ease of Participation in Discussion Threads

13. I found it easier to *follow the thread(s)* of spoken responses than reading them.
14. I found it easier to *understand the content* of spoken responses than written ones.
15. I prefer *hearing* online discussion threads to reading them.
16. I prefer *speaking* my online discussion responses to typing them.

#### Overall Experience

17. Overall, I believe VoiceThread improves the online discussion forum experience as compared to text-only discussion forums.
  18. Please make any other comments about the use of VoiceThread for online discussions in the box below. (optional)
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