

Student Preferences about Student-Teacher Communication Using Text Messages in an Online Middle School

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Received September 02, 2023; Revised October 03, 2023; Accepted October 10, 2023

Abstract This quantitative study examined online middle school students' preferences for receiving text messages from teachers and their likelihood of responding within 30 minutes. The researchers surveyed 142 students in 6th grade language arts classes at a U.S. virtual school. Four text message types were identified: words/emojis only, link to teacher's voice, multiple-choice options, and picture with message. Results showed students strongly preferred receiving texts with multiple-choice options when asked about feelings on schoolwork and texts with just words/emojis when asked about work needing submission. Students were very likely to respond within 30 minutes to texts with words/emojis only and multiple-choice options. There was more uncertainty about responding to texts with a teacher's voice link and texts featuring a basic picture message. Overall, tailoring communication using text choices like words/emojis and multiple-choice options can effectively engage middle school students and encourage prompt responses.

Keywords: *online education, online middle school, communication, text message, student-teacher communication, online communication, texting, student-teacher texting, student communication preferences, student text preferences, text-based communication, virtual communication*

Cite This Article: Kyle Doty, and Thomas Gollery, "Student Preferences about Student-Teacher Communication Using Text Messages in an Online Middle School." *American Journal of Educational Research*, vol. 11, no. 10 (2023): 712-721. doi: 10.12691/education-11-10-10.

1. Introduction

A previous study by Doty [1], focused on teacher presence and student-teacher communication in online middle school. Doty [1] discovered that middle school students preferred to communicate with online teachers using text messages and found that students perceived teachers to be present when the teacher was quick to respond to students' communication attempts. In addition, Doty [1] found that students preferred texts over all other forms of communication—phone calls, emails, and video calls. Students indicated that they wanted to communicate with the teacher through text messages while reading through lessons, working on quizzes, and focusing on writing assignments. Upon completing the study, questions arose about the kinds of text messages students would most likely interact with when communicating with a teacher.

Student-teacher communication has come into focus in recent years with the rise in virtual school (VS) enrollment due, in part, to the COVID-19 pandemic [2]. The COVID-19 pandemic shed light on the importance of student-

teacher communication when teachers and students had to quickly learn how to communicate online. Martin [3] suggested that online teachers work extra hard to communicate with online students to avoid not communicating enough with students in the online learning environment. In addition, Martin [3] advised teachers to use various modes of communication to reach students including using email and other text-based communication. While many students taking online courses are considered digital natives, Tîrziu & Vrabie [4] found that students are mostly adept at communicating online for social purposes but not educational purposes. In a study by Ehrenreich [5], a similar finding was uncovered. Ehrenreich found that students were comfortable text messaging and discovered that texting behavior peaked during adolescence and declined steadily as adolescents approach adulthood. When it came to sending and receiving text messages, Ehrenreich [5] found that students used text messages to assert autonomy from parents and preferred to use texts with adults to check-in about various topics.

Johnson et al. [6] suggested that online teachers work within a framework to achieve successful online teaching and learning. The present study was guided by distance

education theory by Holmberg [7], which states that communication between teacher and student in distance education facilitates learning.

The study was completed at a large k-12 virtual school in the United States located on the East coast, and the researchers focused on texting with students after the previous study, mentioned before by Doty [1], was published. However, the researchers found that not all texts earned responses from students. In fact, many texting efforts were fruitless because students did not respond to the messages teachers sent. The researchers aimed to investigate the types of text messages that middle school students preferred to receive from their teachers. Additionally, they wanted to determine which types of text messages from teachers elicited responses from middle school students within 30 minutes of receiving the message.

2. Related Literature

The purpose of this quantitative study is to describe the kinds of text messages online middle school students prefer to receive from their teachers and which text messages students would respond to within 30 minutes of reading a message from a teacher.

2.1. Technology-Mediated Communication

Online instructors must communicate clearly with students about course requirements and how students can communicate with the instructor [9]. Student-teacher communication using technology was vital for student success in online schools. A special challenge for students and teachers in the online learning environment, communication was found to be the source of successful teaching, learning, and rapport between students and teachers [10]. Two-way communication between students and teachers was a gateway to students learning course content and students' feelings of motivation to successfully complete an online course [11]. In addition, the online teacher played an important role in two-way communication with students. Teachers working in online educational settings were found to be responsible for managing student communication to enhance academic outcomes [12]. The technology-based communication that students received from online teachers was found to be balanced between the favored mode of communication teachers preferred with that of the mode of communication students preferred [2]. In a study by Thomas et al. [13] students valued instructor-generated texts as essential reminders for assignments, test dates, and crucial information, which positively influenced their level of preparedness and overall performance in the course. Utilizing text messages for education had the ability to enhance student-teacher communication. Balancing the communication needs of both teacher and student was found to be favorable in online courses leading to greater student success in the course [14]. Two-way communication between student and teacher in the online learning environment could lead to favorable outcomes for both students and teachers.

The types of communication students and teachers utilize must come into focus. Online teachers had the ability to engage in social and academic communication with students [11], and students indicated that the lack of student-teacher social interaction had no effect on students' perceptions of the value of education they received [11]. This is in misalignment with a recent study by Ashe & Lopez [2] where the researchers discovered that communication technology was important in building rapport with students. While a teacher's social presence with online students is of varied importance and may or may not be a factor in students' perceptions of academic value within an online learning environment, students reported it was necessary for teachers to make themselves available using technology-based communication [1,2,11].

2.2. Two-Way Communication Modalities

Text message users are familiar with the phenomenon of emojis—pictures that communicate words and ideas to replace text-heavy messages. Communication between students and teachers using emojis was studied, and one benefit of using emojis with students was that emojis made the virtual classroom environment a more welcoming and pleasant place to learn [15]. Emojis were also found to be beneficial when teachers emailed welcome messages to students making students feel that the teacher was a real and positive person to learn from in the online classroom [16]. However, the researchers also found that students did not always translate the meaning of emojis in the way the instructor intended [15]. Kim et al. [16] warned that teachers should understand the perceptions that some cultures have about certain depictions of ideas using emojis. Not all research suggested that emojis were positive in the classroom. Vareberg et al. [17] found that the use of emojis triggered rapport between teachers and students, but emojis also caused students to drawback from or distrust the teacher when emojis were used in a welcome email. Vereberg et al. [17] suggested that online teachers balance the use of emojis with professional communication using vocabulary that students understand.

While research is scant about two-way text messaging (SMS) between students and teachers, research focused on text-based messages with students using the WhatsApp platform is generous. Text-based messages using WhatsApp were found to be positive by researchers in one secondary school in Israel. WhatsApp was used to communicate with students when they were outside the classroom [18]. Students reported that the two-way messaging platform allowed them to connect well with the teacher, and the application allowed students who were quiet in the classroom a chance to ask for content clarification they would not have otherwise asked for in front of peers [18]. Hershkovitz et al. [19] concurred that text-based communication using the WhatsApp platform was beneficial because it was easy to use, earned quick replies from teachers to student questions, was a technology that was known to students, and increased student-teacher relationships.

While text-based communication like email and text messaging are easy to use, parents in one study preferred

teachers to use videoconferencing more often for communication, lessons, and discussions [10]. In agreement, researchers working in teacher education found that graduate students preferred videoconferencing to be used during both synchronous and asynchronous learning; researchers indicated that the use of videoconferencing allowed students to feel connected to their instructor [20].

2.3. Other Modes of Communication

Harms et al. [12] discovered there were standard modes of text-based communication for two-way communication in online settings: email, instant message, text, and discussion boards. Johnson et al. [6] also indicated that email and phone calls were valuable in online communication between teachers and students but also found video conferencing to be valuable. Other research found that teachers used social networking platforms to communicate with students, even some platforms that were prohibited by education departments [19]. Teachers were comfortable using the social media platforms, even though they were against the law, because those platforms were used by the students, students were present there, and the platforms were what the students were comfortable using [19].

Students and teachers must work together to communicate using agreed-upon communication modalities when working together in online learning environments. The use of text-based communication to communicate with students is varied in practice using social media platforms and other technology-based tools.

3. Problem/Purpose Statement

Communication between students and teachers is important both in seated traditional classrooms and in VSs. Online teachers communicate to build rapport with students and convey lesson objectives and activities. Teachers can use multiple modes of communication using technology including email, phone calls, text messages, and video conferencing [1], [2], [11]. Some research has been conducted into text-based approaches to student-teacher communication using social platforms [19]. Johnson et al. [6] found that email was a viable resource for student-teacher communication among other types of two-way communication. However, research about the different kinds of text messages middle school students prefer to interact with from their online teacher is unfounded.

The purpose of this study is to describe the kinds of text messages online middle school students prefer to receive from their teachers and which text messages students would respond to within 30 minutes of reading a message from a teacher.

4. Methodology

A non-experimental, quantitative research design was used to address the study's topic and research questions. A researcher-created survey instrument was used for data collection. The survey consisted of 8 Likert-type scale and

multiple-choice questions. The study was conducted in 20 sixth grade language arts classes at a large public virtual school in the United States. The survey was sent to students using the students' school email system, and parents were copied. To ensure the identity of the students was protected, an electronic consent form for parents and an electronic assent form for students was present at the beginning of the survey. The survey was designed so that if either the consent or assent were not agreed to, the survey could not be completed. The identification of students was kept private. Student identifiers including student names, names of students' teachers, and students' gender was not recorded. To validate the research instrument, an instrument validation was conducted in three phases: content validity judgment phase, pilot study of the created instrument, and statistical validation using the Cronbach's alpha (α) statistical technique.

The first phase of validating the survey instrument was performing a content validity judgment to ensure the validity of the survey instrument. The first step of validation was using a panel of experts (SMEs) to address the content validity phase consisting of experts at the virtual school: an instructional leader (principal), two doctoral-level research experts, and two 6th grade language arts teachers.

The second step of the validation process was to pilot the research instrument to verify the construct of the survey instrument with 15 participants from 6 sixth grade language arts courses at the virtual school. The final step was using Cronbach's alpha (α) statistical technique to assess the internal reliability of study participant response to survey items on the research instrument. The use of Cronbach's alpha provides evidence of internal reliability of study participant response to survey items on the research instrument. Cronbach's alpha has been described as "one of the most important and pervasive statistics in research involving test construction and use" [21, p. 98]. The content validity was established through the establishment of "themes" that became survey items via subject matter expert or SME process. The internal reliability level addresses the degree to which data produced by the survey consistently addresses the study's construct. The internal reliability level of $\alpha = .84$ was well beyond the acceptable level of $\alpha = .60$ [22]. Therefore, the survey instrument was validated for study purposes.

5. Findings

The purpose of this study aimed to describe the kinds of text messages online middle school students prefer to receive from their teachers and which text messages students would respond to within 30 minutes of reading a message from a teacher.

Research Question 1

What types of text messages do middle school students prefer to receive from their teachers?

Descriptive and inferential statistical techniques were used to analyze the research questions. A probability level of $p \leq .05$ was adopted as the value to determine if findings were considered statistically significant. Table 1 contains a summary of findings for the descriptive

statistical analysis of the study's categorical information. Note that there were 142 sixth grade language arts students who participated in the study.

Text message preferences were sought by categorizing reasons for communication with the teacher: receiving a text message from the teacher checking in with the student about how the student feels about schoolwork during the week, receiving a text message from the teacher checking in with the student about the work needed to submit, and receiving a text message from the teacher about nothing important, just checking in with the student.

The researchers determined that there were four major types of text messages that teachers could use to engage with middle school students about coursework. Text messages that utilized only words and emojis; text messages that featured a link to the teacher's voice; text messages that feature multiple-choice options; and text messages that feature a picture with a basic message. The

researchers identified three main reasons for teachers sending text messages to students. The researchers have delineated three primary objectives for teachers when sending text messages to students. To begin with, teachers employ text messages to assess students' perceptions of their schoolwork, prompting them to delve into their progress and overall course impressions. Subsequently, text messages serve as a means for teachers to prompt students who have not submitted their work within the past 7 days, encouraging them to actively participate and submit their assignments. Lastly, teachers utilize text messages to establish proactive communication with students concerning their coursework. These messages are designed to initiate meaningful discussions and enhance teacher-student engagement, particularly with proactive course participants who have been without direct contact for a reasonable duration.

Table 1. Descriptive Statistics Summary: Categorical Representation of Survey Items

Survey Item	<i>n</i>	%	Cumulative %
After reading the text message from your teacher, how often do you respond to the message within 30 minutes?			
Never	2	1.41	1.41
Sometimes	25	17.61	19.01
Often	69	48.59	67.61
Always	46	32.39	100.00
Missing	0	0.00	100.00
I would reply to a text message from my teacher within 30 minutes if my teacher sent me a text message with a multiple-choice option			
Not Likely at All	10	7.04	7.04
Somewhat Likely	21	14.79	21.83
Uncertain	55	38.73	60.56
Most Likely	56	39.44	100.00
Missing	0	0.00	100.00
I would reply to a text message from my teacher within 30 minutes if my teacher sent me a text message that has a picture with a basic message			
Not Likely at All	12	8.45	8.45
Somewhat Likely	33	23.24	31.69
Uncertain	45	31.69	63.38
Mostly Likely	52	36.62	100.00
Missing	0	0.00	100.00
I would reply to a text message from my teacher within 30 minutes if my teacher sent me a text message that uses only words and emojis			
Not Likely at All	7	4.93	4.93
Somewhat Likely	30	21.13	26.06
Uncertain	45	31.69	57.75
Mostly Likely	60	42.25	100.00
Missing	0	0.00	100.00
I would reply to a text message from my teacher within 30 minutes if my teacher sent me a text message with a link where I can hear my teacher's voice talking specifically to me			
Not Likely at All	24	16.90	16.90
Somewhat Likely	33	23.24	40.14
Uncertain	34	23.94	64.08
Mostly Likely	51	35.92	100.00

Survey Item	<i>n</i>	%	Cumulative %
Missing	0	0.00	100.00
When receiving a text message from my teacher checking in with me about how I'm feeling about schoolwork during the week I prefer			
Words & Emoji's Only	45	31.69	31.69
Link to Teacher's Voice	9	6.34	38.03
Text with Multiple Choice Options	66	46.48	84.51
Picture with a Basic Message	22	15.49	100.00
Missing	0	0.00	100.00
When receiving a text message from my teacher checking in with me about the work I need to submit, I prefer			
Words & Emoji's Only	44	30.99	30.99
Link to Teacher's Voice	18	12.68	43.66
Text with Multiple Choice Options	43	30.28	73.94
Picture with a Basic Message	37	26.06	100.00
Missing	0	0.00	100.00
When receiving a text message from my teacher about nothing important, just checking in with me, I prefer			
Words & Emoji's Only	65	45.77	45.77
Link to Teacher's Voice	15	10.56	56.34
Text with Multiple Choice Options	22	15.49	71.83
Picture with a Basic Message	40	28.17	100.00
Missing	0	0.00	100.00

5.1. Text Messages about Feelings about Schoolwork

Students were surveyed about the type of text message students preferred to receive from a teacher checking in with the student about how the student feels about schoolwork during the week. These text messages are used to engage students by getting them to talk about their schoolwork and their overall thoughts about their progress in the course. Students indicated that the most preferred type of text message was a text message with multiple choice options ($N = 66$). A secondary student preference was a text message with words and emojis only ($N = 45$). Student preferences within this category dropped off when students were asked whether they preferred a text message with a basic picture message ($N = 22$) or a text message with a link to the teacher's voice ($N = 9$). The researchers wanted to determine whether there was a significant association between middle schoolers' preferences and the types of text messages they received; therefore, the Chi-Squared goodness of fit test (GOF) was applied to the data. A chi-square goodness of fit test was utilized to evaluate the statistical significance of the distribution of responses from study participants. Before applying this test, the necessary assumptions were checked and met, including: the data being analyzed consisted of one categorical variable; the observations were independent of one another; the categories were mutually exclusive; and each category had an expected frequency of at least five observations [23]. With these conditions satisfied, the chi-square goodness of fit test could appropriately be used to assess the significance of the distribution of the response data in relation to the research questions. The GOF test findings were statistically significant. Table 2 contains a

summary of findings for the chi-square GOF test in research question one pertaining to text messages about student feelings about coursework.

There was a significant difference between the observed and expected frequencies, and the preference for different types of text messages was not evenly distributed. The statistical analysis showed that student preference for the teacher texting with multiple-choice options ($N = 66$) was an outlier and noteworthy, as it was beyond what was expected. The students' preferences for being texted by the teacher using multiple-choice options when the teacher wants to know the students' overall feelings about schoolwork skewed considerably beyond researchers' expectations. Middle school students, when texted by the teacher checking in about overall feelings about how schoolwork is going in the course, indicated a strong preference for text messages with multiple-choice options.

Table 2. Chi-Square GOF Test Summary Table Feelings about Schoolwork

Response	Observed Frequency	Expected Frequency
Words & Emoji's Only	45	35.50
Link to Teacher's Voice	9	35.50
Text with Multiple Choice Options	66	35.50
Picture with a Basic Message	22	35.50

Note. $\chi^2(3) = 53.66, p < .001$.

5.2. Text Messages about Work Needed to Submit

Another category was present on the survey that asked students their preferences for text messages from their

teacher regarding work that needed to be submitted to the course. These text messages are used to engage students who have not submitted work in the course for 7 or more days. Students indicated that the most preferred type of text message for this category was text messages with only words and emojis (N = 44). A secondary student preference was a text message with multiple-choice options (N = 43). Overall, according to the descriptive statistics, students preferred their teacher use text messages with only words and emojis or text messages with multiple-choice options when communicating via text about work that needs to be submitted to the course. Again, a chi-square goodness of fit test was utilized to evaluate the statistical significance of the distribution of responses from study participants. The GOF test findings were statistically significant. Table 3 contains a summary of findings for the chi-square GOF test in research question one pertaining to text messages about work students need to submit.

The statistical analysis showed that student preference for the teacher texting using only words and emojis (N = 44) and texts utilizing multiple-choice options (N =43) were similar. This data suggested that both types of text messages were favored by student participants, but students’ preferences for receiving a text message using only words and emojis seemed to stand out. Middle school students, when texted by the teacher about work the students need to submit, indicated a similarly strong preference for text messages using only words and emojis and multiple-choice options with a preference for text messages utilizing only words and emojis being slightly stronger.

Table 3. Chi-Square GOF Test Summary Table Work Needed to Submit

Response	Observed Frequency	Expected Frequency
Words & Emoji's Only	44	35.50
Link to Teacher's Voice	18	35.50
Text with Multiple Choice Options	43	35.50
Picture with a Basic Message	37	35.50

Note. $\chi^2(3) = 12.31, p = .006$.

5.3. Text Messages when Checking in with Students

Researchers wanted to know the types of text messages students preferred when being texted to check in about nothing specific, just checking in with general communication. These text messages are used to spark discussion or promote engagement with students who are active in the course, by submitting work and regularly logging into the course, but whom the teacher has not had contact for a reasonable length of time. Students indicated that the most preferred type of text message for checking in about nothing specific were text messages with only words and emojis (N = 65). It is noteworthy that all other text message types for this category were preferred less over text messages that only contained words and emojis. Text messages with a basic message was slightly preferred (N =40) and text messages with multiple-choice options (N = 22) and text messages with a link to the teacher’s voice (N = 15) were the least preferred for this category.

Once again, a chi-square goodness of fit test was utilized to evaluate the statistical significance of the distribution of responses from study participants. The GOF test findings were statistically significant. Table 4 contains a summary of findings for the chi-square GOF test in research question one pertaining to text messages about work students need to submit.

Table 4. Chi-Square GOF Test Summary Table Checking In

Response	Observed Frequency	Expected Frequency
Words & Emoji's Only	65	35.50
Link to Teacher's Voice	15	35.50
Text with Multiple Choice Options	22	35.50
Picture with a Basic Message	40	35.50

Note. $\chi^2(3) = 42.06, p < .001$.

The statistical analysis showed that students preferred texting with the teacher using only words and emojis (N = 65). This data revealed a significant student preference for text messages that contain words and emojis only when being texted by the teacher for general communication. Additionally, the test highlighted a secondary preference for texts with a basic picture message (N = 40) where the data revealed there was a slight exception beyond the expected frequency. While not as strong as the preference for words and emojis, the results indicate students find, in the case of checking in about nothing, a picture with a basic message appealing. Middle school students, when texted by the teacher to check in for general communication, indicated a strong preference for text messages using only words and emojis with a slightly favored second option of texts featuring a picture with a basic message.

Overall, findings revealed that middle school students preferred to exchange text messages with the teacher using texts that feature only words and emojis, texts with multiple-choice options, and texts the utilize a basic message with a picture. Students indicated that they preferred texts with multiple-choice options when teachers check in about students’ feelings about schoolwork. In addition to texts with multiple-choice options, students indicated they had a strong preference for texts that use only words and emojis when teachers check in with students about nothing important. A secondary preference for texts checking in with students about nothing important was identified as texts with a basic picture message. Finally, students indicated a near-equal preference for texts that utilize only words and emojis and texts with multiple-choice options when teachers texted students about work students need to submit.

Research Question 2

What kinds of texts messages from teachers would middle school students want to respond to within 30 minutes of receiving a text message?

Descriptive and inferential statistical techniques were used to analyze the research questions. A probability level of $p \leq .05$ was adopted as the value to determine if findings were considered statistically significant. Table 1 contains a summary of findings for the descriptive

statistical analysis of the study's categorical information. The Chi-Squared goodness of fit test (GOF) was applied to the data and utilized to evaluate the statistical significance of the distribution of responses from study participants. Note that there were 142 sixth grade language arts students who participated in the study.

5.4. Response Times to Texts Using Only Words and Emojis

Students were surveyed about the types of text messages they would prefer to respond within 30 minutes. The researchers chose 30 minutes as a standard time to define quick return communication. Students indicated that they would most likely respond to a teacher's text message within 30 minutes if the text message contained only words and emojis (N =60). The GOF test findings were statistically significant and noteworthy. Table 5 contains a summary of findings for the chi-square GOF test in research question two relating to students' preferences to respond to a text message within 30 minutes of receiving the message from the teacher. The statistical analysis showed that students preferred to respond to texts from the teacher within 30 minutes when the teacher sent texts using only words and emojis (N = 60). This data revealed a significant student preference for text messages that contain words and emojis, and the likelihood of student response within 30 minutes, was strong.

Table 5. Chi-Square GOF Test Summary Table Words and Emojis

Response	Observed Frequency	Expected Frequency
Not Likely at All	7	35.50
Somewhat Likely	30	35.50
Uncertain	45	35.50
Very Likely	60	35.50

Note. $\chi^2(3) = 43.18, p < .001$.

5.5. Association between Student Preferences of Texts about General Check-In and Prompt Text Responses

As shown in Table 4, students indicated a strong preference for text messages using only words and emojis when teachers used texts to check in with students for general communication (N = 65). When considering the findings presented in Table 5, it became evident that students had a pronounced inclination to respond within 30 minutes to text messages that utilized only words and emojis. This strong preference for such communication style from teachers was significantly associated with the likelihood of students promptly responding to these messages. The results suggested a potential link between students' communication preferences regarding teachers' texts checking in for general communication using only words and emojis and students' prompt responsiveness to teachers' texts.

5.6. Response Times to Texts with Multiple-Choice Options

Students indicated that they would most likely respond to a teacher's text message that provided students with multiple-choice options within 30 minutes (N = 56). Statistical findings using the GOF test were significant. Table 6 provides a summary of findings for the chi-square GOF test in research question two relating to students' preferences to respond to a text message within 30 minutes of receiving the message from the teacher. This data reveals a significant student preference for text messages that provide students with multiple-choice options, and the likelihood of student response within 30 minutes, is strong.

Table 6. Chi-Square GOF Test Summary Table Multiple-Choice Options

Response	Observed Frequency	Expected Frequency
Not Likely at All	10	35.50
Somewhat Likely	21	35.50
Uncertain	55	35.50
Very Likely	56	35.50

Note. $\chi^2(3) = 46.79, p < .001$.

5.7. Association Between Student Preferences of Texts about Feelings about Work and Prompt Text Responses

As shown in Table 2, students indicated a strong preference for text messages that provide multiple-choice option when teachers used texts to inquire about students' feelings about schoolwork (N = 66). When considering the findings presented in Table 6, it became manifest that students wanted to respond to text messages within 30 minutes that use multiple-choice options. Students showed a marked preference for this communication style, which has a noteworthy connection to how likely students are to respond promptly to such messages. The findings strongly indicated a likely correlation between students' communication preferences when teachers use text messages with multiple-choice options to communicate about students' feelings about schoolwork and students' prompt responsiveness to texts.

5.8. Response Times to Texts Using a Basic Picture Message

Students indicated that they would most likely respond to a teacher's text message that provided students with a basic picture message within 30 minutes (N = 52). Statistical analysis using the GOF test were statistically relevant. Table 7 provides a summary of results for the chi-square GOF test in research question two relating to students' preferences to respond to a text message within 30 minutes of receiving the message from the teacher. The results indicate a strong level of acceptance and preference for this communication format, with a substantial majority of participants either being "Somewhat Likely" (N=33) or "Very Likely" (N = 52) to engage with such messages. This data revealed a compelling student preference for text messages that provided students with a basic picture message, and the likelihood of student response within 30 minutes, was robust.

Table 7. Chi-Square GOF Test Summary Table Basic Picture Message

Response	Observed Frequency	Expected Frequency
Not Likely at All	12	35.50
Somewhat Likely	33	35.50
Uncertain	45	35.50
Very Likely	52	35.50

Note. $\chi^2(3) = 25.94, p < .001$.

5.9. Association between Student Preferences of Texts for General Check in and Prompt Text Responses

The Chi-Square GOF results for student preferences of using a text with a basic picture message when teachers are texting students for general check in (Table 4) and students' response time within 30 minutes (Table 7) indicated distinct patterns in students' preferences. The former scenario reflected a lower observed preference for the specific communication format, while the latter scenario demonstrated a higher observed preference for prompt response times. These findings offered valuable information for tailoring communication strategies to effectively reach and engage with the student population. When considering the findings presented in Table 7, it became clear that students showed a preference for responding in a timely fashion to messages with basic picture messages ($N = 52$); however, due to the lackluster response and the absence of an overwhelming preference, the finding was not prodigious as it was for other text message preferences.

5.10. Response Times to Texts with a Link to the Teacher's Voice

Based on the results of the chi-square GOF test in Table 8, it was evident that students' preferences for responding to text messages sent with a link to the teacher's voice varied significantly between the "uncertain" ($N = 34$) and "very likely" ($N = 51$) categories. While students in the "very likely" category showed a higher observed frequency of responding within 30 minutes, indicating a strong preference for texts with a link to the teacher's voice, those in the "uncertain" category displayed a response behavior that deviated from what was expected. The deviation observed in the "uncertain" category implies that not all students are equally inclined to respond immediately to texts linking to the teacher's voice. These findings suggested a level of uncertainty among participants regarding their preference for responding promptly to texts that feature a link to the teacher's voice. Certain barriers seem to exist that hinder students' response behavior. These findings were accepted when considering students' responses about the kinds of text messages they preferred in various scenarios: texts from the teacher for general check in, text from the teacher when asking about feelings about schoolwork, and texts from the teacher when asking about work students need to submit. In all three scenarios, students did not show a strong preference for texts that feature a link to the teacher's voice.

Table 8. Chi-Square GOF Test Summary Table

Response	Observed Frequency	Expected Frequency
Not Likely at All	24	35.50
Somewhat Likely	33	35.50
Uncertain	34	35.50
Very Likely	51	35.50

Note. $\chi^2(3) = 10.73, p = .01$.

The findings revealed distinct patterns in students' preferences for responding quickly to different types of text messages. Students showed a strong preference for responding promptly to text messages containing only words and emojis (Table 5), as well as text messages with multiple-choice options (Table 6) or basic picture messages (Table 7). However, when it came to text messages with a link to the teacher's voice, students' preferences were more uncertain (Table 8), and not all students showed a significant inclination to respond immediately. Overall, the results highlighted the importance of tailoring communication strategies to effectively engage middle school students through text messages. While students generally preferred responding within 30 minutes to certain types of texts, such as those with only words and emojis or multiple-choice options, more attention may be needed to enhance the effectiveness of text messages containing links to the teacher's voice. This research supports the use of text messages in the following scenarios based on statistical findings. When online teachers want to communicate with students about student feelings about schoolwork, teachers should send a text with multiple-choice options. When texting students about work students need to submit, teachers should send texts using only words and emojis or multiple-choice options. Finally, when teachers text students for a general check in, teachers should send a text that uses only words and emojis and sometimes texts that utilize a picture with a basic message.

6. Limitations

The researchers acknowledge that certain limitations exist within this study. Due to the asynchronous nature of online education, students may not be able to respond to texts. The study participants were from students enrolled in sixth grade. Some students may not have their own phone and use a parent's or sibling's phone. Students may be busy with other activities either related or unrelated to school which could hinder response time to texts from a teacher. It cannot be assumed that all students use a smartphone or are in possession of a smartphone with a working screen. The researchers also realized that some students come from families that may not value or use text messaging often or who distrust texting as a valid mode of communication.

7. Recommendations of Future Research

Researchers working with middle grades students in online educational settings would do well to focus

research on the kinds of texts students reply to within 30 minutes of sending a text message. Gathering data about the kind of text messages that students reply to quickly would provide valuable information for teachers working in online education. Future research should focus on other subject areas across 6-8 education. The present study focused on students in sixth grade language arts classes. Perhaps students have different text messaging preferences with teachers in other subject areas. Additional future research should concentrate on emerging two-way communication technologies middle students prefer to use other than the use of smartphones. Furthermore, given that some students may use their parents' phones, future research could explore how parental involvement and consent impact students' text message communication with teachers. Understanding parental attitudes towards text messaging in educational settings can be insightful. Finally, future research might consider student-teacher communication across diverse cultural and regional settings to understand how text message preferences and communication habits vary across different student populations.

8. Summary

This research was focused on middle school students' preferences for text messages from their teachers and the students' likelihood to respond within 30 minutes. Researchers identified 4 major types of text messages teachers could use to engage with students about coursework: texts utilizing only words and emojis, texts featuring a link to the teacher's voice, texts with multiple-choice options, and texts with a basic picture message. In response to Research Question 1, students showed a strong preference for receiving texts with multiple-choice options when teachers checked in about their feelings about schoolwork. Additionally, students preferred texts using only words and emojis or multiple-choice options when asked about work that needed to be submitted. When teachers checked in for general communication, students strongly preferred texts with only words and emojis, with a slight preference for texts featuring a picture with a basic message. As for Research Question 2, students were most likely to respond within 30 minutes to texts using only words and emojis or multiple-choice options. Responses to texts with a link to the teacher's voice were more uncertain. Overall, the research highlighted the importance of tailoring text message communication strategies to effectively engage middle school students, with a focus on using multiple-choice options and messages with only words and emojis to encourage prompt responses.

ACKNOWLEDGEMENTS

We would like to thank the 6th grade Language Arts team at Florida Virtual School for working so closely with us on this project. In addition, we'd like to express our gratitude to Derrick Lyons, the 6th and 7th grade Instructional Leader at FLVS for his constant support. We are grateful for April Fleetwood and Lodi Lipien, also at

FLVS, for their guidance and expertise in bringing this study into the light.

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