Exploring the link between Adult Literacy and Textese: A multi-method Approach

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Abstract

The research study aims to find the relationship between textese (using text messaging as a way of communication) and adult literacy. The study was mixed method in nature and was conducted on 60 participants from three different countries – the UK, Uganda, and Bangladesh. Participants of this study were selected conveniently from **private and public** HE institutions, whereas the countries were selected purposively. Past research on literacy and textese was based on English-speaking countries and school-aged children. This study thus focused on comparing adult participants from both English and non-English-speaking countries to test the hypotheses of the relationship between textese and adult literacy.

The data was collected primarily through the survey (a questionnaire) in a quantitative phase, which was followed by a qualitative phase (semi-structured interviews) with 18 participants (6 participants from each country) from the 60 participants. The findings showed that a high rate of textese improves English speaking. However, over 63% of the non-English speaking participants' scores on the two spelling tests (taken one week apart) declined due to exposure to textese. Textese has been shown to impact spelling, leading to poor writing skills for both English and non-English participants. However, the rise of textese with the utilisation of informative content has been accompanied by a comparative increment in related slang, images, and shorthand text during communication. Consequently, this consideration explores the relationship between textese, content informing, and grown-up education through the present media's rumour.

Keywords: Textese, Spelling, Adult literacy, formal writing, multimethod.

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Introduction

A text message (textese), or Short Message Service (SMS), is a short, typed message sent from one mobile phone to another.

''Text messaging'' or ''texting'' refers to the sending short, typed messages between mobile phones using short message service (SMS) (Kasesniemi and Rautiainen 2002, p. 170).

An SMS message has a limit of 160 characters, although multiple SMS simultaneously are part of one larger message and are typically used for brief, fast, informal communication (Knight, 2023). An SMS is sent and received using a mobile network and requires a mobile phone or smartphone. SMS has become a popular form of communication due to its convenience and widespread availability. On average, 72 texts are sent daily from each person's mobile phone – "four times the normal number of everyday emails sent from individuals' portable phones" (ZipWhip, 2021).

Table 01: Worldwide Text Messaging Statistics

Time Classification	Number
Number of text messages sent per year	8.4 trillion
Number of text messages sent per month	690 billion
Number of text messages per day	23 billion [1]
Number of text messages per hour	958 million
Number of text messages per minute	16 million
Number of text messages per second	270 thousand

Source: (Knight, 2023)

Table 01 provides statistics on the volume of text messages sent at various intervals, from a yearly scale to a per-second rate. These figures highlight the immense prevalence and frequency of text messaging as a popular form of communication in today's digital age.

According to Statista (2020), 61% of the population in the UK frequently sent text messages during the COVID-19 pandemic, a significant increase compared to 2019. Additionally, the report showed that adults aged 18-44 checked their mobile phones doubled, to an average of 190 times a day or more than 10 minutes (Asurion, 2019). The UK estimates the number of adult learners at 1,511,900; females account for 60.6% of these (Gov.UK, 2022). Approximately 726,000 adults (aged 25-44) from all ethnic groups in the UK do not speak English well. The Bangladeshi ethnic group had the highest percentage of women with poor English skills, at 21.9% (Gov. UK, 2020). However, in 2017, the enrolment at HE institutes of British Bangladeshi undergraduate students aged 19-64 rose from 34% to 61.1% compared to 2015/2016 (Department for Education [DfE], 2018a). Therefore, it is essential to consider all ethnic groups and HE participants during the assessment test instead of only native English speakers and school-age participants.

Text messaging has become ubiquitous in our digital age, with most adults relying on texting as a primary means of staying in touch with friends, family, and colleagues. While texting can be a convenient and efficient way to communicate, some studies have suggested that it may hurt adults' literacy skills and different ethnic learners in higher education. The potential reason for this impact is the use of abbreviations, acronyms, and other shorthand language forms commonly used in textese. Although texting can effectively convey a message quickly and succinctly, it may also encourage a lack of attention to proper spelling, grammar, and punctuation. Additionally, the fast-paced nature of texting may lead to a reduced focus on language and reading comprehension skills, which is essential in higher education settings. This potentially leads to difficulties in understanding complex academic texts, writing effectively, and participating in academic discussions.

However, Coughlan (2015) at the BBC reported that mobile phones were a reason for young people's lower test results in schools. Similarly, former UK shadow minster Trista Hunt Espinoza (2015) reported to the Daily Telegraph that 'smartphones negatively affect younger generations' communication abilities. According to the Department for Education (2023), 'Literacy is a basic set of skills such as reading, writing, counting or competencies. However, some linguists believe that texting may enrich language because we become more creative as we play with words (McWhorter, 2013). Lieke (2020) also found a 'positive relationship between social

media use and school writing. According to Crystal (2008), the media has generated considerable fear of text messaging, as exemplified by short-form words such as R8, Gr8, and Db8, despite there being a little basis for these claims.

Therefore, against the media's negative interpretations, this study aims to address the conflicting findings in the body of literature. The researchers, at this moment, aim to identify the link between textese and literacy by examining English and non-English-speaking HE adult learners' pre- and post-expose spelling tests.

Literature Review

Text messaging is used pervasively among students (Johnson 2007; Kennedy et al. 2008; Smith, Salaway, and Caruso 2009). Furthermore, students are willing to use text messaging for educational purposes (Jeong 2007; Kennedy et al. 2008), given the popularity of text messaging and students' willingness to use such technologies for academic purposes.

Over the past few decades, scholars have been exploring the use of text messages and how this use affects reading, writing, and literacy. Despite the negative reports from the media, there is evidence of a positive correlation between English-speaking children's literacy and texting (Plester et al., 2008; Bushnell et al., 2011). Conversely, there is also the issue of children's phonologic and morphologic mindfulness, which affects their learning. For example, children are often confused about the letter 'ph' being pronounced /f/, leading them to spell 'phone' as 'fone'. Meanwhile, morphological awareness supports children in comprehending how words are formed, e.g. the "ed" in kissed is pronounced /t/. Moreover, adult non-native English speakers may also be unaware of phonics or have unstable morphological and orthographic representations. Hence, they may have little concern for omitting letters, but punctuation and writing errors may also negatively impact their literacy. However, the extant research is on adult learners, mainly English as a second language speakers. Therefore, the research findings are incredibly mixed because English is not their first language, and adults may try to save time during text messaging (Drouin & Driver, 2012).

Kemp (2010) revealed a positive effect of texting on literacy through questionnaire surveys and spelling and reading tests conducted on 61 Australian university students aged 22 years. Although the number of text messages sent did not associate with their scores in terms of literacy, those with good texting skills demonstrated improved spelling and their texting did not influence their standard English messages. This meant that the textese only occurred in the appropriate context for

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that specific English-speaking group of participants. Nevertheless, Rogers (2008) found the opposite, discovering that teachers were concerned that students had started using textese in their written work, which was hampering their formal writing skills. On the other hand, Powell and Dixon (2011), in a study of 94 participants who were 24-year-old British students, found that exposure to textese positively affects spelling.

In contrast, exposure to misspellings has a negative impact. De Jonge and Kemp (2012) used spelling and reading tests to examine morphological and orthographic awareness among 53 Australian teenagers and young adults. Their findings were negative, contrasting those of Powell and Dixon's (2011) study. Also, they found a negative relationship between the number of messages daily and literacy, conflicting with Kemp's (2010) findings. Textese refers to using abbreviations when sending text messages, such as 'lemme' instead of 'let me' and 'LOL' instead of 'laugh out loud. It is also known as text language or text speak.

Additionally, it incorporates using emotions as standard and non-standard forms of communication and expressing human feelings. At the same, it is the elimination of vowels, accentuation, and capital letters together with the use of emoticons for diverse human expressions. It has been shown to impact significantly formal literacy (Clark & Teravainen, 2015; Crystal, 2008; Van Dijk et al., 2016; Wood et al., 2013; Wood et al., 2014). This short form of writing/text messaging also appears to have no rules, with 'a lot of' sometimes abbreviated to 'loads', tomorrow becoming "2moro", and others (Farina & Lyddy, 2011). There are several detractors of texting, with the media continuously voicing concern about its effects on literacy. For example, Sutherland (2002, cited in Kristy 2009) believes that text messaging and textese have made people lazy, trigger dyslexia, increase poor spelling sense, and contributed to adult illiteracy.

In addition to these detractors, the media has continuously articulated concerns about texting and its effects on literacy. One critic, Sutherland (2002) cited by Kristy (2009), stated that "text was covering up laziness, dyslexia, poor spelling and was penmanship for illiterates". If this is the case, the impact on the English language and the future of mobile text messages and mobile functions in the educational sector will have devastating consequences. On the other hand, an extensive study suggested that textese has a positive result on children and young people, and some linguists believe that textese enriches the English language and permits playing with words and creativity, like when "Shakespeare himself spelt his name six different ways" (Baron, 2005 cited by Verheijen, 2013).

Hypothesis 1: There is a positive link between textese and literacy.

Past research has provided strong evidence of the linkage between textese and literacy development. However, researchers do not agree on the nature of this relationship, i.e., whether it is entirely positive, negative, or a combination of both with a gap between them. Linguists and educational technology scholars have argued for the causal links between textese and the extreme measures to reverse failing literacy rates (Thurlow and Poff 2013). Some critics said that "there is inconclusive evidence for negative relationships between textese use and literacy skills" (Grace et al., 2014) and that the upheld exposure by textese is positively associated with standard English literacy and formal writing, like spelling and reading fluency (Plester, Wood and Joshi, 2009). Additionally, Rosen et al. (2011) found that the "high textese exposure group significantly worse (10.6 lower) than the No. low textese interruption group" (p.163), highlighting the impact on their memory recall and overall learning of classroom materials. Therefore, it is reasonable to claim a strong positive relationship between textese and literacy development.

Those scholars' results present a negative linkage between textese and literacy. Their research data were based on English-speaking countries and empirical study of young participants rather than adult and university participants or non-native English speakers (Drouin, 2011). In 2014, Drouin and Driver stated that there are "discordant findings between children and adults with regards to textese use and literacy skills" (p.250), implying an impact of textese on literacy skills. However, the study found that texting frequency was significantly linked with any measure of literacy and was negatively related to reading and spelling (Drouin & Driver, 2014). That means whoever used textese more scored lower on their standardised literacy ability. The result shows the relationship between textese and literacy skills for the age group.

Hypothesis 2: Adults can differentiate between formal and informal texting.

Some limited analyses of text language have suggested that the majority of language is standard and distinctive, while nonstandard forms coexist with a standard one (Crystal, 2008). The text message has "deregulated what counts as English spelling rather than changed spelling itself" (Shortis, 2007, p.21).

Carrington (2004) uses the term "squeeze-text" to describe the main characteristics of text language. Textese words can be shortened to the bare minimum of syllables by removing vowels.

There are educational discrepancies in the use of connectivity tools for communication, such as when participants compare both educational differences in relation to textese for archetypal communications. However, Turkey's B test has found that among participants who have either an educational background or a non-educational one, there is no significant difference from either group in regard to textese use. Rosen et al.'s (2010) research study found that non-educated background people more often use "i" during their textese than literate participants, but both use lowercase "i" during text message communication. During textese, capital letters might be omitted and end message punctuation may be absent, while various other abbreviations and nonstandard forms have been noted (Carrington, 20004, Crystal, 2008a, Drouin & Davis, 2009). However, the media is still concerned about textese literacy badly impacting learner literacy.

Rosen et al.'s (2010) research has found that the use of SMS is related to better writing. This could be explained by the theory of low-road situated learning. On the other hand, their empirical study also found that for those who do not have an education, textism is also related to better informal writing. Meanwhile, those who were literate had a negative impact of textism on their formal writing. However, this research outcome also agrees with the fact that textism badly impacts those who speak English as a second language. For example, the use of lowercase "i" was also in an informal writing test 1-week after exposure. Letter or number homophones (i.e., I8r for 'later' w8 for 'wait') and emoticons have been less frequently chronicled in research studies of formal messages than the media representation of text language would suggest (Ling & Baron, 2007; Thurlow, 2006). Additionally, the complexity of emoticons has been enriched with the use of 'smiley' :) and sad :(emoticons in informal message content (Ling & Baron, 2007; Thurlow & Brown, 2003).

Hypothesis 3: Textese has a positive effect on spelling.

Massengill et al. (2007, cited in Jonge and Kemo 2012), could find no relationship between adult spelling and textese in a USA study. Drouin and Driver (2012) conducted a study on 183 American students and revealed a negative relationship between the density of text messages and literacy. Meanwhile, Shafie et al. (2010, cited in Verheijen, 2019) revealed mixed findings for young (18-22 years old) Malaysian adults, and Rosen et al. (2010) discovered a positive association between text messaging and adult literacy but a negative relationship between writing skills and text messaging.

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Conversely, Drouin and Davis (2009, cited by Powell and Dixon 2011), found no negative effects. However, more than 60% of teachers were concerned with the disadvantageous effects on students' formal writing, such as poor spelling and formal essay writing. All these conflicting findings may be due to the differences in the respective studies' methodology, age group, language, culture, and ethnicity. Therefore, to determine the association between adult literacy and textese, the researchers of the current study chose adults aged 21 to 65 years old who used English as a second language. Additionally, accent stylization was positively associated with reading and spelling, while omitting apostrophes was positively associated with all literacy skills and significantly linked with reading and spelling.

Methodology

Three categories are common in the research onion: mono method, multimethod and mixed method (Saunders et al., 2016). Tashakkori and Teddlie (2003) define multimethod in which more than one method are used. Similarly, Morse (2003) also defines Multimethod design as the conduct of two or more research methods in one project.

A "multimethod approach" in research refers to a framework that involves using multiple research methods and data collection techniques in a single study to comprehensively understand and solve a particular research problem.

Tashakkori and Teddlie (2003) also explain the term mixed method to represent the mixture of methods in many stages of any study. While multimethod design handles all projects in a complete way using the same methods from either qualitative or quantitative designs.

Some researchers still confuse mixed methods as multimethod and vice versa, and some claim that it combines both quantitative and qualitative (Stange et al., 2006).

Johnson et al. (2007) endeavoured to distinguish between the two, "Multimethod research is when different methods are used in parallel or sequence but are not integrated until inferences are being made" (p. 119).

As per the aforesaid literature review, the study used an explanatory chronological design, meaning that the data collection process began with a quantitative phase (a

questionnaire), followed by a qualitative phase (semi-structured interviews). The researchers chose an explanatory chronological design because it is a useful tool when "the researcher wants to assess trends and relationships with quantitative data but also be able to explain the mechanism or reasons behind the resultant trends" (Creswell and Plano Clark 2011). Meanwhile, the interviews were performed to explore the participants' answers given in the interviews to examine their feelings and probe the responses in greater depth. The reason for the primary data collection was to build upon and enrich the information to discover why people use textese and whether there is any correlation between these findings and past research findings.

This research study was conducted from April 2021 to August 2021 and used a diverse sample of mature students (adults) aged 21 to 65 years from the UK, Uganda, and Bangladesh, all of whom used English as a second language. A total of 60 adults were selected for the survey; 20 from each country for the quantitative phase of the study and 18 interviewees (6 participants from each country) for the qualitative phase of the study, and the participants attended two spelling tests (taken 1 week apart).

Table 02: Methods used

Multimethod		
Phase	**Method**	**Sample Size**
Quantitative Research	Questionnaire	20 x3 =60
Qualitative Research	Interview	6 x 3 = 18
Spelling Assessment	Test	6 x 3 x 2*= 36

* Two spelling tests

The participants were selected through convenience sampling. The authors used the same spelling test format used by Powell and Dixon (2011) to assess the impact of textese on spelling. This was provided with a changed perception. To collect the data, the researchers used a questionnaire in part 1 that asked about the participants' demographical data, like sex, first language, education, and profession. Part 2 related to a specific measure of how textism impacts adult literacy. The questionnaires were delivered on a one-to-one basis. The 15 questions were composed of multiple-choice questions, five-point Linkert style questions (Cohen et al., 2018), and open questions like comments and closed questions like yes or no, with the interviewers following up on the open question to investigate feelings and probe deeper. This research data was gathered to supplement and expand on an earlier study in order to determine why people used textese when texting certain persons but not others, as well as whether there was a connection between this information, past research, and the following spelling tests. The next part of this research's primary data comprised two

sets of spelling tests, which were past and post-exposure spelling tests. 15 words were selected from the research of Powell and Dixon (2011). The first test involves 15 Standard English words, which were dictated (Appendix 1). Each word was spoken aloud before being inserted into a phrase. One week later, the second test was conducted. The participants were shown the same list of 15 words but as textese. Slides were shared during the test. The participants were required to read words aloud quietly. They then had 15 mins to memorize the words. The interviewers read them aloud. The interviewers allocated participants to different breakout rooms and the participants were asked to write the full words in an MS Word file and show their file. As only 3 sessions could be held due to time limitations, only 18 participants were chosen. The participants encompassed 6 adults from Bangladesh, 6 from Uganda, and 6 from the UK, randomly selected from the author's workplace and including family and friends.

Meanwhile, 6 individual participants' semi-structured interviews 30-45 minutes in length were held from the same country and had various levels of experience (Appendix 4). In 3 countries 18 separate interviews were undertaken after spelling tests. The researchers secured the consent of the participants before collecting samples from their interviews and spelling tests (Appendix 1). The researchers collected all tests from the participants to maintain the originality of the data. The results are displayed as graphs and charts as a percentage of the total group's replies or as a mean average of the results and are occasionally broken into an overall group and then into first and second-language groups. The data was utilised for triangulation, which is defined as "the use of two or more data gathering methods in the study of some element of human behaviour." (Walsh, 2013). The data was analysed using MS Edexcel software to assist the hypotheses development and analysis. This small sampling was goal-directed and empirical, and inductive reasoning approaches were chosen to meet the hypotheses development and gain new insights into the issue (Eastern by-Smith, 2012). The hypotheses for this research were formulated to reassess the most significant past work of Powell and Dixon (2011), Coe and Oakhill (2011), De Jonge and Kemp (2012), and Cingel and Sundar (2012), which focused on the influence of textese on adult literacy. On that basis, three hypotheses were formulated to examine the link between textism and spelling. The data were analysed thematically and presented as tables and discussions according to the findings of each hypothesis. Quantitative analysis was also conducted to determine the correlations.

Results and Discussion (Quantitative Phase)

This section discusses the analysis and hypotheses testing. A quantitative approach was selected using graphic data presentation and analysis.

**Chart 01: Daily text by age group**
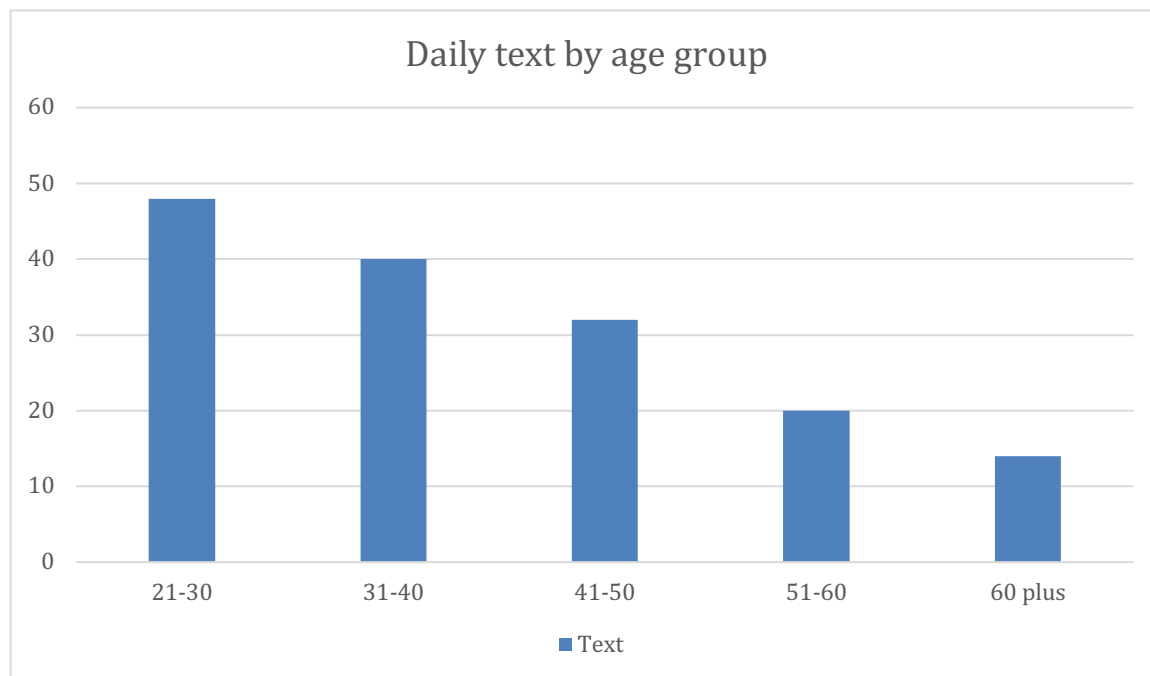
The frequency of text messages can vary by age group, as different generations have distinguishable communication choices and habits. However, it's crucial to note that these trends can change over time due to evolving technology and communication platforms.

Young adults aged from 21 to 30 heavily rely on text messaging for communication. This age group also use text messages frequently, especially for personal and social communication. Our results show that this age group sends 48 text messages daily, followed by the age group 31-40, which sends 40 text messages daily. Middle-aged adults also tend to use text messaging for both personal and professional communication. While they may not text as frequently as younger age groups, they rely on texting for quick communication and coordination. Work-related texts are standard, especially for scheduling and business communication.

The adults 60 plus send 12 messages daily. Seniors are less likely to text frequently compared to younger and middle-aged groups. However, many seniors have adopted text messaging to stay in touch with family and friends. They may use texting for personal communication and rely on phone calls or other methods for more formal or professional communication.The trend of sending text messages by middle-aged people (41-50) has been increasing. The age group 51-60 sends 20 text messages daily.

**Chart 02: Classification of text by percentage**
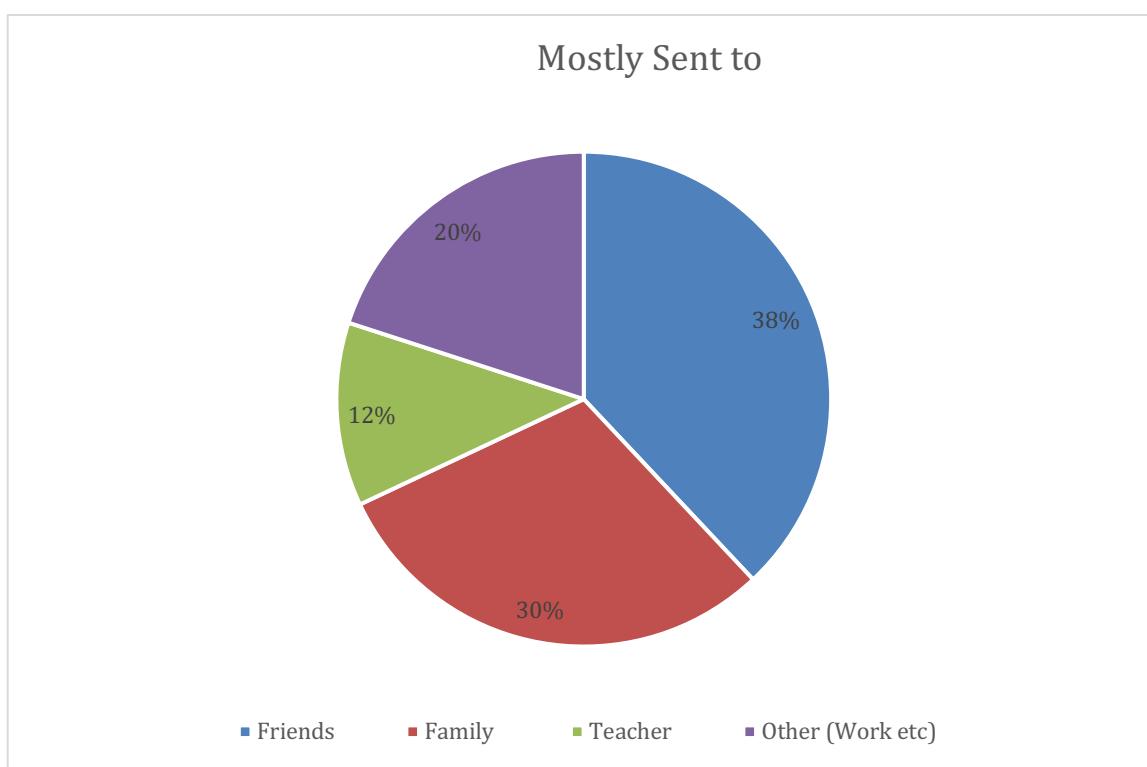
Text messages to friends often involve casual conversations and sharing updates on daily life. Our results show that the percentage of texting to friends is the highest, which is 38%. The second highest percentage is sending texts to family, which is 30%. Text messages within families often serve practical purposes like coordinating schedules, sharing household updates, sending messages expressing love, care, and well wishes and organising family gatherings. The lowest percentage of texting is related to sending texts to teachers, which is 12%. Students often send messages to teachers for academic purposes, such as asking questions about assignments, seeking clarification on topics, or requesting feedback.

Hypothesis 1: There is a positive link between texting and literacy.

This hypothesis expects a negative link between the daily frequency of sending text messages and participants' spelling among both English and non-English participants.

This finding suggests that the adult population is nowadays using text messaging more often than young adults. Most participants expressed that they are using WhatsApp as it is free, and they mostly use it at work or among friends and families. This can explain the relatively high amount of text messages sent per day, as it is cost-effective and also saves time.

Chart 03: Text Exposure
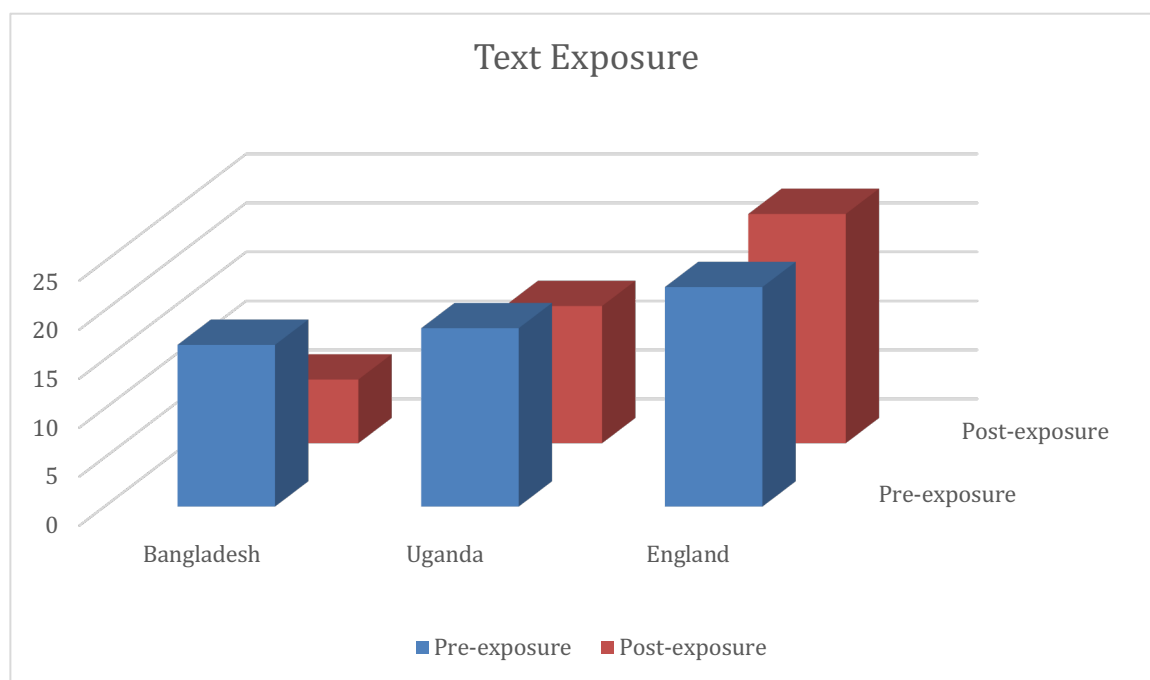
Earlier studies have shown that people whose first language is English and who are between 21 to 30 years old send text messages every day. They also seemed to produce better outcomes in terms of before and after exposure to textese. However, this study found the opposite for speakers of other languages: introducing them to textese adversely impacted their formal writing. It is suggested that either those participants already had a lack of English knowledge or that their study curriculum was based on their native language. As a result, the outcome is negative. However, in some countries, participants educated in the English medium showed a positive performance after being introduced to textese. The same outcome was identified by Lieke (2020). Therefore, this research finding does not support hypothesis 1 as the

number of text messages sent does not relate to spelling errors, nor does it hurt adults' literacy. Instead, it depends on the participants' method of study and their first language, which contradicts the work of Kemp and De Jonge (2012), who found in their research study the daily number of text messages sent is correlated negatively with literacy.

Chart 04: Effects of text exposure on literacy
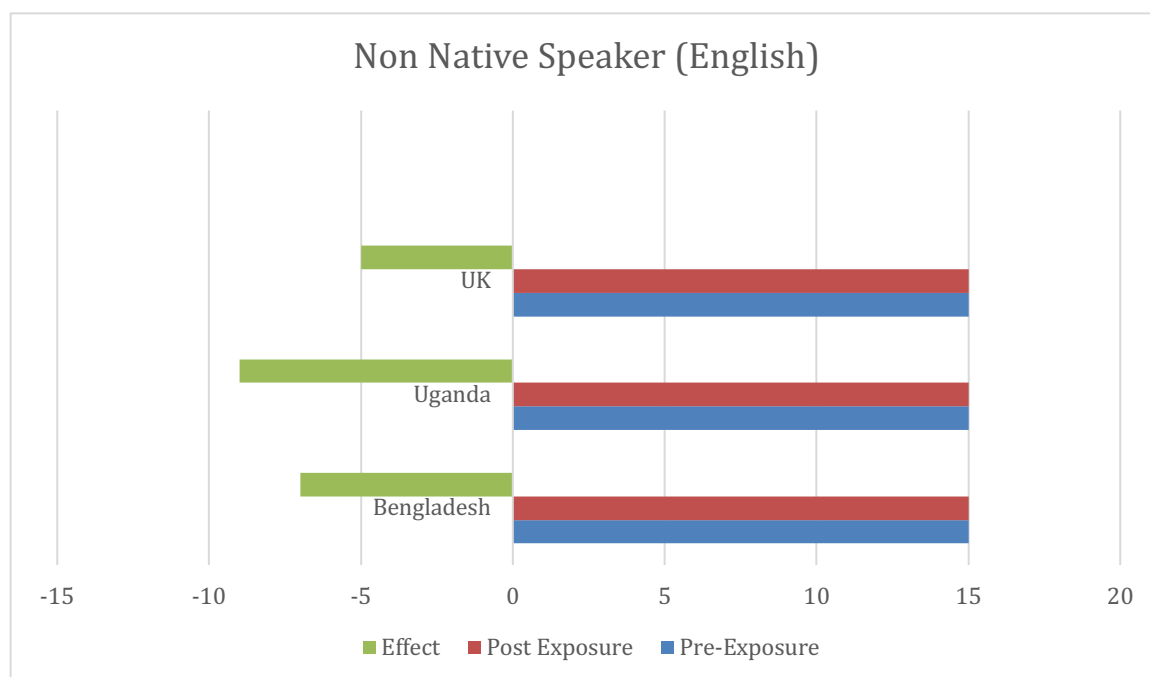
Some scholars argue that textese and literacy have a positive link, while others believe it may have a negative impact. Here are some of the arguments on both sides:

Positive Link Between Textese and Literacy:

1. Increased Communication Skills: Supporters of this view argue that using textese can enhance a person's ability to communicate effectively in digital environments, which are becoming increasingly important in modern society.

2. Improved Typing Skills: Regular typing on mobile devices can improve a person's typing speed and accuracy, which are valuable skills in the digital age.

3. Creativity and Adaptability: Textese often requires individuals to think creatively and adapt to new forms of communication, which can stimulate cognitive development.

Negative Impact of Textese on Literacy:

1. Spelling and Grammar: Critics argue that frequent use of textese can lead to poor spelling and grammar habits, as it often involves shortcuts and unconventional spellings that deviate from standard language rules.
2. Reduced Vocabulary: Overreliance on abbreviations and acronyms may limit vocabulary development, as individuals may not be exposed to a wide range of words and expressions.
3. Negative Transfer: Some research suggests that young people who use textese may struggle with formal writing tasks because they have internalized the conventions of informal digital communication.

It is essential to note that the impact of textese on literacy is likely to vary among individuals and may depend on factors such as the extent of textese use, the individual's age, and their overall language skills. Additionally, the use of textese has evolved, and many people can switch between informal digital communication and formal writing when necessary.

In summary, whether there is a positive or negative link between textese and literacy remains a matter of debate, and the effects are likely to be context-dependent. Educators and researchers continue to explore this topic to better understand its implications for literacy and communication skills in the digital age.

Hypothesis 2: Adults can differentiate links between formal and informal texting.

This hypothesis predicts that adult can understand the difference between formal and informal settings and can use textese and formal language accordingly.

Chart 05: Distinguish between Formal and Informal Text
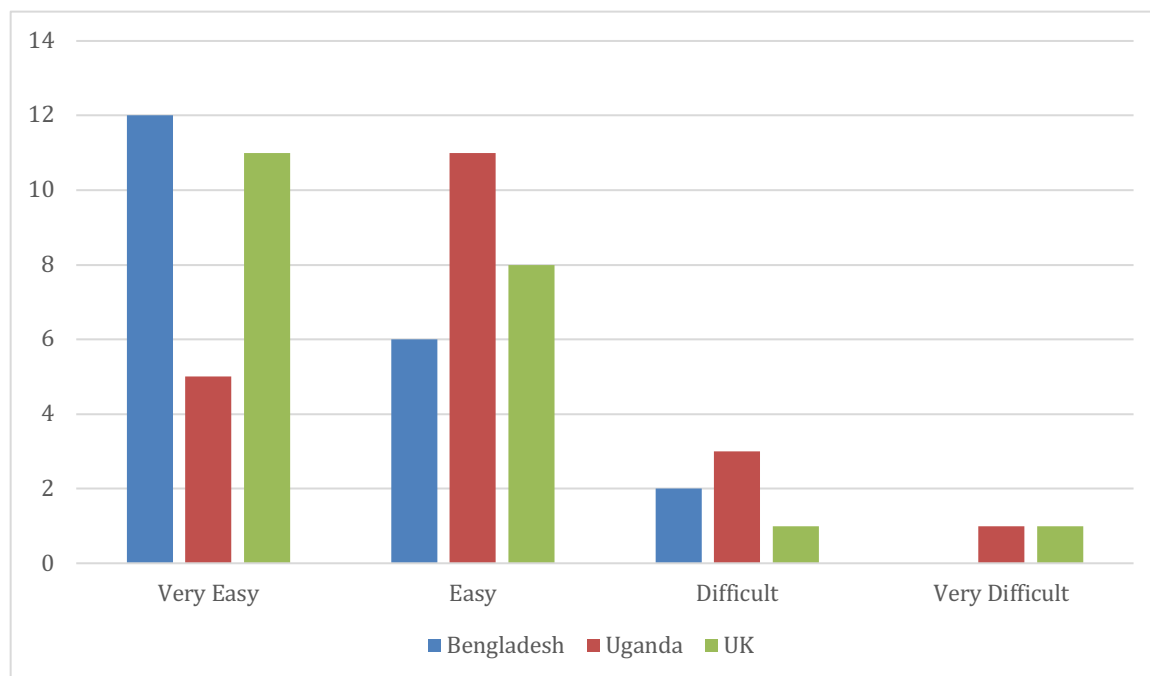
The results show that majority of respondents from three countries very easily and easily differentiate between formal and informal texting.

Table 03: Formal and Informal Texting

Formal Texting	Informal Texting
Use of full sentence	Shortened Messages
Polite Language	Casual Language
Professional Content	Personal Content
Avoidance of Emojis and Slang	Frequent Emojis and GIFs
Structured and Organised	Unstructured, Flexibility with Grammar
Minimal Use of Texting Abbreviations	Maximum use of abbreviations

Source: Authors

This finding reveals that the participants texted friends and family often using informal language as it is the easiest and quickest way to communicate while using emoticons is an informal and humorous way to augment this interaction as well. Most of the respondents use formal texting to communicate with work.

It's important to note that there is a range of formality in texting, and the style can vary based on the individual, the context, and the relationship between the people communicating. While adults can differentiate between formal and informal texting, they may adjust their style to suit the specific situation and audience

Hypothesis 3: Textese has a positive effect on spelling.

This hypothesis predicts that an acquaintance with textese will have a negative impact on spelling as it hampers the adult's ability to recognise the original spelling of a word.

The results show that the UK group had a small increase in the test outcome post-exposure. However, the scores for the participants from Uganda and Bangladesh decreased significantly. This research data finding shows that, overall, 37% of UK participants were influenced negatively by exposure to textese, while 63% of the participants from Uganda and Bangladesh were negatively influenced, as underlined by their post-exposure result. Therefore, this research suggests that exposure to textese impacts adults' spelling. Some of the pre and post-test outcomes are presented here to facilitate a better understanding of the situation:

Chart 06: Participants' Post-exposure of Textese use
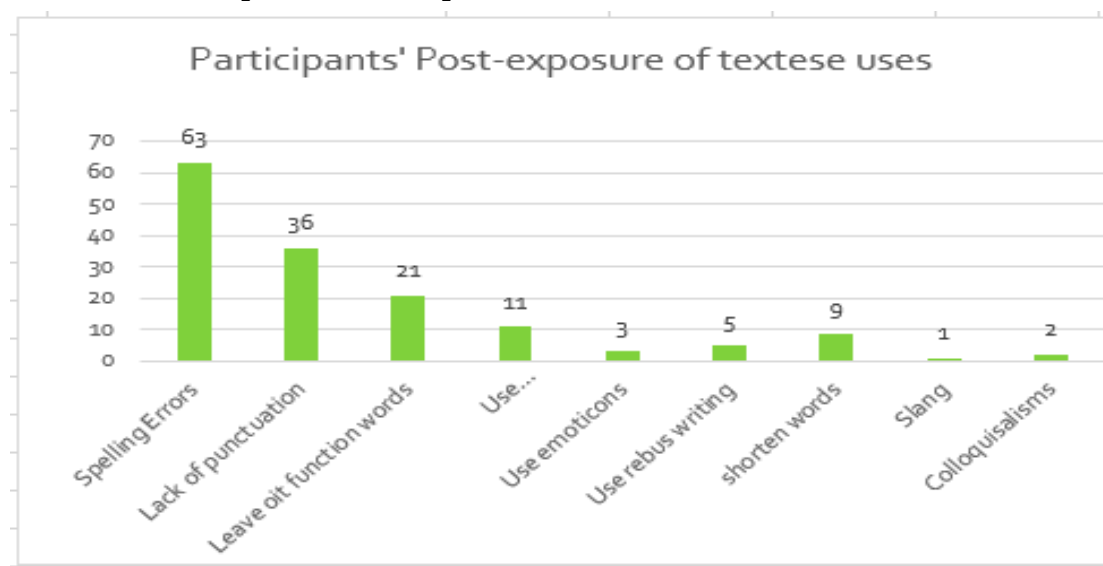
Our results show that misspelt words are common due to typing quickly or relying on autocorrect. Other errors, for example, are related to Homophones (e.g., "there" vs "their" vs "they're") confusion. Omitted or doubled letters in words (e.g., "litle" instead of "little"). Results show that spelling errors are 63 percent followed by punctuation related issues are 36 percent. The results also show that people do not

take into consideration punctuation. Lack of proper punctuation, which can make sentences unclear. Overuse of exclamation points or ellipses for emphasis or suspense.

Overuse of slang or abbreviations (e.g., "lol," "brb," "gr8") that can be unclear to the reader. Inappropriate use of informal language in formal or professional contexts may damage the sender's reputation (see chart 6).

Chart 07: Impact of textese
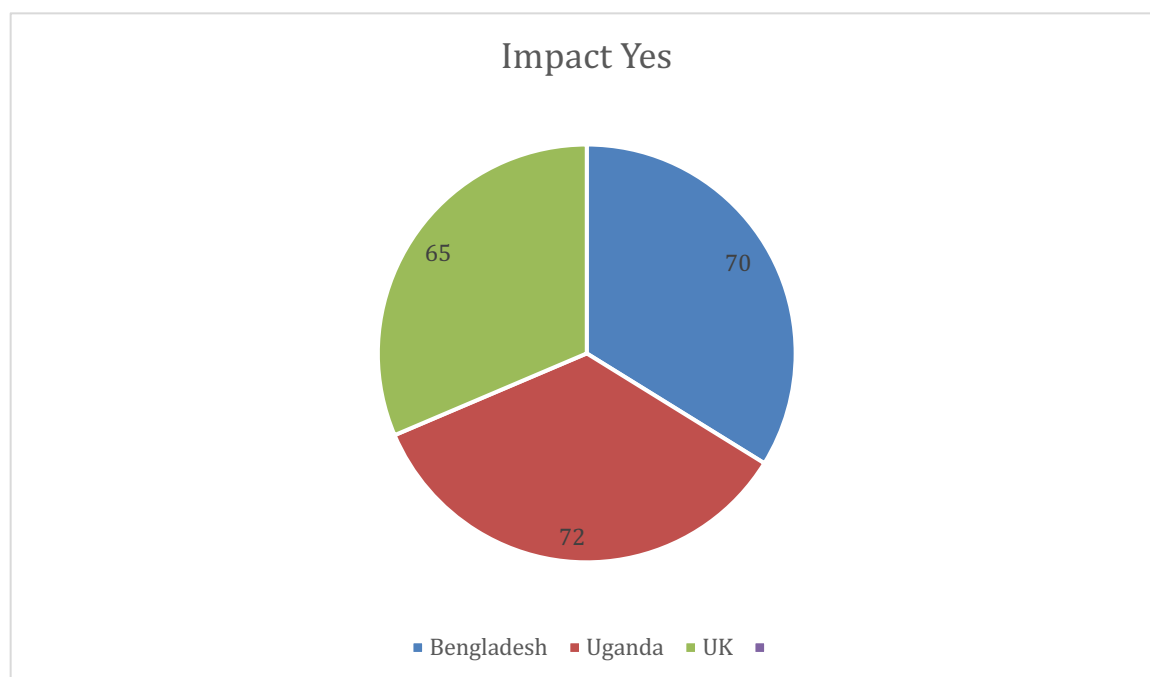
This research study has found that 69% of the participants agreed that textese impacted their spelling.

Outcome of spelling tests have selected 15 spellings out of 30 spellings from six respondents. Overall Standard Deviation (SD) result as below:

Standard Deviation of 16.5, 6.5, 18.2, 14, 22.4, 23.4

SD= 5.640527950073

Count, N = 6, Sum,

$\sum x = 101$,

Mean, $\mu = 16.833333333333$,

Variance, $\sigma^2 = 31.815555555556$

Please see appendix 2.

The analysis found that the second spelling test time was longer than the first spelling test. Meanwhile, some participants made very silly spelling errors due to a lack of confidence, although, their overall score was good. Those who improved their spelling test score decided that they would not use textese as they found that it made them lazy and erased their knowledge of standard English spelling when texting. It is also possible that they did not make a mindful effort to transfer the information to the second spelling test (as discussed above in the high road theory). This supports hypothesis 3 and is consistent with the findings of Drouin and Driver (2012), Drouin (2011), and De Jonge and Kemp (2012). Drouin (2011), for example, found that 60% of contestants understood that textese had obstructed their spelling, even though it had not. This research study has found that 69% of the participants agreed that textese impacted their spelling. As a result, the research study's results accepted hypotheses. However, past research by Rosen et al.'s (2010) also found a positive connection between adults' text messaging frequency and spelling errors.

Findings and Discussion (Qualitative Phase)

Table 04: Demographic Factors

Gender	Percentage
Male	44%
Female	56%
Education Level	
A Level	15%
Undergraduate	45%
Post graduate	30%
Other	10%
Type of HEI	
Public	67%
Private	33%
First Language	
Bengla	45%
English	20%
Uganda	35%

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The data collected from the interview show that most of the participants were aware of the formal and informal language settings and considered the use of textese to be suitable for informal settings. The following presents some examples of participants' responses in this regard:

Participant 01: "...I can easily differentiate between formal and informal text..."

Participant 3: "...I feel respected when I see a formal text... and send formal text to teachers so they can feel in the same way"

Participant 4: "...I don't mind having texts with informal language from family and friends ..."

Participant 5: "...I like to see everyone spelling properly..."

Participant 7: "I like to be formal when I make any formal communication."

Participant 9: "Textese to be used informally, life is busy and we do not have ample time to write full words and sentences... I prefer short and abbreviated language ..."

Participant 12: "...We use textese while we use a colloquial language..."

Participant 15: "...Purpose is to communicate; it does not matter formal or informal language..."

Participant 18: "...Provide fast communication whether formal or informal ..."

The findings from the interview also suggest that teachers and academic professionals find it unacceptable to use textese in informal settings, i.e. during meetings or classroom activities, therefore some participants prefer formal language and as they think they feel respected with formal text language and expect same for teachers. This research finding is in line with Drouin and Davis (2009, cited by Powell and Dixon, 2011), who expressed that students find it inappropriate to send text messages or use textese with their teachers and colleagues. However, in the present time in post COVID-19, the use of online sessions has encouraged students to use

emoticons as a way to get involved and become engaged in the teaching-learning process. This remains an interesting opportunity for future research focusing on the analysis of the post-pandemic trend of text messaging, the use of emoticons, and language development/literacy. There is thus a positive relationship between informal writing and a negative relationship with formal writing. Rosen et al. (2010) found that when someone is educated, it may be difficult for them to complain about formal communication as their daily communication is filled with linguistic textese. On the other hand, participants who do not have any degree but frequently use textism are quickly able to respond to emotional topics, such as by using a sad face emoticon. Their daily conversation thus incorporates both linguistic and contextual textese.

Therefore, hypothesis 2 is supported further by qualitative research in this study as the findings show that adults can identify both the formal and informal uses of textese. This finding contradicts the first finding of Mahahlele and Mashamite (2005, cited by Verherijen 2013), who found that "students are unable to differentiate between formal and informal writing after using textese." On the other hand, this result corresponds with the findings of Lieke (2020), who reported that there is no negative relationship between textese and formal school writing. However, this empirical research study's result suggests a difference between using textese for formal and informal writing and participants' different level of education.

Incorrect spelling may lead to one of the additional features of textese (namely shortening of words) and directly link with formal writing.

Participant 5: Initially spelt "ecstasy" correctly but spelt "extasy" after learning the textese "XTC".

Participant 1: Initially spelt "busy" correctly but spelt "buzy" after learning the textese "BZ" (however, this participant achieved a higher post-exposure result).

Participant 17: Initially spelled "juicy" correctly but spelt "jucy" after learning the textese "juC".

Participant 13: (Postgraduate student with English as the medium of instruction since undergraduate level): This participant's score was unaffected, although she spelled "tomorrow" as 2morrow". This respondent said that she usually uses "2moro" in her normal texts. Although she knew that this is an incorrect spelling, she admitted that

it was automatic. According to Roger (2008), this is how textese impacts the formal writing of students.

In a discussion with the participants about their test results, they admitted that they knew the correct spelling but that the textese words had confused them, even though there had been a 15-minute gap. This outcome could represent a future research field. This is retroactive interference, as defined by McGeoch (1932, cited in Drouin, 2011), in that past knowledge could interfere with or be altered by exposure to new information. Thus, textese may interfere with participants' typical spelling of a word, and the impact may be even greater when English is their second language. This is supported by both low-road and high-road theories of learning. The low-road theory states that knowledge transfer arises when well-established skills transfer automatically, while the high-road theory contends that the learner intentionally and purposely evaluates their new situation and applies previous learning to it (Saloman and Parjins, 1988, cited in Drouin, 2011). An example is the above-mentioned experience of Participant 4.

The analysis found that the second spelling test time was longer than the first spelling test. Meanwhile, some participants made very silly spelling errors due to a lack of confidence, although, their overall score was good. Those who improved their spelling test score decided that they would not use textese as they found that it made them lazy and erased their knowledge of standard English spelling when texting. It is also possible that they did not make a mindful effort to transfer the information to the second spelling test (as discussed above in the high road theory). This supports hypothesis 3 and is consistent with the findings of Drouin and Driver (2012), Drouin (2011), and De Jonge and Kemp (2012). Drouin (2011), for example, found that 60% of contestants understood that textese had obstructed their spelling, even though it had not. This research study has found that 67% of the participants agreed that textese impacted their spelling. As a result, the research study's results accepted hypotheses. However, past research by Rosen et al.'s (2010) also found a positive connection between adults' text messaging frequency and spelling errors.

Conclusion

This research study aimed to investigate the relationship between textese, text messages, and literacy. The survey and interviews offer a valuable perception of the impact of texting on adults' literacy. Based on the immediate results, this study has revealed that there is no adverse relationship between frequent text messages and speaking, adults can differentiate between formal and informal writing contexts, and

'textese' significantly impacts adult literacy and spelling, especially if their first language is not English.

Motiwalla (2007) urges that the popularity and support of mobile devices within the student population is so great that "it would be foolish to ignore them in any learning environment" (p. 584).

In spite of its valuable findings, this study has a limitation in that it does not consider a large number of participants, making it difficult to generalise the findings to adult literacy. Nevertheless, it does highlight that even after just one spelling test, there is a significant impact on adult spelling, affecting more than 67% of the participants, especially those who spoke English as a second language. In terms of the time between the tests, future research may consider a period of a few months instead of a few days to derive a more insightful outcome beyond the scope of this research study.

Despite the above, this study was not overly simple as it involved many factors, including frequency of textese use, age group, formal and informal writing, method of education, different language, and diverse literacy tests. Additionally, it revealed unique findings, setting itself apart from similar studies by showing that 67% of the participants from Bangladesh, the UK (non-native English speakers), and Uganda were impacted by exposure to textese. This could be due to a lack of English proficiency or a lack of confidence, as suggested by the prying theory, as cited in Drouin (2011). Therefore, further investigation is required in this area. In conclusion, it seems that there is some truth to the notion presented in the media that using textese impacts adults' spelling.

Overall, the findings of this research suggest that more is needed, whereby a longitudinal study with a larger sample of all ages is indicated. As per the authors, the amount of texting does not affect literacy because numerous ways can be used, such as standard English, predictive texting, and so on. On the other hand, this research study has found that textese does negatively affect spelling. This study has also found that those who use textese use emoticons, omit punctuation, and even design new abbreviations among other things. Instead of relying on participants' judgment, real observation of text messages could be used to better understand the density of textese. Finally, because of the scarcity of previous studies, an analysis of textese and English as a second language is highly recommended.

Declaration of Conflicting Interests

The author declares no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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Appendices
Appendix 1

Textese	Standard English
aQr8	accurate
bUtiful	beautiful
BZ	busy
Ca$et	cassette
Chocl8	chocolate
DV8	deviate
RIER	earlier
XTC	ecstasy
XS	excess
4T	forty
Lbry	library
mLOD	melody
reCv	receive
2moro	tomorrow
wErd	weird
LMNt	element
MbRSd	embarrassed
MergNC	emergency
XLNt	excellent
XtrEm	extreme
gNer8n	generation
Gnys	genius
jLSE	jealously
juC	juicy
lotRE	lottery
mRvls	marvellous
9th	ninth
rLEvd	relieved
sepr8	separate
st&rd	standard

Appendix 2

Result

Standard Deviation of 16.5, 6.5, 18.2, 14, 22.4, 23.4

5.640527950073

Copy

Arithmetic Mean of the Numbers

Count, $N = 6$

Sum, $\sum x = 101$

Mean, $\mu = 16.833333333333$

Variance, $\sigma^2 = 31.815555555556$

Copy

Step by step solution

The Formula of the Standard Deviation.

$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$$

Calculate the mean of the data. Add up all the numbers and divide by the total number of data points.

$$\mu = \frac{16.5 + 6.5 + 18.2 + 14 + 22.4 + 23.4}{6} = 16.833333333333$$

Subtract the mean from each data point and then sum all the values.

$$\sqrt{\frac{(16.5 - 16.833333333333)^2 + \ldots + (23.4 - 16.833333333333)^2}{6}}$$

Calculate the mean of the squared differences. This value is the sample variance.

$$\sqrt{\frac{190.89333333333}{6}}$$

The standard deviation is the square root of the variance.

$$\sqrt{31.815555555556} = 5.640527950073$$

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