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Exploring Pre-service Teachers' Knowledge of and Ability to Use Text Messaging

Gretchen Geng
Charles Darwin University, Gretchen.geng@cdu.edu.au

Leigh Disney
Charles Darwin University, leigh.disney@cdu.edu.au

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Abstract: This study aimed to assess the pre-service teachers' knowledge of and ability to use text messaging, and assist their use of this technology in the classroom teaching context. Data were gathered by means of a questionnaire and text message exercises. Fifty-three pre-service teachers participated in the study. It was found that although different tasks required different contributions of word numbers to complete the text messages, the percentages of text abbreviations were the same in all text messages. It was also found that participants who used more text abbreviations in their text messages had more correct scores in translating text abbreviations into Standard English. Moreover, participants who rated themselves higher in their self-rated writing and reading abilities used more text abbreviations in their text messages. Teacher educators may find this paper useful in understanding pre-service teachers' knowledge and ability to use text messages, with a further view to developing professional training sessions for improving their abilities in using text messaging technologies effectively in their teaching.

Introduction

'Pre-service teachers' refer to tertiary students who study for a degree (or degrees) in teacher education and will become professional teachers after graduation. Graduate teachers are required by the Australian Professional Standards for Teachers (Australian Institute for Teaching and School Leadership, 2013), to possess the requisite knowledge and skills to plan for and manage learning programs for their students, from early childhood to high school. Therefore, a graduate teacher should know the appropriate content and how to teach it; more specifically, Standard 2.6 requires a graduate teacher to implement teaching strategies for using Information and Communication Technologies (ICTs) to expand curriculum learning opportunities for students.

Most students were born into a world of technology (Tomita, 2009). With the popularity of ICTs, many students use a range of technologies to learn, research, and communicate with each other. For example, in many school contexts, mobile phones, MP3 players and other similar digital devices have become acceptable technologies for students to use. In particular, there are more than 6.8 billion mobile phones in the world in 2013 (International Telecommunication Union, 2013), and one major group of users are school students.

School students use text message as well as voice calls to contact their friends or peers (Palfrey & Gasser, 2008). For example, in the study of Walsh, White, Cox and Young (2011), young Australians (aged 16 to 24 years old) in Queensland are highly involved with their mobile phone, and they use their mobile phones to communicate with others by calling and

text messaging. Text messaging technologies also allow students to use social webs, such as Twitter (Milstein, Chowdhury, Lorica & Magoulas, 2008), and students, especially teenagers, spend an average of 40 minutes a day on sending and receiving text messaging (Bauerlein, 2008; Lenhart, Madden & Hitlin, 2005). Thus, mobile phone use is a highly salient part of many young people's daily lives, including during their schooling (Walsh et al., 2011).

How to use mobile phones and text messages in classroom teaching has become a concern for teachers and educators. Garfinkel (2004) stated that in a future increasing filled with messaging opportunities, the skills of using messaging technologies would be required of both students and educators. Thus, the student population is forcing educators and teachers to rethink how they teach and how students learn in a digitally-connected world (Tomita, 2009). For many years, researchers such as Davis, Bagozzi and Warshaw (1989), Legris, Ingham and Collerette (2003), McCoy, Galletta and King (2007) and Teo (2009) have sought to identify factors to facilitate the integration of technology into classroom teaching. Since pre-service teachers are future professional teachers, the issue of how to assess and train them to learn to use these technologies in the classroom settings emerges.

Moreover, although these researchers tried to connect the choice of pre-service teachers' use of technologies with their education in teacher education degrees, there has been very limited research in relation to assessing their text messaging literacy levels. Expanded ideas about literacy now include not only reading, writing, oral language and listening, but also text messaging skills. Terms such as 'computer literate' and 'media literacy' have been created. For example, being media literate means reading and writing with media technologies to communicate and fulfil different learning tasks and activities (Winch, Johnston, March, Ljungdahl & Holliday, 2010). Winch et al. (2010) use a metaphor to describe this kind of media literacy: like a child, a learner learns to conform to traditional notions of literacy standards; Ashley, Lyden and Fasbinder (2012) state that media literacy education requires critical thinking about the messages we receive and create.

Although there have been many studies on media literacy, few have focused on the need to differentiate between different media message types, such as advertisements, news and public relations messages (Ashley, Lyden & Fasbinder, 2012) and on text messaging literacy levels.

Moreover, as users of text messages, pre-service teachers discuss their studies or teaching practicum with mobile phones (Geng, 2013). As one of the fastest growing types of technologies (Geng, 2013; Plester, Wood & Bell, 2008; Reid & Reid, 2005), text messaging provides pre-service teachers with an inexpensive, fast-paced and convenient channel for communication.

Compared with standard traditional English, text messaging does not always follow the rules. For example, students may use 'LOL' to represent "laugh out loud/lots of love", and 'ASAP' to represent "as soon as possible" (Geng, 2013). Geng studied how the use of text messaging might positively or negatively influence the levels of literacy of tertiary students, especially in terms of their reading and writing abilities, and found that it was positively related to their reading and writing ability. Her study also showed that the students' translation of text abbreviations was significantly correlated with their reading and writing levels and that the students who rated themselves higher in reading and writing had more correct translations of the text abbreviations (Geng, 2013).

Therefore, contrary to the research that looked at the use of text messaging by school-age students, it appears that tertiary students' traditional literacy levels are not related with their use of text messaging. However, given the need to use mobile phones and text messaging in school context, it is important to determine whether the pre-service teachers' text messaging literacy levels can facilitate their future teaching, their knowledge of their students and their understanding of how students learn.

To sum up, although there are concerns that the use of text messaging may influence pre-service teachers' Standard English reading and writing abilities, it has been found (Geng, 2013) that it relates positively with their literacy attainment. As future professional teachers, pre-service teachers are required to know students and how they lean, and have the ability to implement teaching strategies for using ICT to expand curriculum learning opportunities for their students.

Given the growing use of mobile phones in school settings, how do pre-service teachers keep up their text messaging skills so that when they graduate, they can understand and know their students and use this technology in their teaching? This study thus aims to provide educators in teacher education with information about pre-service teachers' knowledge and ability to use text messages, with a further view to developing professional training sessions for improving their abilities to use text messaging technologies more effectively in their teaching.

Methods

This study used the research methodology and research instruments developed by Geng (2013) and Plester, Wood and Joshi (2009). Quantitative data were obtained through a closed-questions questionnaire and text message exercises and using open-ended questions in the questionnaire collected qualitative data. In the text message exercises, a survey was used to test the participants' abilities in 'translating' between the language used in text messages and that used in Standard English.

Participants

Participants were volunteers and consisted of 53 on-campus undergraduate and postgraduate pre-service teachers from the School of Education in Charles Darwin University, in the Northern Territory of Australia. Forty-nine participants (92.5 per cent) were females, reflecting their predominance in the School. Of the 51 students who answered the questions about their mode of study, 46 (86.8 per cent) were full time. Ages ranged from 18 to over 51 years, with 75.5 per cent being aged 18-30, and 26.5 per cent being over 30 years. There were 22 (41 per cent) first year students, 25 (47.2 per cent) second, third and fourth year students, and six (11.3 per cent) postgraduate students.

Questionnaire Procedure

The questionnaire was administered with the assistance of the unit coordinators at Charles Darwin University. It was administered during Semester 2, 2011 in the internal tutorial classes within the normal teaching period, and required 30 minutes to complete. Questionnaire instruments in hard copy were handed out to the students with the consent forms by the researcher, who also transcribed, entered and analysed the data gathered. There were five closed questions regarding the participants' demographic background, their self-rated skills in reading and writing, the year in which they started to use text messages and number of text messages they sent and received each day. Four open-ended questions asked whether they felt comfortable in translating and using text messaging and their views about the importance of using text messaging in their daily lives.

Text Message Exercises Procedure

The text message exercises were administered with the assistance of the unit coordinators. During the exercises procedure, the participants were not allowed to talk to each other. The exercises had two sections: (a), translating 64 of the most popular, well-used text abbreviations to Standard English; and (b), creating two text messages based upon two pre-set scenarios. The participants were given five minutes in each section.

The researcher entered all the written answers into the Statistical Package for the Social Sciences (SPSS), and they were then checked to confirm the accuracy of the data. Qualitative data such as their translation from Standard English to text messages were categorised and entered into Nvivo.

Results

Exercises from Text Abbreviations to Standard English (Exercise 1)

Table 1 presents the means and standard deviations for correct translation, incorrect translation and blank answers among the 53 participants.

Translation	Mean	*SD*
Correct	36.13	9.75
Incorrect	2.66	2.20
Blank answer	24.25	9.54

Note: the total number of text abbreviations was 64.

Table 1: Correct translation, incorrect translation and blank answers from text abbreviations to Standard English ($N = 53$)

A correlation was used to measure the correlation among the correct translation, incorrect translation and blank answer. As can be seen from Table 2, the translation was significantly negatively correlated with blank answer. The students who had more correct translations had fewer blank answers.

Variables	Incorrect translation	Blank answer
Correct translation	-.04	-.86**
Incorrect translation	2.66	-.10
Blank answer		

Note: $N = 53$, ** $p < 0.01$.

Table 2: Intercorrelations of text messages translation

In terms of the text message exercises, the mean of participants' correct was higher than the mean of blank answer. The students who had more correct translations had fewer blank answers. It suggests that tertiary-level students choose to either do a correct translation or leave a blank. There was limited incorrect trying or guessing of the meanings of the text messages.

Exercises from Standard English to Text Messages (Exercise 2)

The participants were asked to write two text messages for two tasks from Standard English to text messages.

Task	Message
1	You have been enjoying a holiday with your family in Bali and you would like to send a text message to your best friend about what you ate, life style and would like to bring a gift to him/her. You will be seeing him/her this Sunday.
2	You are working in a group of three for an assignment. All of you decide to have a group meeting tomorrow. You are going to send them a message about tomorrow's meeting, including time, place, and the basic content of your meeting.

Figure 1: Exercises from Standard English to text messages

Although 49 students (92.5 per cent) completed the Task 1, the text messages they wrote were very different. For example, Student 19 used 51 words and no abbreviations, while Student 23 used 14 words with eight abbreviations.

Student	Message
19	Hi, mate! How are you doing? I'm right now in Bali with my family. The food here is just fantastic. I eat a dish called Nasi Goreng every day because it's so yummy. The people and lifestyle is really easy going and everyone is enjoying themselves. Can I bring you a present?
23	OMG, Bali is SMF, 8 lots of GD food, LUV U, C U Sunday.

Figure 2: Examples of messages from Students 19 and 23 for Task 1

Again, of the 41 students (77.4 per cent) who completed the Task 2, many completed the task differently; for instance, Student 20 used 24 words with no text abbreviations in her message, and Student 23 used 10 words with nine abbreviations.

Student	Message
20	Hi, come at college coffee shop, at 9:00pm and I just want to talk about the assignment powerpoint. Thanks. See you in coffee shop.
23	C@ch up 4 ass. C U @ 4 @ myn.

Figure 3: Examples of messages from Students 20 and 23 for Task 2

It was noted that like Student 23, many used symbols as text abbreviations.

The word numbers for Task 1 were between 10 and 53, and for Task 2 between four and 40. The word numbers for the former had a strong positive correlation with the word numbers for the latter ($r = 0.55$, $p < .01$). Participants who used more word numbers in Task 1 also used more word numbers in Task 2.

Task	Mean	*SD*
1	26.66	11.74
2	15.34	7.48

Table 3: Word numbers for text messages for Tasks 1 and 2 ($N = 53$)

Most messages included text abbreviations (Task 1 between 0 and 37 and Task 2 between 0 and 28). It was found that word numbers for text abbreviations for Task 1 has strong positive correlations with word numbers for text abbreviations for Task 2 ($r = 0.84$, $p < .01$). Participants who used more word numbers in text abbreviations in Task 1 also used more word numbers in text abbreviations in Task 2.

Task	Mean	*SD*
1	10.88	8.70
2	5.80	5.04

Table 4: Word numbers for text abbreviations for Tasks 1 and 2 (*N* = 53)

Two new variables (percentages using text abbreviations in text messages for Task 1 and Task 2) were created by dividing word numbers for text messages by word numbers for text abbreviations for Tasks 1 and 2.

Paired samples t-test was used and although there were differences in the word numbers for text messages and text abbreviations for Tasks 1 and 2, the means of the percentages for Tasks 1 and 2 were not significantly different (t = 1.19, df = 38, p = ns). Although different tasks required different contributions of word numbers to complete the text messages, the percentages of using text abbreviations in completing the tasks were not different.

Task	Mean	*SD*
1	40.63	0.22
2	40.73	0.25

Table 5: Percentages of using text abbreviations in text messages for Tasks 1 and 2 (*N* = 53)

Exercises from Text Abbreviations to Standard English (Exercise 1) and Exercises from Standard English to Text Messages (Exercise 2)

Correlations were used to find the relationship between the participants' correct, incorrect and blank scores for Tasks 1 and 2. Correct scores were positively correlated with Text Abbreviations 1 and 2, although correct scores were not corrected with Text Messages 1 or 2. Incorrect scores were not correlated at all with Text Abbreviations 1 and 2 or Text Messages 1 and 2. Blank scores were negatively correlated with Text Abbreviations 1 and 2 and Text Messages 1 and 2. Participants who used more text abbreviations had more correct scores but fewer blank scores.

Scores	Text Message 1	Text Message 2	Text Abbreviation 1	Text Abbreviation 2
Correct scores	0.04	0.19	0.33*	0.31*
Incorrect scores	0.09	0.25	0.06	0.16
Blank scores	0.04	-0.20	-0.29*	-0.34*

Note: *p < 0.05.

Table 6: Correlations between scores from Exercise 1 and text messages and text abbreviations in Exercise 2

Correlations were also used to find the relationship between the participants' correct, incorrect and blank scores from Exercise 1 and Percentages 1 and 2 from Exercise 2. Percentage 1 was correlated positively with correct scores, but negatively correlated with blank scores, while Percentage 2 was not correlated with correct, blank or incorrect scores. Participants who used more text abbreviations in text messages had more correct scores, but fewer blank scores in Task 1 but not in Task 2.

Scores	Percentage 1	Percentage 2
Correct	0.39**	0.30
Incorrect	0.08	- 0.18
Blank	- 0.39 **	- 0.29

Note: **$p < 0.01$.

Table 7: Correlations between scores from Exercise 1 and percentages in Exercise 2

Students' Self-Rated Writing and Reading Abilities and Exercises from Standard English to Text Messages (Exercise 2)

One-way ANOVA was used to find the differences between the students' self-rated writing and reading abilities and percentages in Exercise 2. It was found that both Percentages 1 and 2 were strongly related with the participants' self-rated abilities. This finding shows that the students who rated themselves higher (5 or 6) in their abilities used more text abbreviations in their text messages.

Percentage	3	4	5	6	*F (df)*	*p*
1	25	31	50	49	3.12 (3)	0.04
2	25	29	53	50	3.00 (3)	0.05

Table 8: Students' self-rated writing and reading abilities and Exercise 2 ($N = 53$)

Discussion and Conclusion

This study presents four major findings.

Firstly, it was found that although majority of the participating pre-service teachers completed writing text messages, different participants used different word numbers. Text abbreviations accounted for around 40 per cent of all the words in text messages. The text abbreviations used included common abbreviations as well as symbols. Unlike Prensky (2001), who found that teachers grew up without using text messaging technologies, most pre-service teachers nowadays can use text messaging skills (Geng, 2013; Walsh, et al., 2011). They can use text abbreviations – the mean for Task 1 was 40.63 per cent for Task 2 40.73 per cent. In this study, although some participants used more word numbers in their text messages than other, they also chose to use more words numbers in text abbreviations. This finding is consistent with the work of McCoy et al (2007) on facilitating technology integration into classroom teaching: they found that pre-service teachers had the appropriate text messaging literacy level to use it in their teaching and would understand their future students and know their needs.

Secondly, it was found that the participants who answered Exercise 1 with more correct answers used more text abbreviations in their text messages. However, the participants who avoided answering the first exercise used fewer text abbreviations in their text messages. These findings agree with those of Geng (2013) that tertiary students can use text messages properly because they, like their future students, have grown up in a digital world

Thirdly, it was found that students who rated themselves higher (such as at '5' or '6' on the six-point scale) in their writing and reading abilities used more text abbreviations in the text messages.

Lastly, the different results among the participating students suggest that there is a need to assist pre-service teachers to develop better skills in using text abbreviations and

translating text messages. Some students (4 per cent) could not use text abbreviations at all, so their messaging skills were very limited. Although there was no significant relationship with years of experience in using mobile phones, it shows that professional development for pre-service teachers (and even after their graduation) is required.

There are limitations to the present study. The data were drawn from 53 mostly female pre-service teachers in the School of Education at one Australian university. In addition, owing to the lack of a standard examination to test the pre-service teachers' reading and writing attainment, the students' writing and reading abilities were rated exclusively by themselves. There was no objective index to measure these against their actual achievement. There were only two tasks involved.

Therefore, a number of research directions can be identified. It is desirable that an actual measure of the pre-service teachers' reading and writing ability be used. Data need to be gathered from other universities. Further research will be needed to understand pre-service teachers' attitudes to using text messaging and text abbreviations in classroom teaching, and therefore how their text messaging literacy levels can be improved. Finally, further study is required to determine how to provide follow-up professional development opportunities for the pre-service teachers after their graduation.

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