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Applying Andragogical Principles to Texting-Based Learning (Short Message Service–SMS) in Higher Education

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by

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Dr. John A. Henschke, Dissertation Chair	10/14/11 Date
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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

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Abstract

Texting-based learning courses may be the next technology advancement in higher education institutions. This study investigated the efficiency of the process of texting to conduct college and university level courses using a cell phone or smartphone. The innovative research of existing technology on the cell phone and texting, also known as short messaging service (SMS), established a way to reach the underserved students or geographically remotely located students or students preferring texting-based learning to traditional or online courses.

Andragogy, the theory of adult learning, and the learning contract using KUSAVI, an acronym, for knowledge, understanding, skills, attitudes, values, and interest created the self-directed basis for the texting-based learning experience among university students. A new instructional method developed for the texting-based learning study included standardized texting abbreviations. A new instructional delivery mode developed when using texting-based learning (SMS). Andragogues are researchers and facilitators of learning in higher education settings. This qualitative research study transpired during the summer semester at a Midwestern university in the United States. The researcher triangulated the study with the focus groups' transcripts, the actual texting messages, and the researcher's participation as the texting-based learning contract facilitator to provide analysis validity. Study participants from the university's school of business and entrepreneurial studies found texting-based learning convenient, efficient, and allowed for learning a wide range of topics and courses. The researcher did not

allow texting or phone calling while participants were driving or operating machinery, in order to maintain the safety of the participants and others.

Results of the analysis concluded that texting-based learning might have a slight impact on the student's efficiency while preparing formal written papers. However, the advantages outweigh the impact when considering the courses are accessible to the underserved students. Advantages to the universities are potential reduced information technology staff for online learning, reduced facilities for traditional learning and increased enrollment associated with easier access to courses. Andragogues using the principles of self-directed learning coupled with texting technology have created a major advancement toward reaching the underserved student and those students preferring the efficiency of texting-based learning courses.

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Chapter One–Overview of the Study

Andragogy, the theory of adult learning, and cell or mobile phones with texting capabilities allow college or university students access to higher education courses from almost everywhere on nearly every topic. The innovative use of texting-based learning provides access to higher education for underserved students, as well as the traditional student. Texting in particular is generally available in very remote and populated geographical areas.

The study of efficiently applying andragogical principles to texting-based learning in higher education combines andragogy with text-based learning to present a new method and delivery of teaching a course to students attending universities, colleges, and community colleges. The simplified learning contract experience uses andragogical principles including self-directed learning and knowledge, understanding, skills, attitudes, values, and interest (KUSAVI) (Knowles, 1986, p. 30). Andragogy is used with higher education adult learners' ages 18 years or older. This is a new teaching texting-based instructional method with texting-based delivery because the learning contract using KUSAVI with texting-based delivery in higher education courses is new. In order to conduct the course (study) using texting, a new method of teaching included and combined the structure of how to approach the instruction of content material (learning contract), the actual delivery of the content (texting), and how the student and teacher interact (texting).

Background of the Study

This research study focused on the process of facilitating the learning of higher education students using texting. The innovation research of existing technology and

learning contracts studied a new way to facilitate a new learning method with a new delivery method. This new way uses texting (Short Message Service–SMS) in both the instruction and the delivery of learning for adults in higher education.

The texting-based learning instructional method uses a new form of instruction that uses abbreviations and concentrates information in order to provide instruction. The 160 character limitations of a texting message, requires the use of this new texting-based instructional method. Delivery of instruction ordinarily can be classroom face-to-face, online, computer based, video, television, mail order, WebEx, or other delivery modes. However, texting-based delivery is a separate delivery mode and different from the other delivery modes. Texting-based delivery uses handheld or mobile device equipment and the texting protocol called SMS as the delivery mode for learning

The researcher, after approval from the Institutional Review Board (Appendix A), collected data using a simplified learning contract, also known as the business learning contract, from participants. The participants were student volunteers enrolled in a senior level marketing course at a Midwestern university school of business and entrepreneurship. Participants included nine undergraduate students and one graduate student from the summer 2010 semester course from June 14, 2010 through July 9, 2010.

This qualitative study investigated how efficiently texting-based learning supports the principles of andragogy while creating a texting-based version of the learning contract experience. Focus group sessions consisting of student volunteers provided qualitative data for collection and analysis. The focus group participants answered questions about the texting-based process to determine their perceptions of the texting-based (SMS)

learning process. The qualitative data analysis, conducted by coding the answers, yielded emerging themes.

Statement of the Problem

The problem is that there is a population of adult students or potential adult students who are underserved. The underserved students may be remotely located, lack Internet access, find learning new computer programs for Internet learning difficult or cumbersome, lack care for children or elderly parents, lack transportation, while finding the texting-based learning (SMS) convenient. Texting-based learning may advance access to technology learning beyond traditional online learning for students and faculty in higher education institutions. The results of this study may inform colleges and universities on how to offer courses efficiently to an expanded number of students using texting (SMS).

Though some students may have access to smartphones, the cell phone is more affordable, adequate for texting-based learning (SMS), and available almost everywhere. The use of cell phones and texting-based learning could provide accessibility to an underserved higher education population. Colleges and universities may find that texting-based learning (SMS) provides access to students and potential students who may contribute to increased enrollment. Texting-based learning (SMS) requires no software purchase or Internet technology staff. Colleges and universities may find advantages to texting-based learning (SMS) such as access to faculty located remotely or faculty finding texting-based learning (SMS) convenient. In summary, the use of texting-based learning (SMS) may provide access to the underserved students and faculty, may increase enrollment, and may eliminate Internet technology staff and new software.

Definition of Terms

Terms defined for the study include andragogue, andragogy, adult learners, cell phone, efficiency, efficiency measurement level, higher education institution, KUSAVI, learning contract experience, m-learning, mmail, mmobile-based learning, Mobile Message Service (MMS), mobile phone, pedagogue, pedagogy, QWERTY phone, Short Message Service (SMS), simplified learning experience contract using KUSAVI, texting, texting-based learning delivery mode, texting-based learning instructional methodology, and two thumbs learning.

Andragogue - a person who performs research in or practices andragogy in higher education institutions or corporate settings.

Andragogy - the "art and science of helping adults learn" (Knowles, 1970, p. 30).

Adult learners - any learner 18 years or older (Knowles, 1970, pp. 46-47).

Cell phone - mobile phone without Internet capabilities (see Mobile phone).

Efficiency - measured using representative evidence from each of thefour categories: focus groups, actual texting messages (SMS), researcher's participation, and literature review (support). Efficiency, while it may include time, is not exclusively related to time. It includes taking responsibility for learning, initiating learning, and understanding or applying the meaning of these, etc.

Extent of efficiency - provides for the measurement of texting-based learning (SMS) using the independent efficiency for each of the individual categories-focus groups, texting messages, researcher's participation, and literature review (support) to determine the total extent of efficiency for texting-based learning

(SMS). The extent of efficiency measurement ratings are: highly efficient, very efficient, moderately efficient, modestly efficient, and inefficient (see Figure 3).

Higher education institution-a post secondary institution of learning such as a university or college leading to an academic degree whether an undergraduate or graduate degree including programs at the associate, bachelor, master, doctoral, or certification level such as a teaching certificate.

KUSAVI - adult learning competencies and acronym with the K representing knowledge, U representing understanding, S representing skills, A representing attitudes, V representing values, and I representing interest. KUSAVI are adult learning competencies (Knowles, n.d., p. 17).

Learning contract experience - provides learners with a structure for their self-directed learning when creating their own learning objectives, learning resources and strategies, target date or amount of time for completion, evidence of accomplishment of objectives, and criteria and means for evaluating evidence of learning (Knowles, 1986, p. 14;Appendix D).

M-learning (mobile learning) -

Definition of m-Learning must include the ability to learn everywhere every time without permanent physical connection to cable network . . . use of mobile and portable devices such as PDA [Personal Digital Assistant], cell phones . . . have the ability to connect to other computer devices, to present educational information and to realize bilateral information exchange between the students and the teacher. (Georgiev et al., 2004. p. IV.28-1)

M-learning is also written as mlearning.

Mmail - email on a mobile phone using Java software/platform.

Mmobile-based learning - form of m-learning using two thumbs learning with the internet. (see two thumbs learning)

Mobile Message Service (MMS) - A mobile message service that sends pictures instead of texting messages using a cell or mobile phone. Not all cell phones are capable of receiving MMS pictures.

Mobile phone - intelligent phone with Internet service also referred to as a smartphone (see Cell phone).

Pedagogue - a person who teaches children.

Pedagogy - "the art and science of teaching children and youth" (Knowles, 1996, p. 253).

QWERTY phone-A mobile or cell phone with a full keyboard that supports texting. QWERTY is the first six letters on the top row of a typewritter or computer.

Short Message Service (SMS) - a message limiting the number of characters per message to 160 characters and is sent or received using a cell phone or mobile device. This definition of SMS is interchangeable with the definition of texting.

Simplifed learning contract experience using KUSAVI - Knowles (n.d.) defined the five elements of the learning contract and used KUSAVI to include: "diagnose your learning needs; specify your learning objectives, specify learning resesources and strategies; specify evidence of accomplishment; and specify how the evidence will be validated" (Knowles, n.d., pp. 16-18).

Texting – a commonly accepted term for a Short Message Service (SMS) message.

Texting-based learning delivery mode - delivery of texting-based learning instruction using SMS via a mobile or cell phone with texting capabilities.

Texting-based learning instructional methodology - an instructional methodology using abbreviations with SMS messages.

Two thumbs learning-mobile phone learning using a simplified learning contract with KUSAVI and abbreviations involving the learner typing emails using two thumbs on the mobile phone keypad (see Mmobile-based learning).

Purpose of the Study

The purpose of the study was to learn if it was possible to efficently support the principles of andragogy while creating a texting-based version of the simplified learning contract. The simplified learning contract is a type of learning contract that is also known as the business learning contract.

This qualitative study determined how efficiently texting-based learning supports the principles of andragogy while creating a texting-based version of the learning contract experience. Focus group sessions consisted of student volunteers from the study class. The researcher conducted the sessions and collected and analyzed qualitative data from the sessions. The focus group participants answered questions about their texting-based process.

Research question

The research question of the study was, "How efficiently does texting-based learning support the principles of andragogy while creating a texting-based version of the learning contract experience?"

Rationale for the Study

Texting-based learning in colleges and universities could expand higher education offerings to students and potential students. Potential students include persons who may

not have access to other forms of higher education, may find texting generally convenient for communicating with other students and faculty, may find texting generally easy to use, and may find it difficult to learn new computer programs that may be associated with delivery of online courses. Texting-based learning (SMS) in colleges and universities may offer benefits to the colleges and universities by not requiring the cost of a classroom, building, utilities, grounds, and parking lot maintenance. Texting-based learning (SMS) does not require computers, Internet service, or an information technology staff. Texting-based learning (SMS) may provide access to a greater resource pool of adjunct faculty and students.

The literature review provides evidence of the study's importance as potentially contributing to the knowledge base for adult learning and texting-based learning (SMS). The literature review of research on efficiently applying andragogical principles to texting-based learning (SMS) in a university is new with few actual studies providing results at universities. However, the combination of research presented a pattern and combination for consideration when forming reflections. The appearance of repetitive patterns in the literature and later in the dissertation research process resulted in consideration of efficiency and process as themes emerged. The literature search included defining texting and educators' knowledge of using texting for learning both the technology and content. The researcher examined texting-based learning (SMS) that had specific uses that were different from other mobile learning applications and uses that were different from texting for learning such as test taking, question asking, polling, or the use of specialized software, and administrative functions such as notifications. The application of andragogical principles such as self-directed learning appears to be

particularly suited to texting. The research study examined the efficiency of supporting a texting-based (SMS) learning contract experience while supporting andragogical principles.

The international education community appears to be leading the way in conducting texting-based learning (SMS) studies, from the practice and the usability perspectives. The texting-based learning (SMS) research conducted in the United States is related more to pedagogy than andragogy. However, researchers conducting studies related to texting-based learning (SMS) is growing.

This study addressed several distinct ideas including texting-based instructional method used in higher education, texting-based delivery of course content in higher education, texting-based (SMS) learning contract experience using KUSAVI, and the efficiency of texting-based learning (SMS) in higher education. The researcher considered higher education as andragogical since the students' ages were 18 years and older. The researcher considered the adult learning competencies KUSAVI (Knowledge, Understanding, Skills, Attitudes, Values and Interest) as andragogical principles that were used in the study.

The texting-based instructional method is important because of the introduction of a new form of instructional method and a new form of instructional delivery focusing on the learning needs of the higher education adult learner. The review of literature indicated the lack of an applicable methodology suitable for texting-based learning in higher education. The innovative use of combining andragogy and texting hopes to provide a standard methodology for both instruction and delivery that was previously absent.

The rationale for implementation of texting-based learning (SMS) at a university was that this study was conducted at a university and may be applicable to other higher education institutions. The results of this study may enable the university to offer a course using texting-based learning (SMS) that supports andragogical principles and incorporates a simplified learning contract. This may increase the university's image as an innovative university. The university, by providing this method to teaching almost any topic, provides underserved students access to higher education courses. Enrollment may increase because students find texting-based learning convenient. University costs could potentially decrease by reducing the need for buildings, maintenance, and information technology staff for support.

Limitations

The study was only about students in higher education and the texting process for academic purposes. The study was about using the texting (SMS) process for informal, non-traditional college or university level instruction for courses or potential course offerings. The study only included participants with English as their primary language.

In higher education, the undergraduate and graduate students are included. All students or potential students in any higher education institution are included. The higher education institutions include universities, colleges, technical colleges, two-year community colleges, private, and public higher institutions of learning.

Delimitations

The study was not about re-validating the learning contract, considered an andragogy standard in adult learning since Knowles (1986) introduced the learning contract. The study was not about other Internet learning or face-to-face instruction. The

study was not about texting for personal reasons. The study did not include texting for children from pre-school to 12th grade or adults seeking secondary or higher school certification such as the Graduate Equivalency Diploma (GED). Adults who were not students or potential students in higher education institutions were not included.

The study mentions the use of texting for administration purposes such as notifications to the students. However, the study did not focus on the administration functions. The administrative activities such as enrollment, admissions, payments, financial aid, counseling, library loans, scheduling of classes, extra curricula activities or other student services were not part of the study.

A delimitation of this study was that efficiency was not only about time. Efficiency, while it may include time, is not exclusively related to time. It includes taking responsibility for learning, initiating learning, and understanding or applying the meaning of these, etc.

Limitation of the Study Research

Competition for Volunteers Time: The limitations of the study were the use of only volunteers. Students who volunteered for the study were also volunteers for a competing project sponsored by his or her professor. In addition, competing for the volunteers' time were class assignments since the students' attended accelerated summer semester courses. The researcher conducted the study strictly as a texting-based course, did not include emails, phone voice conversations, personal computer applications, or other hybrid or blended forms of instruction or delivery. Although this limitation was highly restrictive, it provided for remote

learners with no Internet service or computer with an instructional delivery method.

English as a Second Language: A limitation of the study was the exclusion of volunteers with English as a Second Language. This exclusion was for two purposes: harm to the volunteer and introduction of unknown variables to the study associated with abbreviations. The first purpose was to do no harm to potential non-native English speaking volunteers. Research on how texting affects English skills for volunteers with English as a Second Language is inconclusive. Therefore, the study excluded volunteers with English as a Second Language ensuring that abbreviations would have no impact on English skills of the volunteers. The second purpose was to remove any unknown variables that might be associated with volunteers who spoke a primary language other English when using abbreviations.

Texting and Driving: The study limitations included where the volunteers could perform texting. Because of increasing safety concerns about driving and texting, volunteers were required to sign a no texting while driving or operating machinery commitment letter. During the recruitment process, the researcher and the marketing class professor verbally stressed texting safety to the volunteers. Safety of the volunteers was important.

Participants Characteristics: The self-selected sample for this qualitative study was a limitation because the volunteers' professor offered extra credit for participating in the study. However, other factors may have mitigated the degree of influence of the extra credit. One important factor was an extra credit project of equal value

offered to the students, by their professor, for a competing project that required the students to conduct surveys while attending minor league baseball games.

Data Collector Bias: The researcher had never met the participants prior to when their professor requested volunteers for the study during the recruitment. Therefore, bias from the researcher involving the participants was minimal.

Assumptions

- The first assumption was that participants would use texting with the learning contract experience for educational purposes and not for personal or social communications. The assumption in this case was that the texting messages process using the simplified learning contract experience will affect learning and learning will affect the texting process.
- A second assumption was that the simplified learning contract, validated since introduced by Knowles (1986), needs no revalidation. However, the texting-based process studied efficiency in the texting-based instructional methodology and the texting-based instructional delivery mode.
- A third assumption was that self-directed learning is an andragogical principle, set forth by Knowles (1970). Andragogical principles have been successfully implemented throughout higher education institutions since that time. The learning contract experience uses self-directed learning and, hence, the assumption that andragogical principles were supported in the texting-based (SMS) learning contract experience.

- A fourth assumption was that students in higher education have texting (SMS) capabilities and currently use or have used texting prior to the study. In other words, students were texting already and were often texting savvy.
- A fifth assumption was that students have access to a textbook or other learning material from a library or the Internet to perform homework. This is generally accepted practice in normal face-to-face or online courses currently offered at higher education institutions.
- A sixth assumption was that higher education students with English as their primary language and because of their 18 or more years of using English would not have their writing skills affected by the abbreviated English used in texting.
- The seventh assumption was that the effects of texting on English writing skills among higher education students who did not have English as their primary language was unknown at the time of this study.
- The eighth assumption, because of unknown effects on English writing skills, was to eliminate from the study students with a primary language other than English.

Summary

To summarize, this chapter has included details of the topic, efficiently supporting principles of andragogy while creating a texting-based version of the simplified learning contract. The research question was answered by a triangulation of examining the texting-based (SMS) process with focus group sessions, analyzing the texting messages, and the researcher's own experience. The researcher examined the efficiencies of

supporting the principles of andragogy while creating a texting-based version of the simplified learning contract using KUSAVI.

The limitations of this study included competition for the volunteers' time, exclusion of volunteers with English as a Second Language, and not texting while driving or operating machinery. The researcher required all volunteers to sign a no texting while driving or operation machinery form in order to participate in the study. Another limitation was the extra credit given to the participants by their professor for volunteering for the study.

The terms, methodology, delivery, process, and limitations discussed by the researcher provided an overview and introduction to the study. The researcher discussed the eight assumptions used for the study. In Chapter 2, the current literature is reviewed and discussed, as related to the research background and research question, including the related information that may enhance understanding of the process, methodology, and ultimately, the study findings.

Chapter Two–Review of the Framing Literature

The literature review consists of an overall review of moving from a broad perspective of general literature to a narrow perspective of literature on texting. The literature review includes a natural progression while incorporating surrounding texting-based technological and andragogical studies from higher education settings.

This study is multidisciplinary by the nature of the topics. Persons reading this paper that may find this research of interest include information technologists, andragogues, higher education researchers and educators, and others. To assist the reader in understanding various andragogical foundations and concepts in the context of the study, established classical noteworthy citations of internationally recognized experts in the field of andragogy are included. Dr. John Arthur Henschke, considered the premier internationally recognized andragogical expert living today, received his mentoring from Dr. Malcolm S. Knowles. Classical andragogical foundational works that are necessary for reader understanding and cited in this study include those from Dr. J. A. Henschke, Dr. M. S. Knowles, and Dr. Marilyn Taylor.

Literature Background

Extensive global research conducted by Henschke (2009a) concluded that the strongest theme of advancing andragogy within adult education is its theory, research, and definition (Conclusions section, para. 2). The texting-based learning study, including the literature review, is research that supports the theme and an effort toward advancing andragogy and adult education in higher education institutions.

The literature review addresses texting-based instructional methods in higher education, texting-based delivery methods of content in higher education, andragogy and

the simplified learning contract experience using KUSAVI, and efficiency of text-based learning in higher education. KUSAVI is an acronym representing the adult education learning competencies knowledge, understanding, skills, attitudes, values and interest (Knowles, 1986, p. 30). Figure 1 graphically displays the flow of the literature review beginning with the general patterns and ending with efficiency and texting.

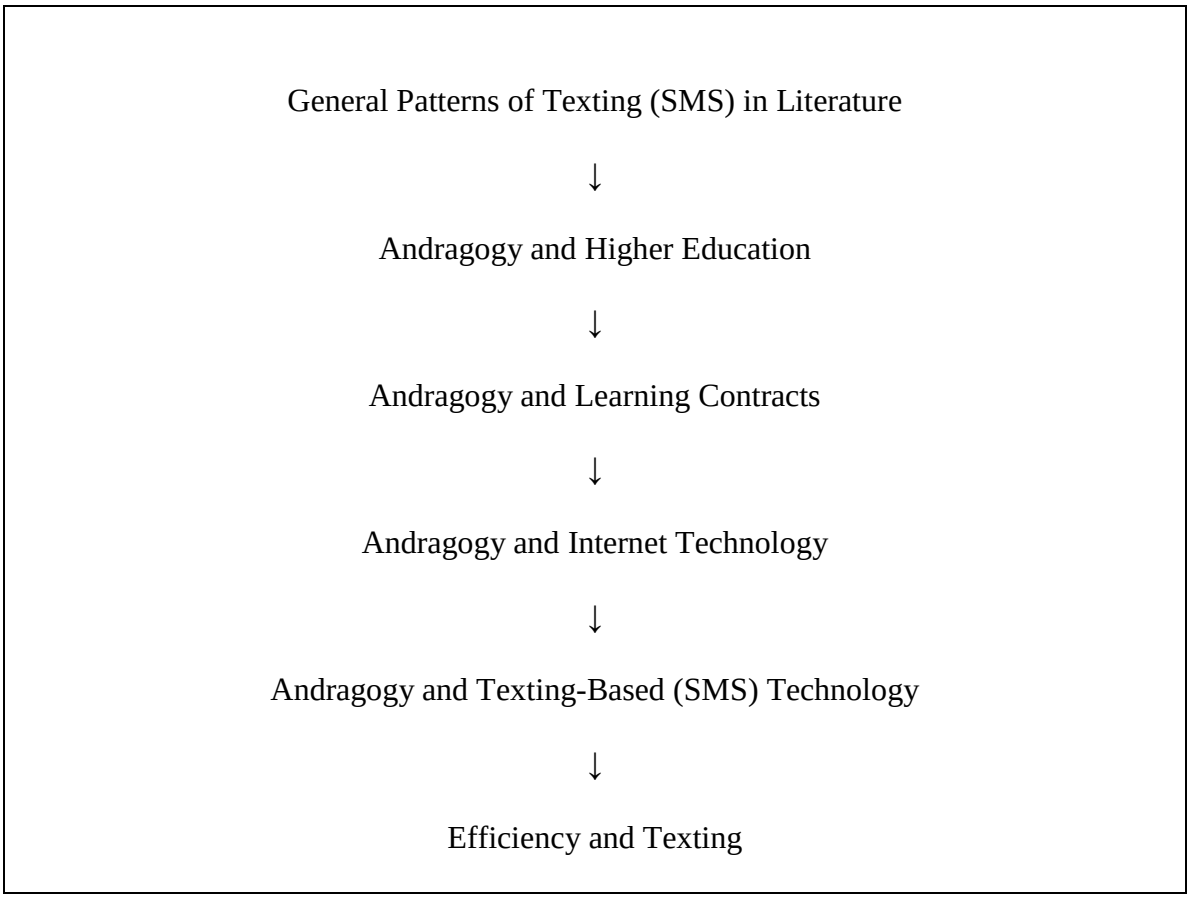


Figure 1. Flow of literature review

Texting-based learning, also known as, Short Messages Service (SMS) and text messaging, is not to be confused with text-based learning. Text-based learning is often referred to as book-based learning such as textbooks. Texting-based learning is a subset of mobile learning and sometimes called handheld learning or m-learning while text-based (SMS) learning is more likely associated with books or other printed materials.

University faculty, students, and personnel are using texting (SMS) in academics and administration.

Texting or text messaging are interchangeable with the technical SMS or Short Message Service since both have the same definition. The SMS communication protocol provides a way for people to communicate with very short messages. The short messages are up to 160 characters and transmitted over mobile phones. The first SMS official commercial texting message was sent on December 3, 1992, from Neil Papworth of Airwide Solutions saying "Merry Christmas" to Vodafone's Richard Jarvis using the Global System for Mobile communications standard (GSM) network in the United Kingdom. Allegedly Riku Pihkonen, an engineering student working for Nokia, transmitted the first unofficial text message in 1992 (McClain, n.d.). The engineering student was first according to the calendar. However, students sometimes do not actually receive the credit that they deserve. Therefore, the words "allegedly first" appear before the student's name. In 2003, 90% of teenagers in the United States exchanged SMS with their peers (Tomita, 2009, p. 186). In 2010, the Lindenwood University undergraduate business public relations class indicated that the results of a verbal survey showed 100% of the students' either sent or received text messages on a regular basis.

The literature review begins with a background of general patterns of texting in literature and then ends with literature on efficiency in supporting andragogy in texting-based learning (SMS). The researcher used the general patterns of texting to guide the literature review process. The process included general patterns of texting in andragogy, andragogy and higher education, andragogy and learning contracts, andragogy and

Internet Technology, andragogy and texting-based (SMS) Technology, and efficiency in supporting andragogy in texting in the review of literature.

General Patterns of Texting (SMS) in Literature

During the literature search, some general patterns emerged. Patterns discovered in the literature search included educator views about texting-based learning. Texting-based learning from the educators' point of views has opponents, proponents, and some without opinions. The literature reveals the use of texting in universities for learning and administrative communications among students and faculty and international education communities. The literature also supports the suitability of andragogical principles, such as self-directed learning, to texting and usability.

Educators views on texting-based learning. As with many people on any number of topics, educators have varying points of view on texting in general and on texting-based learning. Opponents and proponents have reasons and opinions on texting and texting-based learning. Some educators are not willing to use texting-based learning because of fear of cheating. For example, Japanese schools are developing policies to block cheating by SMS (Alexander, 2004, p. 28).

The proponents say that research seems to dispute the negative impact of texting in education. Plester (as cited in Tomita, 2009) argued that literacy increases because of increased exposure to the written word. Plester said, "Newer research shows a stronger causal relationship between text abbreviations and literacy skills" (as cited in Tomita, 2009, p. 188).

Tomita's (2009) conclusions on texting are that texting provides an effective delivery for teaching students, fosters development of communities of practice, and

encourages students to write (p. 189). Tomita draws this conclusion based on Plester's study from Coventry University indicating that texting encouraged more reading, thus increasing literacy skills. The Coventry University study was a pedagogy study that examined the effects of texting only on children's literacy skills. The study did not examine the effects of texting on adults' literacy skills.

Educators may simply be unfamiliar with the technology and the environment surrounding texting. Tomita (2009) continued,

> Students need to communicate efficiently . . . using short text messages . . . Beyond mastering traditional writing skills, students will also need to understand and master tools like Twitter and IM [Instant Messaging]. These are tools of the 21st century; the tools that will help to transform the ways teachers teach and students learn. (pp. 189-190)

Twitter and Instant Messaging (IM) are tools with character limitations used to convey a message. However, both Twitter and IM require an Internet connection.

Other than the character confinement of Twitter and Instant Messaging (IM), the comparison is unwarranted since texting-based learning (SMS) is not merely a tool but rather an instructional strategy combining both a new texting-based instructional method and a new texting-based delivery mode. The instructional strategy of the texting-based learning focuses on designing the instruction using limited characters. The next texting-based delivery mode focuses delivering of the new instructional design using the limited number of characters to a student with only a cell phone instead of a physical classroom or Internet learning.

Texting in universities for learning and administrative functions. Texting-based learning has specific uses that are different from other mobile learning. One specific use that is different from other mobile learning is the texting-only (SMS) delivery method that allows students access to learning from almost any cell phone from almost anywhere using only texting. Other mobile learning may require costly equipment such as a smartphone or access to the Internet. Access to the Internet may also be costly and unavailable because of remote geographical areas. Therefore, universities use texting for learning and a variety of administrative functions.

Henschke (2010) provided the Characteristic Elements, Measurable Performance Indicator for Administrative Policies and Mechanisms when describing responsibilities of higher education institutions to the increasingly older (over 22 years old) university student. Potentially, texting (SMS) in universities for administrative functions could enable universities to adhere to one of Henschke's (2010) requirements to support the older university student, "Registration, class times, and courses−including modular choices and academics support−are available at the times and in formats geared to the convenience of learners" (p. 7).

Traxler (2007) discussed the emerging issue of delivery ease that provides for an optimal student experience with mobile technologies in learning compared to desktop computers with mobile technologies. The use of desktop computers, documented in the research literature, is well understood, well established, and much more trackable than is the use of mobile devices (Jones & Marsden as cited in Traxler, 2007, p. 9). Nevertheless, creators, publishers, and providers of content must adapt to these findings

as they emerge, if the student experiences are to be optimal. Traxler further refers to a 2007 mlearn plan discussion:

> In the final panel discussion at the 2007 mLearn conference in Melbourne, Professor Mike Sharples, a panel member, when asked about the role of universities in an age where mobile and student-owned devices give universal access to facts and information, answered, perhaps tongue-in-cheek, 'universities could at least still give degrees'. (p. 9)

It is important to note that access to student devices do not create a total learning experience. Universities and professors guiding and assisting the student in his or her self-directed inquiry create more of a total learning experience. Universities and colleges should look at the handheld or mobile device as a tool. Online computer learning did not replace the need for universities, but instead the opposite is true. Universities, such as the University of Phoenix, embraced online computer learning and grew. Many universities now offer online computer learning courses. The same could happen with texting-based learning on student devices.

Universities are performing administrative functions with mobile phones for texting reminders to students. Harley et al. (2007) found that using texting "can enhance the support provided to students by an academic department during transition to university" (p. 238). Administrative functions provide students with a measure of texting (SMS). However, Harley et al.'s study limited texting (SMS) to only administrative functions and did not examine the potential for texting (SMS) in the learning process.

Many universities use SMS for security notices. Peters (2007) addressed the suitability of m-learning in adult education.

> SMS is already in place but the opportunities to use it for learning have not been considered in great depth and implementation will largely depend on practicalities and cost. M-Learning is ideally suited to adult education if it is used to extend the reach of programs. (pp. 11-12)

Peters (2007) continued by considering the efficiency of access and identified user non-adoptions as a teaching tool. Peters addressed the mobile phone's social tool aspect of texting (SMS). Peters reported that seven education and training providers gave the following perceptions about m-learning.

> It allows students to get a response quickly, at all hours, they like the interactivity and the ability to receive a quicker response than they would via email. Texting allow learners to learn in the field, where and when they want. However, mobile phones are not a huge teaching tool, as the students use them mainly for social contact and do not want to use them as a learning tool. (pp. 9-13)

This appears to be a contradiction between readiness of the SMS technology and the educators. The literature did not indicate the student's desires, only the perceptions of the education and training providers. However, student comments suggested and interpreted that student readiness was high. Peters (2007) found positive comments by both students and educators regarding efficiency.

To summarize the background of general patterns of texting in the literature review, the researcher examined the literature content. The literature produced a pattern of occurrence that began with a general background in supporting andragogical principles applied to texting-based (SMS) learning. The research patterns that emerged included a definition of texting, educators' knowledge using texting for learning in the technology

and content, and texting-based learning that has specific uses different from other mobile learning. Universities use texting for learning and a variety of administrative functions.

Andragogy and Higher Education

Thompson and Deis (2004) summarized literature to suggest that based on university online course descriptions, websites focus on content instead of how to help adults learn. Thompson and Deis (2004) addressed curriculum development based on the application of andragogical principles. Thompson and Deis disclosed that through informal discussion, many higher education faculties have never heard the term "andragogy." Thompson and Deis further referred to Knowles' theory suggesting that higher education must use andragogy to teach adults or face losses in enrollment to other institutions or programs. Other universities and programs may use names commonly associated with andragogy such as adult learning, adult education, and the like. However, many universities and programs do not use the principles that adults need for learning. Most of the higher education student population consists of adults.

The literature reviewed about andragogy and higher education point to the works of Henschke (2007a). The face of higher education is changing today and includes a growing student population over the age of 22 with various enrollments and learning patterns (Henschke, 2007d, p. 1). Andragogy is learning for the adult learner. The higher education student is an adult learner. Therefore, logic suggests using andragogy principles lead to educating the college or university student in ways they learn.

Two types of learning patterns arise in association with higher education students. The two types are the learning style and the instructional style. Faculty must become facilitators of learning to attend to the learning patterns of the higher education students.

Faculty must use the learning paradigm instead of an instructional paradigm in higher education settings (Henschke, 2007d, p. 5). The facilitated learning paradigm is associated with andragogical principles.

Weinstock and Henschke (1991) in writing about the differences between traditional professorial emphasis and adult learner emphasis consider two particularly important concepts. The first concept demonstrates the emphasis of the professor as an authoritarian over the student versus the second concept that demonstrates the emphasis as a facilitator helping the student discover his or her choice in what to learn. The first concept of the didactic role or lecturer with the professorial emphasis versus the second concept where the emphasis is on the ostensive or discovery learning of the adult is important. It is important because the second concept's association with self-direction is an assumption about the adult learners. The first concept demonstrates an emphasis on a professor's role as an authoritarian having power over the student versus the second concept with the emphasis on a professor's role as a facilitator of learning having power with the student.

Henschke (2010) indicates that learning theory is changing to become student-centered and adult-centered. Students learn how-to inquire and are valued for their particular knowledge and experience. The faculty empowers students to learn. This change, appropriately, moves higher education institutions toward changes in productivity and funding based on learning outcomes and not the number of hours of instruction. Another andragogical principle, the learning contract, while mutually designed by faculty and students will facilitate learning among students to meet individual needs and educational objectives.

Andragogy and the Learning Contract

Henschke comments on Knowles' 1975 publication labeling andragogy as "self directed" learning and further states, "Andragogy was the underlying philosophy, and self-directed learning was the way andragogy was to be implemented" (Henschke, 2009b, "Andragogy and self-directed learning," para. 1). Self-directedness as suggested by both Knowles and Henschke is important to the adult learner. Self-directness as andragogy's vehicle of implementation is an exceedingly powerful suggestion.

Knowles (1980) and Mezirow (1981) advocate the use and promotion of the most basic andragogical principle of self-directed learning. Knowles (1980) said, "Methods and techniques, which involve the individual most deeply in self-directed inquiry will produce the greatest learning" (p. 56). A learning contract acts as an enabler to help guide the self-directed higher education adult learner on his or her learning journey. Knowles (1975) stated that a student creates a learning contract by developing the following: learning objectives; learning resources and strategies; completion date or amount of time spent; evidence of accomplishment of objectives; and criteria and means for validating the evidence. The creation of a learning contract by the adult learner is evidence of applying andragogical principles.

Mandell and Herman (2008) revealed the need to create access and a new learning experience to meet learning requirements for the part-time adult students in higher education. Analysis of a case study, using a learning contract, yielded favorable results by permitting flexibility in using a learning contract allowing the learning contract to evolve the learning process and inquiry with personal reflection (pp. 17-19). The

learning contract removed the barrier of non-access for the student and provided breadth and depth to the learning inquiry.

Chiang (1998) validated use of the learning contract with a six-year study of 222 college students reporting a positive impact on their learning. According to Chiang, "Learning contracts prove to help students monitor and judge what is to be learned and applied in their learning process" (pp. 7-8). Chiang provided a significant population and with a lengthy study of college students to validate learning contracts.

Kania-Gosche (2010) conducted a pilot project using 36 doctor of education students in her class during the spring 2010 semester at Lindenwood University. She used the learning contract and the principle of self-directed learning for the doctoral dissertation-writing course. Dr. Kania-Gosche found "students who were self-directed learners flourished in this course, although they may have been successful regardless of the support systems offered. Rather than trial and error . . . students knew expectations at the beginning, before writing" (Student Perceptions and Progress section, para. 1).

Andragogy and Internet Technology in Literature

Isenberg (2007) applied, developed, and tested andragogical principles using Internet technology when the two concepts, andragogy and Internet learning were combined for the first time (Henschke, 2007c). Isenberg (2007) found that Internet technology makes the online learning contract possible and easy to do (p. 23).

For over seven years, Jerrard and Jefsioutine (2006) developed online work-based learning contacts for master's level graduate students working in art and design education. The increase of a variety of goals in higher education requires additional learning and teaching styles; and, learning contracts provide structuring, assessing, and

self-directed learning within the overall goals of a course. The work-based learning contract inspired research into web-based learning contracts. Fifteen students participated in research using an electronic online version of the learning contracts. He describes the online learning contract as a curriculum carrier since delivery of content is not included. The study indicated that online learning contracts provide the students with the opportunity to create a deeper and wider learning experience than face-to-face in traditional teaching. Jerrard and Jefsioutine (2006) said, "Direct instruction was used in the first instance when the student is shown how to use the contract and how the process works" (p. 64).

Boyer (2003) performed a research study using online learning contracts in a social, self-directed learning study to produce learning outcomes with retention. The research study, with master's level students, applied andragogical concepts of self-directedness and ownership that Knowles (1986) identified. The research study used online learning contracts for both phase number two and phase number three of the program. Phase two of the study with 20 students was 10 weeks in the summer semester of 2002. Phase three of the study with 27 students was 15 weeks in the fall semester of 2002. Phase three was a reiteration of phase two. Face-to-face training and restating the course expectations in multiple ways, added in phase three, provided clarity for the learning contract activities. The study, as judged by the professor, indicated positive overall knowledge gain and outcomes-based evidence. Several students reported that they were better prepared to explore further learning.

The study of the online learning contract process highlighted the need for face-to-face training to clarify the learning contract experience. The study indicated that each of

the students completed his or her learning contract and that the professor was pleased with the learning outcomes. Boyer (2003) applied andragogical principles to the learning experience by using the self-directed inquiry in the format of Knowles' learning contract. The study was an online learning experience yielding positive results. This brings to the forefront the need of efficiently applying andragogical principles by using a texting-based (SMS) learning version of the learning contract.

Ham and Davey (2005) spoke to teaching of teachers in a phenomenological sense, not merely a set of instructional practices that exists independent of the delivery mode. Two educators reflected on the distance learning experiences of one educator teaching postgraduate English education and the other educator teaching information and communications technologies in education for postgraduate professional development. The results indicated the need for sounder andragogy. Technology with andragogy could provide more desirable higher education online distance learning.

Guilar and Loring (2008) discussed the benefit of online learning because students have time to reflect, which is inherent to the online process, before sending a response to the professor or other students. The online process of giving the student time to compose a well-developed answer is also inherent in the texting-based learning process. The well-developed response may be efficient if the effectiveness and quality of the responses increase.

Wyatt et al. (2010) conducted phase two of a study using 12 female nursing students participating during the fall 2006 semester and eight female nursing students participating in the spring 2007 semester from two Mid-Atlantic universities. Phase two of the study used Personal Digital Assistants (PDAs) to answer the question, "Do

interactive m-learning techniques promote learning?" The researcher did not give phase two pretest and posttest surveys, thus reducing the testing threat to internal validity. However, students reported that cooperative learning using PDAs was valuable. Using PDAs during this study incorporated audio, video, web, and more than texting-based only learning.

Andragogy and Texting-Based (SMS) Technology

Henschke (2007d) recommended, "use [of] different teaching methods that respond to the diverse learning styles . . . including co-learning, interactive learning, and continuous learning while integrating appropriate technology" (p. 5). Texting-based learning (SMS) provides an appropriate vehicle for learning styles tailored to each individual adult learner. The researcher did not collect data for analysis of co-learning from the texting-based (SMS) learning study.

Knowles (1995) presents the learning theory and the design theory as conceptual foundations of andragogy. While agreeing with these two conceptual foundations, a third conceptual foundation is technology. Although related to both learning theory and design theory, the importance of technology as a conceptual foundation is upmost.

Alamki and Sepala (2002) discussed the University of Helsinki use of SMS messaging as part of two teacher pilot training programs for the Home Economics Department and Forest Resource Management Department. Home Economics' students experienced SMS teaching methods for exchanging recipes while the Forest Resources' students used SMS and digital pictures to send materials from the forest. The goal was to create flexible teaching solutions providing support for learning in a variety of ways. Although the two pilots resulted in some gains toward texting-based learning, the pilots

did not advance to the point of texting-based (SMS) learning. The pilot programs were more of a demonstration of technology and only addressed a small sample piece of texting. The pilot programs were not an innovative actual texting-based learning (SMS) instructional method that could be replicated for an entire college or university course.

Ng'ambi and Brown (2009) of The Mobile Learning Project at the Centre for Educational Technology and the University of Cape Town in South Africa performed a pilot study from 2004 to 2006 with up to 610 first year students. This pilot study engaged university students in developing a web/SMS tool for Dynamic Frequently Asked Questions (DFAQ). The pilot study used texting for anonymous knowledge sharing for pedagogical and administrative changes. Actually, it provided an unintended benefit to the current andragogical university student. Although this study provided an andragogical texting benefit, it begs the question, is it a texting-based learning methodology or only another tool and technique that supports, but does not address, the methodology?

Parsons and Ryu (as cited in Caudill, 2007) defined m-learning as delivery of learning content using a mobile computing device. Caudill compared the efficiency of m-learning from the view point of eliminating the restrictive immobility that comes from desktop computer technology. Caudill (2007) made the point that reviewing course materials is possible while sitting in a restaurant or waiting for a bus. Although true, m-learning also incorporates SMS or texting capabilities and, more recently, MMS for pictures. The advantage increases the efficiency when using a cell phone or smartphone as opposed to a mini laptop because now the student can learn while standing in line. Caudill also discussed the efficiency of not needing Wi-Fi for Internet connection when

using a mobile phone (p. 11). The authors indicated that using a mobile phone provided efficiency when learning was delivered.

Peters (2007) indicated that texting forces teachers to think in a new way by breaking down the course into small segments of learning activies and by using multiple choice to accomadate students use of mobile technology. Peters' concept of the need to rethink new ways of teaching supports that texting-based instruction is a new educational instructional method. The texting-based learning instructional method is more than and separate from the texting-based delivery method, although related. The relationship between the texting-based learning instructional method and the texting-based delivery method may be comparable to a letter delivered by a postal truck−the letter as the texting-based learning (SMS) instructional method and the delivery as the texting-based delivery method. They are separate but related.

Tuononen and Kurola (2002) used three different instructional delivery modes: a virtual teacher training computer model, face-to-face, and instruction via a mobile device. The researchers conducted a study in Finland that taught teacher education. The researchers succeeded in communicating instructions using different delivery modes. However, the results of this study, due to the hybrid mode of delivery, lost relevancy when compared to texting-based only learning.

Koszalka and Ntloedibe-Kuswani (2010) indicated that new instructional design strategies are needed to enhance instruction and learning when using m-learning (p. 151). This finding exemplifies that texting-based learning (SMS) needs a new instructional design strategy. The new instructional design strategy is needed to an even greater extent because of the short message 160 character limitations.

A study on the creation of a rich learning environment for remote postgraduate learners in rural Australia found that the tertiary level required two facilitators. One facilitator provided instructional content to the postgraduate learners. The other facilitator served in the role as a help desk providing the learners with help on how to send and receive a texting message and other technology problems the learner might encounter. The study's aim was to improve accessibility to remote students with a focus on andragogical principles of self-directed study and reflective activities (Lonie & Andrews, 2009, p. 3). Some teachers, with a background in pedagogy, needed thorough training in andragogical principles. Lonie and Andrews' study did not specify particular andragogical training needed for the teachers.

Henschke (2010) with the University of Missouri-St. Louis, Missouri, United States and the University of the Western Cape, South Africa, identified Characteristic Elements with Measureable Performance Indicators for Lifelong Learning including higher education institutions. Three of the performance indicators are highly applicable to texting-based learning in higher education institutions. The three applicable performance indicators are research, teaching and learning processes, student support systems and services (Henschke, 2010, pp. 5-8).

The review of literature shares a common thread among higher education disciplines. All higher education disciplines, whether mathematics, engineering, education, medicine, science, or other disciplines share the ability to use texting-based learning (SMS). Texting-based learning (SMS) using the simplified learning contract experience is appropriate for at least a portion of all disciplines. Collaboration among departments within a higher educational institution could increase with texting-based

learning (SMS). Topics in various university departments often intertwine, mingle, or support one another. Courses using texting in one discipline may support another discipline. Texting-based learning (SMS) supports collaboration across disciplines and could lead to increased accessibilty as students work toward achieving their educational goals.

The teaching and learning processes of moving from an instructional style to the learning style is almost forced because of the texting character limits and texting environment. The learning contract and self-directed learning, discussed earlier in this chapter, suits texting and andragogical priniciples. Texting-based learning (SMS) forces faculty to consider a learning style because lectures and other methods associated with the instructions style are cumbersome when texting is used. The support systems and services provided the higher education student with a means to accomplish an independent, self-directed learning experience. The support sytems and services also provided flexibility with schedules. The support system is another avenue for the higher education institution to support the faculty when facilitating learning.

Andragogical principles such as self-directed learning suited to texting. "Informal learning using mobile technologies is already embedded in our daily lives. Millions of Web-enabled phones are being used by learners (who may not be enrolled in formal courses) to seek information" (Peters, 2007, p. 15). This natural usage embedded in our daily lives is associated with the direct andragogical principle of self-directed learning. To seek information is to inquire. Self-directed learning is self-directed inquiry and a principle of andragogy.

Henschke (2007a) discussed the characteristics and high skill levels found with self-directed learners. The characteristics and high skill levels (see Table 1) may be associated with students in higher education institutions. Henschke did not assign a high skill level to the last two characteristics of self-directedness, the creative, holistic thinker, and not dogmatic.

Table 1

Self-Directedness Associated with Higher Education Students

Characteristic	High Skill Levels
Self-confident	Strong goal setters
Inner - directed	Good decision maker
Reflective	Accurate observer
Achievement, motivated	Effective listener
Accommodating	Higher reading level
Creative, holistic thinker	
Not dogmatic	

Note. Information adapted from Henschke, 2007a.

Learners, according to Henschke (2007b) "take responsibility for their own learning including diagnosing needs, developing needs, developing objectives, designing learning experiences, finding resources, and evaluating learning outcomes" (pp. 12-13). Henschke's description of the self-directed learning responsibility has structure within the framework of Knowles' (1986) learning contract. The self-directed learning responsibility is applicable to the simplified learning contract.

Self-directedness is an andragogical principle by Knowles (1975). Not only is self-directed learning an andragogical principle but tells followers that andragogical implementation should be conducted using self-directed learning. Knowles (1975) body of work increased when Taylor (1986) contributed her study of the phases and phase transition points of the self-directed process for learning.

Taylor (1986) conducted a study using 12 student volunteers about the learning process for self-directed learning as perceived by the learner. This classic study resulted in the identification of phases in the learning process toward becoming self-directed including disconfirmation, disorientation, exploration, and equilibrium. The definition of disconfirmation is "a major discrepancy between expectations and experience" and a characteristic of disorientation is confusion (pp. 59-60). The study gave andragogy practitioners phases as a roadmap intended for the self-directed learning process.

Texting-based learning by the very vehicle of the mobile phone, the shortness of the message allowance, the immediately available, and constantly within reach delivery mode, provides exactly the right combination for self-directed learning. The function of the teacher is to help the adult learner learn. This guides and assists the self-directed learner in his or her inquiry. Texting-based learning is suited to the university adult learner. Definitions in Chapter 1 identified an adult as anyone over 18. That age range matches nearly all of the university population. This is a natural progression of a learning delivery mode since most university students use texting now and will be in the future.

Using the simplified learning contract could provide the structure to enable the self-directed inquirer to learn. Texting messages could help focus the learner by providing questions using the simplified learning contract structure. By answering the

texting message questions, the learner could build his or her own learning contract. The contract provides the structure for the person to conduct his or her own self-directed learning. In this study, during and after creating the learning contract, the researcher sent and responded to texting messages, as the adult learner needed help in learning. As part of building the learning contract, the self-directed learner could define criteria for evidence of learning. Upon completion of the learning contract, then credible judges would evaluate and validate the evidence.

Knowles (1970) established self-directed learning as an andragogical principle upon discovering how adults learn (p. 30). Knowles found that an adult learns more and deeper when self-directed. Smith, Murphy, and Mahoney (2003) defined self-management of learning as the extent to which an individual feels he or she is self-disciplined and can engage in autonomous learning. Miflin (2004), upon clarifying the meaning for self-directed learning, concluded that self-directed learning did not mean self-teaching and was appropriate for problem-based learning curriculum especially in higher education (p. 51).

Y. Wang (2009), using a convenience sample, surveyed 330 responses of participants from five organizations in Taiwan: Aerospace Industrial Development Corporation, IBA Taiwan, National Changhua University of Education, Chung Chou Institutes of Technology, and Yuanlin Community University. Unexpected results from the study indicated that women's self-management of learning on m-learning using intention was stronger than men, but was significant for all groups. The researchers concluded that this was because women strengthened their capabilities in self-management of learning in order to increase their competitive advantage in business (p.

113). The importance of this study lies in the andragogical aspect of learning and intention and the use of m-learning. However, the study survey focused on m-learning and self-management of learning and was not confined to learning using only SMS messaging.

The texting-based learner in higher education is both an adult learner and non-traditional student. When writing about designing a learning experience for teaching adults and non-traditional students, excellence in design depends upon the mutual deep involvment reflected in the design process (Henschke, 2007b, p. 12). Self-directed learning is the design process that appeared to match the requirements of texting-based learning (SMS) for the higher education adult learner.

International education community. The researcher found literature, discussed in more detail later in this chapter, about research conducted at international locations recognized for embracing andragogy such as Australia, United Kingdom, and New Zealand. These countries appear to be on the forefront of research in the areas of andragogy and texting-based learning. When comparing the American and European understanding of andragogy, Cooper and Henschke (2007) found the Europeans stronger in andragogy and defined a critical element that adults help adults become refined and competent (p. 159). However, countries where texting technologies are important such as China, India, Japan, and South Korea are beginning to make strides in technology toward texting (SMS).

Kennedy and Levy (2008) performed a study using SMS messages to support beginners' level learning of the Italian language. The experiment focused on vocabulary learning and support. The student used mobile phones with a push mode sent by the

teacher, and the scheduling of messages determined by the teacher. The study demonstrated that the message content was useful and enjoyable for the student. However, the student was limited by not having a pull mode, which was requested by the student, which would make the messages available upon request. Further studies recommended allowing retrieval of the message at the student's convenience. Not evaluated was the efficiency of texting. Kennedy and Levy (2008) provided only recommendations providing the students' increased convenience for learning.

Usability perspective. Usability is important for the student in the areas of environment, collaborative work, simulation, and content-based learning. Deegan and Rothwell (2010) discussed the importance of usability for mobile device learning focusing on the main concern of content-based learning satisfaction and comfort (p. 24). Similarly, the collaborative learning can work together contently when all learners understand the process.

Roschelle (2003) used participatory simulations as a type of collaborative learning. Students using mobile devices used for m-learning in participatory simulations led to a much deeper level of engagement by students in the subject matter. Collaborative data gathering is not collaborative learning.

Deegan and Rothwell (2010) concluded that content creators should examine usability. Usability should be examined by the classification of m-learning and the central positioning of the context of uses in the application. Usability is a factor of not only the technical creation of m-learning but the instructional developers. When both the technical creator and the instructional developer focused on the integration of the content

with the technical aspect of the application, the learners found the application easier to use.

Henschke (2008) wrote about the shift from training to performance support in the work setting for a total system of human capital flourishing in accomplishing the corporate mission (pp. 1-2). Performance support is also applicable to higher education institutions accomplishing the mission of provided education to adults. In referring to the mission of adult texting-based learning, usability is an important key factor. This research study foundation was on the usability of texting as the infrastructure of learning using a cell or mobile phone.

In summary, the application of andragogical principles, such as self-directed learning, is particularly suited to texting. The international education community appears to be leading the way in texting-based (SMS) learning studies, practice, and the usability perspective. Adult texting-based learning (SMS), using a cell phone or mobile phone, is important because it provides adults with the infrastructure required to gain access to higher education courses.

Efficiency and Texting in Literature

Anderson (2004) examined the online learning environment as a temptation for online teachers or tutors to become overly involved, checking emails and message boards at all hours of the night and day. Anderson called for vigilant time management skills (p. 286). The online learning experience presents a need for vigilance and increases the need for time management skills. The efficiency of sending text messages anytime of the day and night may increase the efficiency of the process, especially for the sender. However,

the impact of receiving text messages 24 hours a day may come with other consequences that adversely affect the benefits of texting efficiency.

Horstmanshof (2004) studied texting as an efficient method for students to communicate important short messages with his or her university lecturer since casual university teaching staff may only spend a few hours on campus. Horstmanshof stated that texting (SMS) is efficient and time saving for both parties, less disruptive than mobile phone calls, and cheaper. Group text messaging is efficient for class alerts. The study indicated that first year students were more accepting of texting than older, more traditional students. However, Horstmanshof only addressed connection and communication between the students and lecturer and does not address instructional methods using texting. The results of the Horstmanshof study provides important first steps to a texting-based learning environment, but needs to go further in examining university academic curriculum using texting-based instructional methodology and delivery. As stated in the two previous sentences, Horstmanshof did not address learning and efficiency when using andragogical principles, but only communication and efficiency.

Carrier and Benitez (2010) studied efficiency in text messages (SMS) using multilingual university students at California State University. The study results did not support the idea that efficiency resulted from bilingual language (code) switching of Spanish and English in order to use the fewest keystrokes while communicating via SMS (pp. 168, 181-182). The results suggested that participants did not select a Spanish word in place of an English word, or an English word instead of a Spanish word, to send in a text message based solely on which word had the fewest keystrokes. Carrier and Benitez

(2010) addressed the project's limitation by indicating that efficiency in texting might not be at the keystroke level, but at the conception level by using efficient words (pp. 168, 181-182).

Deumert and Masinyanna (2008) studied (code) switching behavior of language in texting messages (SMS). The bilingual participants had the choice of selecting a mixture of both isiXhosa words, a South African language, and English words when writing a texting message (SMS). Deumert (2008) found the participants' word language choices were based more on the conversation than on keystroke efficiency (pp. 117-147).

In the following quote, Peters (2007) used words that inferred texting was efficient. She used words such as a faster way and instantaneously which indicated efficiency in texting messages (SMS). Peters' said texting messages (SMS)

> Provide a faster way of informing students (using SMS) and flexible delivery that is not bound to computer so we can engage across physical space. . . . Enable situated learning or learning in context, using phones with cameras/video capabilities to enable students to capture their own material and instantaneously transfer to other students and lecturers. (Peters, 2007, Education and training interview, para. 10)

Peters addressed the efficiency of SMS as a delivery method when she wrote informing the students. She also addressed the efficiency of SMS as an instructional method when she referred to the students' learning in context.

Thornton and Houser (2005) performed a study using 44 Japanese university females to conduct a study comparing two groups: one group was sent text assignments in three short texting (SMS) messages daily and the other group was handed the same

assignment, but on paper. The assignments consisted of practice exercises. The learners were tested using an exam. The texting group received the highest score for learning on the exam. The researchers determined that sending the students texting messages actually encouraged the students to study. The researchers also found the efficiency of texting assignments greater than paper based on students' reading the exercises while commuting or performing other daily activities. Since this was a Japanese study, the mode of transportation in commuting was likely train or walking, and not related to texting while driving an automobile.

M. Wang, Shen, Novak, and Pan (2008) at the Shanghai Jiaotong University conducted a study of 1,000 students with 800 online chinese students, working on advanced degrees, in a class studying English. The class used a blend of technologies such as texting, audio, video, and other smarthphone technologies to broadcast and deliver instructions on the students' mobile phones. A customized system was developed that also supported SMS and instant polls, and provided a full m-learning experience. However, only 170 students participated in the three m-learning activities, sending 365 messages. The average number of mobile phone messages was 2.147 per student. M. Wang et al. (2008) stated, "Students simply typed the answers to some of the multiple-choice questions but were not engaged in any other more extensive interactions" (p. 684). Considering this statement by M. Wang et al. (2008), the study indicates that actual data collected was small compared to the potential number of available students and that there was no interactive engagement beyond selecting multipe-choice answers. Also, the study used a hybrid learning system (mixture of customized computer applications along with

texting [SMS] and blended technologies [multiple technologies that broadcasted or delivered communications]) that included more than text messaging.

Scornavacca, Huff, and Marshall (2009) used a computer-based SMS management tool as part of a TXT-2-LRN system. The researchers conducted a study using volunteers from a Bachelor of Commerce and Administration business course in Victoria University of Wellington, New Zealand. The business course included a trial of five lectures on information technology during which the students were introduced to TXT-2-LRN and encouraged to use their mobile phone. After the five lectures, 569 volunteer students provided data by answering a 22 question survey. The volunteers were first year students, 18 to 20 years old, English speaking natives, evenly distributed−male and female. The percentage of volunteers that attended five lectures were 79.3%. Two or more SMS messages per day were sent by 369 volunteers while less than two SMS messages per day were sent by 200 volunteers. The study resulted in students indicating an increase in interest and interactivity. Surveyed students indicated that using the hybrid, computer-based SMS management tool with TXT-2-LRN, was especially useful, efficient, and preferred over raising their hand to ask questions. Students rated the survey statement "using text messages to enchance their study" (p. 145) as a mean of 2.95 based on a Likert-scale of 1-5 with 5 being the the highest rating. The student responses demonstrated that the TXT-2-LRN texting message system resulted in only a moderately positive impact on enchancing their learning (p. 145). Although, the Victoria University study conducted by Scornavacca et al. (2009) provided insight into the efficient use of SMS in higher education, it is a hybrid system of a computer application with SMS and not texting only. The study was not conducted as a

texting-based learning class, but focused on students asking questions of the teacher using the texting.

Lee (2007), in a case study at the Management School of the University of Edinburgh, Scotland, conducted 17 interviews—10 were with Masters of Business Administration (MBA) students and seven were with staff on the use of wireless technology. The results indicated that the efficient use of time is linked to place, such as an airport or train, and being "as easy as picking up the phone" (p. 376). Lee concluded that the use of mobile technologies in higher education was driven by students rather than teachers and the teachers' need for developing learning methods and application use (p. 378).

The field of texting-based learning in andragogy is relatively new. The efficiency related to texting-based learning, in the literature, focuses mostly on the efficiency of the delivery method. Peters (2007) discussed the benefits of learning in context using the phone's camera to capture and transfer materials but did not provide data to support efficiency and texting-based learning. As discussed earlier in this chapter, Scornavacca et al. (2009) and other researchers used hybrids application with a combination of a SMS computer proprietary applications and texting. However, proprietary applications are not pure SMS texting-based learning. Proprietary applications may cause additional expense to universities and students. The proprietary application may require expenses associated with purchasing the proprietary application, Information Technology (IT) support staff, training on the new proprietary application, and additional computers. However, pure texting-based learning (SMS) is relatively inexpensive and only requires a cell phone.

Cavus and Ibramhim (2009) used 45 first year undergraduate students from the Near East University, Department of Computer Information Systems to conduct an experiment using SMS text messaging using only technical English lanuage words with students. The researchers developed a computer based system called the mobile learning tool (MOLT). The researchers used MOLT, a propriatery SMS management system that uses a bluetooth interface, to format and submit messages via the personal computer at arranged times. During the experiment, each student received an orginal set of 16 SMS messages. The same set of SMS messages were sent to the same student on two different days. Results from a pretest and posttest revealed a statistically significant increase in recall after receiving the SMS messages. The mean pretest was 24.68 and the mean posttest was 89.77. The SMS messages were sent from the MOLT system to the students. There was no two-way communication with the students. Although this study resulted in increased learning, the MOLT system appears to be more of a teaching tool for minimal amounts of learning.

Cavus and Ibramhim's (2009) study was not comparable to a full texting-based (SMS) study using a simplified learning contract that provides an instructional methodology. The study had only one-way communications with texting sent to the students. The researcher did not provide the students with the capability to send SMS messages, but only to receive SMS messages. The study used a hybrid proprietary system call MOLTS instead of using only pure SMS messages. Each student received a set of the same 16 SMS messages on three separate days. Cavus and Ibramhim's method provided background information but is not comparable to this full texting-based (SMS)

learning using a simplified learning contract that provides a new instructional methodology.

Liu, Tao, and Nee (2008) in a study of 65 undergraduate students at the Yuan Ze University in Taiwan examined the effectiveness [efficiency] of using SMS messages to notify students of web-based collaborative learning activities to increase learning. The purpose of the study was to determine if early notification using SMS would increase awareness of the student's need to participate in a web-based collaborative learning activity. The 36 students in the experimental group received realtime SMS activity-awareness notification that were computer generated as a result of realtime monitoring of the web-based collaborative learning activities. The control group of 29 students received no SMS activity-awareness notification. The experimental group logged on the web-based collaborative learning activity on an average of 11.44 times compared to the control group that logged on an average of 9.79 times. A pre-score and post-score were completed by 48 students. The result determined that the experimental group had a significant inprovement in their group work compared to the control group, both in participation and student learning achievement (pp. 129-136). Overall student responses to a 5-point Likert-scale questionnaire resulted in a mean of 3.60 for the following "it gives me a kind of pressure when I come to know that the progress of the assignment made by the competitor is faster than me" (p. 134).

The study provided insight into the efficiency of being faster when using SMS as a notification system and the increase in collaborative learning resulting from the notification. However, an SMS notification is not the depth or breath of texting-based learning, even though, SMS is text messaging. This study was a hybrid because the

computer generated the SMS notification and the use of web-based collaboration for learning.

Efficiency, according to the Institute of Industrial Engineers (IIE) when using computers, is the access time (Hammer & Morris, n.d.). Efficiency is also a comparison to a standard. For the purposes of this researcher's study, e-learning was the standard and access was compared to texting-based (SMS) learning. It was not the intent of this researcher's study to perform a professional industrial enginneering time study because the quantities and types of known and unknown variables were unpredictable, such as the distance each student must travel to reach a computer, and students may have widely varied access time when logging into an application. Performing a mathematical calculation or even a vague numerical estimate determining efficiency is inappropriate and inefficient. Similar to the findings in the literature review, efficiency for this researcher's study is a descriptive comparison of SMS against the standard of access such as used in e-learning (Fein et al., 2010).

When defining efficiency descriptively, the term access is broadened to include not only time but other things that prohibit immediate access. Koszalka and Ntloedibe-Kuswani (2010) sampled m-learning case studies using a variety of perspectives and found that, "m-learning provided educational access to learners normally excluded from education based on location, social status, and technology infrasturcture" (p. 149). While texting-based learning (SMS) is part of m-learning, the lower cost of service, the lower cost of mobile phone equipment, and the greater geographic availablity of service may indicate that texting-based learning (SMS) is more accesssible to more students, and therefore, by definition more efficient.

Vyas, Albright, Walker, Zachariah, & Lee (2010) described a study to support clinical education for use in developing countries at remote sites that was conducted in partnership with the Christian Medical College (CMC) in India and Tufts University School of Medicine in the United States. The first objective was to adapt e-learning curriculum for mobile use and pilot the m-learning application using 11 fellowship medical degreed trainee volunteers. The fellows volunteered medical services to underserved people across India including secondary hospitals and remote clinics without Internet access. Vyas et al. (2010) stated, "mobile devices with Internet were used because other phones were too basic to access the mobile application" (p. 218). Some study participants had older phones and reported trouble accessing the system. Data transmission costs were high for the volunteers. The study's program management issued smartphones and phone cards to cover costs for the volunteers. Vyas et al. (2010) discussed using SMS instead of Tufts adapted mobile tool but dimissed SMS citing limitations of message length and Short Message Services' lack of a learning organizational framework (p. 221). Contrary to Vyas et al.'s (2010) opinion, SMS provided a learning organizational framework by using the learning contract experience. The learning contract experience is a structured learning framework for the self-directed learner using self-directed inquiry. Texting-based learning (SMS) is more efficient by providing access through using a low cost phone and likely reducing data transmission costs.

Ritt (2008) identified limited or no access as a barrier for some adult students who desire to attend higher education institutions. The access barrier included personal and institutional barriers such as family and work commitments, childcare, schedules,

conflicts, and others. Ritt directs institutions to, "leverage the strength and appeal of your web site to the adult student maket" (p. 15). Efficiency is indicated because of access to the institution of higher education's website. The efficiency of access afforded by a website increased with efficiency of access afforded by only a mobile phone for texting-based learning (SMS).

Summary of Literature Review

In summary, the literature review suggested that texting-based learning is still in its infancy. Mostly, texting studies were not instructional based. Other texting studies were a hybrid of instructional methods and delivery environments, mixing computers with mobile phones. Tuononen and Kurola (2002) used a virtual teacher-training model instructing students in three different ways. Koszalka and Ntloedibe-Kuswani (2010) analyzed case studies and suggested the need for a new instructional strategy design for m-learning, but did not address the seemingly obvious need for texting-based learning (SMS) instructional strategy design directly. Efficiency was discussed in several studies including SMS and m-learning. However, the studies did not address efficiency in the context of SMS and applying andragogical principles with the evidence of a learning contract using KUSAVI.

Chapter Three–Research Methodology

The methodology used in this study is described in such detail that repeatability is obtainable by any higher education institution such as universities, colleges, community colleges, technical, or vocational specialty schools including institutions using distance learning as a major form of instruction or research institutions or organizations involving texting-based learning involving adult learners. However, the main thrust of the study was performance in the arena of higher education institutions. This researcher for the texting-based learning (SMS) study used as subjects undergraduate and graduate students in the area of business. Educators could replicate this study, especially in remote geographical areas or geographical areas that do not have or have limited access to the Internet or direct learning but have access to mobile phone service. The only requirement to replicating this study methodology is for the adult student and educator to have access to mobile telephone equipment and mobile service. The reader should be able to understand and replicate the study by following the methodology and processes detailed in this chapter about applying andragogical principles to a texting-based version of the learning contract using KUSAVI. Efficiency of the texting-based learning may vary with each application depending upon each situation.

Design

The qualitative study determined how efficiently texting-based learning supports the principles of andragogy while creating a texting-based version of the learning contract experience. The researcher answered the research question by determining efficiency related to texting using the learning contract experience.

The researcher conducted the study of texting-based learning (SMS) using the methodology which is a sequential description of the procedures used. This study was designed so that the methodology could be used when performing a college or university level course. The texting-based learning (SMS) methodology used the following 25 step-by-step protocol for obtaining data from the study participants.

1. The researcher signed up volunteers to participate in the study using the forms in Appendix B and Appendix C.
2. The researcher sent a texting message to the participants to test the accuracy of the phone numbers and texting reception.
3. The participants replied that they received a test texting message.
4. The researcher provided students by texting an initial list of standard texting abbreviations used in the study with the anticipation that additional abbreviations will surface during the study. The initial abbreviation list included but is not limited to K for knowledge, U for understanding, S for skills, A for attitude, V for value, I for interest, lc for learning contract, q for question, lcq for learning contract question, and so forth.
5. Using texting, the researcher texted an overview of the simplified learning contract to the participants using a texting-based lecture (txlx).
6. Using texting, the researcher texted an overview of objectives to the participants.
7. Using texting, the participants replied to the researcher with the requested information.
8. Some participants in this stage of the study sent texting messages with confusion about the simplified learning contract questions.

9. To clear up the participants' confusion, the researcher held a 20-minute face-to-face meeting to answer the participants' questions about the simplified learning contract process.
10. For a normal college semester, the participants used KUSAVI to complete the simplified learning contract. However, due to the time constraints of a three week accelerated summer semester, the participants completed only Knowledge and Understanding (KU) for this study.
11. Participants determined a topic that they wanted to study for their simplified learning contract.
12. With the topic in mind, students built their simplified learning contract answering the learning contract questions for knowledge and understanding.
13. Using texting, the researcher sent the simplified learning contract questions to the participants.
14. Using texting, the participants replied to the researcher with the answer to each of the five simplified learning contract questions using the letters KU to represent Knowledge and Understanding.
15. After the participants developed the simplified learning contract and had it approved by the researcher, the students accomplished the learning needed to support the evidence of learning that he or she defined in the simplified learning contract.
16. Using texting, the students sent evidence of the learning to the researcher for each the Knowledge and Understanding portions of KUSVAI.

17. Using texting, the researcher sent a verification of receipt of the evidence to the participants.
18. After the texting portion of the study, the researcher held sessions with two different focus groups to answer the focus group questions about the texting-based experience.
19. The researcher read aloud the following questions to the focus groups participants:

    Focus group question #1: What did you like about texting-based learning?

    Focus group question #2: What did you dislike about texting-based learning?

    Focus group question #3: Describe your experience using texting-based learning.

    Focus group question #4: What changes would you recommend for future texting-based learning courses?

    Focus group question #5: Did you find obtaining information from individuals faster or slower when using texting-based learning instead of email?

    Focus group question #6: Did the texting message character limitation help focus your thinking? Explain.

    Focus group question #7: Explain why you would or would not take future courses using texting-based learning.

    Focus group question #8: What further recommendations would you have for any future texting-based learning courses?

20. The researcher recorded the focus group sessions using her cell phone for transcription.
21. The researcher coded and analyzed the transcriptions for efficiency and process.
22. The researcher coded and analyzed the texting messages for efficiency.
23. The researcher examined the Chapter 2−literature review for efficiency.
24. The researcher analyzed the researcher's participation as the learning facilitator, focus group facilitator, observations, perceptions, and memories for efficiency.
25. The researcher coded and analyzed the data sources for emerging themes.

Schwandt (1997) defined a priori, content-specific scheme is coded after careful study of the topic (p. 16). Schwandt defined a grounded posteriori, inductive, context-sensitive scheme as being coded or categorized and the meaning refined while proceeding through the data (pp. 16-17). The researcher used both a content-specific scheme and a context-sensitive scheme.

The researcher coded with a content-specific scheme. The terms "process" and "efficiency" were developed from careful study of the topic under investigation. The researcher coded for "process" by marking a word or phrase that identified or indicated a process was happening or had happened such as texted a message to the researcher or requested a face-to-face meeting. The researcher marked any word or phases that identified or indicated "efficiency" such as saving time, wasting time, faster, slower, effective, and others. Then, the researcher coded for a context-sensitive scheme with actual language of the respondents to generate the codes or categories.

After conducting the texting study, the participants joined focus group sessions and answered questions and discussed among themselves their texting-based experience

of the texting-based learning process. First, the researcher collected qualitative data provided by the focus group sessions participants. The researcher coded focus group session transcriptions for process and efficiency. The researcher analyzed the coded transcriptions to determine emerging themes. Second, the researcher collected qualitative data using the actual texting (SMS) messages sent during the study. The researcher coded and analyzed the texting (SMS) messages for process and efficiency. Third, the researcher's coded and analyzed her own participation from texting message (SMS) sent to the participants, the focus group facilitator's transcription, the learning facilitator's instructional preparation on her cell phone, and the researcher's memories provided a third part of the triangulation of the research. Fourth, the researcher reviewed the literature for efficiency in texting to provide additional support of the analyses for efficiency.

The purpose of this study was to learn if it is possible to efficiently support the principles of andragogy while creating a texting-based version of the simplified learning contract. The purpose focused on the efficiency provided by the texting technology when coupled with andragogy, the theory of adult learning, in higher education institutions.

The technology of the texting-based delivery mode required a new texting-based instructional methodology. Combining a new texting-based delivery mode and texting-based instructional methodology is necessary for learning to take place. This is both an innovative way and a way of exploring a unique context to provide higher education courseware to the adult students.

The research question was "How efficiently does texting-based learning support the principles of Andragogy while creating a texting-based version of the simplified

learning contract experience?" The simplified learning contract is a type of learning contract used for the learning contract experience with texting.

The research method for the study was qualitative, both evaluation of innovation and exploration of a unique context. The researcher evaluated innovation because of the development of the new instructional method using abbreviations and the restrictive instructional limitations used in a texting-based (SMS) form. The researcher had to deliver instructions using abbreviations that had various meanings while being confined to only 160 characters per message.

In the past, educators were allocated time and space to use many resources including unlimited talking, writing, photographs, graphics, pictures, and objects that were real and physically touchable by the students. Consider even a few limitations that encompass distance-learning using personal computers. During distance-learning when using a personal computer, the student's learning may be limited by being unable to physically hold, touch, or smell a real object.

However, many resources are still available to the educator delivering distance-learning to the adult student. Some educators and adult students may find the personal computer online distance-learning methodology too restrictive. Compare the new texting-based instructional methodology restrictions when using remote texting-based delivery to the personal computer online distance-learning course. Students no longer are capable of receiving several pages of instruction from the educator, but are restricted to only 160 characters of text. This creates the need to develop a texting-based instructional methodology that educators can use with texting-based learning delivery.

The research methodology for this study was not only the evaluation of innovation but also exploration of a unique concept. Exploring a unique concept is the research process used when comparing the traditional learning and distance-learning instructional methodologies to the texting-based instructional methodology. Currently, instructional methods use andragogical principles and the learning contract experience for traditional and online distance-learning methodologies in higher education institutions. Since Malcolm Knowles first used the learning contract in the 1970s as an example of applying andragogical principles, use of the learning contract experience with adult learners is evidence of applying andragogical principles. The researcher used the simplified learning contract because of the limited amount of time in this situation.

One unique concept of this study was the innovation of a texting-based instruction methodology using texting-based delivery with the evidence of applying andragogical principles efficiently using the learning contract. A second unique concept was the innovation of using of texting-based delivery for an entire course delivered by a higher education institution. Never before attempted was texting-based delivery using a learning contract with KUSAVI for an entire higher education course in the United States. Previously, texting-based learning was only a supplement to classroom instruction or online Internet delivery.

Participants

The sample selected were volunteers recruited from a school of business senior level public relations class from the summer semester 2010 students at a Midwestern university in the United States. This researcher recruited and included in the study one

graduate student and nine undergraduates students, including five males and five females. A total number of 10 study participants volunteered.

Excluded from the recruitment were three students, one female and two males, who spoke or wrote English as a second language. This researcher excluded the students based on the Chapter 2 literature review that identified educators' concern that texting may cause interference with English-speaking abilities. This researcher excluded the student volunteers with English as a second language because of the unknown variable that the impact of texting may have on both the study and the English as a second language participants. The most important factor concerning any research study and this study in particular was to do no harm to the participants.

Not excluded from the recruitment process and ultimately the study were volunteers with English as a first language. This researcher's Chapter 2 literature review found no negative influence on children's literacy, but rather texting benefited children. Logically, if children received no negative influence on literacy then college and university volunteers with English as a primary language could safely participate in texting-based learning (SMS). Therefore, included in the recruitment for the study were university students with the English as a primary language.

The selection criteria for the participants included the ability and willingness to text and the possession of a texting mobile phone with texting service. The researcher required that the participants be able and willing to accept financial responsibility for texting services and mobile phone equipment costs. The researcher required the participants to speak English as their first language. The researcher required each participant to sign a no texting while driving agreement. The researcher required each

participant to sign agreements to participate and to be audio recorded. The researcher required that the participants be willing to text daily, during the summer semester 2010, on his or her own time and participate in a focus group session to discuss his or her experience with texting-based learning in higher education.

The texting-based study was separate from the business public relations course. The business public relations course was a means of recruiting student volunteers. All eligible students volunteered for the study. The volunteers were six senior level students, two junior level students, one sophomore level student, and one graduate student. The students ranged from 21 to 39 years of age. The median age was 22 years old. Four students were African-American and six were Caucasian. All participants were already texting daily for personal use.

Data Sources

Performance of data gathering used two data sources in this qualitative research study. The first data source was the transcripts of the two focus group sessions. The second data source was the actual texting (SMS) messages exchanged between the researcher and participants. The researcher collected data for use with qualitative analysis. The researcher transcribed raw data from the audio recordings of the two focus group sessions. The researcher used the actual texting messages written by the students during the study. The researcher used her mobile phone to collect raw data from both the focus group sessions through an audio recording feature on the phone and the actual texting messages written by the students during the study.

The first data set was the focus group sessions transcripts. The researcher recorded and transcribed the two focus group sessions. The researcher used her mobile

phone to record each of the two focus group sessions. The mobile phone recorder captured the voices of the focus group participants using the Adaptive Multi-Rate audio codec (AMR) file format. This is important because AMR files are convertible to Microsoft Word documents. The researcher emailed the AMR files from her mobile phone to a transcriber. During the data analysis phase of the study process, the AMR recorded focus group session transcripts provided the first data set for analysis.

The focus groups served as collection venues for qualitative information about the study using prescribed questions. The focus groups were audio recorded when participants provided answers to the prescribed questions. The researcher read each question orally to the focus groups during the focus group sessions. The students who volunteered to participate in the study verbally answered questions during the focus group sessions. After the focus groups' session, the researcher gave a copy of the questions in writing to the participants to keep for their records. The researcher did not provide the questions to the participants prior to the focus group sessions because the researcher desired spontaneous answers from the participants.

The two focus groups consisted of nine undergraduate student participants and one graduate student participant. Each focus group had an equal number of female and males. One focus group session had eight participants while the other focus group session had two participants. All focus group participants were also participants in the actual texting-based learning (SMS) study. Participants volunteered from the School of Business and Entrepreneurship at a Midwestern university in the United States. The researcher then conducted qualitative coding and analysis from the focus groups transcripts.

The second data set was the actual texting-based learning messages (SMS). The researcher used the same process as with the first data set for the focus group sessions. The researcher collected raw data of actual texting message from the study using the researcher's mobile phone and sending them to her email. The researcher collected the raw data text messages (SMS) during the summer semester of 2010 for qualitative data analysis.

The second data set was the actual texting messages. The actual texting (SMS) messages numbered 332 for the study. As anticipated, the volume of texting messages occurred in a greater amount in the beginning of the semester when the researcher gave students initial instructions using texting. After the initial instructions on the simplified learning contract, abbreviations, and due dates, as expected because of the learning curve, the number of texting messages decreased. The researcher conducted the study for three weeks during the highly accelerated semester with daily texting. Texting during a regular semester held over a 16-week period would have more evenly distributed the texting message frequency. During the summer 2010 semester, the researcher exchanged texting messages (SMS) with each of the 10 volunteer participants. The researcher forwarded SMS messages sent to and from the students to the researcher's e-mail in order to convert them into a Microsoft Word document for qualitative analysis performed after the study.

Procedures

The procedure of the study began with the participants building a simplified learning contract experience using texting. After the simplified learning contract experience, the researcher asked the participants to provide their perceptions of the experience by answering focus group questions.

During the study, the participants answered the simplified learning contract questions using only texting. The simplified learning contract questions are not to be confused with the focus group questions. The focus group questions, answered by the participants, reflected their perceptions of and experience with the texting-based learning process. The simplified learning contract questions in Figure 2 are the texting messages sent to the study participants from the researcher's mobile phone.

Simplified learning contract questions texting message (SMS)
Me: Q1 - What are you going to learn? (Objectives)
Q2 - How are you going to learn it? (Resources & strategies)
Q3 - Date of completion?
Q4 - How are you going to know you learned it? (Evidence)
Q5 - How are you going to prove you learned it? (Verified by judges)
Note. Adapted from Knowles (1986) (Appendix F). This is a copy of the actual texting message sent by the researcher to the participant for use in building individual simplified learning contracts.

Figure 2. The simplified learning contract questions for texting-based learning (SMS).

Data Analysis

This researcher analyzed two data sets gathered from study participants: transcripts from two focus group sessions and transcripts from the actual texting messages. The researcher's own perceptions and experience during the study process were included in the analysis as a third data set because triangulation can provide verification of the analysis results. The triangulation included the focus group sessions, the actual study texting messages, and the researcher's own perceptions and participation experience in the study. During qualitative analysis, the researcher used the transcribed

texting messages, coding, the researcher's own experience in the study, and the two focus group transcripts in determining conclusions and findings.

For purposes of this study, the researcher used descriptive analysis of the efficiency of applying andragogical principles to texting-based learning. The intent of this study was to conduct qualitative educationally based research. The intent was not to conduct a quantitative or numerical industrial engineering work measurement study. The researcher's general descriptive analysis and conclusions of texting-based learning efficiency resulted from the extent of efficiency. The result of the extent of efficiency is discussed in Chapter 5.

Background of the Researcher

The researcher has experience developing questions. She spent two years leading a team of engineering professionals that developed examination questions for professional societies conducting examinations leading to professional certifications. The certification examination team developed and wrote questions, refereed, and validated questions from a pool of over 600 questions to over 1,200 questions. Several professionally administered focus group sessions, an internal certification team, and an outside research firm validated the questions. The researcher also has several years of experience with focus groups in business and industry. The researcher's experience developing questions and facilitating focus groups provided her with valuable skills and qualification for conducting this study.

Summary

To summarize, the researcher examined the design of this qualitative research that provides a 25 step-by-step protocol for obtaining data from the study participants. The

study is both the evaluation of innovative research and the exploration of a unique context. The researcher described the data sources from the focus groups participants' perceptions, the actual texting messages from the participants, and the researcher's perceptions. The researcher captured the raw data using her mobile phone prior to its transcription. The researcher coded and analyzed the transcriptions. The researcher provided her background and qualification for conducting the focus group sessions.

Chapter Four–Presentation of Data

The purpose of the study was to learn about the efficiency of applying andragogy to texting-based learning (SMS) in higher education. The researcher used KUSAVI as part of the first texting abbreviations used when the adult learner created a texting-based simplified learning contract. The researcher collected data from university student volunteers for this innovative and qualitative research about texting-based learning (SMS).

Research Overview

The researcher collected data using the simplified learning contract, which is also known as the business learning contract, from student volunteers enrolled at a major Midwestern university in the School of Business and Entrepreneurship, a senior level Marketing course. Study volunteers included nine undergraduate and one graduate student from the summer 2010 Marketing course from June 14, 2010 through July 9, 2010. Table 2 provides the participants' demographics.

Table 2

Demographics of Study Participants by Percentage

Demographics	Study Participants (%)
Males	50
Females	50
Age range	
21 - 29 years	90
30 - 39 years	10
Ethnicity	
Caucasian	60
African-American	40

The study participants from the School of Business and Entrepreneur (SBE) Studies provided insight into their participation in the study including the focus group comments and selected learning contract topics. The majority of the participants were senior level business and entrepreneurship majors. The researcher illustrates the academic college majors and level as percentages of the study group Table 3.

Table 3

Participants Academic Demographics Percentages

Majors and Level	Study Participants (%)
College major	
Business and Entrepreneurship	90
P-12 teaching	10
College level	
Sophomore	10
Junior	20
Senior	60
Graduate	10

This qualitative research was based on data collected from the participants' perceptions voiced during the focus group sessions. The texting messages were both indirect and direct data. Indirect data were meta-data such as the time of day, quantity, and average number per day of texting messages exchanged. The researcher retrieved indirect data from the actual texting messages the students exchanged with the researcher during the study. Direct data were the actual texting messages including word choices, abbreviation choices, and the actual communication intended for the receiver of the messages.

Simplified learning contract topics. Participants selected a variety of topics to study using the simplified learning contract. Since all of the participants were volunteers from a marketing department course given by SBE, most of the topics were business related. A broad scope of business and entrepreneurial studies offered by the SBE include sport management, fishing, a wide variety of entrepreneurial and small business studies and a full range of usual business and management courses such as accounting, management information systems, marketing, economics, finance, management, and supply chain, offered at most higher education institutions. The broad variety of potential topics provided credibility to the span of higher education courses that might be candidates for texting-based learning (SMS).

As expected, reflecting the variety of courses offered in the SBE, participants selected a diversity of topics for their simplified learning contract experience, many of which were sports or small business related. Some learning contract selected topics paralleling concurrent lectures in the marketing/public relation class from which volunteer recruitment occurred. The marketing/public relations class recently studied toothpaste marketing that most likely influenced one student's selection of correct tooth brushing procedures. Simplified learning contract topics mirrored the participants' background in sport management. The participants' selections of topics in the simplified learning contracts included the National Basketball Association (NBA), Major League Baseball (MLB), disc golfing, track with five kilometer running and other related activities such as exercise. Small business studies, perhaps, influenced a participant's topic selection of the cosmetic make-up application procedures. One participant selected the topic of the correct procedure to bait a hook for his simplified learning contract. The

researcher perceived the participant selected the topic based on the SBEE course about custom building fishing rods.

Each participant selected a different learning contract when participating in the texting-based learning experience. The wide variety of topics used in the study represented the conformation of breadth and depth of possible topic application of the learning contract in higher education institutions using texting-based learning. The subject topics were open with no restrictions. Table 4 provides a listing of the study topics selected by the participants.

Table 4

Participants Selected Simplified Learning Contract Topics

Topic Categories	Participants Selected (%)
Sport Management	40
Marketing/Public Relations	30
Business course related	20
Other	10
Total	100%

Texting-based learning (SMS) contract abbreviations. To minimize confusing with personal and other common texting (SMS) abbreviations, the researcher provided an initial list of standard abbreviations used in the study. Performing texting-based learning using the learning contract experience required a minimum list of abbreviations for the study. The researcher sent texting (SMS) messages of the initial standard abbreviations to each participant.

Texting-based learning (SMS) used additional abbreviations needed by volunteers when they completed the simplified learning contract experience. The researcher sent

texting message (SMS) abbreviations to each participant for simplified learning contract completion. Recall from Chapter 2, the six adult learning competencies: Knowledge, Understanding, Skills, Attitudes, Values, and Interest (KUSAVI). The researcher asked the participants to use all six competencies to complete their simplified learning contract using the questions in Figure 2. In addition to the adult learning competencies, two other abbreviations were among the first standard abbreviations—lc for learning contract and txlx for texting-based lecture. Table 5 displays the first abbreviations used when completing the learning contract experience.

Table 5

First Standard Abbreviations

Abbreviation	Representing
lc	learning contract
txlx	texting-based lecture
K	knowledge
U	understanding
S	skills
A	attitudes
V	values
I	interest

Each letter of KUSAVI combined with each question created the simplified learning contract. The researcher accepted upper case and lower case letters, or a mix of both. Most students selected the upper case K with a lower case q (for question) or a (for answer). However, the all lower case characters would be more efficient for most persons sending texting messages. Table 6 illustrates a partial list of the simplified learning contract questions abbreviations for questions 1 and 2 for K representing knowledge and U representing understanding. A complete list would include simplified

learning contract questions 3, 4, 5, and the rest of the 6 adult learning competencies using skills, attitudes, values, and interest.

The researcher asked the participants to use each KUSAVI letter in their simplified learning contract. Figure 2 is the list of questions the researcher sent to the participants for building their simplified learning contract. The abbreviation of KQ1 or Kq1 represented knowledge (K) for the simplified learning contract question (Q) number one (1). The researcher sent a texting message (SMS) with the question (Q), the question number (1) to the participants for each of the six adult learning competencies (KUSAVI). The participants replied to each of the researcher's questions by texting their answer (A) with the abbreviation of KA1 representing knowledge (K) for the answer (A) to simplified learning contract question number one (1). The researcher asked the participants to replace the Q with an A when they designated their answer. The second knowledge question by the researcher was KQ2 represented knowledge for simplified learning contract question number two. KA2 represented the answer for simplified learning contract question number two. KQ3 represented knowledge for simplified learning contact question number three. KA3 represented the answer to the knowledge simplified learning contact question number three. The process continues until all five questions are answered using knowledge. A partial list of the abbreviations that are using in texting-based learning (SMS) that students used to build their the simplified learning contract are in Table 6.

Table 6

Simplified Learning Contract Abbreviations Partial List

Abbreviation	Representing
Q1	question number 1
Q2	question number 2
Q3	question number 3
Q4	question number 4
Q5	question number 5
Kq1	knowledge question 1
Ka1	knowledge answer to question 1
Kq2	knowledge question 2
Ka2	knowledge answer to question 2
Kq3	knowledge question 3
Ka3	knowledge answer to question 3
Kq4	knowledge question 4
Ka4	knowledge answer to question 4
Kq5	knowledge question 5
Ka5	knowledge answer to question 5
Uq1	understanding question 1
Ua1	understanding answer to question 1
Uq2	understanding question 2
Ua2	understanding answer to question 2
Uq3	understanding question 3
Ua3	understanding answer to question 3
Uq4	understanding question 4
Ua4	understanding answer to question 4
Uq5	understanding question 5
Ua5	understanding answer to question 5

The abbreviation UQ1 represented understanding for simplified learning contract question number one. The abbreviation UA1 represented the understanding answer for simplified learning contract question number one. The abbreviations were numbered sequentially and continued through all simplified learning contract questions. Therefore, the last of question and answer for knowledge used the abbreviation KQ5 when texting about the question and the abbreviation KA5 when texting about the answer.

The study participants completed five answers to the simplified learning contract questions for knowledge and understanding. The participants did not complete the answers to the questions regarding skills, attitudes, value, and interest during the study. This may be due to several factors mostly related directly or indirectly to the university's highly condensed summer semester. The university's summer semester was a normal 16-week of course material condensed into three weeks. The study, conducted concurrently with the course summer semester, required that 16-week of learning be squeezed into only three weeks of time. This necessitated a high volume of 332 texting (SMS) messages during the first two weeks of the study.

The intent was to conduct a pure 'texting-only study' with all abbreviation and communication using only texting (SMS) messages. To resolve confusion on the simplified learning contract experience resulting from the high volume of texting messages required during the accelerated summer semester, the researcher met face-to-face with the participants for 20 minutes providing two examples of the learning contract. The first example was a texting-based (SMS) learning contract on the NBA draft application process for sport management. The second example was a texting-based (SMS) simplified learning contract on the establishment of a bakery and researching commercial cookie recipes for entrepreneurial studies. The participants said the 20-minute face-to-face meeting clarified their confusion.

The participants successfully completed the simplified learning contract experience for knowledge and understanding. Time constraints played a role in the participants' non-completion of skills, attitudes, values, and interest. Another constraint

was the extra credit offered by a competing project−attending minor league baseball games and surveying baseball game audiences.

Qualitative Responses

The researcher used transcriptions from the two focus group sessions and the texting messages to capture the qualitative responses from the participants. The researcher's own perceptions and experience during the study process were included in the analysis results. Three data sources—the focus group, the texting messages, and the researcher's perceptions provided triangulation to verify the results.

Focus group session. Words or phrases were coded as efficient including participants' perceptions of what was efficient. Efficiency coding included their words (e.g., fast, quicker, effective), phrases, (e.g., shorter time, less words, less or no waiting), and their actions (using abbreviations, walking to class, and texting at the same time). Action descriptions indicating efficiency such as walking to class and texting at the same time were coded for efficiency. The researcher coded as process anything related directly or indirectly to the process or that affected the process of the actual texting-based learning (SMS) study as perceived by the participants. Process coding included anything related to the actual texting-based learning (SMS) study's 25 step-by-step protocol.

The researcher coded the two audio recording transcriptions of the focus group sessions for efficiency and process. The researcher compared the analyses of the individual participants' informal personal comments to the analyses of the focus group sessions summaries for verification. Each of the two focus group sessions came to a consensus among the participants. The focus groups each synthesized their own discussion of the topic and formulated the words for their group's summary answer to the

question. The researcher did not summarize words used for either group's answer. Only the participants provided the summarized answers to the questions. This entire question and answer section was informal language used by the participants in the direct quotes.

Focus group question #1: What did you like about texting-based learning?

Focus group answer summaries for focus group question #1

"The things that were cool about texting were convenience and flexibility of when you could reply back [and] abbreviated messages" (Focus Group #1).

> It was something different that I never thought would happen. Well, if you, [participant pauses] if there was a class through texting I could be anywhere in participating class and I mean e-mail and online classes you had to be sitting at a computer somewhere or somewhere with WiFi space, you know. It could be you would just be convenient in all I could go somewhere and like, you know, I could be in the store and just texting. (Focus Group #2)

Focus group question #2: What did you dislike about texting-based learning?

Focus group answer summaries for focus group question #2

> In general, like everyone stated, text messages are more personal, sent to boyfriends, girlfriends, moms, dads, your sisters and brothers. And you're really trying to relate homework through text messages is not efficient because of the long messages that are required to type your responses back to the questions. (Focus Group #1)

"At the beginning, there was too much information in one text message and they got confusing . . . if the questions were [a] little bit shorter I think it would be easier" (Focus Group #2).

Focus group question #3: Describe your experience using texting-based learning.

Focus group answer summaries for focus group question #3

> I was confused at first, definitely. I think due to our previous experiences, we've never had a class through texting, so that might have made [it] a little more confusing for us and that's about it. First, the concept is simply cool but then it was confusing until you (the researcher) came and explained it. Then when you came and explained it really didn't take that long, it was over. I didn't even know we were done with. It was really fast. (Focus Group #1)

"Being explained first made it a lot easier rather than just sending a text message explain it and the giving us the question" (Focus Group #2).

Focus group question #4: What changes would you recommend for future texting-based learning courses?

Focus group answer summaries for focus group question #4

> It would help to have some explanation or guide. I think it would help initially, have like to meet in person together to kind of explain it would help a lot and also not only be text [texting] based but primarily text-based [texting-based] and then have like five weekly meeting or something just to make sure everybody's understanding. It gets confusing. I think if the text was sent out on a daily basis. . . . Send one text to the class and if they have time to reply back, then send out another. Early, by biweekly or once a week (conduct a) meeting to get feedback from the students to see what's going on; or if there were any questions. (That) could help the process because I mean, I think the kids will love it not having to come to class. I mean that's a big, will there, [pause] and texting and urban

> texting. But when he gets to be an overload, I mean that's where the trouble comes in at. (Focus Group #1)
>
> Just to go over it at the beginning and make the text messages shorter and question after question rather than all at one time. Meeting it, with a class meeting, with the class one day in the very beginning, and explaining everything. Maybe handing out some paperwork about it or something. And then explaining that I'm going to text you, you know, this question. Then you need to respond. And if it's some kind of like class or something that you're going to want to get done in one day, maybe be like you know you have this much time to respond and then on th [sic] miss in the next question. And make sure everyone knows beforehand. Like this is what's going to happen and then alright after the first day you're done [with verbal communications] and it's just all texting after that. That would probably work good. Meet at the beginning of each [course] or at the beginning of each session [semester] and explain everything you expect from the course and just shorter text messages I think would work great. (Focus Group #2)

Focus group question #5: Did you find obtaining information from individuals faster or slower when using texting-based learning instead of email? Explain.

Focus group answer summaries to focus group question #5

> I agree [with the focus group participants] email would be better, like at first text might seem faster because it's instant notification. I . . . responding but it's much easier responding through e-mail and also like a lot of teachers say that we've developed like worst grammar skills. (Focus Group #1)

The researcher asked the participants for additional comments on the "explain" portion of focus group question #5. The participant's comment is below.

> Emailing your professor, you're almost forced to be more professional. You feel more like you have to use complete sentences and correct grammar and spelling than in texting because you're used to like making things shorter and you know not having to worry about it. (Participant #7)

Based on the focus group discussion, the researcher asked for clarification for the answer to focus group question #5. The researcher asked, "Have you seen texting affect your skills, as far as grammar language writing?"

> I was about to type you are with 'ur' and I changed it because you know I started looking at it like it does kind of affect grammar. I agree with [name deleted], you do have to make a conscious effort and recheck everything because I think it's a way where you can be personal with your text messages but you still, when it comes to e-mail and papers you need to be professional. So, I guess it depends on the person, if they can handle it or not. (Participant #10)

"I lose my phone all the time so that's like another thing you've got to worry about. I lose my phone then you have like girlfriends or boyfriends looking through your phone. Then you might miss some messages" (Participant #9).

> Texting is more like a faster paced like communications tool as opposed to e-mail. So, I think that it does kind of go with your grammar because you're trying to get short messages right to [the] point with texting as opposed [to] email were supposed to be profession and laid out. (Participant #1)

> Honestly, I don't have much problems, without being able to separate my e-mail business stuff from my personal text messages and things. As for as doing assignments, everybody has grammar problems but I don't abbreviate much even through text messages because I have a full keyboard on my phone. (Participant #6)

Focus Group #2 summary answer to focus group question #5

> Texting is faster, I mean if I was taking a texting class or a class that was through email or on the Internet, like, I could be walking out of my 10:15 class and text on my way to the next class without having to go sit down on a computer and or wait for my email, you know, to load on my phone or anything like that. I think it would be a lot easier [using texting]. I think once we figured out what we had to do it was efficient but at the beginning we didn't know, like, I didn't understand exactly what we were supposed to do. If you sit down with a class at the very beginning of the session and say, you know, handout some papers that says, you know, these are abbreviations and things. Then when you send out questions and stuff, I think it would be very efficient, you know, you just text them right back and be like here's the answer to this or I went and found this and just basically like if you were asking a question. And I got it on my, you know, text and I had to look up some information on the Internet or whatever, you know, I could text you the answer like right back without having any worries, you know. If the abbreviation were written down in front of me rather than like having to look back at my other text messages and if you didn't save one, you know, it just harder to keep altogether. (Focus Group #2)

Focus group question #6: Did the texting message character limitation [of 160 characters] help focus your thinking? Explain.

Focus group answer summaries for focus group question #6

> Having the character limitation really didn't. I guess [I] have an issue with texts. Because with certain phones, it does all [allow] you to go over the 160 character limitation. It was just a matter of being able to handle the questions correctly. I guess with as little texting as possible. I guess, I mean it was yeah. (Focus Group #1)
>
> I just think if you just know what the abbreviation means then it's going to be easier to use those [abbreviation] characters . . . or to make it into 160 characters so then, like, if those questions were a lot shorter and less, if you did not want as much detail to it. [Then] it would be easier to get it in that [160 characters]. I don't think it would be too tough to do…use the abbreviations . . . I can narrow it [the texting message] down or just put it into two text messages. (Focus Group #2)

Focus group question #7: Explain why you would or would not take future courses using texting-based learning.

Focus group answer summaries for focus group question # 7

> I, personally, wouldn't take a texting class. For me, I don't have a problem really coming to class and sitting in class to me I get more out of the, what we're doing right now, sitting in a group exchanging and sharing ideas and conversing like this. So, I don't think I would really care too much for the texting. (Focus Group #1)

> I would do it [take a class using texting]. I would definitely take a texting class if it was like I said. We meet we all have an understand[ing] of what we can and don't do to the texting [referring to the abbreviations]. And then we kind of have a set, like, time, you know, maybe from eight in the morning until seven o'clock at night. [You] can get text messages any time of the day, you know, seven days a week for like a semester and then you know if I'm going to text you [a] question I'm going to give the least you know 10 minutes to text you back if I'm going to send another question…If you had a math class, you know, they could even text to a math question…I mean like multiple different classes you could ask them a question from geography …you could look it up if you had to or text them right back. You could like look in your book if he had a book, so I think it [texting-based learning] would work good. (Focus Group #2)

Focus group question #8: What further recommendations would you have for any future texting-based learning courses?

Focus group answer summaries to focus group question #8

> Basically, we all think that [the] only way that it could work is if it's done in a class but it's not just a texting class, like it's a finance class . . . you text, maybe like, the quiz or do a survey. Or like I said, maybe do a class that's like an every other week meeting things. And, it's still not just like texting you can e-mail or stuff like that. But basically, you know on texting for the future work class. I think that it was surprising like how much we were like all behind it at first. Oh yeah, it sounds easy and it turned out to be not nearly as easy as we thought it was

> going to be. Come down to like people would just cheat. Like get something off the Internet, text it back or email it back you. Know the end of the day so if you just wanted to do a class solely texting, people would cheat. I really don't thing [think] you can learn a lot through that [texting]. You have to have supplemental material or come to class. And, I think it would be hard to find a teacher that would want to do that. You know, like when you're out doing something and you get a message about school. And, you're not in homework mode, I guess you really don't want to bother with it. I think it would be hard to find a teacher who wanted to get 30 text messages. (Focus Group #1)

"I think four [three] weeks [summer semester] isn't enough time. If this were the time-period [16week] of an actual semester long class, it would work really well" (Focus Group #2).

Both of the focus groups indicated the texting-based (SMS) learning is efficient and both desired to see texting-based learning succeed. The focus groups displayed desire by giving thoughtful recommendations toward texting-based learning improvements. The participants also affirmed the desire to take a texting-based (SMS) learning course in the future. The recommendations and willingness to move forward are strong indicators of desire for texting-based (SMS) learning success and predicts a possible future for texting-based (SMS) learning course offerings.

The researcher coded the two focus groups transcripts.

First, the researcher coded for a specific scheme. The terms "process" and "efficiency" were developed from careful study of efficiency of texting-based learning. Then, the researcher coded for a context sensitive scheme with actual language of the

respondents to generate the codes or categories. Table 7 displays the results of the data analysis of the focus group summaries, transcripts.

Upon analyzing the words coded as process in the two focus group transcriptions, the researcher found that the study participants preferred that the texting-based learning (SMS) process include the four elements.

Table 7

Summary of Texting-based Learning Process Focus Group Participants' Preferences

Preferred Elements	Focus Group #1(%)	Focus Group #2 (%)
Texting over a 16-week semester	100	100
Initial face-to face contact	100	100
Abbreviation handout	100	100
Learning Contract sample handout	100	100

Note. From the focus group transcriptions.

The researcher coded for efficiency the combined two focus groups session transcriptions. The researcher then examined the coding for evidence of efficiency in the focus group summaries and individual statements. The researcher considered the focus group summaries as the primary data source because the summaries represented all of the participants in the focus groups. The researcher used the individual participant's statements as a factor in verifying the focus group transcriptions analysis.

The researcher analyzed for evidence of efficiency the actual texting messages exchanged between the researcher and the participants during the study. The researcher compared the length of the typical texting message using abbreviations with the length of the typical formal sentence without abbreviations. Both the texting message and the

formal sentence communicated the same meaning. The researcher determined the texting message communicated the meaning efficiently by using fewer characters.

The researcher examined the research literature for studies that indicated efficiency of exchanging texting messages while learning. Evidence of efficiency included efficiency as perceived by participants or researchers in research studies using texting messages and learning. The researcher considered words and phrases in the literature that indicated texting message efficiency such as fast, quick, effective, less time, or easy access.

The researcher's participation, based on her role as learning facilitator in the study, examined efficiency in texting-based learning (SMS) compared to online learning or face-to-face learning. Included in the evidence of efficiency of the researcher's participation was lesser amount of time used. The researcher determined less time was used accessing a cell phone as compared to accessing a computer, less time was used when tasks were combined such as exchanging texting messages while simultaneously performing other tasks, and less time was used to type a texting message using abbreviations than to type an email. The researcher's experience as an industrial engineer working with efficiency assisted her in making the determinations.

The coding and analysis results for texting-based learning (SMS) are for efficiency as indicated by the focus groups, actual texting messages, and the researcher's participation as the learning facilitator in this study. The researcher's review of literature was coded, analyzed, and used as support for evidence of efficiency for texting-based learning (SMS). The researcher addressed the categories in Table 8 for evidence of

efficiency in texting-based learning (SMS). The researcher used the efficiency as determined in each of the categories for rating texting-based learning (SMS) efficiency.

Table 8

Texting-based Learning Efficiency Determination by Category

Category	Efficient
Focus groups	Yes
Texting messages	Yes
Researcher (as learning facilitator)	Yes
Literature review (support)	Yes

Note. Efficiency of the study data and literature review.

Equipment and service capabilities and limitations. Equipment and service play an important role in texting-based learning. The equipment and service may affect efficiency, availability, convenience for both the participants and the researcher. The two focus groups and the researcher provided an indication of which services the participants had available for use during the study (see Table 9).

Table 9

Summary of Participant Equipment, Service Capabilities, and Limitations

Equipment and Service Capabilities and Limitations	Focus Groups	Researcher Perceptions and Observations
Difficulty locating previous messages	Yes	Yes
Concerned may delete a message	Yes	Yes
Unable to retrieve message once deleted	Yes	Yes
Concerned with 160 character limitation	No	Yes
Service readily available	Yes	Yes
MMS capable on cell equipment	Some	Yes
Text history available from phone company	No	No

Note. From focus groups transcripts and the researcher's perceptions and observations.

Texting messages (SMS). All of the texting messages are [*sic*] because of the inherent abbreviations of the texting messages (SMS). The entire texting messages section is automatically [*sic*], assumed, and will not be repeated for individual texting messages (SMS). The texting messages sent from the researcher for the learning contract to all participants involved txlx (see Table 5) and answers to the five questions required to build the simplified learning contract. A sample of the txlx sent from the researcher is, "Txlx is a lecture I will give about KUSAVI over the Q1-Q5 as u create your lc."

The five questions the participants answered to build their simplified learning contract were texted to each participant by the researcher. The researcher's texted questions were as follows:

Q1 - What are you going to learn? (Objectives)

Q2 - How are you going to learn it? (Resources & strategies)

Q3 - Date of completion?

Q4 - How are you going to know you learned it? (Evidence)

Q5 - How are you going to prove you learned it? (Verified by judges)

The above five questions parallel the learning contract (Appendix D). The participants used the learning competencies of KUSAVI representing knowledge, understanding, skills, attitudes, values, and interest (Appendix F) to answer the researcher's questions when building the simplified learning contract. The first question involved the selection of a learning topic by the participants. The second question involved the selection of the resources and strategies and so forth.

The participants selected a variety of topics, learning resources, and credible judges categorized in Tables 10, 11, and 12. Most of the participants selected topics in

alignment with their higher education field of study. Most of the participants selected the Internet resource in alignment with their learning resource and strategy choice for many course assignments. Most of the participants selected reputable judges in alignment with their topic based on the judge's reputations, background, and experience.

Table 10

Participant Selection of Simplified Learning Contract Topics

Topic Categories	Participant Selections (%)
Sports Related	40
Entrepreneurial	30
Marketing	20
Others	10

Note. From participant simplified learning contracts.

The importance of the high percentage of participants selecting the Internet as the resource and strategy for learning (see Table 12) is a factor that provides a basis for future texting-based (SMS) learning as mobile equipment and service becomes affordable for more students and prospective students. Cell phone participants without Internet are restricted to textbooks, library services, or a university computer laboratory for the Internet connectivity. Participants with Internet mobile phones as a constant companion increased efficiency when using the Internet as a resource and strategy. However, the Internet as a learning resource and strategy has limitations that may include reliability, depth of information available, the inability to ask questions, and requiring multiple searches to find specific information. A person, as a learning resource and strategy, may be more reliable and provide the exact information more efficiently without searching the

Internet. The learning resources and strategies that the participants selected for their simplified learning contract topics are in Table 11.

Table 11

Participant Selection of Learning Resources and Strategies

Learning Resources and Strategies Categories	Participant Selections (%)
Internet	70
Person contacted	20
Other	10

Note. From participant simplified learning contracts.

An andragogical principle is applied when the evidence of learning is verified by a credible judge. The credible judge is a person recognized as an expert in his or her field who evaluated the participant's evidence. The professor or instructor may have knowledge providing credibility as a judge, but not in all topics the students choose to learn. In the case of this study, the marketing class professor from whom the study participants were recruited was an expert in sport management and marketing. Therefore, the professor was a credible judge for the majority of study participants as an expert in sport management and as the marketing professor. Table 12 illustrates the participant selection of credible judges in percentage of the whole.

Table 12

Participant Selection of Credible Judges

Credible Judge Categories	Participant Selections (%)
Professor	50
Recognized field expert	40
Other	10

Note. From participant simplified learning contracts.

A sample of the texting process illustrates the brevity of the interaction between the participant and the facilitator. The participant continued the first texting message in the texting message #2. The participant chose fewer words than the facilitator for the response enabling answers for all five questions for the competency understanding using only one texting message. Texting messages used to build the simplified learning contract experience during the study are as follows:

Text message #1 from participant.

KAQ! (KAQ1) How to check your credit score.

KAQ2 talked to dad who's in the insurance industry. He recommend a website.

KAQ3 6/24/2010

KAQ4 WWW.annualcreditreport.com

Text message #2 from participant.

KAQ5 visit above website.

Text message #3 from participant.

UAQ1 checking my credit score.

UAQ2 following directions on the website WWW.annualcreditreport.com

UAQ3 6/24/2010

UAQ4 received my actual credit score

UAQ5 t [teacher]

Researcher's participation. The study, conducted in an authentic college level course, provided insight into the reality of an andragogical texting class. The researcher assumed the role of teacher and the participants assumed the role of students. Since the

researcher's participation was both an observer and teacher, insight into the perceptions and responsibilities of texting faculty were recorded in the process. For the purposes of this study, texting messages sent by the researcher represented examples of texting messages that a teacher would send when conducting a class using texting messages. The researcher's participation, observations, perceptions, and memories provided data and verification for the analyses when combined with results from the focus group sessions, study's texting messages, and the literature review.

Efficiency and Equipment

The researcher investigated the efficiency of various types of communication equipment. Cell phones without Internet service were compared to mobile phones with Internet service. The researcher investigated the various ways a person might write a texting message. A person might write a texting message by typing on a keypad with only 10 keys, use a full keyboard, or speak into a microphone on the mobile phone with an application that converts speech to text. Computers were compared to cell phones or mobile phones. The researcher compared the efficiency of the time it might take for a person to access a computer, cell phone, mobile phone, or service. The researcher rated the efficiency of the equipment based on the shortest amount of time whether access time or keystroke time.

This study did not differentiate the various types of mobile equipment used by the participants or the researcher. Table 13 is a comparison of efficiency by generic equipment type. Participant efficiency varied because mobile equipment varied. The descriptive comparison provides a general guide of efficiency.

The types of mobile phones used by the participants included cell phones without the Internet and mobile phones with Internet. Cell phones without Internet may have either a key pad or QWERTY (the first six letters on the top row of a typewriter). Keypads cell phones have one number and three letters the same key. The cell phone user must press the key between one and three time to select a letter. A keystroke is the time it takes to press a key once. If the cell phone user selected a letter that required three keystrokes then the typing time is three times longer than one keystroke. Typing, also known as keying, time is fastest and most efficient when only one keystroke is used.

The QWERTY phone has a full typewriter keyboard. The QWERTY phone requires the user to press a key one time per letter. Uppercase letters require one or more keys to press on all phones. Some cell phones required one or more key presses to switch between letters and numbers. The researcher determined efficiency estimating a comparison of generality of keystrokes. For example, the lowercase c would only take one keystroke on the QWERTY cell phone while it would take three keystrokes on the number pad cell phone. Therefore, the time to access the SMS system in preparation for keying in a texting message is fast.

Intelligent phones, also known as smartphones, are mobile phones with Internet, email, texting capabilities and many features and mobile applications that may increase efficiency. Smartphones, Android phones, iPhones, and Blackberry phones are intelligent phones with a variety of equipment, services, and mobile applications. For purposes of this study, the researchers used the term mobile phone or smartphone when referring to intelligent phones. The time it takes a person to access the SMS system, may vary with a mobile phone because of the many mobile application choices. The

participant with a mobile phone had the choice of pressing keys on the phone or keys on a screen (keying or typing) when writing the texting message. The participant had the choice of speaking (audio) the texting message into the mobile phone that automatically converted to a texting message. If the participant with a mobile phone chose to type the texting message using the mobile phone screen, then extra keystrokes may be required if the screen light dims or turns off. This would require extra actions on the part of the participant. Visually searching for letters on a screen is less efficient than pressing keys on a cell phone without looking at the key pad.

The cell phones and mobile phone have many variables that affect the efficiency of texting-based learning (SMS). Therefore, time studies, though more accurate, are not practical due to the ever-continuing release of new equipment with new services. Cell phones continue to provide greater access to everyone because of their increasingly lower cost and greater access to texting services (SMS system).

Table 13

Efficiency Comparison of Cell Phone Equipment

Mobile/Cell Phone Type	SMS System Access Time	Keying Time
Cell phone with number pad (texting)	fast	less fast
Cell phone with QWERTY (texting)	fast	faster
Mobile—Intelligent phones (texting, Internet, email)	audio SMS faster	less fast

Internet connectivity directly on the mobile phone provided access to the vast learning resources and strategies that previously were only accessible in a library or via an Internet accessible computer. This accessibility of the Internet greatly increases the efficiency of learning using reference materials. The use of audio dictation greatly increases the efficiency of sending texting messages, which uses the audio feature to

dictate messages instead of typing. The mobile phone audio dictation feature does not require Internet service, which make access for remote locations ideal. The audio feature increases efficiency while texting from remote locations. However, at this time the cost for the smartphone equipment necessary for audio SMS service may hinder some students.

When comparing texting capable phones to computers and even laptops, generally the access time may be slower due to varying startup processes when logging on to a computer or application. This varies widely depending on software accessed, file execution, data transmission speed, computer processing speeds, and many other factors. If the computer and the application are already running and the student is sitting at the computer, then the efficiency increases. However, the variability of efficiency among students, among computers, and among locations may be great. An overall comparison suggests that texting is faster and more efficient. As one focus group participant stated, "My cell phone is faster because it is at the end of my arm."

Efficiency varied with the types of phone equipment and mobile applications that were used by the participants. The researcher compared cell phones without Internet as a learning resource and strategy to mobile phones with Internet access, the efficiency of typing on a keypad to a mobile screen and overall general efficiency of equipment and service. The researcher did not evaluate efficiency of individual participant phones.

Texting Efficiency Analysis

Texting messages (SMS) sent using this study's standard abbreviations were more efficient when using lower cases characters. Because using a mixture of upper and lower case characters generally takes one to two extra key strokes, depending upon the cell

phone equipment, it is often more efficient to use only one case when writing a texting message. Since social, cultural, and emotional meanings may be associated with all capitals letters in a texting message (SMS), the preference may be to use only lower case characters when concerned with writing a texting message efficiently. Although, the study did not specifically address the nonuse of all capitals, the participants' texting messages (SMS) did not use all capitals.

The sender of the texting message (SMS) must consider the receiver's ability to understand the message. The texting message (SMS) may be hard to understand or misunderstood by the reader. Therefore, clarification may require one or more additional texting messages (SMS) that may affect efficiency. The worst-case scenario is for both the sender and receiver to believe each other understands the texting message (SMS) meaning when, in fact, neither understands the precise meaning. The more efficient method may be structuring the texting message (SMS) thoughtfully to avoid misunderstanding. Another point of view on efficiency is that for the most part it is more efficient to send a short message and ask for clarification when needed.

Many of the participants' phone equipment had audio dictation capabilities when creating texting messages (SMS). Generally, audio dictation capabilities may increase phone efficiency. However, this study did not address the efficiency of audio dictation capabilities directly due to a number of variables that can affect audio dictation efficiency. Some of the variables that may affect efficiency when using audio dictation on cell or smartphone equipment may include background noise, individual speech, or misspoken words. Any of these variables may cause re-recording of the audio dictated

texting message (SMS) resulting in a decrease in efficiency. In some cases, typing or keying texting messages (SMS) may be faster and more efficient.

The effect on the efficiency of lower and upper case texting was minimal in the study. In general, participants selected the case they perceived most efficient depending on the texting message (SMS) meaning they wanted to convey and their cell phone equipment. Participants did not compare or evaluate the efficiency of creating an audio dictated texting message (SMS) to creating a typed or keyed texting message (SMS). During the study, the researcher found using audio dictation less efficient than keying or typing texting messages (SMS) when sending texting messages (SMS) to the participants.

Andragogical Learning Paradigm Analysis

The participants displayed behaviors consistent with the Andragogical learning paradigm (Henschke, 2007d, p. 5). Pedagogy is generally associated with the instructional paradigm. The researcher observed the participants during the clarification meeting and focus group sessions to determine andragogical behavior (see Table 14).

Table 14

Instructional Versus Learning Paradigm Behaviors Displayed by Participants

Participant Behavior	Andragogy (Learning)	Pedagogy (Instructional)
Self-directed	Yes	No
Cheating concerns	No	Yes
Personal and Academic Texting	Yes	No
Higher Education	Yes	No

Note. From researcher's observations at the focus group sessions.

Triangulation

The researcher coded, analyzed, and triangulated the three qualitative data source findings. The researcher verified the finding using three qualitative data sources consisting of the focus group discussions transcripts, the texting messages, and the researcher's texting messages, observations, memories, perceptions as the learning facilitator for creation of the texting simplified learning contract, and focus group facilitator in the study. A limitation of the study was that the memory, perceptions, and bias of the researcher. The conscious and unconscious bias, resulting from the researcher's past experiences may have affected her perceptions and filtered her memories of the study. However, the researcher believes the bias was mitigated by triangulation with results from the focus groups and the texting messages.

The summary of question 1 answers from both focus group sessions was as follows:

> the things that were cool about texting were convenience and flexibility of when you could reply back, abbreviated messages. Well, if you if there was a class through texting, I could be anywhere participating in class. And I mean email and online classes you had to be sitting at a computer somewhere or somewhere with WiFi space. You know it could be you would just be convenient in all. I could go somewhere and like, you know, I could be in the store and just texting. (Focus Groups)

Summary

Results from this study may influence higher education course offerings. As with the online learning or face-to-face instruction, each has a place when providing learning

to the higher education student. Texting-based learning has a place because of its efficiency, convenience, and enjoyment. Texting-based learning (SMS) satisfies the need of providing learning to the underserved college or university student, whether remotely located or caring for children, elderly parents, or an incapacitated person. Texting-based learning (SMS) provides access to a higher education that might not be otherwise available.

This chapter presented the results of this study. Demographic data showed an equal number of female and male participants. The percentage of the Caucasian participants to African-American participants was 60% to 40% respectively. The majority (90%) of the participants ranged between 20 to 29 years old. Most of the participants were business majors with only 10% from the school of education teaching pre-school through 12th grade. Undergraduate participants totaled 90%, of which 60% were senior level undergraduate students. The graduate school participant accounted for only 10% of the study participants.

The participants selected a variety of topics for their texting-based (SMS) simplified learning contract. The participants selected business related topics with sport management as the topic choice at 40% of all of the selected topics. The participants selected credible judges to verify their learning; 50% of the participants selected their professor.

The qualitative data sources included the two focus group sessions, the texting messages exchanged during the study, and the researcher's participation in the study. The researcher audio recorded the two focus group sessions using her mobile phone. The focus group transcriptions were first coded for process and efficiency and then for

emerging themes. To provide validity to the study analyses the researcher examined efficiency using studies and research from the literature review.

The results of the research are discussed in Chapter 5 including the efficiency rating. The researcher uses the evidence of efficient to answer the research question. In Chapter 5 the researcher discusses suggested revisions to the study, topics of future studies, and implications of the study. Last, the researcher links the study findings to the framing literature.

Chapter Five–Discussion, Recommendations, and Conclusion

The study yielded both expected and unexpected results. Participants from a marketing department course volunteered for a texting-based learning in higher education study. A discussion of the results, recommendations for future studies, and conclusions follows.

A key finding was, according to the study participants, texting-based learning is efficient. One focus group even labeled texting-based learning as, "very efficient." A participant said, "It is efficient because you don't have to look for a computer and login. The phone is at the end of your hand." The literature review supported the efficiency of texting-based learning in higher education. Themes that emerged from the study data were inexperience, fun, isolation, pedagogical influence, participants concern over cheating, concern over mixing up personal with university texting messages (SMS), desire for texting-based learning (SMS) success, technology transferable and applicable to email using two thumbs learning method, and efficiency.

The texting-based learning study was performed in an accelerated summer semester. A regular semester is 16 weeks in duration but the summer semester is only three weeks in duration. The participants, when squeezing an entire semester into only three weeks, performed an enormous amount of work. The accelerated summer semester course required many texting messages to be sent and received daily.

The process of the simplified learning contract experience was new to all of the participants. Texting lectures, texted by the researchers to the participants, assisted in completing the simplified learning contract using the adult learning competencies KUSAVI to write learning objectives. The large number of texting messages required

because of the accelerated summer semester led to a 20-minute face-to-face meeting between the researcher and participants to clarify the simplified learning contract process. The participants and the researcher agreed the short meeting was successful. The meeting enabled the completion of two of the KUSAVI's adult learning competencies knowledge and understanding, on the simplified learning contract learning objectives for each participant.

The participants agreed the abbreviations were very helpful. Both the participants and the researcher appreciated the efficiency and convenience of using K instead of keying the entire word, knowledge, into the texting messages. The participants readily accepted and used the abbreviations without difficulty.

The diversity of topics selected by the participants indicated the widespread application of the texting-based learning experience. All of the participants were junior and senior level undergraduate students from the School of Business and Entrepreneurship with the exception of one graduate participant from the School of Education. Topics selected by the participants reflected the participant's background and ranged from sport management and marketing to entrepreneurial topics. For the study, cell phone equipment and service were used only for texting messages.

The evidence of supporting andragogical principles came in the form of the self-directed learning when creating the simplified learning contract using the KU abbreviations (the short summer session only allowed participants time to complete the KU of KUSAVI). A simplified learning contact is an instructional tool that supports andragogical principles such as self-directed learning. Another andragogical principle, self-directed learning, became evident with each participant's accomplishment in

selecting a topic and learning objective to gain knowledge and understanding about the topic. The participants selected the resource and strategy accomplishing each learning objective. Most of the participants selected an Internet search as their resource and strategy to gain knowledge and understanding of their topic. Study participants selected the simplified learning contract evidence. The participants selected credible judges to validate the learning on their simplified learning contract. The participants submitted the evidence to the credible judges for validation of the learning.

The research question of the study was, "How efficiently does texting-based learning support the principles of andragogy while creating a texting-based version of the learning contract experience?" The researcher answered the research question based on findings from analyses of the participant perceptions, the texting messages themselves as evidence of success, and the researcher's perception and observations.

Discussion

Chapter 2 discussed Taylor's (1986) findings that the first phase of the journey toward becoming self-directed (as perceived by the higher education learner) is that it occurs as a result of a disconfirmation, which in this case was the first-time experience with texting-based learning and learning contracts. The initial confusion experienced by this study's participants aligns with Taylor's model. The researcher used Taylor's model to validate that andragogical principles supported in texting-based learning (SMS).

Andragogical principles were evident when the researcher observed the participant's behavior during the learning paradigm. Pedagogy is generally associated with an instructional paradigm. The analysis performed from the study data (see Table

14) resulted in the researcher concluding that 60% of the participants displayed andragogical behavior.

The researcher observed andragogical behaviors among the participants resulting from phases and phase transition points of becoming a self-directed learner. Recall in Chapter 2, Taylor (1986) described the phases and phase transition points of the journey toward becoming a self-directed learner as perceived by the learner. The disconfirmation confusion was displayed by the focus group participants when they commented that texting-based learning was harder than expected. The disorientation behavior was displayed when the focus group participants expressed their confusion over what to do and how to do it. After the researcher's face-to-face 20 minute meeting, the participants moved into the reorientation phase and toward the equilibrium phase.

The focus group participants identified a concern that students in future texting-based learning (SMS) courses would cheat. However, cheating is not a concern when using the simplified learning contract. The student, as a self-directed learner creates his or her own simplified learning contract by determining the learning objectives, learning resources and strategies, and so forth. The student and teacher agree on the learning contract. As a student's learning progresses, the simplified learning contract may need re-diagnosing to accommodate new learning resources and strategies, new completion dates, or new judges associated with the new learning resources or other reasons. The student and teacher agree upon a simplified learning contract that accommodates the learner's needs. Knowles (1970) discussed the re-diagnosis of learning needs instead of evaluation of learning (pp. 43-44). Therefore, the student taking a future texting-based learning (SMS) course such as this one would not be tempted to cheat because the goal is

not a grade (evaluation), the goal is learning. The researcher provides more details about the participants' concerns over future student's cheating in the emerging themes section later in this chapter.

In the summary answer to question #4, the focus group #2 spokesperson used the word 'kids' when referring to adult learners. The researcher suggests that the spokesperson may have used that word 'kids' because the participant teaches in the public school system and is not generally in business classes. The participant was in the marketing department course that substituted for the School of Education public relations course requirement. The researcher surmised that the participant might have been examining texting-based learning as a potential practice for use in pedagogy.

Emerging Themes and Andragogical Foundational Works

The researcher presents the nine themes that emerged from the study. The researcher used qualitative inquiry for the content-specific scheme and the context-specific scheme coding. The researcher analysis of the coding resulted in the nine themes that emerged. The emerging themes dealt with the adult learning aspect of the study. The researcher examined the themes through the lens of the assumptions of the adult learner and processes of the adult learning, and phases and phase transition points of the journey toward becoming a self-directed learner as perceived by the learner in higher education.

The researcher investigated the emerging themes using andragogical foundational works of Knowles, Henschke, and Taylor. Knowles (1996) and Henschke, Cooper, and Isaac's (2003) foundational works addressed the six assumptions of the adult learner and eight processes of adult learning. The researcher used the work of both Knowles (1996)

and Henschke et al. (2003) simultaneously for clarity when investigating the emerging themes. Henschke et al. (2003) added two adult learning processes to Knowles' (1996) work to total eight processes. The researcher used Henschke et al.'s (2003) eight processes of adult learning for their investigation of emerging themes. The researcher used Taylor's (1986) foundational work on the self-directed learner's process. Taylor described the journey toward becoming self-directed learner as perceived by the learner as one that moves through a cycle with four phases and four phase transition points. The researcher selected three foundational anadragogy works from Knowles, Henschke, and Taylor to view texting-based learning (SMS). The researcher selected these authors because they are considered authorities in adult learning among many disciplines and internationally. The foundational works of Knowles, Henschke, and Taylor are used in educational, governmental, and businesses when teaching adults, whether in the classroom, on the Internet, or by other instructional delivery modes.

The researcher viewed each of the emerging themes through the lens of the assumptions of the adult learner, the processes of adult learning, and the phases and phase transition points on the journey toward becoming a self-directed adult learner. The following is a brief description of adult learners as related to the assumptions of the adult learner, processes of adult learning, and self-directedness journey phases and phase transition points of adult learners.

Knowles' (1996) and Henschke et al. 's (2003) six assumptions of the adult learner are the concept of the learner, role of the learner, readiness to learn, orientation to learning, motivation to learn, and reason to learn something (pp.9-10). Henschke et al.'s (2003) eight processes of adult learning are (a) preparing the learners for the

program/course, (b) setting the physical and psychological climate, (c) involving the learners in mutual planning, (d) diagnosing their own learning needs, (e) translating the learning needs into objectives, (f) designing a pattern of learning experiences, (g) helping adult learners manage and carry out their learning plans, and (h) evaluating the extent to which the learners have achieved their objectives (pp. 9-13).

The researcher completes the examination of the emerging themes with Taylor's (1986) four phases and four phase transition points of the journey toward becoming self-directed as perceived by the learner in higher education. Taylor's four phases are disorientation, exploration, reorientation, and equilibrium. Taylors's four phase transition points start with disconfirmation, the transition to disorientation. The next phase transition point, naming the problem, transitions to exploration. The exploration phase is followed by the phase transition point, reflection, and transitions to the reorientation phase. The last phase transition point, sharing the discovery with others, transitions to the equilibrium phase where the cycle begins again (p. 59).

Six assumptions of the adult learner. Knowles (1996) and Henschke et al. (2003) presented six assumptions of the adult learner.

1. Concept of the learner−adult learner has a deep psychological need for self-direction and takes responsibility for his or her own learning.
2. Role of the learner's experience−the adult learner gains many experiences during her or his lifetime and is a rich learning resource for their own learning and the learning of others, experience affects planning and conducting of educational activities, and experience emphasizes learning contracts.

3. Readiness to learn−the need to know or be able to perform effectively in all aspects of their life, and move to next stage of development. Readiness to learn can be induced by exposing the gap between the "here-now" and "need to-be" for their personal competencies.
4. Orientation to learning−organized learning around life situations (life-, task-, or problem-centered orientation to learning) instead of subject-matter units.
5. Motivation to learn−adult learners need external motivators such as a better job and change in technology and internal motivators such as self-esteem, peer recognition, better quality of life, self-confidence, and self-actualization.
6. Why learn something−adult learners need to know and understand the reason why they need to learn something. Adult learners consider the cost of learning something before spending their time to explore or learn it. (Knowles, 1996, pp. 255-258; Henschke et al., 2003, pp. 9-10)

Eight processes of adult learning. Henschke et al. (2003) described the following eight processes in adult learning teaching technologies:

1. Preparing the learners for the program/course
2. Setting the physical and psychological climate
3. Involving the learners in mutual planning
4. Diagnosing their own learning needs
5. Translating the learning needs into objectives
6. Designing a pattern of learning experiences

7. Helping adult learners manage and carry out their learning plans
8. Evaluating the extent to which the learners have achieved their objectives

(pp. 10-13).

Knowles (1996) discussed the experience that adults bring into a learning situation as a rich resource for learning to which new ideas and skills, when attached, provide a richer meaning with a deeper and more permanent learning experience (p. 256). The learners brought rich learning experiences to texting-based learning. The rich learning resource experience is used by the learner and shared with others to enrich the learner's learning experience.

Self-directed learning: transition process. Taylor's (1996) journey toward becoming self-directed for higher education students is a transition process and has four phases and four phase transition points (p. 59). Taylor's (1986) transition process toward self-directedness in higher education is as follows:

1. Phases transition point – Disconfirmation. The learner has discrepancies of experience with expectations built from the equilibrium phase.
2. Phase – Disorientation. The learner has confusion, a crisis of confidence, and a loss of a meaningful link between concept and experience causing feelings of tension and anxiety.
3. Phase transition point – Naming the problem. The learner identifies the nature of the problem. This phase transition point is an essential element for the learners to move out of the disorientation phase.

4. Phase – Exploration. The learner has more confidence that he or she moving in right direction. The learner is more satisfied, interested, less anxious, more insightful, present-oriented. The learner's exploration is intuitively-guided.
5. Phase transition point – Reflection. A time of solitude for private reflective review. This is not a mental decision by the learner but rather an unconscious action to withdraw from others. The learners must have the private reflective review before he or she is able to move to the reorientation phase.
6. Phase – Reorientation. The learner synthesizes experiences and ideas into a perspective, and gains major insight and new understanding. The learner has a sense of resolving issues from the disorientation phase.
7. Phase transition point – Sharing the discovery with others. The self-directed learner shares and tests out their discovery with others. The learner's sharing major insights of the discovery with others brings a sense of resolution and completeness to the learner.
8. Phase – Equilibrium. The learner elaborates, applies, and refines the new perspective. Learners in the equilibrium phase experience less emotional turmoil than in the other phases and phase transition points, especially the disorientation phase. (pp. 59-67)

The equilibrium phase becomes the basis for the self-directed process cycle to begin again and move into the phase transition point of disconfirmation. The self-directed learner's experiences from the equilibrium phase now become his or her new experience base. The learner uses the existing conceptual categories in shaping the learner's experiences against the expectations during the phase transition point of

disconfirmation. The equilibrium phase experience becomes the new "assumptive world" (Parke, 1971, as cited in Taylor, 1986, p. 59) in shaping the existing conceptual categories in the phase transition point of disconfirmation as the cycle begins again in new learning (Taylor, 1986, pp. 59-67).

Emerging theme—inexperience. The researcher identified the emerging theme of inexperience−the participants' inexperience with the simplified learning contract and inexperience with self-directed learning. The researcher observed inexperience with texting-based learning on the part of both the participants and the researcher. However, all of the participants had previously texted for personal use but not for academic use.

The researcher investigated the emerging themes of inexperience to determine if texting-based learning (SMS) was supported by the andragogical principles described by Knowles' (1996) and Henschke et al.'s (2003) andragogical conceptual framework in Chapter 5's, emerging themes and andragogy foundational works. Knowles (1996) and Henschke et al. (2003) discussed the six assumptions of the adult learner and eight processes of adult learning. The researcher examined the emerging theme inexperience with the assumptions of the adult learner to demonstrate that the study supported andragogical principles. The researcher continues the examination of the emerging theme inexperience with Henschke et al.'s (2003) eight processes of the adult learning. The researcher completed the examination of the emerging theme inexperience with the andragogical principle, self-directed learning, using Taylor's (1986) four phases and four phase transition points toward self-directedness in higher education learning.

Knowles (1996) presented six assumption of the adult learner. Henschke et al. (2003) provided clarity and elaborated on their meaning. The researcher found that the

study emerging theme inexperience related to all six assumptions of the adult learner. The researcher described the emerging theme inexperience with each of the six assumptions.

The first assumption, concept of the learner, is the learner's deep psychological need to be self-directed when taking responsibility for his or her own learning (Henschke et al., 2003, p. 9). The study participants experienced a quick transition to self-directed learning. The participants learned, gained control, and took responsibility for overcoming their inexperience with the simplified learning contract using self-directed learning.

The second assumption, role of the learner's experience, speaks about his or her accumulation and variety of experience gained during life (Henschke et al., 2003, p. 9). The experience gained by the participants from previous experience in personal texting contributed to the building of self-directness. The participants' previous personal texting experience was applied to texting-based learning to build the simplified learning contract. The participants also used previous experience based on how they gained knowledge and understanding for learning in past college courses. The participants used this prior experience to assist in learning about the simplified learning contract.

A rich learning resource and strategy for the participants was the experience of other participants in the study. Not fully known is the extent to which other participants drew upon experiences of the other participants. Generally, texting-based learning is an isolated activity not performed in groups. However, students often talk outside of class with other students enrolled, perceived enrolled, or class alumni. The researcher did not control or require copies of texting messages or other forms of communications exchanged among participants and others outside the study.

To ensure the third assumption, readiness to learner, the researcher introduced, exposed, and provided the participants with a diagnostic experience using examples. The participants used the examples provided by the researcher to perform a self-assessment of the gaps between their experience with personal texting and competencies of texting-based learning (SMS). Additionally, the researcher introduced participants to the pending development changes from one stage to another such as answering the questions required to create their simplified learning contract. The participants' readiness to learn might be because they wanted to gain knowledge, academic acumen, or anticipated a career change upon graduation from college. The participants' readiness to learn might be merely from experiencing a new form of learning resulting in participants gaining personal competencies. In this study, the participant's inexperience might have been the motivating factor in his or her readiness to learn.

The researcher observed the fourth assumption, orientation to learning, in all three educational activities: life-, task-, and problem-centered orientation to learning (Henschke et al., 2003, p. 9). The simplified learning contract provided for all three. However, besides the academic factors the texting convenience and efficiency encompassed life-, task-, and, problem-centered orientation to learning. Texting solves a problem for the underserved student. Life is easier with the convenience of using a cell phone or mobile phone for coursework. The task of efficiently structuring a simplified learning contract allowed the participants to accomplish the three educational activities and chief implication of the fourth assumption, organized learning experience. The inexperience as well as the experience of the participants contributed to the orientation by motivating the participant with one or more needs. The need was gap related such as the

problem-centered need of attending school for the underserved student. The inexperience played a role in defining the need for the fourth assumption, orientation to learning.

Using the fifth assumption, motivation to learn, the researcher identified internal and external motivators (Henschke et al., 2003, p. 10). The researcher observed the external motivator; the participants desire to investigate the new technology of texting-based learning. The researcher observed another external motivator, the extra credit giving for participation in the study. However, the extra credit proved to be of little appeal since their professor also offered the participants extra credit for another project. The researcher's perception is that internal motivators guided the participants. The internal motivators included self-esteem, recognition by peers and others, and by perceiving a better quality of life. The participants' inexperience may have been a factor in the need to gain experience in order to raise their self-esteem.

Henschke et al. (2003), regarding the sixth assumption of why learn something, stated, "adults need to know a reason that makes sense to them, as to why they should learn some particular thing" (p. 10). In this study, the participants were inexperienced in academic texting. The participants' experience with the efficiency and convenience of personal texting automatically provided a reason why texting-based learning benefits would be worth the cost of investing their time for the study.

Henschke et al. (2003) gave eight processes in teaching technologies based on Knowles (1996) original six processes. Henschke et al. (2003) described the following eight processes of the adult learner. The researcher investigated the emerging theme inexperience with all eight processes. The researcher found Henschke et al.'s seventh

and eight processes to be meaningful in the examination of the emerging theme inexperience.

The seventh process is helping adult learners manage and carry out their learning plans (Henschke et al., 2003, p. 13). The simplified learning contract best exemplifies the seventh process and is associated with the inexperience of the participants. The simplified learning contract helps the adult learners carry out their learning plan by providing the self-directed learner with a structure for setting objectives, identifying resources and strategies, setting target completion dates or times, identifying evidence of learning, and identifying judges to evaluate their learning. The researcher acted as the learning facilitator to help the participants create their simplified learning contract. The participants had no experience using the simplified learning contract with texting-based learning prior to the study.

The eighth process is assessing the learners' achievement of their objectives as active participants in evaluating their own learning outcomes (Henschke et al., 2003, p. 13). The participants evaluated their own learning using the simplified learning contract and during the focus group discussions. The researcher observed participants' conversations during the focus group sessions and texting messages that evaluated their own learning outcomes.

Knowles (1996) discussed the experience that adults bring into a learning situation as a rich resource for learning to which new ideas and skills, when attached, provide a richer meaning (p. 256). The participants' with their experience of personal texting enriched their inexperience with the self-directed learning and the simplified

learning contract. This provided the participants with a deeper and more permanent learning experience.

Knowles' (1996) warned, "a potential negative consequence of this fact of greater experience tends to cause people to develop habits of thought and biases, to make presuppositions, to be less open to new ideas" (p. 256). On the positive side, the inexperience of the participants provided openness to new ideas potentially enabling learning. The researcher observed the inexperience of the participants providing openness to new ideas for learning.

The researcher considered the role of the learning curve for both the participants and the researcher in the performance of the study. Inherent in innovative research is inexperience. The participants displayed inexperience in self-directed learning and building a simplified learning contract. The researcher displayed inexperience by sending her first texting message the first day of the study. The participants gained experience with self-directed learning and the simplified learning contract while the researcher gained experience with texting.

The learning curve normally starts slowly and accelerates over time. Taylor (1986) indicated that the process cycle of self-directedness in learning in higher education in Chapter 5's emerging themes and andragogical foundational works. It may take repetitive times to accomplish "since the disorientation phase arises out of an experience of equilibrium similar to the final phase" (p. 59).

Taylor's (1986) transition process of self-directedness with higher education students has four phases and four transition phases (p. 59). The researcher examined the emerging theme inexperience with Taylor's (1986) transition processes toward self-

directedness in higher education. The researcher described the emerging theme inexperience beginning with the last phase, equilibrium.

The equilibrium phase becomes the basis for the self-directed process cycle to begin again and move into the phase transition point of disconfirmation. The self-directed learner's experiences from the equilibrium phase now become his or her new experience base. The learner uses the existing conceptual categories in shaping the learner's experiences against the expectations during the phase transition point, disconfirmation. The equilibrium phase experience becomes the new "assumptive world" (Parke, 1971, as cited in Taylor, 1986, p. 59) in shaping the existing conceptual categories in the phase transition point, disconfirmation, as the cycle begins in new learning (Taylor, 1986, pp. 59-67).

In contrast with the accelerated semester long study, the learning curve for the participants in the abbreviated summer semester started fast with the benefit of only time for a short reflective review. However, the participants and the researcher rapidly accelerated their learning curve speed. Therefore, the participants minimized their learning curve time.

Emerging theme—fun. Henschke et al. (2003) and Knowles (1996) in the teaching technologies process design, the andragogical principle, the psychological climate of fun, appeared missing from texting-based learning (SMS) (see Chapter 5, emerging themes and andragogical foundational works). Upon first examining fun, the researcher thought that this might be because of the participants' isolation from others. However, with a deeper reflective review the researcher compared fun to other isolated activities. Fun is a major component of video games often played in isolation. Upon

further reflection, fun from texting-based learning comes from two sources. The first and main source of fun is the actual learning process with the self-selected topics of interest. By self-selecting the topic, the adult learner begins an exciting adventure of his or her choice and provides results gratifying to the participant, especially upon verification of learning by the credible judge. Taylor (1986) discussed the self-directed learners' feeling in the equilibrium phase. She provides this quotation from one of her study participant's speaking about self-directedness in learning.

> The kind of emotional turmoil that characterized me in the first month here [was one of] disintegration. . . . The ambiguity was incredibly exciting. . . . And [now what I am experiencing] is the opposite of the spectrum. The excitement of being integrated-re-integrated. And I'm just feelin incredibly good about myself because I'm realigning that I do have sort of, that there is some sort of direction, some sort of central purpose in me, and I've connected up with a lot of resources to further this feeling—this direction. . . . I'm feeling incredibly good about it−so good that I really don't want the reading and the enlarging upon this to stop. [Learner's emphasis]. (Taylor, 1986, p. 67)

Excitement and feeling incredibly good about oneself is fun. Therefore, the self-directedness in the learning process automatically incorporated fun within the design of the self-directed simplified learning contract including self-selection of the topic. Feeling good about oneself for learning something new is fun.

In addition to the self-selected topic of the self-directedness in learning, an andragogical assumption of Knowles (1996) and Henschke et al. (2003) is the motivation to learn in Chapter 5's emerging themes and andragogical foundational works. This

assumption of the adult learner, the motivation to learn, using a change in technology application may have contributed to the excitement and fun of learning. The second source of fun came from using texting in order to build the simplified learning contract. Some students may find typing a texting message fun while others may consider it a chore. A possible way to add fun is to include emotion icons (emoticons) as part of the abbreviation design. Further studies may find other ways to design the texting-based learning to incorporate the principle of fun.

Upon examining the Taylor (1986) four phases and phases transitions points of developing self-directedness in learning, the researcher observed that the participants passed through all four phases and four phase transition points in Chapter 5's emerging themes and andragogical foundational works. During the exploration phase, the learners gathered insight, confidence, and satisfaction, which were fun. When the researcher held the 20-minute meeting, she observed that the participants continued transitioning with a private reflective review into the reorientation phase. The reorientation phase is one of major insights that gave the participants the epiphany moment, the light-bulb moment, the fun moment. However, due to isolation, the sharing of the discovery phase transition was limited to testing out the understanding by texting the researcher. Equilibrium became visible as the participants completed the simplified learning contract for knowledge and understanding. The Taylor (1986) phases in Chapter 5's emerging themes and andragogy foundational work, did not permit the observation of fun via texting messages. However, the researcher deduced that the participants achieved excitement and fun during the equilibrium phase with the accomplishment, having built their simplified learning contract.

Knowles' (1996) described the climate of fun as a, "joyful thing we do . . . enjoyable" (p. 259). The researcher believes texting-based learning (SMS) contains the climate of fun in Chapter 5's emerging themes and andragogical foundational works. During the 20-minute face-to-face meeting, the researcher witnessed evidence of the climate of fun when the participants related examples provided by the researcher to their own self-directedness in using the simplified learning contract. This epiphany moment was a joyful thing for both the participants and the researcher. The researcher perceives that the completion of the participants' simplified learning contract for K and U (knowledge and understanding) was a joyful thing for participants, as well as the researcher.

The researcher observed and perceived fun for the participants during the texting-based learning (SMS) study. However, the researcher believes that more fun built into the texting-based learning (SMS) experience will provide a more enjoyable learning experience. The researcher believes the inclusion of emotion icons, games, humor, or other direct fun elements should be encouraged in future texting-based learning (SMS) courses.

Emerging theme—isolation. Participants may miss the benefit of collaboration and interaction with other students because of isolation. However, this is not different from the experience with Internet learning. Participants may avoid isolation with contact and collaboration unknown to the researcher. For example, students may enroll in the same course and have discussions verbally, use email, or exchange texting messages with each other without the instructor being aware of the conversations. During this study when one participant's cell phone broke, another participant came to her aid by sharing

his cell phone. According to Knowles (1996), in an organization, there are multiplicities of ways of managing a system of learning resources. In this case, the participant was managing a system of learning resources by making information about resources available (Knowles, 1996, p. 263).

The researcher examined six assumptions about the adult learner from Knowles (1996) and Henschke et al. (2003) in Chapter 5's emerging themes and andragogical foundational works in the context of the emerging theme of isolation. The emerging theme of isolation is not unique to this study but is possibly a prominent theme among texting-based learning (SMS) in general.

The first assumption about the adult learner is the concept of the learner from Chapter 5's emerging themes and andragogical foundational works. Henschke et al. (2003) indicated that the adult learner feels resentment and resistance when others force their will upon us without our input (p. 9). The way in which texting-based learning (SMS) methodology uses abbreviations of KUSAVI to build the simplified learning contract, and the participants' isolation, provided little immediate self-directed input into the methodology process. Even though the participants had latitude to answer the questions, their input was very restricted because of the 160 character limitations. The researcher did not know if the participants demonstrated resentment or resistance. The participants only contact through texting possibly reflected isolation. The participants complained of confusion. Taylor (1986) identified confusion as part of the normal disorientation phase of the process of learning in Chapter 5's emerging themes and andragogical foundational works. However, while the participants indicated their confusion with the texting-based learning process (SMS), the underlying factors of

resentment and resistance might have played a role because of the association of isolation.

The second assumption about the adult learner is the role of the learner's experience from Chapter 5's emerging themes and andragogical foundational works (Henschke et al., 2003, p. 9). Although the researcher discussed this assumption when addressing the emerging theme of inexperience, isolation and inexperience are highly related. Isolation exaggeration may occur with the learner's inexperience. The learner needs others to assist and mitigate the inexperience. However, the isolation limited the learner's ability to obtain the needed experience. The adult learner is motivated to find a way to gain collaboration that may help to overcome isolation, since the richest learning resource is often sharing with one another. The researcher knew of one participant reaching out to another participant to use his phone in order to gain experience with texting-based learning (SMS), thus helping to overcome isolation. Nonetheless, participant isolation in the study might be modestly significant.

The third assumption about the adult learner is the readiness to learn from Chapter 5's emerging themes and andragogical foundational works (Henschke et al., 2003, p. 9). The researcher observed this assumption often with the participants being eager to volunteer for the study, eager to participate in the study, and eager to give feedback in the study focus group sessions. Isolation did not appear to play a role in the participants' readiness to learn with one exception. The one exception was the isolation of not attending a formal traditional classroom setting. The researcher believes the participants viewed the isolation associated with texting-based learning (SMS) as freedom from a confining traditional classroom setting. According to one focus group member, "I can

text while walking to my next class." The researcher interpreted this as isolation that increased the participants' readiness to learn. The researcher viewed isolation of the participants' as a positive ingredient, which increased the participants' ability to perform their lives more effectively.

The fourth assumption about the adult learner is the orientation to learning from Chapter 5's emerging themes and andragogical foundational works. The researcher observed orientation to learning in the participants need for the diversity of topics selected for the simplified learning contract. The ability of the participant to select any topic allowed texting-based learning to meet their educational needs, including a life-, task-, or problem-centered topic. The researcher's perception is that isolation presented the participants with the concentrated ability to focus on their own selected topic without interference or influence from others.

The fifth assumption about the adult learner is the motivation to learn from Chapter 5's emerging themes and andragogical foundational works. The researcher's perception is that the participants' isolation may have contributed both external and internal motivators to learn. The researcher observed internal motivators during the focus group sessions when the participants displayed self-confidence when speaking about their perceptions of texting-based learning (SMS).

Isolation provided for the most potent internal motivators such as self-esteem, greater self-confidence, and self-actualization. Isolation forces the learner to self-learn. A self-learner may be a self-directed learner. The isolated learner possibly gains the most from motivation in the building of self-esteem, self-confidence, and self-actualization because he or she learned by himself or herself.

The external motivator for participants may have been the cutting edge of the texting-based learning technology that would help isolated and underserved students attend college and obtain a higher education degree. During the volunteer recruitment, the participants received information that the study hoped to help isolated students attend college. Isolated potential college students included parents of small children, persons with disabilities, persons caring for others, remotely isolated persons, persons without transportation, or access to the Internet, and others. The researcher's perception was that during the recruitment process, participants used non-verbal facial expressions of concern that appeared to be caring about the isolated and underserved student. The researcher interpreted the participants' caring nonverbal communication as their external motivation for helping the isolated and underserved student attend college.

The sixth assumption about the adult learner is reason to learn from Chapter 5's emerging themes and andragogical foundational works. The researcher considers this assumption as the strongest case for the emerging theme of isolation because it supports the values of their life performance in their learning. Learning benefits the individual adult learner. The adult learner alone or in isolation, experiences the benefits of knowing something and the cost of not knowing that same something (Henschke et al., 2003, p. 2). The researcher assisted the participants by providing examples of experiences, but the isolated adult learner decided to learn based on his or her isolated needs. The researcher observed the participants' isolation by choosing their own topics to learn and the answers they used to build their simplified learning contracts.

Henschke et al. (2003) and Knowles (1996) discussed eight processes of the teaching technologies for the adult learner in Chapter 5's emerging themes and

andragogical foundational works. The teaching technology process of preparing the learner for the program/course with realistic expectations and topic is ideal for the self-directed isolated learner. The isolated learner may be self-directed. The self-directed participant determined his or her own expectations and topic. The isolated learner may need facilitation to assist in learning. The isolated participants in the study sought assistance from the researcher.

The participants seeking out of the researcher demonstrated the psychological climate processes of mutual respect, mutual trust, and climate of support among the researcher and the participants (Henschke et al., 2003, p. 11). The researcher perceived that mutual trust, mutual respect, and a climate of support gained during the interaction of the researcher with the participants in the recruitment process and the academic texting-based learning (SMS) helped to overcome the feeling of isolation. The researcher mitigated isolation with texting-based learning (SMS) for the participants during the recruitment and actual study. Under normal conditions in a texting-based environment, students would be working in isolation. However, one participant demonstrated overcoming isolation by seeking out another student. A climate of collaboration is a psychological climate process that the researcher witnessed when one isolated participant sought out another participant to borrow a cell phone when her phone broke.

The process of involving learners in mutual planning is high involvement with the isolated learner from Chapter 5's emerging themes and andragogical foundational works. The participants determined the content of their study by selecting their own topics. The participants maintained responsibility for planning with the simplified learning contract. The simplified learning contract, a plan that is open to the influence and planning by the

participants with the choice of a topic, resources and strategies, timeline, evidence of learning, and judges. The participants used the processes of diagnosing their own learning needs, translating their own learning needs into objectives, designing a pattern of learning experiences, and evaluating the extent to which the learners achieved their objectives. All of these processes may be attainable in isolation from other participants. However, these processes may not be attainable by the learner in isolation from other persons. Persons may be required as resources and strategies, or to judge evidence, especially by higher education institutions and for credit learning.

The process of teaching technologies is helping adult learners manage and carry out their learning plans. Henschke et al. (2003) indicated that the most effective way for the process of helping adult learners manage and carry out their learning plans is by using the learning contract (p. 13). This study uses the simplified learning contract as a basis for texting-based learning. The simplified learning contract tailored by the individual works well for the isolated adult learner. These processes confirm that this study supports andragogical processes and principles.

Taylor (1986) identified four phases and four phase transition points of developing self-directedness in learning in Chapter 5's emerging themes and andragogical foundational works. The researcher found that participants can perform all of the phases and phase transition points of learning for self-direction in isolation expect one. The one exception is the learning for self-direction phase transition point of sharing the discovery. This phase transition point of sharing the discovery, according to Taylor (1986) is, "Testing out the new understanding with others" (p. 59). In terms of *with others* and *isolation*, by definition, with others means not alone and isolation means

alone. Therefore, only one phase transition point is not appropriate for the emerging theme of isolation. However, after reflection, the researcher realized that indeed the phase transition point of sharing with others included isolation. Isolation in the context of emerging themes for this study referred to other participants. The participants shared their learning with the judges that validated the learning evidence supplied by the participants. Because of the reflection, the researcher learned that the participants used all of Taylor's (1986) transition processes toward self-directedness in higher education. Even so, the participants performed learning in isolation. In other words, the self-directed adult learner is never alone or in isolation. The participants shared evidence of learning with the judges overcoming isolation.

Emerging theme—pedagogical influence. The researcher provided the readers with background on the emerging theme of pedagogical influences on the participants and the study. After the background, the researcher discusses the emerging theme of pedagogical influence examining the relationship with the andragogical assumptions, processes, and transition processes toward self-directedness in higher education. Knowles (1996) and Henschke et al. (2003) identified assumptions and processes of the adult learner in Chapter 5's emerging themes and andragogical foundational works. Taylor (1986) identified phases and phase transition points in Chapter 5's emerging themes and andragogical foundational works.

The researcher observed pedagogical influences in two realms: one direct and the other indirect. The researcher considered the direct pedagogical influence as any pedagogical influence that happened as part of and during the study. The indirect pedagogical influence is what happened outside of the study.

A direct pedagogical influence the researcher observed was the use of the word, "kids" by the focus group #1 spokesperson in his answer to focus group question #4. Focus group question #4 was "What changes would you recommend for future texting-based learning courses?" It is unclear why the other participants agreed. The researcher did not observe the participants noticing or commenting on the word 'kids'. The researcher surmises reasons the participants not noticing the word 'kids' may have been the participants own self-image acceptance resulting from past pre-college schooling. Perhaps, a reason that they accepted the word kids was the influence of the spokesperson who commanded agreement by the participants. After the focus group participants discussed each question, the researcher acting as the focus group facilitator, asked for a volunteer from the group to summarize the discussion. The volunteer acted as the spokesperson for the group and provided a summarized answer to the particular question discussed. The focus group participants verbally agreed with the spokesperson's summarization. The spokesperson with pedagogy background provided the summarized answer for question # 4. The direct pedagogy influence came as the pedagogue assumed the role of spokesperson. This spokesperson was a graduate student from the school of education and participated in the study as a student from the marketing department course. This spokesperson also taught in the public school system as a pedagogue.

The participants expressed concern over possible cheating. This pedagogical influence on the concern for cheating may be both direct and indirect. On the one hand, the participants brought up in the discussion a concern over possible cheating in future texting-based learning courses. The researcher considers this as a direct pedagogical influence because the concern over possible cheating was discussed heavily during the

focus group #1 session, especially by the spokesperson when referring to his teaching children. On the other hand, the researcher assumed the concern over potential cheating in future texting-based learning (SMS) courses also came from an indirect pedagogical influence based on the participants' experiences prior to the study. The researcher assumed the concern about potential cheating in future texting-based learning (SMS) courses may have stemmed from the participants' pre-college schooling experiences or the inappropriate use of pedagogical practices in higher education, such as testing, that may have been used in the participants' previous college level coursework. In other words, the spokesperson with a background in pedagogical teaching had direct and immediate influence by directly speaking for the focus group #1 participants. The participants' past pedagogical experiences did not happen during the study but rather may have had an indirect influence based on the participants' perceptions of past experiences that they brought to the study.

Pedagogical influence appeared in the focus group sessions when one spokesperson referred to texting-based learning (SMS) affecting kids' writing skills. The researcher assumed the spokesperson's experience as a pedagogical teacher of children influenced the comment about kids. The researcher observed another pedagogical influence when focus group participants discussed the cheating during texting-based learning (SMS). The simplified learning contract is negotiable at the beginning and throughout the self-directed learning process. Self-direction eliminates a reason to cheat. Therefore, the self-direct learner, using texting-based learning (SMS) with the simplified learning contract and andragogical practices, eliminates the need for the adult learner to cheat. The researcher observing the focus group comments on cheating assumed the

pedagogical influence of cheating was from pre-adult educational experiences such as testing.

The emerging theme of pedagogical influences is examined using Knowles' (1996) and Henschke et al.'s (2003) six assumptions of adult learners and eight processes of adult learning in Chapter 5's emerging themes and andragogical foundational works. The researcher examined the pedagogical influences found during the study through the lens of the six assumptions of the adult learner. Then the researcher examined the pedagogical influences through the lens of the eight processes of adult learning.

The first assumption about the adult learner is the concept of the learner from Chapter 5's emerging themes and andragogical foundational works. Henschke et al. (2003) indicated that the adult learner sees himself/herself as a self-directed learner instead of dependent learner (p. 9). The pedagogical influence is toward learning dependency while the andragogical influence is toward learning independency. The participants quickly made the transition to self-directed learners during the texting-based learning (SMS) study. The display of andragogy and not pedagogy was evident with each participant developing his or her simplified learning contract. The researcher witnessed each participant taking responsibility for building his or her own simplified learning contract by selecting his or her own topic using texting-based learning (SMS) abbreviations for his or her answers to the KUSAVI questions for knowledge and understanding.

The second assumption about the adult learner is the role of the learner's experience from Chapter 5's emerging themes and andragogical foundational works. According to Henschke et al. (2003) and Knowles (1996), with age comes a greater

quantity and a different quality of experience that affects educational activity (p. 9). The individualized learning contract takes advantage of the wide age range of adult learners. The participants' varying selection of topics for the simplified learning contract exemplified the experiences gained and employed by each participant for his or her own learning, as well as, others' learning. The researcher considered past pedagogical experience to be an indirect influence on the participants because the experience happened in participants' past. However, the pedagogical influence from the focus group #1 session spokesperson was a direct (current) influence. The direct pedagogical influence resulted when the spokesperson directly influenced the participants during the study's focus group discussion.

The third assumption about the adult learner is the readiness to learn from Chapter 5's emerging themes and andragogical foundational works. The researcher did not observe this assumption with the participants in the emerging theme of pedagogical influence. The researcher observed the contrary with a display on the participants' part of the andragogical assumption, readiness to learn. The researcher observed not just a readiness to learn, but an eagerness to learn. The participants responded quickly to texting-based learning (SMS) messages sent by the researcher. During the recruitment of the study volunteers, the participants quickly responded with a resounding 'yes' to the study. The participants rapidly signed and returned all forms required to the researcher for participation in the study. All eligible persons volunteered to participate in the texting-based learning (SMS) study. The researcher observed a high level of eagerness throughout the study and during the focus group sessions.

The fourth assumption of the adult learner is the orientation to learning from Chapter 5's emerging themes and andragogical foundational works. The researcher saw no evidence of pedagogical influence of the fourth assumption of the adult learner except during the focus group session. During the focus group session discussion, the researcher observed the participants providing titles of potential classes that could possibly be pedagogical such as a texting-based learning (SMS) course in finance and economics that typically includes testing. However, a valid case for andragogy exists if in contrast to pedagogical testing, the learning experience is for a life situation. Certainly, finance may qualify as both a practical matter in living and as a life organizing learning experience.

The fifth assumption of the adult learner is the motivation to learn from Chapter 5's emerging themes and andragogical foundational works. The researcher observed no pedagogical influence on the motivation to learn. The researcher observed motivation of the participants' non-verbal expression and eagerness to learn during both the recruitment process and the two focus group sessions as being intrinsic motivation in contract to extrinsic motivation.

The sixth assumption of the adult learner is reason to learn from Chapter 5's emerging themes and andragogical foundational works. The researcher observed no pedagogical influence of the assumption of reason to learn with one exception. The exception may be the potential benefit from personal texting gained as a teenager, a pedagogical experience. The participants using this pedagogical experience of personal texting to evaluate benefits, may have also influenced the transfer of potential benefits from personal texting to texting-based learning (SMS). The researcher's perception is based on observation of the participants' eagerness to learn and the positive benefits of

the participants' personal texting experience. The researcher perceived that the participants' understanding of reason to learn aligned with Henschke et al. (2003) "benefits of knowing something and the costs of not knowing something" (p. 2). The researcher perceived that the participants already understood the benefits of reason to learn before beginning the study.

Knowles' (1996) and Henschke et al.'s (2003) eight processes of the self-directed adult learner in Chapter 5's emerging themes and andragogical foundational works, mostly were not applicable to the emerging theme of pedagogical influence. However, the researcher believes that pedagogical influence as related to texting-based learning (SMS) may include the two psychological climates of fun and humanness. Children and adults both enjoy fun, adventure, excitement of discovery, spontaneous humor, and the avoidance of dullness. The emotion icon such as a happy face is a pedagogical influence also usable in andragogical texting-based learning. This study did not use emotion icons. However, the researcher suggests the incorporation of emotion icons or other methods of fun for texting-based learning (SMS).

The process of setting the climate that is conducive to learning includes the psychological climate of humanness and has both pedagogical influence and andragogical influence since both are human. Henschke et al. (2003) said, "Learning is a very human activity" (p. 11). The human learning activity includes both adults and children. Humans like caring, accepting, respecting, and being treated like human beings. This important psychological climate of humanness applies to both pedagogical and andragogical learning.

The researcher did not observe a pedagogical influence on participants related to Taylor's (1986) transition processes toward self-directedness in higher education in Chapter 5's emerging themes and andragogical foundational works. Taylor's (1986) study participants age range was 20-50 (p. 56). Taylor's study participants were higher education students. This study's participants were within the same age range as the participants in Taylor's study. This study's participants were higher education students.

The researcher, over the course of the study, observed Taylor's (1986) transition processes toward self-directedness in higher education. The learner starts with a frame of reference or an assumptive world of ease and familiarity with personal texting as adequate means of understanding his/her experience of context (Taylor, 1986, p. 59). The participants demonstrated texting behavior consistent with the first phase transition point, disconfirmation. Participants indicated that texting-based learning was harder than expected. The researcher assumed the participants' ease with past personal texting experience, served as a basis for their not realizing texting-based learning would be harder than personal texting. Therefore, the participants did not meet their expectation.

The participants exemplified the first phase of disorientation by stating their confusion with texting-based learning (SMS). The researcher observed the disorientation phase when the participants began the simplified learning contract. The researcher perceived that the disorientation phase resulted from the participants' self-directedness while creating their simplified learning contract using the abbreviations. The researcher observed the confirmation of the disorientation phase when the participants recalled their confusion during the focus group sessions.

The second phase transition point of the participants is naming the problem. The participants named the problem as confusion over how to create their simplified learning contract while using abbreviations. The researcher observed the participants using self-directedness in learning during the second phase, exploration. This resulted in the participants meeting with the researcher for a 20-minute face-to-face meeting. During the face-to-face meeting, the researcher provided examples of the texting-based learning process discussed in Chapter 3 of this paper.

The third phase transition point of developing self-directedness in learning was a private reflective review by the participants. A private reflective review is hard to observe. The researcher believes the participants performed a private reflective review. The researcher observed evidence of reflection in the participants' comments regarding their understanding and eliminating confusion. The participants' comments occurred during the face-to-face meeting.

The third phase of developing self-directedness of learning is reorientation. The researcher concluded that through understanding and eliminating confusion, the participants gained insight into learning the task of creating a simplified learning contract using texting-based learning (SMS). The participants' reorientation also provided the major insight needed for their simplified learning contract including texting-based learning (SMS) abbreviations.

The fourth and final phase transition point of developing self-directedness in learning is sharing the discovery with others. The participants tested out their new understanding by sharing their simplified learning contract with the researcher using texting-based learning messages (SMS). The participants also shared the discovery with

the judges of their evidence and with other participants during the focus group discussions. The researcher did not specifically observe the participants sharing the discovery with other persons outside the study. Based on the researcher's observation of the participants' excitement about texting-based learning (SMS), the researcher assumes that sharing outside the research study was likely to have occurred.

The fourth and final phase of developing self-directedness in learning is equilibrium. The researcher observed the equilibrium phase of the application of the participants' new understanding by receiving the participants texting messages (SMS) of their simplified learning contracts. The participants completed the equilibrium phase by elaborating, refining, and applying the simplified learning contract. In creating the simplified learning contract, the participants selected their own topic and used KUSAVI's K and U aspects of the simplified learning contract. The participants can elaborate by explaining K and U in connection with the simplified learning contract. The participants refined their understanding of what they need to do to create their simplified learning contract. The participants applied their simplified learning contract using it for their texting-based learning experience (SMS).

The researcher examined the assumptions, processes, and developing self-directedness in learning in relationship to the emerging theme of pedagogical influences. After the examination, the researcher concluded that andragogical principles dominated the study participants while pedagogical influences played a limited role not significantly affecting this study's outcome when answering the research question of efficiently supporting andragogical principles during texting-based learning (SMS).

Emerging theme—participants' concern over cheating. During focus group session #1, the participants while discussing future texting-based courses mentioned a concern over cheating when using texting-based learning (SMS). The focus group session spokesperson included the concern over cheating in future texting-based courses in the summary in order to capture comments from all of the participants.

Students in other educational settings may be tempted to cheat in several ways. Among the ways students in other educational settings cheat may include glancing on another student's test, plagiarizing information from the Internet, and/or obtaining a copy of the test ahead of test taking time. Students in other educational settings may have someone else do the research and or have someone else write a paper for them. In andragogy, the test is the active engagement of the learners in the process. This eliminates cheating in andragogy.

The researcher included the topic, concern over cheating, as an emerging theme for two reasons. The first reason is that the focus group spokesperson included the concern of cheating in the summary and all of focus group #1 participants agreed to the summary. The second reason may be the potential interest of the higher education community. The professor may lose power over the student. Professors may find tests require less work and are less time consuming for the professor than to engage the student in conversations to assess the student's learning needs, especially with large class sizes.

The researcher found no evidence of cheating by the participants during the study. However, the researcher addresses cheating in general as related to self-directed learning and texting-based learning (SMS). The researcher further discusses the concern over

cheating as it relates to Henschke et al.'s (2003) and Knowles' (1996) six assumptions of the adult learner and the eight processes of self-directed adult learning in Chapter 5's emerging themes and andragogical foundational works. Although the researcher examined all six assumptions and eight processes and found four assumptions and two processes related to the participants' concern over cheating. Therefore, the researcher discussed only the relevant assumptions processes and processes. The assumptions and processes that were not applicable were not discussed. The researcher did not observe any cheating during the study and it is impossible to cheat with andragogy using self-directed learning. Therefore, the researcher did not examine the emerging theme of the participants' concern over cheating with Taylor's (1986) transition processes toward self-directedness in higher education in Chapter 5's emerging themes and andragogical foundational works.

Briefly, cheating is an irrelevant concern in andragogy. The simplified learning contract used in texting-based learning is negotiable: the need to cheat is unwarranted. The adult learning may redefine the simplified learning contract in texting-based learning (SMS) at any time during the learning process. Adult learners may alter the simplified learning contract if they run out of time, find their selected topic too large, or encounter other barriers that require them to make other changes that may arise during the self-directed learning process. The self-directed adult learner creates his or her own learning experience. The andragogue is not a teacher but rather a learning facilitator that helps and guides the adult learner.

The researcher examined the emerging theme, the participants' concern over cheating within the framework of Henschke et al.'s (2003) and Knowles' (1996) six

assumptions of the adult learner in Chapter 5's emerging themes and andragogical foundational works. This emerging theme is a concern of the participants about potential future texting-based learning (SMS) courses. The researcher addresses the concern of the study participants even though cheating is not an issue with the design of texting-based learning (SMS) courses.

The first assumption of the concept of the learners is the deep psychological need to be self-directed and the desire to take responsibility for their own learning from Chapter 5's emerging themes and andragogical foundational works. Adult learners demonstrate andragogical behavior when taking responsibility for their own learning. Oddly enough, the fact that the participants voiced concern over students cheating in future texting-based courses meant that the study participants took responsibility for their own learning and others' learning. The researcher believes that the participants displayed responsibility by stating their concern of cheating. The researcher believes that persons taking responsibility are not likely to think or voice a concern over cheating. The researcher believes the study participants acted andragogically by taking responsibility for their own and others' learning.

The second assumption of the learner's experience, from Chapter 5's emerging themes and andragogical foundational works, may have stimulated the concern over cheating. The adult learners' experience brings a rich learning resource (Henschke et al., 2003, p. 1). However, the experience brings a variation of quality experiences including negative educational experiences from their educational background that requiring test taking and paper writing. The researcher perceives that negative experiences of the participants' past played a role in the concern over cheating.

The third assumption of the readiness to learn, from Chapter 5's emerging themes and andragogical foundational works, is applicable to the participants' concern over cheating by future texting-based learning (SMS) students. A student who cheats is probably not ready to learn. Therefore, the student is not demonstrating adult learner assumptions. The researcher observed no cheating by the participants during the study, only concern by the participants regarding potential future students.

The fourth assumption is orientation to learning from Chapter 5's emerging themes and andragogical foundational works. The connection between the participants' concerns over cheating of future texting-based learning students to the adult learners' orientation to learning is for a life-, task-, or problem-centered education. Cheating is illogical when an adult learner needs to know something to solve a problem or undertake a task meant for immediate application.

The fifth assumption is the motivation to learn from Chapter 5's emerging themes and andragogical foundational works. The participants' concern over future students cheating is not associated with learning. The student who cheats is not motivated to learn. Cheating does not exemplify adult behavior.

The sixth assumption of reason to learn, from Chapter 5's emerging themes and andragogical foundational works, is an adult learning assumption that is demonstrated by the person who cheats. In the sixth assumptions the cheater, like the adult learner, has considered the costs of not learning but is not willing to invest the time and energy to learn something. Within the confines of this reasoning, the cheater is not an adult learner. However, the student who cheats, unlike the adult learner, wants a representational or false reward of learning without the real reward of actual learning.

Henschke et al. (2003) presented eight processes of the self-directed adult learner in Chapter 5's emerging themes and andragogical foundational works. The researcher examined the emerging theme of the participants' concern over cheating using Henschke et al.'s (2003) eight processes of the self-directed adult learner. The researcher did not observe any participants cheating. The emerging theme of the participants' concern over others cheating was about future texting-based learning (SMS) courses.

The first teaching technology process of the self-directed adult learner is preparing the learners for the course, in Chapter 5's emerging themes and andragogical foundational works. The first process is particularly applicable to the participants concern over cheating. This process is about setting expectations with the students. Texting-based learning (SMS) uses self-directedness including student designed and selected topics, objectives, due dates, learning resources and strategies, and judges of the evidence for the simplified learning contract. Additionally, the simplified learning contract is negotiable and renegotiable by the student. The first process sets the expectation in preparation of the learner for the course. A benefit of the first process is that it also sets the expectation that the need to cheat does not exist because the simplified learning contract is renegotiable.

The second teaching technology process of the self-directed adult learner is the setting of a climate conducive to adult learning, in Chapter 5's, emerging themes and andragogy foundational works. The sub processes, psychological climate, supports the student's desire to avoid cheating. Since cheating may develop from a psychological desire, any of the sub processes within the psychological climate setting may affect a person's desire to cheat. In a psychological climate, that is conducive to learning

students feel valued in the sub process, climate of mutual respect; their energy is spent on learning and not on feelings that could lead to the desire to cheat. The sub processes, climate of openness and authenticity, climate of humanness, and the climate of fun provide freedom, acceptance, and emotional caring. These sub processes of a climate conducive to learning possibly expanded the student's self-confidence, emotional relaxation, and reduced the student's perceived need to cheat.

The three most important sub processes of setting a psychological climate that is conducive to learning for self-directed adult learner in connection with cheating are ensuring a climate of collaboration, a climate of mutual trust, and a climate of support. The first important sub process of climate setting is a climate of collaboration, which releases the need to compete for grades by cheating. Instead of cheating, there is the climate of collaboration where students view one another as allies and not competitors. The researcher views the second important sub process, climate of mutual trust, as a way of helping students avoid cheating. The andragogue's position is one of helping the adult learner and not as an authority figure over the student. Removal of emotional pressure by an authority figure and mutual trust may suppress the perceived need for cheating by students who are susceptible to cheating. The third important sub process, a psychological climate of support, eliminates the student's feeling of judgment or threat. Whether real or perceived, the climate of support eliminates the negative feelings that may lead to cheating. The result of the climate of support is that success is more likely while failure is more unlikely. As with the climate of collaboration, the climate of support reduces the student's emotional pressure of feeling alone that may lead to

cheating. The third, fourth, fifth, sixth, seventh, and eighth processes of the self-directed learner all support the avoidance or the elimination of the need for a student to cheat.

In summary, the researcher believes the focus group participants' concerns over students cheating in future texting-based learning (SMS) courses is unfounded. The researcher observed no instances of cheating among the study participants during any portion of the texting-based learning (SMS) study. Therefore, the researcher does not examine the emerging theme of the participants' concern about students cheating with Taylor's (1986) transition processes toward self-directedness in higher education in Chapter 5's, emerging themes and andragogy foundational works.

Emerging theme—concern over mixing up personal with university texting messages (SMS). The researcher examined the emerging theme of the participants' concern over mixing up personal texting messages with university texting messages within the framework of Knowles' (1996) and Henschke et al.'s (2003) six assumptions of the adult learner and eight processes of adult learning in Chapter 5's emerging themes and andragogical foundational works. The researcher also examined this emerging theme as it relates to Taylor's (1986) transition processes toward self-directedness in higher education in Chapter 5's, emerging themes and andragogy foundational works.

During the focus group #1 session discussion, participants voiced a concern over accidently sending a personal texting message to their university professor, particularly when the intended recipient was a person the participant was dating. The researcher perceived that the participants did not appear as concerned with their accidently sending a university texting message to their boyfriend or girlfriend. The researcher perceived the participants viewed accidently sending a personal texting message to the university as

potentially leading to a student's embarrassment or some other unintended consequence. However, the researcher perceived that accidently sending a texting message intended for the student's university professor to a student's boyfriend or girlfriend was generally easier to rectify.

Knowles' (1996) and Henschke et al.'s (2003) in Chapter 5's, emerging themes and andragogy foundational works, first assumption of the concept of the adult learner is taking responsibility for any messages sent by the participant. Adult learners demonstrated andragogical behavior when taking responsibility. The participants voiced concern over accidently mixing up personal and university texting messages. While accidents may happen to anyone, the adult takes responsibility by exercising behavior to avoid potential accidents. The researcher perceives that responsible adult behavior may include double-checking the phone number of the recipient prior to pressing the phone's send button. This is no different from accidently sending an email to the wrong person. However, some email software provides a recall feature that allows the sender to recall unread messages. At the time of this study, no such feature existed for cell phone texting messages (SMS).

The second assumption is the learners' experience as a potential resource for their own and/or others' learning, in Chapter 5's emerging themes and andragogical foundational works. Personal texting may have provided the background experience for the concern over mixing up personal texting messages with university texting messages. The adult learners' rich experience may have brought awareness of a distracting negative experience that potentially could adversely affect the learning experience. The researcher reasons that the distraction could cause diverting a student's attention from the learning

experience to attempting to correct the error. The researcher perceives that negative experiences of the participants' past played a role in the concern over mixing up personal texting messages with university texting-messages.

The third, fourth, fifth and sixth assumptions (readiness to learn, orientation to learning, motivation to learn, and reason to learn) did not apply to the participants' concern over mixing up personal texting messages with university texting messages. The focus group participants raised the concern over mixing up personal texting messages with university texting messages. During the study, the researcher received no texting messages that the participants intended for another person.

Henschke et al.'s (2003) eight processes of the self-directed adult learner in Chapter 5's emerging themes and andragogical foundational works. The researcher compared the emerging theme of participants' concern over mixing up personal texting messages with university texting messages with the eight processes. The researcher did not observe mixing up of texting-message by the study participants.

The first teaching technology process of the self-directed adult learner is preparing the learners for the course. This process is about setting expectations with the students. The researcher did not address the issue of mixing up personal texting messages with study texting messages in preparing the learner for the study. However, the researcher addressed the expectation of the correct phone number. The first text message sent by the researcher during the study was to test and verify phone number accuracy with all participants. Each participant responded to the researcher by sending the researcher a texting message validating that each participant's phone number was correct. The receipt of the participant's texting message by the researcher also validated

that the participant had the researcher's correct phone number. The researcher did not address the expectation that the participants should take care when sending texting messages to the correct person. The researcher expects that with adult learners in higher education that a certain level of competency exists. The researcher expects that most texting messages are to the appropriate person and a texting message is rarely accidently sent to an unintended person.

The researcher realized that participants' concern over sending a personal texting message accidently to a professor could cause embarrassment or worse for the student. The participants' concern is related to the extremely intimate, personal, or off-colored messages they send to each other. In some cases, the texting message could communicate their unhappiness with the professor or an assignment. It could be high stakes for the students if a professor saw the texting messages. It could make them look bad or even have consequences that could affect their academic standing in the university. Adult learners take responsibility to ensure their learning is not affected by sending the wrong messages to their professor.

The second process of the self-directed adult learner is setting the climate in Chapter 5's emerging themes and andragogical foundational works. The researcher examined the emerging theme of mixing up personal texting messages with university texting messages with the sub processes of the psychological climate conducive to learning−mutual respect, mutual trust, support, openness and authenticity, and humanness. The emerging theme, mixing up personal texting messages, was not examined with the sub process of the physical climate. Each participant selected his or her own physical climate when texting.

The researcher first examined the psychological climates sub process of the climate of mutual respect. The mutual respect sub process provides the student with feeling valued. The student's time is for learning instead of worrying about losing the professor's respect by sending a texting message in error intended for another person. The climate of mutual respect mitigates the student's negative feelings that could rob the student's learning time and attention.

The sub process, climate of mutual trust, provides the student with a learning environment that allows the student to make a mistake or have an accident. In a climate of mutual trust, the student replaces the fear of authoritarian action with trust. The student trusts that the professor believes accidently mixing up texting messages is more deserving of forgiveness than punishment.

The sub process, climate of support, provides the student with a learning environment that is free of the threat of ridicule. In this sub process, the student feels support from the acceptance and empathy of the professor. The professor's unqualified positive regard provides the student with the support needed to be able to accidently send a texting message without judgment or threat.

The sub processes, climate of openness and authenticity, viewed in connection with the concern over mixing up personal texting messages with university texting messages, allows the student freedom in their behavior to take risks. The risk associated with the student's behavior is the risk of accidently sending a personal texting message intended for another person to the university professor. A student might send a texting message containing curse words to express his or her unhappiness with the professor's time-consuming assignment. The climate of openness and authenticity allows the

professor and student to discuss openly and potentially resolve both the assignment and the use of the curse word in texting messages. This climate of openness and authenticity removes the student's fear of risk taking from texting-based learning (SMS).

The sub process, climate of humanness, in the researcher's opinion is the most relevant process to the concern over mixing up personal texting messages with university texting messages. Accidents are characteristic of all humans. When professors are caring, accepting, respecting, and helpful to students who have texting accidents then students are more likely to learn in a texting-based learning environment.

The researcher examined the emerging theme, concern over mixing up personal texting messages with university texting messages and the remaining processes in Chapter 5's emerging themes and andragogical foundational works. The researcher found the remaining processes (involving learners in mutual planning, diagnosing their own learning, translating the learning needs into objectives, designing a pattern of learning experiences, helping adult learners manage and carry out their learning plans, and evaluating the extent to which the learners have achieved their objectives) were not relevant to this emerging theme. The researcher determined that the psychological climate sub processes, climate of collaboration and a climate of pleasure/fun, were not associated with the emerging theme, concern over mixing up personal texting messages with university texting messages.

During the study, the researcher did not receive any texting message from participants sent to the researcher by accident. The researcher included the emerging theme of the concern of mixing up personal texting messages with university messages because of the focus group discussion summary. This emerging theme was a concern

from the participants about a possible accidental sending of a texting message to the wrong person during texting-based learning. The possibility of the accident happening is unknown. The accident did not happen as part of the actual texting-based learning (SMS) study. Therefore, the researcher does not feel she can reliably compare a concern about a possible accident with Taylor's (1986) transition processes toward self-directedness in higher education in Chapter 5's, emerging themes and andragogy foundational works.

Emerging theme—desire for texting-based learning (SMS) success. The researcher examined the emerging theme, participants' desire for texting-based learning (SMS) success. The researcher analyzed the emerging theme with Knowles (1996) and Henschke et al.'s (2003) framework of six assumptions of the adult learner and eight processes of adult learning in Chapter 5's emerging themes and andragogical foundational works. The researcher continued examining the emerging theme using Taylor's (1986) transition processes toward self-directedness in higher education in Chapter 5's, emerging themes and andragogy foundational works.

Knowles' (1996) and Henschke et al.'s (2003) first assumption, of the adult learner, is related to the learner taking responsibility for his or her own learning, in Chapter 5's emerging themes and andragogical foundational works. The participants not only took responsibility for the success of their own learning but also were anxious to assist future texting-based students to succeed. During the focus group sessions, the participants demonstrated the desire to help by providing suggestions to improve texting-based courses. The participants also demonstrated a desire for success by recommending other likely texting-based learning courses such as finance offered to future students.

The second assumption of the adult learner is the role of the learner's experience in his or her own and others' learning, in Chapter 5's emerging themes and andragogical foundational works. The participants drew upon their experience with texting-based learning from being a participant in the study. During the focus group sessions, the participants provided comments they felt may improve the texting-based learning experience for future students. The participants' two main recommendations included facilitating a short face-to- face initial meeting and conducting the course during a regular 16-week semester, instead of during a short 3-week semester. The first recommendation was facilitating a short face-to-face initial meeting. The participants recommended the professor present one or two examples of the simplified learning contract during the face-to-face meeting using KUSAVI as the researcher did during the study. The participants viewed their experience with the face-to-face meeting as extremely helpful and wanted the meeting immediately prior to beginning texting in future texting-based learning (SMS) courses. The second recommendation, conducting the course during a regular16-week semester, resulted from the participants' experience engaging in a texting-based learning experience during the accelerated 3-week summer semester.

The third assumption of the adult learner is the readiness to learn, in Chapter 5's, emerging themes and andragogy foundational works. The focus group sessions' discussion summaries indicated a readiness to learn in future texting-based (SMS) courses especially upon implementing their recommendations. The researcher believes an important factor in their readiness to learn included the second assumption, the learner's experience with texting-based learning participating in the study.

The fourth assumption of the adult learner, orientation to learning, is in Chapter 5's emerging themes and andragogical foundational works. The connection of the participants' desire for future texting-based learning success with learners' orientation to learning is the need surrounding life situations, issues, or problems. In the case of the desire for future success, the learner's need may connect with the delivery mode of texting-based learning (SMS). The study participants selected a wide variety of topics used in creating the simplified learning contract. The adult learners need around life situations can be satisfied by providing access to learning through the delivery mode of texting-based learning and the simplified learning contract. The researcher surmises the emerging theme, participants' desire for future texting-based learning success, is accomplishable. The researcher's perception that participants' topic selection fulfilled both the study participants' learning need and the delivery mode need is projectable to future texting-based learning courses students.

The fifth assumption of the adult learner, motivation to learn, is in Chapter 5's emerging themes and andragogical foundational works. The participants' desire for future texting-based learning success included external and internal motivators. An external motivator was the participants' expressed desire to enroll in another texting-based course to further his or her own need to graduate or find employment. However, the researcher perceives the participants internal motivation was the basis for the emerging theme, desire for texting-based learning success. The researcher perceives that the participants saw the benefit of texting-based learning as a means for providing a better quality of life for underserved students through improved educational access.

Another internal motivator was the participants' self-esteem resulting from making a difference in innovative texting-based learning (SMS).

The sixth assumption of the adult learner, reason to learn, is in Chapter 5's emerging themes and andragogical foundational works. The participants knew that the benefits of using texting-based learning (SMS) outweighed the risks of not using texting-based learning (SMS). The participants invested the time and energy to make texting-based learning better for future students. The researcher observed actions consistent with the participants' desire to see texting-based learning (SMS) succeed. The participants' actions included reflection, thought, and discussion within the focus group sessions resulting in a recommendation for future texting-based courses.

The researcher examined the emerging theme of participants' desire for texting-based learning success with Henschke et al.'s (2003) eight processes of adult learning in Chapter 5's emerging themes and andragogical foundational works. The first process of preparing the learner for the course was the only process appropriate for this emerging theme since this is a desire and not a learning activity per se. The participants' recommendation for a face-to-face initial meeting is actually setting expectations about the learner's use of the simplified learning contract using KUSAVI and the abbreviations used in texting-based learning (SMS). The process may also include discussion of possible topic selections. The participants recommended using the full 16-weeks during a regular semester instead of squeezing the 16-weeks of learning into a 3-week accelerated summer semester. This recommendation is also part of preparing the learner.

The researcher viewed Taylor's (1986) four phases and four phase transition points of self-directed learning in Chapter 5's, emerging themes and andragogy

foundational works, with the emerging theme, participants' desire for texting-based learning success for future courses. The researcher found that the most appropriate were (a) the reflection phase transition point, (b) the reorientation phase, (c) sharing the discovery phase transition point, and (d) the equilibrium phase. The participants went through the reflection phase transition point in order to identify recommendations for improvement. The participants then moved into the reorientation phase by transforming the reflection into insight for the new approach—making recommendations of an initial face-to-face-meeting and using a full 16-week semester with others in the focus groups sessions−by testing out their insights with other participants. Then the participants reached equilibrium when they had refined their recommendation as their part in seeing future texting-based learning (SMS) succeed.

Emerging theme—technology transferable and applicable to email using the two thumbs learning method. The technology transfer of texting-based learning (SMS) methodology is applicable to email learning using a mobile phone. Mobile mail (also known as mmail) is email from a mobile phone using texting abbreviation and texting-based learning methodology. The delivery mode is different. Email on a mobile phone or mmail uses the Internet as the delivery mode instead of using texting (SMS) as the delivery mode. The texting-based methodology remains the same by using the abbreviations and the simplified learning contract. The advantage to using mmail over texting is the elimination of the 160-character restriction with texting.

Mmail is especially suited for today and the future. The researcher conducted this texting-based learning (SMS) study primarily to investigate the benefit for the underserved higher education student. The researcher hoped texting-based learning

(SMS) would enable the underserved student to attend remotely a higher education institution leading to a college or university degree. However, a much wider potential higher education audience may find mmail based learning an attractive alternative to other distance learning methodologies. The reason other higher education audiences may find mmail-based learning attractive is because of the advancement in mobile technology. The cost of mobile phones and their service is becoming more affordable for the general student population. Therefore, the researcher anticipates the number of students with mobile phone access will increase. This provides a potentially broad market of higher education students with mobile phones for mmobile-based learning, a form of m-learning.

The market seems to be ready for mmobile-based learning. Mmobile might fill a major chasm left by Internet learning. This chasm created by two thumbs typing adversely affects Internet learning. A person's two thumbs are used to type on a mobile phone keyboard. A full computer keyboard needed for Internet learning requires the use of all eight fingers and two thumbs. The limited space on a mobile keypad allows only enough space for two thumbs typing.

The same texting-based learning (SMS) instructional methodology using abbreviations and the simplified learning contract is transferrable to email on a mobile phone (mmail). Typing a formal email using a mobile phone would be time consuming, tiresome, difficult, and inefficient for learning. However, with texting-based abbreviations, the student using the two thumbs typing method can build a simplified learning contract efficiently using email. An advantage of using mmail is that there are

no character restrictions. Learners can receive long emails or even attached documents while abbreviating their reply when using mmail.

The researcher believes three major components of technology-based learning will make this innovative research widely used in higher education courses. The first component is the size of the mobile keyboard, which forces abbreviations. The second component is the andragogical success of the simplified learning contract. The third component is the increased use of mobile phones.

The researcher believes texting-based learning (SMS) supports adult learning as described by Knowles (1996), Henschke et al. (2003), and Taylor (1986). Knowles (1996) and Henschke et al. (2003) described andragogical assumptions and processes of adult learning in Chapter 5, emerging themes and andragogical foundational works. Taylor's (1986) described four phases and four phase transition points in the journey toward developing self-directedness in learning in Chapter 5's emerging themes and andragogical foundational works. The researcher believes that the texting-based learning (SMS) is transferrable and applicable to mmail learning and that andragogical assumptions, processes of adult learning, and the phases and phase transition points of developing self-directedness in learning will remain intact during the transfer.

Emerging theme—efficiency. The researcher examined six assumptions about the adult learner from Knowles (1996) and Henschke et al. (2003) in Chapter 5's emerging themes and andragogical foundational works in the context of the emerging theme of efficiency. The researcher investigated the theme of efficiency in the context of the adult learner, the participants. The adult learner demands efficiency. According to a conversation with Isenberg (2011)

> Adults demand that you don't waste their time. Adult learning must (a) be relevant, (b) be able to be applied immediately, (c) start where the learner is right now, and (d) solve a problem. And, andragogy design elements ooze efficiency. (S.K. Isenberg, personal communication, May 11, 2011)

The efficiency of adult learning comes in various forms translated into the adult learners' perspective. Adult learners' perspective is giving them what they need, when they need it, in the amount they need (not too much or too little), does not waste their time, and gives it to them as fast as they can learn it. If you give it too fast, then they may find it hard to learn. If you give it too slowly, then their time is wasted, and they may be bored. Efficiency, while it may include time, is not exclusively related to time. It includes taking responsibility for learning, initiating learning, and understanding or applying the meaning of these, etc.

The first assumption about adult learners is the concept of the learner. Henschke et al. (2003) indicated that adult learners feel resentment and resistance when others force their will upon them without their input (p. 1). When adult learners deal with resentment and resistance, they waste time on negative emotions instead of spending time on learning. This is inefficient. The participants used the adult learning concept of self-directness with their simplified learning contract. The participants used their free will when they selected their individual topics and planned their individual learning. The researcher observed that the participants did not show negative emotion such as frowning, raised eyebrows, or other facial expressions during the face-to-face meeting from resentment or resistance because they used their free will. The participants performed using the concept of the adult learner.

The first assumption, concept of adult learners, also includes taking responsibility for their own learning, in Chapter 5's emerging themes and andragogical foundational works. Efficiency increases as the adult learners take responsibility. Isenberg (2011) writes about adult learners taking responsibility.

> The responsibility of adult learners involves proofreading what they write before turning it in, without assuming forgiveness. Adult learners take responsibility by pausing to reflect on what they are doing while doing it. Adult learners reflect on the consequences of their writing before submitting it to the learning facilitator. Texting doesn't naturally foster pausing to reflect on what is written. The natural tendency is to respond immediately. Cell phones keep dinging until the text is acknowledged, like "hurry up!" "I'm waiting." Therefore, the participants performed efficiently during the study. It is about adult learners taking responsibility for their own learning and all that is involved with it. (S.K. Isenberg, personal communication, May 11, 2011)

The adult learners' efficiency will most likely decrease when he or she must re-write and re-submit papers or other learning materials. If the adult learner continues to avoid responsibility, he or she may be forced to take the course again. If this happens, the learner is very inefficient. Efficiency will most likely increase when the adult learner takes responsibility even when time for reflection is included.

Glancy and Isenberg (2011) discussed the common dimension of a construct for a framework for e-learning that could apply to texting-based learning (SMS). The constructs are information search, reflection, discourse, convergence and assessment, and integration (p. 9). If the reflection process is efficient, then the learner can review and

reprocess new information. If the reflection process is inefficient, then the learner will not progress through the constructs.

Isenberg acknowledges that texting may come with unique problems because of the nature of texting. One unique problem may be related to speed of creating a texting message.

> The problem with texting is that learners don't think enough about what they send before sending it. Thinking about something slows down the efficiency of the process, but is critical to learning. There is a discrepancy here—a contradiction. When the facilitator sends texting messages in batches to all the learners, there will be varying response times due to variability in learning style, reflection time, competing responsibilities, etc. (S.K. Isenberg, personal communication, May 11, 2011)

Efficiency is impacted by how the learner takes responsibility for his or her own learning. Efficiency can increase when the adult learner takes responsibility or decrease when the adult learner does not take responsibility for his or her own learning.

The second assumption about the adult learner is the role of the learner's volume and quality of experience that affects the planning and conducting of educational activities, in Chapter 5's emerging themes and andragogical foundational works (Henschke et al., 2003, p. 9). The researcher investigated participants' experience prior to the texting-based learning (SMS) study. All of the participants had prior experience with personal texting; however, none of the participants had any prior experience with academic texting. The participants' prior experience with personal texting resulted in increased efficiency when using academic texting. The participants were volunteers from

a senior level college course from the School of Business and Entrepreneurship. The participants' experience provided some knowledge about common terminology, such as objectives, resources and strategies, used when they built the simplified learning contract. The researcher believes the participants' academic experience made building their simplified learning contract slightly more efficient, than if they had no prior experience with the common terminology. However, the participants' prior personal texting experience provided the most efficiency when the researcher viewed efficiency through the lens of the second assumption the role of the learner's experience.

The third assumption about the adult learner is the readiness to learn based on a need or desire in their life in Chapter 5's emerging themes and andragogical foundational works (Henschke et al., 2003, p. 9). The researcher observed this assumption with the eagerness of the participants. The participants did not attend a formal traditional classroom setting that is inefficient. The researcher believes the participants viewed texting-based learning (SMS) as freedom from a confining traditional classroom setting and more efficient than physically attending a traditional class. According to one focus group member, "I can text while walking to my next class." The researcher's interpretation of the participant's perception was that his personal efficiency would increase with texting-based learning (SMS). The researcher believed this resulted in increasing his readiness to learn using texting-based learning (SMS).

The fourth assumption about the adult learner is the orientation to learning arising out of a need, in Chapter 5's emerging themes and andragogical foundational works (Henschke et al., 2003, p. 9). The researcher observed orientation to learning in the participants' need during the selection of diverse topics for their simplified learning

contract. The ability of the participant to select any topic allowed texting-based learning to meet his or her educational needs, including a life-, task-, or problem-centered topic. The researcher's perception is that the participants had the ability to focus efficiently on their own selected topic without interference or influence from others.

The fifth assumption about the adult learner is the motivation to learn where the adult learner engages in learning based on external or internal motivators, in Chapter 5's emerging themes and andragogical foundational works (Henschke et al., 2003, p. 10). The researcher's perception is that the participants' efficiency may have contributed to both external and internal motivators to learn. The researcher observed internal motivators during the focus group sessions when the participants displayed self-confidence when speaking about their perceptions of texting-based learning (SMS). During the focus group sessions, the participants spoke about a better quality of college life with the opportunity to have future texting-based learning (SMS) courses. A better quality of life is an internal motivator.

The researcher observed external motivators as part of the assumption of the adult learner of the motivation to learn. The researcher observed the external motivator of learning a change in technology when the volunteers showed efficiency in quickly signing up for the study. The researcher assumed that the external motivator of being the first to learn the new technology of texting-based learning (SMS) improved their efficiency because the participants were motivated to begin immediately building their simplified learning contract using texting-based learning (SMS).

The researcher assumed isolation provided potent internal motivators such as self-esteem, greater self-confidence, and self-actualization. A learner in isolation only has

himself or herself as a motivator. Self-esteem, self-confidence, and self-actualization must come from within the learner if he or she is alone. Efficiency enhances the learner to be a self-directed learner. The learner possibly gains efficiency from motivation in the building of self-esteem, self-confidence, and self-actualization because he or she learned by himself or herself. The learner's self-confidence means he or she does not need to second-guess his or her learning. The removal of second-guessing translates to less time spent going over the same learning material again and again. Self-actualization helps the learner venture into learning without waiting on a professor for help. Self-actualization removes the fear factor or the need to obtain approval from others before beginning learning. This increases efficiency.

The external motivator for the participants may have been the cutting edge of the texting-based learning technology that would help the student's efficiency by attending college and obtaining a higher education degree. Individual efficiency may increase due to the college student's capability to care for small children or others while texting for class. Efficiency may increase by reducing travel time for remotely located persons, persons without transportation (no waiting for the bus), or access to the Internet, and others.

The sixth assumption about the adult learner is reason to learn and needs a reason that makes sense to the adult learner before he or she is willing to engage in learning, in Chapter 5's emerging themes and andragogical foundational works (Henschke et al., 2003, p. 10). The researcher considers this assumption as the strongest case for the emerging theme of isolation because it supports the values of their life performance in their learning. Learning benefits the individual adult learner. The adult learner

experiences the efficiency of knowing something and the inefficiency (sometimes translated to cost—time is money) of not knowing that same something (Henschke et al., 2003, p. 10).

Henschke et al. (2003) discussed eight processes of the teaching technologies for the adult learner, in Chapter 5's emerging themes and andragogical foundational works. The researcher presented the eight processes in Chapter 5's emerging themes and andragogical foundational works. The researcher investigated the efficiency of texting-based learning (SMS) through the lens of the eight processes. Henschke et al.'s eight processes, in Chapter 5's emerging themes and andragogical foundational works, are preparing the learners for the program/course, setting the climate−physical and psychological, involving the learners in mutual planning, diagnosing their own learning needs, translating the learning needs into objectives, designing a pattern of learning experiences, helping adult learners manage and carry out their learning plans, and evaluating the extent which the learners have achieved their objectives (pp. 10-13). The researcher investigated the participants' efficiency when the eight processes of the teaching technologies were applied to texting-based learning (SMS).

The first process of adult learning is preparing the learners for the program/course, in Chapter 5's emerging themes and andragogical foundational works. The researcher investigated the participants' efficiency through the lens of the first process, preparing the learners for the program/course. The researcher texted each of the participants initial instructions and abbreviations using the group texting messaging (SMS) feature from her mobile phone. The group texting feature provided efficiency for the research when distributing information common to all participants. However, the

participants' efficiency was hindered when they did not understand the simplified learning contract. The participants requested a 20-minute meeting with the researcher for clarification. After the researcher provided clarification, the participants' efficiency increased as a result of understanding the expectation of building a simplified learning contract. The researcher believes efficiency will increase as adult learners become accustomed to using the simplified learning contract.

The researcher's perception is the participants' efficiency using texting was high. The researcher believes the participants' high texting efficiency is a result of the participants' proficiency with personal texting. The researcher believed the proficiency with personal texting translated to efficiency with academic texting used for texting-based learning.

The second process of adult learning is setting a climate conducive to learning, in Chapter 5's emerging themes and andragogical foundational works. The researcher investigated the participants' efficiency through the lens of the second process of setting the climate for the physical and psychological climates. The researcher began with the physical climate and then investigated the psychological climate.

The process of the physical climate of texting-based learning (SMS) is probably one of the most conducive and efficient to learning because adult learners choose their own physical climate. The texting-based learners are not hindered by an assigned college classroom or seating structure. The texting-based learners choose their most efficient place based on their convenience and learning style. This researcher's learning style is the most efficient when she is surrounded by noise. Others learners may learn the most efficiently when surrounded by silence. This researcher considers texting-based learning

(SMS) highly efficient when viewed through the lens of the process of the physical climate.

The second process of setting the climate includes setting the psychological climate that is conducive to learning, in Chapter 5's emerging themes and andragogical foundational works. A psychological climate for learning is created when the following characteristics are present. The characteristics are referred to as sub-processes. The psychological climate for learning sub processes are a climate of mutual respect, a climate of collaboration, a climate of mutual trust, a climate of support, a climate of openness and authenticity, a climate of pleasure/fun, and a climate of humanness (Henschke et al., 2003, p. 11). The researcher investigated efficiency of texting-based learning (SMS) through the lens of each of the sub-processes.

The researcher investigated the efficiency of texting-based learning through the lens of the psychological climate sub process−a climate of mutual respect. The researcher perceived a climate of mutual respect among the study participants and the researcher during the 20-minute face-to-face meeting. The researcher observed the focus group discussions, which indicated a climate of mutual respect. The researcher perceived that the participants were efficient by not wasting time dealing with feelings of being talked down to, ignored, or regarded as incapable. The researcher observed no indication of any participants feeling disrespected or not valued.

The climate of mutual respect involves the learning facilitator and the adult learner, in Chapter 5's emerging themes and andragogical foundational works. The learning facilitator is not respected by the learner when he or she fails to re-read and reflect on their texting messages. Glancy and Isenberg (2011) stated, "The learner needs

to be able to examine and re-examine the information until it is comprehended completely" (p. 9). Some learner's efficiency may decrease because of the time spent in the reflection process. However, the learning facilitator's efficiency will increase since the facilitator is not assessing the same material multiple times. There is the emotional impact to efficiency when mutual respect is lost. The emotional impact may decrease efficiency when either one or both the participant and the learning facilitator becomes frustrated with doing it over again, and again.

The researcher investigated the efficiency of texting-based learning through the lens of the psychological climate sub process—a climate of collaboration. The researcher believes the sub process of a climate of collaboration was highly efficient because when the participants sought out others for collaboration, it was for a specific reason. One participant sought out the use of another participant's cell phone when her cell phone broke. The participant's action of seeking out collaboration yielded highly efficient results. The participant's involvement in the texting-based learning study would have been inefficient and nonexistent without using a cell phone. Another example of efficiency was the participants collaborated with other participants, teachers, etc. for learning resources and strategies. The researcher observed high efficiency of the participants because the learning resources and strategies and credible judges. The participants selected learning resources and strategies and credible judges that were efficiency because of credibility in the participants' topic areas. The researcher observed the participants using the sub process of a climate of collaboration resulting in efficiency when building the simplified learning contract using texting-based learning (SMS).

The researcher investigated the efficiency of texting-based learning through the lens of the psychological climate sub process—a climate of mutual trust. The researcher observed a climate of mutual trust among the participants. Texting-based learning used self-directedness to build the simplified learning contract. Self-directed learning sets up a climate of mutual trust because of the roles of the teacher and the participant. The teacher's role is one of being a learning facilitator and not an authoritarian figure. The participant's role is one of being a self-directed learner with a learning facilitator that can be trusted. The climate of mutual trust eliminated the time wasted by the learners to become emotional and fret over punishment and rewards from by their teacher. The participants eliminated or minimized their emotional baggage associated with an authoritarian figure. The participants' elimination or minimization of wasted time provided efficiency for texting-based learning.

The researcher investigated the efficiency of texting-based learning through the lens of the psychological climate sub process—a climate of support. The study itself and the researcher's role as learning facilitator provided a climate of support for the participants. The researcher conducted the study to learn about the texting-based learning. Inherent in the study was the researcher's need to accept the participants with an unqualified positive regard. The researcher performed innovative research for the texting-based learning study. The participants' worries, problems, and need for help were important to determining outcomes of the study. An important aspect of them not feeling threatened or judged were the participants' willingness to accept support. The participants not only accepted support, but also sought support from the researcher by asking for the 20-minute meeting. The researcher observed the participants' efficiency

increased when building the learning contract resulted from the 20-minute meeting. The researcher believes a climate of support provided the participants with the comfort and feeling of acceptance required to seek out the researcher for the 20-minute meeting.

The researcher investigated the efficiency of texting-based learning (SMS) through the lens of the psychological climate sub process—a climate of openness and authenticity. The researcher provided a climate of openness and authenticity. The researcher told the participants that what they really think and feel was critical to the study. The researcher based the study's outcomes on openness and authenticity of the participants' experience during the texting-based learning (SMS) study. The researcher encouraged the participants to examine new ideas and behaviors. The participants selected topics and built their simplified learning contract using texting abbreviations that were new ideas and behaviors. The researcher observed the participants' efficiency because they took risks that may be a faster way to learning. The participants were open to texting-based learning (SMS) methods of texting abbreviations that were efficient. The researcher also attributed the participants' efficiency to the elimination of wasted time. The participants did not waste time on feeling defensive or feeling the need to justify their new ideas or risk taking new behaviors. The researcher believes she observed the participants' efficiency because of a climate of openness and authenticity.

The researcher investigated the efficiency of texting-based learning (SMS) through the lens of the psychological climate sub process—a climate of pleasure/fun. The researcher observed the participants with an eagerness and excitement of their self-directedness when building the simplified learning contract. The researcher observed the participants' pleasure of the "aha" or epiphany moment when they learned how to build

their simplified learning contract using texting-based abbreviations. The researcher observed the participants' excitement and eagerness, which encouraged an increase in their speed while using texting-based learning (SMS). The participants' increased speed provided an increase in efficiency.

The researcher investigated the efficiency of texting-based learning through the lens of the psychological climate sub process—a climate of humanness. Henschke et al. (2003) stated, "the more people feel they are being treated as human beings, the more they are likely to learn" (p. 11). Texting-based learning (SMS) appeared less human than face-to-face delivery methods. However, the researcher found humanness in the participants' texting-based learning (SMS) to be innate by their accepting and respecting the nature of self-directed adult learning. The researcher observed the focus group discussion of the pleasure of the participants' human comfort by choosing a location to using texting-based learning (SMS). The researcher believes participants' efficiency may have increased because of human comfort. The participants' efficiency may have increased by eliminating negative feeling of human discomfort. The participants' efficiency may have increased because a human treatment atmosphere existed which communicated their being cared about, accepted, respected, and helped.

The psychological climate sub processes are a set of sub processes that the researcher believes had a synergic effect on the participants' efficiency in texting-based learning (SMS). Although each sub process can stand alone when related to efficiency, the researcher believes each sub process is related and interacts with one or more other sub processes. The sub process of a climate of mutual trust with a climate of support, or the sub process of a climate of support with a climate of openness and authenticity may

provide different efficiency when investigated relative to one another. An example may be that if the teacher does not display trust of a student by valuing the student's experience, then the student, because of not trusting the teacher, may not adopt the behavior modeled by the teacher. This may be inefficient, even though each separate sub process may be efficient. The impact of one sub process may affect the efficiency of another sub process. This may also be true when combining one or more sub processes. The researcher investigated the efficiency of texting-based learning for each sub process. However, the researcher suggests that further studies may research the interrelationship and impact of the psychological climate sub processes—a climate of mutual respect, a climate of collaboration, a climate of mutual trust, a climate of support, a climate of openness and authenticity, a climate of pleasure/fun, and a climate of humanness—on other sub processes of the psychological climate to determine a relative value and ranking of each sub process or combinations of sub processes as compared to the whole of the psychological climate. Overall, the researcher observed or perceived each sub process in the second process of setting the climate—the psychological climate provided efficiency in texting-based learning (SMS) for the participants.

The third process of adult learning is involving the learners in mutual planning, in Chapter 5's emerging themes and andragogical foundational works. The researcher investigated the participants' efficiency through the lens of the third process−involving the learners in mutual planning. Texting-based learning (SMS) is self-directed that used the simplified learning contract as the process plan that involved the learner.

The researcher observed and acted as the learning facilitator for the participants using a set of texting-based learning procedures, a process plan to build their simplified

learning contracts. The participants shared responsibility in the process plan. The researcher observed that the shared responsibility provided the participants with a high level of commitment. The participants' high level of commitment translated into efficiency because the participants did not waste time by complaining about the decisions forced upon them. The researcher observed and perceived the participants' attitude of excitement and achievement of accomplishing a self-directed process that they influenced and developed. The researcher perceived that the participants' success oriented attitude provided a commitment and interest causing them to search for the most efficient ways to carry out their own learning.

The fourth process of adult learning is diagnosing their learning needs, in Chapter 5's, emerging themes and andragogy foundational works. The researcher investigated the participants' efficiency through the lens of the fourth process−diagnosing their own learning needs. The participants engaged in two new body-of-technology parts, the academic texting part, and a new body of technology, the self-directed learning process part. The participants entered into the simplified learning contract with an awareness of their learning needs when they began the process design and a topic content area for learning. The researcher observed the participant actively engaged in the process design of self-directness. The participants were efficient by engaging in a process plan. The researcher determined that without a process plan the learning would be random and inefficient.

The fifth process of adult learning is translating the learning needs into objectives, in Chapter 5's emerging themes and andragogical foundational works. The researcher investigated the participants' efficiency through the lens of the fifth process—translating

their learning needs into objectives. The researcher observed the participants translating their learning needs into objectives. The participants selected and developed texting-based simplified learning contract answers that identified objectives and behaviors they needed to move toward growth. The participants' efficiency increased when the participants' defined criteria for the steps necessary in formulating the objectives. This process is not only efficient for the fifth process, translating the learning needs into learning objectives, but also sets the stage for efficiency in the sixth process−designing a pattern of learning experiences, and seventh process−helping adult learners manage and carry out their learning plans.

The sixth process of adult learning is designing a pattern of learning experiences, in Chapter 5's emerging themes and andragogical foundational works. The researcher investigated the participants' efficiency through the lens of the sixth process−designing a pattern of learning experiences. The researcher observed the participants identifying their learning resources and strategies for utilizing their learning resources. The researcher perceived the participants' choices of learning resources and strategies were efficient for accomplishing their learning objectives. The learning resources and strategies were efficient because the participants chose resources that minimized the time the participant spent accessing the correct information. The participants were efficient by using learning resources and strategies that provided maximum value by being credible resources. Therefore, the participants minimized false starts and wrong directions. The researcher believes the participants approach to learning resources and strategies was efficient.

The seventh process of adult learning is helping adult learners manage and carry out their learning plans, in Chapter 5's emerging themes and andragogical foundational

works. The researcher investigated the participants' efficiency through the lens of the seventh process− helping adult learners manage and carry out their learning plans. The participants carried out learning plans and built their simplified learning contract. Henschke et al. (2003) stated, "Learning contracts are the most effective way to help learners structure and conduct their learning" (p.13). The researcher observed the participant's efficiency when using the structure of the simplified learning contract. The individualized simplified learning contract provided the structure and individualized learning desired and required by each participant in an efficient manner.

The eighth process of adult learning is evaluating the extent which the learners have achieved their objectives, in Chapter 5's emerging themes and andragogical foundational works. The researcher investigated the participants' efficiency through the lens of the eighth process—evaluating the extent which the learners have achieved their objectives. The participants selected credible judges to evaluate, along with the participant, the learning outcomes. The researcher believes the combined use of the credible judges and the participant providing a subjective evaluation of the learning outcome is the most efficient way to determine the participants' achievement of their objectives. Traditional objective measures such as testing may be fast in the short term but is not efficient in determining the how differently the participant performs in life.

All of the processes of the adult learner used by the participants were efficient. Each process provided the participants with efficiency by reducing or eliminating wasted time on learning information the learner did not need, want, or already knew. The processes provided a plan that focused the participants learning by providing a set of

procedures that guided the participants in accomplishing their learning. The researcher observed efficiency when the participants used of the process plan to guide their learning.

Taylor (1986) described four phases and four phase transition points of self-directed learning in higher education, in Chapter 5's emerging themes and andragogical foundational works. The researcher listed the four phases and four phase transition points in Chapter 5's, emerging themes and andragogy foundational works. The researcher investigated efficiency of the participants' movement through the phases and phase transition points during the self-directed building of the simplified learning contract using texting-based learning (SMS).

Taylor's (1986) phases and phase transition points are disconfirmation (phase transition), disorientation (phase), naming the problem (phase transition), exploration (phase), reflection (phase transition), reorientation (phase), sharing the discovery (phase transition), and equilibrium (phase) (p. 59). The researcher investigated efficiency in each phase and phase transition of self-directed learning for texting-based learning (SMS). The researcher realized that the participants have to move through all of the phases and phase transition points in order to accomplish their self-directed learning. Efficiency could not be gained by eliminating a phase or phase transition point.

The researcher provided for the reader the following descriptive example of an outcome when a phase is eliminated. For example, when making a birthday cake all steps (phases) in the process must be completed. The desired outcome cannot be accomplished by eliminating the step (process) that calls for baking the cake. Even though the elimination of the step (phase) is efficient, the outcome of the birthday cake

would be raw cake batter with icing on top. Efficiency could not be increased by eliminating any of the phases or phase transition points.

To move forward, participants successfully completed a phase or phase transition point prior to moving to the next phase or phase transition point. The researcher investigated efficiency in phase and phase transition of the texting-based learning (SMS) study. The researcher observed the efficiency in the following ways: (a) the participants' quickness of successfully moving through each phase and phase transition points, (b) eliminating back tracking because the movement to the next phase or phase transition point was incomplete prior to attempting to move to the next phase or phase transition point.

The researcher investigated the efficiency of the disconfirmation phase transition point. The participants entered this phase transition point from the equilibrium phase with personal texting experience and a prior knowledge from the School of Business and Entrepreneurship of common terms used in both the simplified learning contract and the business discipline such as objectives, resources, and strategies. However, none of the participants had experience with the simplified learning contract. The participants' past personal texting experience helped set their expectation for participation in the texting-based study. The researcher observed the participants efficiently moved through and completed the disconfirmation phase transition point.

The researcher investigated the efficiency of the disorientation phase. The researcher observed that the participants efficiently moved through and completed this phase. The participants did not waste time in the disorientation phase. Instead of

dwelling on their disorientation and confusion, the participants moved immediately to naming the problem.

During the disorientation phase, the researcher received a texting message from two study participants requesting to withdraw from the study. The researcher assumed the two participants associated the source of their confusion with the researcher. Taylor (1986) identified this behavior as a being associated with the disorientation phase. The researcher replied with a texting message simply thanking the two participants for their participation in the study. However, surprising to the researcher, the two participants continued in their participation with others in the study as if they had never sent a texting message to the researcher saying they were withdrawing. The researcher allowed the two to continue participating for the entire study.

The researcher investigated the efficiency of the naming the problem phase transition point. The participants named the problem of not understanding how to create their simplified learning contract. The participants then moved immediately into the exploration phase by requesting a face-to-face meeting to discuss the problem they had just named. The researcher observed the participants' behavior as being consistent with adult learning behavior. Adult learners seek help early during the learning process when they determine they need help. The participants did not waste time in this stage. The researcher observed high efficiency by the participants in the naming the problem phase transition point.

The researcher investigated the efficiency of the exploration phase. The participants requested a face-to-face meeting with the researcher to discuss the problems they had named, how to create a simplified learning contract. During the 20-minute

meeting, the researcher provided the two examples of a simplified learning contract. The participants immediately understood the two examples of creating a texting-based simplified learning contract from the example. The participants moved very efficiently through the exploration phase. The participants understood the examples immediately. The researcher heard the participants commenting how easy it would be for them to create their simplified learning contract using texting-based learning (SMS). The participants moved to the next phase transition point, reflection.

The researcher investigated the efficiency of the reflection phase transition point. The researcher observed a very quick move through the reflection phase. The reflection phase transition point was a private reflective review conducted by the each participant. The researcher perceived that the participants reflected on the examples provided during the 20-minute meeting, texting messages, and other information provided by the researcher during the study. The participants may have also reflected on input from other participants in the study. The participants moved quickly through the reflective phase transition point. The researcher believed the participants gained major insight from their private reflective review. The researcher believed the participants were highly efficient in their reflective review based on their fast completion of the reflective phase transition point.

The researcher recognized the reflective review for each learner was private and personal. Each of the adult learners' efficiency varied based on the time each individual learner needed in order to gain a major insight about his or her topic. The researcher recognized this phase should not be hurried for the sake of efficiency. If the adult learner does not conduct a thorough reflective review, then other phases and phase transition

points may be impacted. The adult learner may need to return to the reflection phase transition point for further reflection prior to moving again to the reorientation phase. If this occurred, the adult learner would likely find the reflection phase transition point inefficient, and other phases and phase transition points affected.

The researcher investigated the efficiency of the reorientation phase. The researcher believes the participants gained major insight from the private reflection transition point using information from the 20-minute meeting, past experience, and other study information provided by the researcher. In the reorientation phase, the participants used the major insight to develop an approach to creating their simplified learning contract using texting-based learning.

The efficiency of the reorientation phase varied. The efficiency was impacted by the time needed depending on the individuals and their topics. The prior reflection phase transition point may also have affected the efficiency. If the private reflective review is cut short or the participant does not fully perform the reflection in enough depth, then efficiency in the reorientation phase may be impacted.

The researcher investigated the efficiency of the sharing the discovery phase transition point. The researcher observed the participants shared their discovery by texting when testing out their simplified learning contract with the researcher and their credible judges. However, the researcher believes the participants may have also shared their discovery with other participants, other university students or faculty, and possibly friends. The researcher observed that the participants' moved through the sharing of the discovery phase transition point fast and efficiently. However, the researcher observed that when the participants moved through the sharing the discovery phase transition

point, efficiency varied. The researcher recognized efficiency was based on the individual adult learner, his or her topic, and the number of people the participant involved in sharing the discovery. The participants in the study moved efficiently through the sharing the discovery phase transition point when they tested out their new understanding with others. The participants completed sharing the discovery and moved into the equilibrium phase.

The researcher investigated the efficiency of the equilibrium phase. The participants applied their new approach to texting-based learning when they elaborated and refined their simplified learning contract. The researcher observed some participants who elaborated and refined their learning resources and strategies, evidence of learning, or credible judges while other participants refined their topics by narrowing the scope of their topic.

The researcher recognized that elaboration of the participants' new perspective was not necessarily more words to type into the texting message, but rather carefully chosen words that conveyed the elaborated meaning. This new approach increased the participants' efficiency when typing a texting message.

The new approach also increased the efficiency of other persons such as learning resources and credible judges with whom the participants communicated during texting-based learning. When the participant used a carefully chosen word to convey their elaborated meaning, then the efficiency increased for the person that received the texting message. When the researcher received a texting message where the participant carefully selected the word(s), then she could respond quicker. The researcher's efficiency

increased. Therefore, the participant's time waiting for a reply from the researcher was reduced. The researcher's faster reply allowed the participant's efficiency to increase.

The researcher observed the participants' efficiency increased with completion of the equilibrium phase. The researcher observed the participants' new approach to learning eliminated wasted time in learning and communicating with others. The participants moved through the equilibrium phase and their efficiency increased along with others who were involved with the participants' self-directed learning using the texting-based learning (SMS). The researcher found the equilibrium phase to be highly efficient because both the participants and others had increased efficiency.

After the equilibrium phase, the self-directed learner moves again to the disconfirmation phase transition point. The participants completed the self-directed process cycle efficiently. The participants were ready to begin a new self-directed learning adventure with a new topic using their experience gained as they emerged with knowledge from the completed topic's equilibrium phase.

The emerging themes that emerged during the focus groups and from the analysis of the texting messages were process, efficiency, and the impact of texting on writing skills. The first theme, process, resulted from the analysis of the coded written transcript of the focus group sessions. The second theme, efficiency, also resulted from the analysis of the coded written transcripts. The third theme, the impact on writing skills, emerged from the researcher's interpretation and analysis of the two focus groups' nonverbal communications. The transcripts contained the written concerns as stated by the participants. However, the researcher observed a passionate demonstration of concern with the nonverbal facial expressions, vocal inflections, and intensity of vocal

expressions from the participants of the focus groups. Therefore, the researcher included the concern about the impact of texting on writing skills as the third theme.

Evidence of Efficiency

Evidence from each of the individual four categories−focus groups, texting-messages, researcher's participation and literature review (support)−determined how efficiently andragogical principles were supported by texting-based learning. The individual evidence of efficiency of each of the three categories of focus groups, texting messages, and the researcher's participation were supported with evidence of efficiency from the fourth category, literature review (support). The researcher in Chapter 1 discussed the support of andragogical principles by being self-directed when using the simplified learning contract experience. Therefore, each of the four individual categories provided individual evidence of efficiency while supporting andragogical principles through texting-based learning (SMS).

As defined in Chapter 1, the researcher used the total number of individual categories to measure the extent of the efficiency for texting-based learning (SMS). Directly measuring efficiency for each texting message was not viable for this study because of the vast number of independent variables. Table 9 discusses the variability of equipment and service capabilities and limitations. Chapter 2 discusses research on the mental aspect of word substitution. However, efficiency can be determined qualitatively for each of the four individual categories of the focus groups, texting messages, researcher's participation, and literature review (support).

The researcher coded and analyzed the data separately for each of the four categories (focus groups, texting messages, researcher's participation, and literature

review (support)) for efficiency, process, that led to emerging themes. The conclusions for efficiency is best displayed using representative samples of evidence that describes the overall conclusion based on each category separately.

Efficiency evidence from a focus group summary. The focus group summary statement supports the evidence of efficiency. The summary as stated by the focus group follows:

> Texting is faster, I mean if I was taking a texting class or a class that was through email or on the Internet, like, I could be walking out of my 10:15 class and text on my way to the next class without having to go sit down on a computer and or wait for my email, you know, to load on my phone or anything like that. I think it would be a lot easier [using texting]. I think once we figured out what we had to do it was efficient but at the beginning we didn't know, like, I didn't understand exactly what we were supposed to do. (Focus Group #2)

The focus group provided evidence for the focus group category, efficiency rating. The next category is for the texting messages.

Efficiency evidence from the texting messages. The texting messages are the second category that the researcher used to determine the evidence of efficiency. The researcher compared the texting messages from a study participant to the researcher's translation of the texting messages into formal writing and examined the efficiency in Table 15.

Table 15

Participant's Texting Messages Efficiency

Texting Message (by participant)	Formal Writing (by researcher)	Texting = efficiency
KAQ1-racing a 5k	The answer to question one for my simplified learning contract is that I will gain knowledge about racing in a 5 kilometer race.	**Yes**
KAQ2-Internet and former coach	The answer to question number two for my simplified learning contract is that I will gain knowledge by using the Internet and ask my coach about racing.	**Yes**
KAQ3-about 10 min	The answer to question number three for my simplified learning contract is that I will gain knowledge is about ten minutes.	**Yes**
KAQ4-ehow.com google.com runnersworld.com. …cross country coach…	The answer to question number four for my simplified learning contract is that I will gain knowledge by using the websites ehow.com, google.com and runnersworld.com. I will ask my cross-country coach for advice.	**Yes**
KAQ5-teacher to verify	The answer to question number five for my simplified learning contract is that I will gain knowledge and that the teacher is to verify the information.	**Yes**

Table 16 (continued)

Participant's Texting Messages Efficiency

Texting Message (by participant)	Formal Writing (by researcher)	Texting = efficiency
KAQ5-teacher to verify	The answer to question number five for my simplified learning contract is that I will gain knowledge and that the teacher is to verify the information.	**Yes**
UAQ1-racing in a 5ka [omit a]	The answer to question number one for my simplified learning contract is that I will gain understanding of what I need to do to run in a five kilometer race.	**Yes**
UAQ2-Use information gained in K and apply it to my purpose.	The answer to question number two for my simplified learning contract is that I will gain understanding when using the knowledge I gained from accessing the Internet and speaking to my coach.	**Yes**
UAQ4-raced a 5k. Feedback from my coach, improvement in times	The answer to question number four for my simplified learning contract is that I will gain understanding when I receive feedback from my coach and when my racing time improves.	**Yes**

Efficiency evidence from the literature review. In Chapter 2, the researcher wrote about the efficiency of texting or short message services. Horstmanshof (2004) found texting efficient and convenient for both the professors and the students. Several authors in the literature review verified the efficiency and convenience of using texting. The evidence of the literature review category supports the efficiency of texting for the efficiency.

Efficiency evidence from the researcher's participation. The researcher's participation in the study provided an experience comparable to a professor conducting a texting-based learning course. The insight from the researcher provided results consistent with results of the other categories. The researcher found the texting-based study efficient. Therefore, the category, researcher's participation in texting, was included in the efficiency.

Figure 3 provides for the measurement of the extent of efficiency for texting-based learning (SMS) when all categories-focus groups, texting messages, researcher's participation, and literature review (support) are included in the analysis. The researcher developed the extent of efficiency scale to determine a qualitative verification for how efficient is texting-based learning (SMS). The researcher describes below the process used to determine the extent of efficiency rating for texting-based learning (SMS) based on the rating scale.

The researcher found each of the four categories to be individually efficient, independent of the other three categories. The independent efficiency for the focus groups category came from the qualitative analysis finding of the focus group transcripts. The independent efficiency for the texting messages category came from the researcher's

comparison of the participant's texting messages, using abbreviations to the researcher's translations of the texting messages into formal writing. The independent efficiency for the researcher's participation category came from the qualitative analysis of the researcher's perceptions from participating as the learning facilitator and focus group facilitator. The independent efficiency of the literature review (support) category came from the literature on efficiency of texting, cell phone and smartphone equipment and services, and use of texting in high education. The literature review (support) category provided support to the other three categories- focus groups, texting messages, and the researcher's participation which were each individually efficient.

The researcher used the rating scale of 0-4 (0 = inefficient, 1 = modestly efficient, 2 = moderately efficient, 3 = very efficient, 4 = highly efficient) to measure the extent of efficiency for the texting-based learning (SMS). The researcher determined the extent of efficiency rating for texting-based learning (SMS) by adding the number of categories together to obtain a total number from the rating scale and the efficiency. If none of the categories were found to be efficient then the rating for the extent of efficiency for texting-based learning (SMS) would have been zero or inefficient. If only one of the categories, regardless of which category, was found to be efficient, then the rating of the extent of efficiency for texting-based learning (SMS) would have been 1 or modestly efficient. If any two of the categories were found to be efficient, then the rating of the extent of efficiency for texting-based learning (SMS) would have been 2 or moderately efficient. If any three of the categories were found to be efficient, then the rating of the extent of efficiency for texting-based learning (SMS) would have been 3 or very efficient.

If all four of the categories were found to be efficient, then the rating of the extent of the efficiency for texting-based learning (SMS) would be 4 or highly efficient.

The researcher found that alone and by itself, each one of the four categories was independently efficient. The extent of efficiency rating for texting-based learning (SMS) when all four of the categories were added together was a rating of 4 or highly efficient. Therefore, the researcher used the measurement of the extent of efficiency and found texting-based learning (SMS) to be highly efficient.

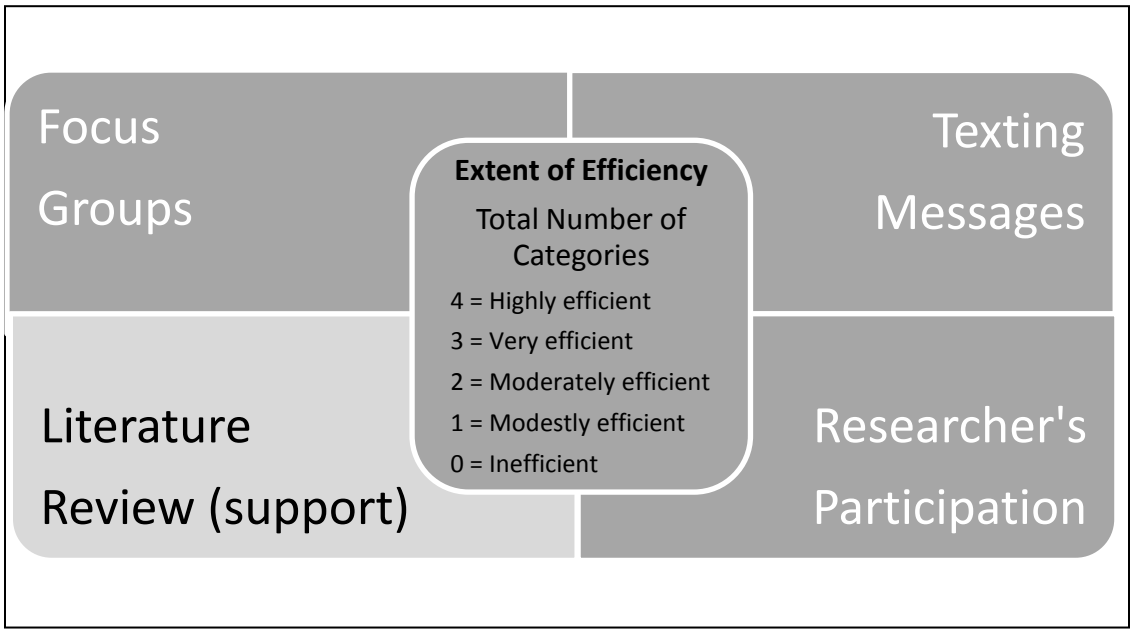


Figure 3. Extent of efficiency of texting-based learning (SMS)*

**Note.* Provides for the measurement of the extent of efficiency for texting-based learning (SMS). The categories are the focus groups, texting messages, researcher's participation, and literature review (support). The extent of efficiency is found by adding together the number of categories that were each individually efficient to obtain the rating of the total number of categories found to be efficient. If the total number of categories for texting-based learning (SMS) is four, then the rating would be 4 or highly efficient when measured using the extent of efficiency. The same rating process would yield a total of 3, 2, 1, or 0, depending on how many of the categories were found to be individually efficient.

Unexpected Results

An unexpected finding resulted from the focus group discussions. All of students agreed that abbreviation and short cuts used when creating texting messages (SMS) affected the efficiency of their writing skills. One participant gave an example of when creating a texting message (SMS) she used a lower case i when referring to herself. When performing more formal writing for class, she had to "think a minute" to remember that writing for a course required a capital letter I. All of the other participants in the study agreed that the short cuts and lower cases characters and sentences caused a slight decrease in efficiency when creating formal papers for university courses because of rethinking the formal rhetoric.

Summary of Efficiency

Many important results came from the research that may influence higher education offerings. As with the online learning or face-to-face instruction, each has a place when providing learning to the higher education student. Texting-based learning (SMS) has many places because of the efficiency, convenience, and like-ability. A real need served by texting-based learning is providing learning to the underserved college or university student, whether remotely located, or caring for children, elderly parents, or an incapacitated or handicapped person. Texting-based learning (SMS) provides access to a higher education that might not be otherwise available.

Summary of Efficiency for the Study

To summarize, texting-messaging (SMS) using andragogical principles is highly efficient. The researcher based the highly efficient rating on the evidence represented from all categories. The categories were focus groups, texting messages, researcher's

participation, and supported by the literature review of texting-based (SMS) learning in the study.

Future Studies

The researcher suggests that further studies may involve more about the interactions and effects on learning when various psychological climates sub processes are combined. Future studies may research the interrelationship and impact of Knowles' (1996) and Henschke et al.'s (2003) psychological climate sub processes−a climate of mutual respect, a climate of collaboration, a climate of mutual trust, a climate of support, a climate of openness and authenticity, a climate of pleasure/fun, and a climate of humanness−on other sub processes of the psychological climate to determine a relative value and ranking of each sub process or combinations of sub processes as compared to the whole of the psychological climate. The studies may address any subject matter in the context of adult learning whether learning in higher education, corporate training, or another academic setting or technology.

Future studies could include the effect of texting-based learning (SMS) on English literacy for students with English as their primary language. A future study could be research on evolving language using lower case I in formal writing. A future study could be a comparison of the impact of academic texting-based learning (SMS) with the impact of personal texting on formal writings in higher education settings.

At the beginning of the study, all participants sent text messages daily for personal use. However, none of the participants had heard of a learning contract, much less written a learning contract. Therefore, the learning curve for participants of this study was the learning contract and not the texting. Future studies could determine if

participants who had never sent a text message but had written learning contracts would experience a faster learning process. Perhaps the most discoveries could result from studying participants with neither texting nor learning contract background.

Implications

The implications of the study provide colleges and universities with a new vehicle to reach the underserved or higher education student preferring the convenience of texting-based learning while providing and effective way to facilitate the learning of adults. As with any new technology or methodology, user adoption is the key ingredient to success, especially user adoption on a large scale. This innovative research is the foundational building block for the beginnings of user adoption. As with adult Internet learning, the expectation is that user adoption will come faster for some colleges and universities than others. Factors accounting for user adoption are texting-based learning course offerings, students enrolling in those courses, the student's age, the innovations of mobile phone technology, and cost effectiveness of the mobile phones and service.

The researcher's recommendations for future texting-based learning (SMS) courses concur with those of the study participants and would include an initial meeting with class members to explain the learning contract experience process. As the learning contract becomes more widely known in higher education, the initial meeting becomes less important. Another recommendation is to provide a handout with the abbreviations before class begins instead of sending them in a texting message (SMS). The last recommendation is to conduct the course over the entire 16-week duration. Especially in the beginning, numerous texting messages are required over too short a timeframe when conducting the course in a speeded-up condensed summer session.

Summary

The researcher believes this study is a step in providing a new way of learning for students in higher education based on texting and m-learning. A mobile phone allows the sending and receiving of emails. However, emails are often cumbersome to create using the mobile keys because of the length and more formal writing structure of an email. The short messages used in texting-based learning and especially with the inclusion of mobile message service (MMS) for pictures provides a highly efficient manner in which to learn. This study is the beginning of marrying the texting abbreviations with mobile technology application and easy Internet access.

This study provides advancement in learning for higher education not seen since computers made online learning achievable. This study provides andragogical advancement with the introduction of texting-based learning methodology and the texting-based delivery mode. Isenberg's (2007) pivotal study applying andragogical principles to online learning significantly influenced higher education and adult learning. This study has the potential to significantly better the lives of people by providing access to higher education courses for underserved students and those students desiring convenience and efficiency. Texting-based (SMS) learning is a turning point for andragogy, higher education, and technology.

According to Carlson (1989), "Knowles redefined andragogy as 'an emerging technology for adult learning'" (p. 8). Knowles, a man of great vision, could not have known how accurate his statement would become. Knowles' (as cited in Carlson, 1989, p. 8) definition of andragogical technology is different from the definition of the digital technology of today. However, andragogical technology implications are appropriate for

texting-based technology. Knowles (1970) identified implications appropriate for all andragogical learning including, for the learner, for the timing of learning, the grouping of learners and for the educator, the adult educator orientation, the curriculum organization, and the design of the learning experience (pp. 47-49).

Knowles (1980) discussed new delivery systems saying

> a concern for developing new ways to deliver educational services to individuals so that they can go on learning throughout their lives at their convenience in terms of time and place . . . more than just a random series of innovative experiments: they point to a new direction in our thinking about how and where learning takes place. The modern task of education, therefore, becomes one of finding new ways to link learners with learning resources. (pp. 19-20)

Texting-based (SMS) learning meets Knowles' call for the modern educator by finding a new way to link learners and resources. This study has answered the call of the modern educator. Texting-based (SMS) learning is highly efficient and convenient in terms of time and place and applies andragogical principles to meet adult learning needs. This researcher hopes this innovative research in texting-based learning (SMS) will gain adoption in the higher education community and become an addition to the history of andragogy.

Appendix A

Institutional Review Board Disposition Report

10-86

IRB Project Number

Lindenwood University

Institutional Review Board

Disposition Report

To: Janet Talbott

Cc: John Henschke

The IRB has reviewed your expedited application for research and has no concerns regarding protection of human subjects. The application is approved.

Jeanie Thies, Ph.D. 6/4/10

Institutional Review Board Chair Date

Appendix B

Participation Signup Form

Participation Signup Form

Informed Consent for Participation in Research Activities

"Applying Andragogical Principles to Texting-Based Learning in Higher Education"

Principal Investigator Janet K. Talbott

Telephone: XXX-XXX-XXX E-mail: jkt301@lionmail.lindenwood.edu

Participant_____

Contact info_____

. You are invited to participate in a research study conducted by Janet K. Talbott under the guidance of John A. Henschke, Ed.D. The purpose of this research is to study the texting-based learning in students at Lindenwood University.

2. a) Your participation will involve

- Developing and texting information using a simplified learning contract environment to help determine if the texting-based learning model can be used for college and university students.

- Selecting a topic and developing a simplified learning contract using daily texting to communicate with the researcher. After developing the learning contract and receiving approval from the researcher, you will accomplish the learning needed to support the evidence of learning that you defined in the simplified learning contract. You will then submit the evidence of learning by texting for the researcher's approval. After completion of the study, you will participate in a focus group session to discuss your experience and opinions of the texting-based learning experience. Later, you may be asked for clarification of comments made during the focus group session, if needed.

- The time frame of your participation will be from June 14 to July 9, 2010. However, you may be contacted by the research at a later time if clarification is needed.

- Texting may be conducted from any location. The focus group session will be held on campus at Lindenwood University.

b) The amount of time involved in your participation will be daily texting to develop, complete, and accomplish learning. Time varies with each student; however, an estimate is a minimum of ten to fifteen minutes daily for the study. The focus group session is estimated to take approximately thirty to forty minutes. There is no remuneration for this study.

Approximately ten students will be involved in this research.

3. There may be certain risks or costs associated with this research. They may include the costs, charges or fees associated with equipment, services, and usage for texting or phoning charged by your mobile service provider. There is a high risk of dangerous accidents caused when texting and phoning while driving or operating machinery. By signing this Consent for Participation, I agree to not perform any texting or phone conversations or any material related to this study while driving or operating machinery.
4. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about texting-based learning and may help society.
5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw from the study. Alternatives for earning course credit are available from your course instructor.
6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from

this study and the information collected will remain in the possession of the investigator in a safe location.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Janet K. Talbott or the Supervising Faculty, Dr. John A. Henschke. You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting the Vice President for Academic Affairs at XXX-XXX-XXXX.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

[x] **As a study participant, I give my permission to be audio taped.**

_____		_____
Participant's Signature	Date	Participant's Printed Name
_____		_____
Signature of Principal Investigator	Date	Investigator Printed Name

Appendix C

No Texting or Phoning While Driving Affidavit

No Texting Signup Form

No Texting or Phoning While Driving or Operating Machinery Student Affidavit

I _____(student's printed name and student number) , as a participant in the "Applying Andragogical Principles of Texting-Based Learning in Higher Education" study swear that I will not text any materials or have any phone conversations related to or associated with this study while driving or operating machinery because of the high rate of potential accidents associated with texting, phoning and driving or operating machinery.

I further hold harmless and blameless and release from any liability the researcher, Lindenwood University and their faculty, staff, and administration for any activities that I perform in connection with this Lindenwood University study.

_____

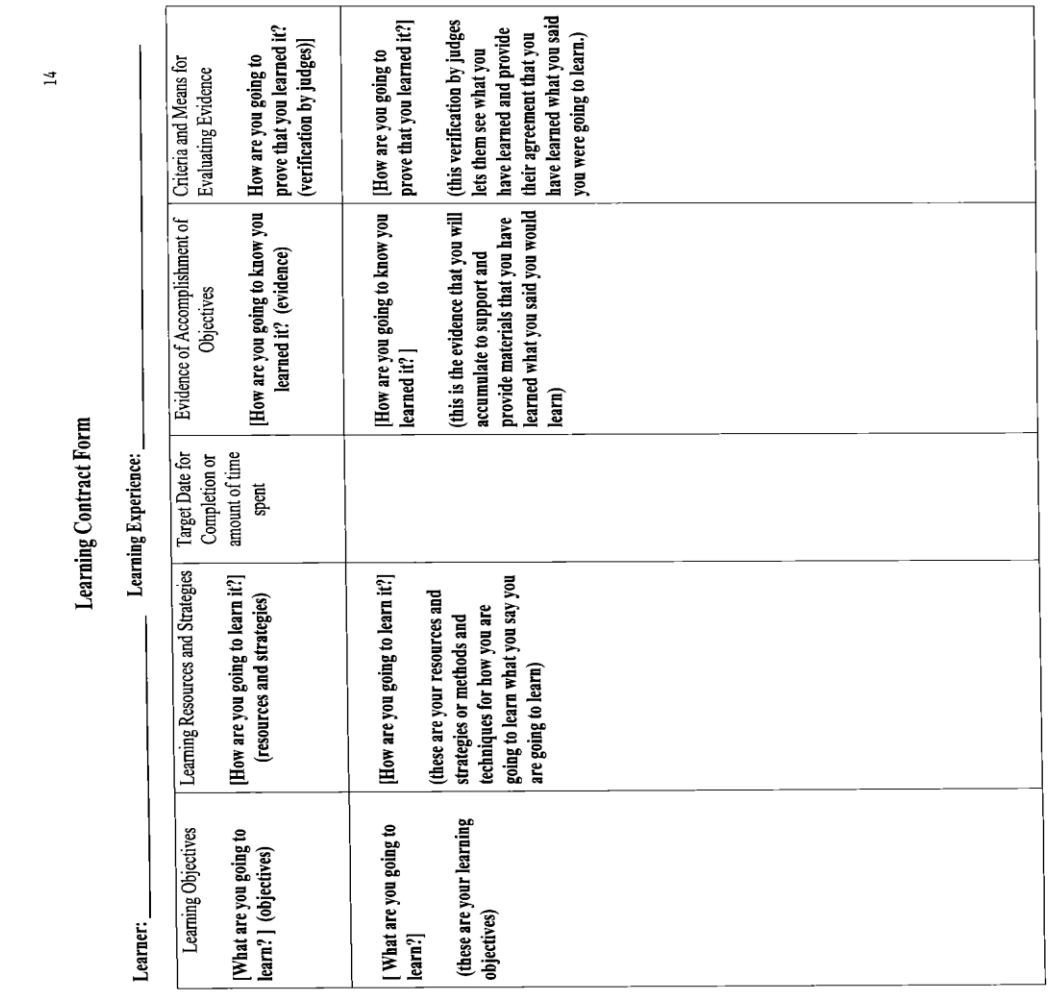
Students Name

_____

Students Signature and date

Appendix D

Learning Contract Form



14

Learning Contract Form

Learner: _____ **Learning Experience:** _____

Learning Objectives **[What are you going to learn?] (objectives)**	Learning Resources and Strategies **[How are you going to learn it?] (resources and strategies)**	Target Date for Completion or amount of time spent	Evidence of Accomplishment of Objectives **[How are you going to know you learned it? (evidence)**	Criteria and Means for Evaluating Evidence **How are you going to prove that you learned it? (verification by judges)]**
[What are you going to learn?] **(these are your learning objectives)**	**[How are you going to learn it?]** **(these are your resources and strategies or methods and techniques for how you are going to learn what you say you are going to learn)**		**[How are you going to know you learned it?]** **(this is the evidence that you will accumulate to support and provide materials that you have learned what you said you would learn)**	**[How are you going to prove that you learned it?]** **(this verification by judges lets them see what you have learned and provide their agreement that you have learned what you said you were going to learn.)**

Knowles, M.S. (1986)

Appendix E

KUSAVI for Learning Objectives Worksheet

KUSAVI (Knowledge, Understanding, Skill, Attitudes, Values, Interest)

For Learning Objectives

2

Learning Contract Column #1
Learning Objective

Worksheet for Stating Learning Objectives*

One of the outcomes of this program I would like to see is:

Behavioral Aspect	Content Areas
To develop KNOWLEDGE about … **Knowledge-** Generalizations about experience; Internalization of information	
To develop UNDERSTANDING of … **Understanding-** Application of information and generalizations	
To develop SKILL in … **Skills-** Incorporation of new ways of performing through practice	
To develop ATTITUDES toward … **Attitudes-** Adoption of new feelings through experiencing greater success with them than old feelings	
To develop VALUES of … **Values-** The adoption and priority arrangements of beliefs	
To develop INTEREST in … **Interest-** Satisfying exposure to new activities/experiences	

* Knowles, M. S. (1980). The modern practice of adult education. (2nd ed.). New York: Cambridge Book Co.

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Vitae

Janet K. Talbott, as a management consultant ,executive, business leader, and engineering manager, worked for Oracle, Accenture, Boeing (formerly McDonnell Douglas), General Motors, AT&T, A.T. Kearney, Electronic Data Systems (EDS), Metro St. Louis Transit, and Missouri University of Science and Technology. Talbott taught undergraduate courses in the College of Engineering for Southern Illinois University at Carbondale, Illinois, and graduate Master of Business Administration courses at Lindenwood University in St. Charles, Missouri.

Talbott served eight years on the Accreditation Board Engineering and Technology (ABET) as a Commissioner and Evaluator of undergraduate programs in higher education for such institutions as Princeton, University of Dayton, Purdue, and SUNY, and others. Talbott received the United States Congressional appointment to serve on the National Research Council and as a board assessor of the National Institute for Standards and Technology (NIST). Ms. Talbott served on the National Science Foundation (NSF) as an award evaluator for the Logistics Engineering program at Georgia Tech. Ms. Talbott received awards for innovative work in research with the U. S. Army and U.S. Air Force. At the request of President George W. Bush, Ms. Talbott served as a small business presidential advisor. Ms. Talbott served under the direction of Vice President Al Gore providing technical Internet educational materials published by the U.S. Printing Office. Ms. Talbott earned a Bachelor of Science in Industrial Technology from Southern Illinois University, and dual Masters in both Business Administration, and Management, and Doctorate of Management work from Webster University.