Wireless and Mobile Technologies, 2016, Vol. 3, No. 1, 1-6
Available online at http://pubs.sciepub.com/wmt/3/1/1

DOI:10.12691/wmt-3-1-1

Influence of Age and Training on Planning Instruction Using Mobiles Phones by Pre-service Social Studies Teachers

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Abstract Effective planning of instruction enables the teacher to set out different strategies that can make both teachers and students achieve stated objectives. Teachers are expected to put a lot of effort into planning their instruction, and with the emergence of different technologies (hardware/software), planning can be done with considerable ease. These technologies such as computers, mobile phones, tablets, Personal Digital Assistants (PDAs) and so on create a platform for teachers to explore, gather facts, sort, edit and re-arrange information about a topic before teaching it. Therefore, in this study, pre-service social studies teachers were trained on how to plan instruction using the Mobiles, this was done using a Mobile Learning Lesson Plan (MLLP) template, the influence of age on how pre-service teachers plan instructions using mobiles was also examined. The template is a blueprint of what is to be taught using the mobile phone, it enables teachers to organise, plan, design, and evaluate the lesson effectively. The results show that after the training, the pre-service social studies teachers were able to acquire requisite skills to plan instruction using mobile phones. Also, age does not significantly influence on the ability of pre-service social studies teachers to plan instruction using mobiles.

Keywords: *planning, mobile learning, Pre-service social studies teachers, age*

Cite This Article: Gloria Adedoja, and Abimbade Oluwadara, "Influence of Age and Training on Planning Instruction Using Mobiles Phones by Pre-service Social Studies Teachers." *Wireless and Mobile Technologies*, vol. 3, no. 1 (2016): 1-6. doi: 10.12691/wmt-3-1-1.

1. Introduction

Instruction can be defined as specified techniques or means of controlling or manipulating sequence of events to produce a change of behaviour through learning and can only happen if the outcomes of learning are specified in measurable and observable terms [1]. The process of instructing involves determination of desired learner's behaviours; the analyzing, relating, ordering or arranging of learner activities that will develop the desired level of performance and the creation of responsive environments (human and non-human mediation) that motivate and induce the learner to interact with the structured environment, and provide feedback to the learner and teachers for the guidance of learner activity.

Planning is an integral aspect in the process of instruction. The method of executing lessons and assessment must have been determined at the planning stage. There must be adequate planning before the instruction when the instructor critically analyses the learners, and the *media*, using appropriate methods in their interactions to convey the content of instruction in order to realize the desire outcome. The outcome is the desired new knowledge, skills, attitudes and changed behaviour. Success in interactions between the components is largely determined by effective planning and preparing for the lessons. According to Pouliot [15], Planning helps teachers in five basic ways:

1. By helping them feel comfortable about instruction and giving them a sense of understanding and ownership over the teaching they plan.
2. By establishing a sense of purpose and subject matter focus.
3. By affording the chance to review and becoming familiar with the subject matter before actually beginning to teach it.
4. By ensuring that there are ways in place to get instruction started, activities to pursue, and a framework to follow during the actual delivery of instruction.
5. By linking daily lessons to broader integrative goals, units, or curriculum topics.

The processes of planning and providing instruction are important activities for teachers and planning to use technology for instruction demands more effort from teachers because technology is already an integral part of the curricula at all levels of education. It behoves the school authorities to give teachers the opportunities to become familiar with a range of technologies and to develop the required skills which would support their learning. Technology brings out systems approach to instruction and helps to check the end product – by checking on achievement, to see if the objectives earlier stated had been achieved or not.

In essence, technology gives opportunity for realistic learning activities that could make the teaching and learning process meaningful. An increasing number of technologies and web applications has been developed over the years, some of which have been used in teaching and learning: Interactive Whiteboard, Multimedia projector, Personal Digital Assistant (PDAs), Tablets, mobile phones, laptop, Ipod, Mp3 and others. Out of all these technologies, mobile phone technology stands out not only because of the kind of connections it offers but also the wide opportunities it has in supporting and extending education in ways not possible before.

Technology plays an important role in the teaching and learning of Social Studies. The subject is concerned with the interactions between people and their social environment. These include how man and woman interact with their fellows in society, the kinds of institutions (social, economic and political) that they establish, and the different kinds of value systems that they uphold. The emphasis is that the study of Social Studies is concerned with the realities of human's existence on earth. By implication, students are expected to learn about humankind's social, political, economic, religious and artistic behaviour. The teaching of social studies especially in Sub-Saharan Africa is characterised mainly by traditional teaching method where the teacher is the know all and be all. Meanwhile, there are a variety of technology-driven teaching strategies that could make the students learn better [2,5]. According to Akcaoğlu [3], creating resources to teach using the mobile phone provides a dynamic way for social studies educator to present new ideas to learners. However, using mobile phones to support the teaching of certain social studies has its complexities. The nature of the subject hinges on the overall experience of people in the society and the interactions that happen among them and using mobile phones could help teachers connect to their students and develop a social enabled environment that makes teaching and learning interesting and productive. In essence, using mobile phones to support Social Studies instruction creates a new culture of making lessons more real to the learners. For the social studies teachers, using mobile phones in learning helps to get young learners to better understand the detail of humans living on earth and with such an understanding, they would then be better equipped to live and interact more effectively and meaningfully within their own environments.

Evidences have shown that the use of mobile technologies promotes learning outcomes [12,19,22]. However, Olofinniyi, Fashiku and Owombo [13] argued that the use of mobile phones does not contribute to academic achievements of students in Osun state secondary schools, Nigeria. They further gave reasons as to why students' use of mobile phones hampered achievement to include disturbance in the class rooms or libraries, decline of moral values, negative health implications, and waste of precious time on night calls.

Planning to use mobile phones in the instructional process requires teachers to acquire some requisite skills. According to The Mobile Learning Academy [11], the skills teachers should possess include: context-awareness – learning at locations, (Re)search and informational skills, Literacy and reading, Social and collaborative skills, Technical and "new media" skills. Teachers can sharpen their skills to access the immense knowledge repository using the internet as well as take advantage of educational platforms that provide ways for students to collaborate and develop knowledge of how software interfaces work. If mobile learning will be successful, teachers must be trained on how to use mobile technologies for instruction. It is against this background that Baustista [6] indicated that digital skills are necessary for contemporary students, but they need to know how to use them responsibly. Teachers must be adept on how these digital technologies, such mobile phones, work before they can transfer the skills to the learners and not only how to use it but also how to use it to effectively plan instruction. In the light of this, a Mobile Learning Lesson Plan (MLLP) template was designed to help teachers to effective plan and execute their instruction using mobile phones. A variable that may likely influence the adoption of mobiles in instructional delivery, notably age is also considered.

In this present study, Age of teachers in relation to the use of technology is explained in terms of Prensky's digital natives and immigrants. Prensky [16] defined the generation born after 1980 as digital natives and those born before then as digital immigrants. Digital natives prefer receiving information quickly, they are capable of processing information rapidly, learn by multi-tasking, prefer active rather than passive learning, and rely heavily on communication technologies to access information and interact socially. In contrast to the digital natives, He also defines the pre - 1980 generation of technology users as digital immigrants, those not born into the digital world, but have learned and adopted many new technologies. By not growing up in this period, he argues that digital immigrants may not fully understand the ways in which digital natives interpret, communicate, and learn. He regards this disparity as the "biggest single problem facing education today." He concludes that the learning preferences and skills that characterise digital natives are incompatible with the current teaching practices of digital immigrants, and urges educators to adjust their pedagogical models to help this new generation of students. Many adults have also developed proficient digital technology skills [17], and may be referred to as digital immigrants or digital settlers [16], but may never be as proficient with technology use as the digital natives. However, there have been different opinions and critiques of Prensky's notion of digital natives and immigrants, against the backdrop of emerging technologies in the world. Most of Prensky's assertion that younger people tend to adapt themselves to the use of technological tools than their older colleagues is arguable [7,14,20]. Therefore, in this study, age is categorised into early natives and late natives. Early natives are those born between 1980 and 1990, late natives are those born from 1990 and above. The categorisation of natives by Prensky between 1980 and 2000 was influenced by his socio-cultural environment, characterised by massive technological revolution which ranges from the World Wide Web (www), Pentium processor, Bluetooth 1.0, Java programming language and smartphones in America and Europe. Meanwhile, during this period, not many people own emails or computers in Sub Sahara Africa (SSA) especially Nigeria. The technology revolution did not start in Nigeria until the late 90s and early 2000 with the advent of mobile telecommunications, hence, age is classified

into early and late natives, early natives are categorised as pre-service Social Studies teachers born between 1980 and 1990, while late natives are those born after 1990.

In this study, it is assumed that some pre-service Social Studies teachers who are early natives may display low competencies in the use of mobile phone technologies because of the era in which they grew up, they might not be positively disposed to the use of mobile phones which could translate to complete abandonment of the device. Late natives, on the contrary, may have high appreciation for these new skills acquired and perfected through years of interacting with the mobile phone. They also may have competences to conveniently use it without difficulty.

Therefore, this study examined the influence of age and training on planning instruction using mobiles by pre-service social studies teachers.

2. Design of Mobile Learning Lesson Plan

The design of the plan has gone through several phases of evaluation and validation. Mobile Learning Lesson Plan (MLLP) template enables teachers to organise, plan, design, and evaluate the lesson. It is a blueprint of what is to be taught using the mobile phone; it allows the teacher to provide detailed information of the lesson and provide sequence of activities that is to be carried out using the mobile phone. Some aspects of the MLLP include the Grade level, topic, instructional objectives, outline and introduction of the lesson, breaking the content into mobile format, identifying the feature(s) on the mobile phone to capture the content, questions and tasks for the students, provision of guiding comments, evaluation, feedback, conclusion and medium to share input. The MLLP template went through a series of validation process and the summary of feedback from users indicate that the MLLP is a useful, innovative, cost effective and less stressful medium of preparing for mobile instruction.

2.1. Research Questions

This study was guided by two research questions namely;

1. What is the level of mobile phone learning lesson plan skills of the pre-service social studies teachers after exposure to the training?
2. What is the influence of age on pre-service Social Studies teachers' mobile phone learning lesson plan skills after the training?

2.2. Instrument

2.2.1. Mobile Learning Lesson Plan (MLLP) Template

The Mobile Learning Lesson Plan Template (MLLP) can be used by pre-service social studies teachers to prepare lessons using the features and applications on the mobile phone. The MLLP allows the teacher to provide detailed information of the lesson and provide sequence of activities that is to be carried out using the mobile phone. The major headings in the MLLP include the grade level, population, topic, instructional objectives, outline of the lesson, introduction of the lesson, the content, questions and tasks for the students, evaluation, feedback, conclusion and medium to share ideas/input.

2.2.2. Mobile Learning Lesson Plan Rubric (MLLPR)

The Rubric contains guidelines on evaluating the mobile learning lesson plan. The rubric has a maximum of 60 points and it is categorized based on the mastery level:

- Beginning: The pre-service social studies teachers display low level of mastery and skill at this level; this is from 0 – 20 points.
- Developing: The pre-service social studies teachers display average level of mastery and skill at this level; this is from 21 – 30 points.
- Accomplished: The pre-service social studies teachers display an expert level of mastery and skill at this level; this is from 31 – 60 points.

The instrument was given to the research supervisor, educational technologists for face validity and comments on the logical arrangement of materials and language were provided. The instrument was administered to participants who were not part of the target group. The rubric was evaluated using inter rater technique and the reliability coefficient was 0.78

2.3. Population and Sample

103 pre-service social studies teachers were purposively selected in the Faculties of Education of Obafemi Awolowo University, Ile-Ife, Osun State and Tai Solari University of Education, Ijebu-Ode, Ogun State. The teachers were trained to use mobile phones for social studies instruction. The criteria for selection were based on ownership of web-enabled mobile phones; they must have done Social studies methods and Educational technology course and willingness to participate in the study. At the end of Phase II, the best 10% of the pre-service social studies teachers trained were selected based on their scores in the Rubric for evaluating MLLP (RMLLP) to deliver the lessons in schools.

2.4. Procedure for Training on the Mobile Learning Lesson Plan (MLLP) Template

The MLLP allows the pre-service social studies teachers to organise, plan, design, and evaluate the lesson effectively. It is a road map of what is to be taught using features and applications on the mobile phone.

Table 1. Training on Mobile Learning Lesson Plan (MLLP) template

Section in the Template	The trainer;
SECTION A *of the TEMPLATE*	Introduces the MLLP
	Explains the sources of resources needed to teach topics selected
	Explains how to write good instructional objectives
SECTION B	Illustrates how to write brief outline of the lesson
	Illustrates how to write Introduction of the lesson

SECTION C *of the TEMPLATE*	Describes how to break content into frames or small interesting and engaging unit
	Explains how to identify the phone features to capture each frame (reasons for the choice of feature/application on the mobile phone).
SECTION D *of the TEMPLATE*	Explains how to Prepare Questions and Task for Students
	Describes how to provide Guiding comments for students e.g. Show general/specific resources, areas, information which could make the students understand the topic/concepts in the topic better
	Explains how to identify areas where students can differ in their responses and reasons why the response can be accommodated or not
	Explains how to write out task in the lesson where students can share inputs or ideas
	Explains how to write out individual/ group task
	Discusses how to provide reasons for selecting task to group/individual?
	Illustrates how to identify medium/ media to share ideas
SECTION E *of the TEMPLATE*	Provides criteria for grading which will be based on the student's effort
	Describes how to provide them with the rubrics for evaluation upfront
	Explains how grades will be counted or averaged
	The pre-service social studies are given topics in JSS II Social Studies
	The pre-service Social Studies teachers were given a blank template to design their lesson
	The pre-service Social Studies teachers designed their lesson using the MLLP

Details of how pre-service social studies teachers captured their content with the features on mobile

Break content into modules, phone features to capture each module (reasons for the choice of feature and content in the feature).

- Specify content area
- When specifying content area, the teacher breaks content to modular format. The instructional content is broken down into bit of information presented as a *frame* one at a time. The step by step presentation is supposed to reflect the gradual nature of moving from simple to complex
- List the phone applications that a teacher would need to complete the activity

The teacher lists the most appropriate mobile phone feature(s) e.g. video, camera, audio, text and so on that can be used to effectively capture each of the modules that has been created.

At this stage: the teachers are able to describe their lesson and also break their content into modules as well as capture the feature on the mobile phone that can used to teach each aspect

Definition of Drug Abuse

Drug Abuse is the taking in of drugs and other substances without the advice and prescription of doctors, pharmacists and nurses. They are any substance that could make people sick and they are also substances that are produced, sold and used illegally e.g. Indian hemp, Opium, heroin, Estacy and so on.

Phone features:

Picture: *Provide picture of banned drugs such as Indian hemp, Opium, and heroin.*

Video: *provide video of person(s) taking banned drugs and getting drugs without prescription.*

Medium of delivery: *Send the video and picture to the learner using a chat application/email*

Evaluation of the MLLP was done using the Mobile Learning Lesson Plan Rubric (MLLPR) and through direct observation of their activities.

3. Results

Answer to **research question one**, the data collected using rubric was analysed with descriptive statistics. The mark obtainable is 60marks. Table 2 presents the Analysis.

Table 2 shows that the pre-service social studies teachers performed excellently in mobile lesson plan skills. Finding reveals that only 3% of the pre-service social studies teachers scored between 50% and 59%; 28% scored between 60% and 69% while 69% scored 70% and above. The mean score is 44.13 which is rated at 74%. This shows that the pre-service teachers had high skills of mobile lesson plan after exposure to the training.

Table 2. Performance of the Pre-service social studies Teachers in Lesson Plan Skills after Exposure to the Training

Raw scores (In group)	Score Aggregate	Freq.	%	Mean score	Std. D
0 – 23	0 – 39%	0	0.0	44.13 (73.6%)	6.44
24 – 29	40% - 49%	0	0.0		
30 – 35	50% - 59%	3	3.03		
36 – 41	60% - 69%	28	28.3		
42 and above	70% and above	68	68.7		

Research Question Two: What is the influence of age on pre-service Social Studies teachers' mobile phone learning lesson plan skills after the training?

Table 3. Summary of t-test showing the influence of age on Early and late natives Pre-service Teachers in their Mobile Lesson Plan Skills

Variables	N	Mean	Std. D	T	Df	Sig.	Remark
MOBILE LESSON PLAN SKILLS							
Early natives	68	44.06	7.19	-.009	94	.993	NS
Late Natives	28	44.07	4.54				

Table 3 reveals that age as no influence on "Early Natives" and "Late Natives" pre-service Social Studies teachers in their mobile lesson plan skills after they were exposed to training (t = -0.01; df = 94; p>0.05).

3.1. Acquisition of Mobile Learning Lesson Plan Skills

Findings from the study further revealed that pre-service social studies teachers were able to plan and design learning activities using mobiles. This is because the pre-service social studies teachers exposed to the training were able to acquire the skills to design the MLLP. The teachers acquired skills in designing components of the MLLP which include the ability to explicitly write their learning outcomes in such a way that the elements expected of a good learning outcome such as terminal behaviour, condition and minimal acceptable standard are visible. Subjects were also able to prepare and create their lessons using dynamic media that is appropriate in accomplishing the task. For example, the use of screen capture, video clips, still images, audio clips, to mention a few were demonstrated. In the same vein, the teachers were able to break large content into smaller, interesting and engaging units of content. Also, they created and identified appropriate media to capture and explain the content of the lesson in order to present the lesson content in a sequential manner. The pre-service social studies teachers acquired the skills to develop engaging activities and tasks for the students so that they would be actively involved in the learning process. They also acquired the ability to provide scaffold and ongoing support to prompt and motivate the students to learn better and enhance their analytical skills. The teachers were able to select appropriate features on the mobile phones to prepare their lessons. The trainees were also able to validate learning experience by designing evaluation procedures for mobile instruction which include the design of rubric for evaluating the students, explain how grades are averaged, and provision of criteria for evaluation. In addition, the trainees were able to develop the skills to search and research for resources to guide the students in their learning.

Apart from the training the pre-service social studies teachers were exposed to, their performance in designing their MLLP may be due to their readiness and willingness to use mobile phones to teach and the availability of the device. The pre-service social studies teachers also attest to the fact that to be able to carry out an effective mobile instruction, training is paramount. Studies on designing and training on mobile learning instruction place emphasis on careful planning and preparation when introducing mobile technologies, particularly if large numbers of learners and devices are to be involved [4]. For mobile learning instruction to be successful, Levert [10] identifies some basic principles in planning and designing mobile learning instruction: creation of content in small chunks of text, using images as pop-ups; using audio as text; keeping narration short; keeping feedback with question; do not duplicate information; and conversational approach with users. Also Sharples, Arnedillo Sánchez, Milrad, Vavoula [18] indicate that successful mobile phone learning projects need strong institutional support, including the design of relevant resources in mobile format, staff training and technical support.

3.2. The Influence of Age on Mobile Learning Plan Skills

Age in this study was not a determinant factor in the teacher trainees' ability to acquire technological competencies to be able to use mobile phones for the teaching and learning process. While some scholars have argued that disparities exist between the 'net generation' (late natives) and the 'digital immigrants' (early natives), others support the position that the natives have profound skills in using technological than the immigrants [8,16,17,21]. However, Helsper and Enyon [9] are of the opinion that the generation an individual belongs to, is not the only significant variable in explaining the use of technology, gender, education, experience and extent of use also play a part. Therefore, this study challenges the argument that individuals born before the period of recognisable technological advancement are less proficient than those born after—this position can be a subject for further research.

4. Conclusion and Recommendations

This study has established that through adequate and proper training, the pre-service social studies teachers can acquire the skills to effectively use the mobile phone for instructional purposes. The teachers were able to acquire the skills to organise, plan, design, and evaluate the mobile learning lesson effectively.

Age has been classified in such a way that the generation an individual belongs to is one of the determinant factors on how technology is adopted for instruction. However, finding from this study has revealed that this may not be the case as age was not found to be significant in the ability of pre-service teachers to plan instruction using mobiles.

It is therefore, recommended that Pre-service social studies teachers should be exposed to continuous and sustained training programme on the design of mobile learning instruction. There should be an awareness advocacy on the use of mobile phones because the device is a viable tool in teaching and learning. The awareness programme is to stem the widespread societal bias against

the use of mobile phones in schools because most school administrators believe the device does more harm than good. Education bodies and policy makers should therefore be encouraged to use MLLP to plan and design mobile lessons so as to ensure best practices.

References

[1] Abimbade, A. and Balogun, T.A. (2007), TEE 353: Introduction to Instructional Technology, Distance Learning Centre, University of Ibadan, Oyo State. Nigeria.

[2] Aduwa-Ogiegbaen, S.E. and Iyamu, E.O.S. (2016). Factors affecting quality of English language teaching and learning in secondary schools in Nigeria. *Project Innovation (Alabama)*. 40.3.

[3] Akcaoğlu M. (2008). Exploring technology integration approaches and practices of pre-service and in-service English language teachers. A Thesis Submitted to the Graduate School of Social Sciences of Middle East Technical University. http://etd.lib.metu.edu.tr/upload/12612234/index.pdf.

[4] Attewell, J., Savill-Smith, C., and Douch, R., (2009). T*he Impact of Mobile Learning: Examining what it means for Teaching and Learning.* Published by LSN. www.lsnlearning.org.uk retrieved on 16-1-2014.

[5] Azuka, B. F. (2016). Activity -Based Learning Strategies in the Mathematics Classrooms. Journal of Education and Practice, 4.13

[6] Bautista, C. (2013). 73% of *teachers use cell phone for classroom activities.* http://mashable.com/2013/02/28/teachers-technology/ retrieved on 16-10-2014.

[7] Breivik, P. S. (2005). 21st Century learning and information literacy. *Change* 37.2:20-27.

[8] Gibbons, S. (2007). Redefining the roles of Information professionals in Higher education to Engage the Net Generation. Paper presented at EDUCAUSE, Australasia. http://www.caudit.edu.au/educauseaustralasia07/authors_papers/Gibbons2.pdf retrieved on 16-10-2014.

[9] Helsper, E. and Eynon, R. (2009). Digital natives: where is the evidence? *British educational research journal*. 1-18.

[10] Levert, G. 2006**.** Designing for Mobile Learning: Clark and Mayer's Principles Applied**.** http://www.learningsolutionsmag.com/articles/222/designing-for-mobile-learning-clark-and-mayers-principles-applied.

[11] Mobile Learning Academy (2014).

[12] Nasser, R. (2014). Using mobile device to increase student academic outcomes in Qatar. *Open Journal of Social Sciences*, 2014, 2, 67-73.

[13] Olofinniyi, O., Fashiku C., Fashiku B., Owombo P. (2012). Access to GSM and Students' Academic Performance in Secondary School of Osun State, Nigeria. *Online Journal of Social Sciences Research.*

[14] Ophir, E., Nass, C. and Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences of the United States of America*, 106.37:15583-15587.

[15] Pouliot, C. (2006). Instructional Planning and Assessment, chapter 3, retrieve in https://www.google.com.ng/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjTuMqj4a3LAhWE8Q4KHbFzAfwQFggeMAE&url=http%3A%2F%2Fhighered.mheducation.com%2Fsites%2Fdl%2Ffree%2F0070959668%2F405859%2FAirasian_88697_ch03.pdf&usg=AFQjCNFntd-2e3kpVU7wN3-eU2k4771VJA.

[16] Prensky, M. (2001). Digital natives, digital immigrants. On the Horizon, 9(5), p. 1-2.

[17] Rainie, L. (2006). Life online: Teens and technology and the world to come. online at, http://www.pewInternet.org/ppt/Teens%20and%20technology.pdf.

[18] Sharples, M; Milrad, M; Arnedillo S, Inmaculada; Vavoula, G. (2009). Mobile Learning: ‹Small devices, big Issues.› In Nicolas Balacheff, Sten Ludvigsen, Ton de Jong, Ard Lazonder & Sally Barnes (eds.), *Technology Enhanced Learning: Principles and Products*. Heidelberg: Springer, pp. 233-249.

[19] Shih, J.-L., Chuang, C.-W. and Hwang, G.-J. (2010). An Inquiry-based Mobile Learning Approach to Enhancing Social Science Learning Effectiveness. *Educational Technology and Society* 13.4:50-62.

[20] Southall G. 2012; *The Union City story*. New York: Education Development Center, Center for Children and Technology.

[21] Wiersma, W. (2011). Digital natives: mythical tribe, or savvy youth of nowadays?. Wybowiersma. net. http://wybowiersma. net/pub/essays/Wiersma, Wybo.

[22] Wu, C.-C., & Lai, C.Y. (2009). Wireless Handhelds to Support Clinical Nursing Practicum. *Educational Technology & Society* 12.2:190-204.