ADAPTIVNESS OF THE NEW WHATSAPP SETTINGS FOR TEACHING, LEARNING AND COLLABORATION. AMONG HIGHER INSTITUTIONS IN SUB- REGIONAL AFRICA

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Abstract

The wide use of social media in institutions of higher learning and its e-learning potentials of the technology are making educators to look at models social network model to be used to support and improve educational practice for human capacity building. This study examines the use of WhatsApp instant messaging media for learning, support and building research collaboration among two universities in Rivers State; namely, Rivers State University (RSU) and Ignatius Ajuru University of Education (IAUOE). To represent sub-regional Africa. This model is designed to be used by distant learning communities or groups and therefore could be deployed across West African Sub-regions. The study adopted descriptive survey method, using questionnaire to elicit responses from 100 randomly sampled respondents, 50 from each university. Questionnaire instrument titled "WhatsApp an Innovative Research Support Tool for Collaboration in Higher Institutions" (WIRSTCHI) was used for data collection. The instrument validated and test for reliability was conducted using Cronbach Alpha Coefficient with an index of 0.84. Mean and Standard Deviation was used to analyze the data obtained from the respondents while hypotheses were tested with z-test at 0.05 level of significance. Findings revealed that WhatsApp if well modeled could provide innovative research support tools among institutions of higher learning and enhance learning efforts across West African Sub-region. Recommendations were made, that suggested among other things the development of different usable models and creating awareness on when and where to use them for greater effectiveness.

Keywords: Whatsapp, Social Media, Adaptive, Teaching-learning Collaboration

Introduction

The major thrust of this work is to explore way of using social media or networks to support learning and learning communities for greater effectiveness. There are so many instant messaging applications available, however, WhatsApp instant messaging network is chosen as the case study. The use of social networks to promote and enhance learning has become a major trend in the 21st century because of its role in effective communication and the impact of the technology in our changing life style. There is an unending debate among teachers, educators and professional on the use of social media for educational purpose. Opponents of the system often complain of its tendency to cause distraction and unstructured nature of the knowledge content. The proponents believe that the platform brings about communication effectiveness as well as enhance learning because of its audio/visual appeal. Lets not make mistake about this; social media are designed for

fun/entertainment primarily, and its application in learning is either by accident or design. Any attempt at using the system outside its design framework (say for classroom learning) will require some kind of control structure (re-configuration, re-designing, re-engineering or rules setting to guide the usage) in order to mitigate inherent and undesirable effect of the original use function inimical to learning. Establishing the appropriate control structure and its effective management will be crucial in achieving strategic result in social support learning.

There are two types of control structure to apply when using any of the social media for educational purposes. The first is the internal control; that borders on re-configuring the platform by enabling or disenabling some of the programme's features or functions to make suitable for the desired use. Incidentally, WhatsApp has a simple design and direct use functions devoid of unsolicited interference from third party. This is what makes WhatsApp adaptable supportive platform for learning.

Concept of WhatsApp and its use Features in Learning

Brain Anton and Jan Koom with the aid of $8 million investment from a Silicon Valley investment holding company invented WhatsApp social media in 2009 (Chokri, 2015). The name WhatsApp was coined from the English phrase "What is up" meaning "what's new" an instantaneous messaging application specially designed for smartphones. WhatsApp as a social networking enables users to share text messages, videos, images and audio messages via internet connection. WhatsApp is superior to SMS messaging, which can be very costly

when used in foreign countries due to roaming charges; WhatsApp, in contrast, relies on the Wi-Fi network technology.

WhatsApp allow two types of account within its platform, the individual (personal) and group account (many users) allowing 256 participants only in a group account. Individual WhatsApp account allows one-on-one interact with a friend (single user). Group account allows interaction among members of the group (multi-user). This is suitable for classroom support learning or learning community environment. The person who created the group becomes the group administrator with a controlling power to admit, erase and control membership of the group. Apart from the case of group charting, every other member of the group enjoys equal right. The software makes it possible for members to receive notification for each message sent or, alternatively, to mute the incoming message for 8 hours in a day, or a whole week.

WhatsApp social networking platform as at 2013 became very popular, gaining over 350 million users and is rated the most downloaded application in 127 countries (Cohavi, 2013) and with an average of 31 billion messages are sent everyday through WhatsApp (Tzuk, 2013). According to the latest statistics, the platform has reached a mark of I billion daily chart users, 1.3 billion monthly active users, 55 billion messages sent per day, 4.5 Billion Photo shared per day, 1 billion videos shared per day and support about 60 languages (Barb, 2017).

The use of WhatsApp as a support tools for learning enhances on-line collaboration and cooperation between on-line students connected from school or home in a blended mobile lecture and

has several educational value (Chokri, 2015).

WhatsApp and other social networks have increased the possibilities of communicating with a wider audience around the globe (Deng & Tavares, 2013). Social networks have become "a widespread tool for communication and exchange of ideas and as a result of its wider coverage and flexibility, the platforms are now utilized to enhance academic engagement and improved learning performances (Onomo, 2012). Deng and Tavares (2013) opined that the concept of learning communities are now entrenched in the school system at all levels today. Learning community is viewed as a "group of people engaged in learning activities" and social networks are seen as platforms that creates learning environment and communities for students and their peers (Mingle and Adams, 2016).

The underlying use of WhatsApp in learning primarily is to facilitate communication, and communication is the hall mark of education. Thus WhatsApp provides a veritable platform through which teachers can achieve faster and more seamless communication with their students especially outside the classroom. The platform can also increase communication among students that may fosters group learning and problem solving. There are several strategies educators can effectively utilize WhatsApp to achieve collaborative learning and research:

i) Use the Group Chats feature to create learning environments, communities and study groups

ii) Information and knowledge are easily constructed and share through WhatsApp instant messaging.

iii) Utilize the audio/visual facility in WhatsApp to share text content, documents, images, videos, music, emoji and symbols and make maximum impact on the learner.

iv) The following extra support application tools can be integrated and operated from WhatsApp platform: T9 text prediction, spellchecker, on-line dictionaries, pronunciation check, internet search etc.

v) For class management system: stay in contact with students outside the classroom, getting in touch with their parents, sending report cards.

vi) Facilitate real-time communication between students to teachers and teacher to parents

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Statement of the Problem
Believe it or not; social media has become an indispensable tool for learning in the 21st century. This is because the technology has become part of our daily life. Social media provides a global platform to disseminate and sharing information with members of the public and understanding their value proposition in any issue has the tendency to escalate learning and acquisition of knowledge. Also as a result of the use frequency and the rich educational contents sometimes carried by the network; the platform tends to encourage learning spontaneity, self learning, lifelong learning, unconscious and social learning and as well as other e-learning advantages. Social platform can never be like a classroom where

discipline and orderly behaviour are variables that are within the teacher's control. The problem is that there are several teachers/educators who avoid the use of social media in teaching and learning because of the above and other similar reasons. Conceptually, social media are designed for fun/entertainments; and for these reasons, they may not be as appropriate as the place of classroom in learning. Social Medias are incorporated into learning process because of the need to exploit the inherent advantages in the system for the benefit of the learner and the educational processes. Specifically, this study aimed at developing end user model of WhatsApp with control structures that will enhance effective use of the platform in promoting learning and innovative research collaboration among institutions of higher learning in and outside the country.

Purpose of the Study
The purpose of this study is to explore the use of WhatsApp instant messaging platform by study groups and learning communities to carryout an innovative research to improve human capacity development across regions.

Research Questions:
■ What are the facilities in WhatsApp as a support tool for learning and research development?

■ How effective is the use of WhatsApp to achieve innovative and collaborative research among Institutions of Higher Learning in Sub-regional Africa?

Hypothesis:

HO_1: There is no significant difference in the mean response of RSU and IAUOE on the facilities in WhatsApp as a support tool for learning and research development.

HO_2: There is no significant difference in the mean response of RSU and IAUOE on the use of WhatsApp to achieve innovative and collaborative research among Higher Institutions in sub-regional Africa.

Methods
The study adopted descriptive survey because it is effective in providing both quantitative and numeric information on the responses of respondents on the subject matter. The population of this study consists of Business Education third year students of Rivers State University (RSU) and Ignatius Ajuru University of Education (IAUOE); all in Rivers State. A total of 100 students and two lecturers each from the two universities were used for the study. The instrument for data collection was the researchers' constructed questionnaire titled "WhatsApp an Innovative Research Support Tool for Collaboration in Higher Institutions" (WIRSTCHI). Random sampling method was used in selecting the 50 students from each university who fulfill the following three conditions: the student must have a Smartphone with access to WiFi or data bundle, willing to participate in the progrmame and abide by the code established for participants. WIRSTCHI instrument was divided into two sections A and B. Section A, sought demographic information about the respondents, section B deals with the use of WhatsApp as a support tools for learning and building collaboration. Four point modified Likert scale classified as follows: Strongly Agree (SA-4), Agree (A-3), Disagree (D-2) and Strongly Disagree (SD-1). Validation of

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the instrument was carried out by two Business Educator and expert from measure and evaluation department all in Rivers State University. The reliability of the instrument was determined using Cronbach Alpha coefficient that yielded an index of 0.84. Word version of the questionnaire was distributed to participants via WhatsApp attachment to the 100 members and sample of how to answer and return posted on the group chart) Hundred percent of distributed questionnaire was returned and used for result analyses. It was arranged that an item with a calculated mean value equal to or greater than 2.50, [2.50 - 4.00] was accepted while item was considered rejected if calculated mean is less than or equal to 2.49, [0.00 -2.49]. A z-test statistics was used to test the null hypotheses in the study. A decision rule was that where the z- calculated value was equal to or greater than the table z-value, there is a significant difference; hence, the null hypothesis was rejected, but if otherwise, the null hypothesis is accepted.

Study Design
Research on Innovative Research Collaboration could be carried out among Business Education Students in Higher Institutions using WhatsApp Platform.

Concept of Social Media and WhatsApp Uses of WhatsApp as information communication and learning

Use of WhatsApp for developing learning communities and Research Collaboration

What are we getting right and where are we getting things wrong? Which way moving forward?

Using WhatsApp for learning and research collaboration requires putting in place good control structures. The control options available in Group WhatsApp are that of being the Administrator of the group; who has the power to admit and deregister members, as well as moderate the activity of the group. The WhatsApp models (Fig. 1) can be adopted both for learning and collaboration purposes. The model is designed to utilize the existing WhatsApp features as well as incorporating the additional new WhatsApp features. The best way to use social networking programs for learning is to try as much as possible to retain its original features amidst attempt at instituting control measures to guide against distraction, misuse and possible abuse of the system. This is better achieved at sub-group level which provides greater interaction among participants, most suitable for a Close User Group (CUG) with identified common interest. Even with that, it is still subject to abuse because of some members who have the attitude of making announcement rather than engaging in discussion. This makes group chat or discussion messy. It's often difficult to predict individual's behaviour especially in large group settings; therefore control structure is vital to keep in check of possible abuse of the programme and its objectives.
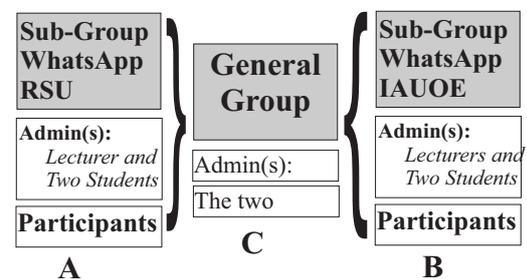

Fig. 1: WhatsApp Multi-Level Platform

An innovative collaborative research effort can be achieved using WhatsApp Group Chat by two Business Education Lecturers in two Universities in different learning communities and environment. The WhatsApp model in Figure I is designed with two levels of control structures in place. At the level of A and B the platform is used in normal level with the settings allow member's unrestricted and unfiltered access to share, post and contribute to the platform. This level gives students and relax frame of mind to explore and share ideas, opinion, and information in a fun and less official manner. This helps to generate lots of ideas on the subject matter. Control at this level is left in the hands of students administrators with the two Lecturers overseeing. The two groups articulate their ideas and make submission of their findings platform C.

a) The next stage, all the members of groups A and B will migrate to C

platform. In this platform control is important; the two lectures will be the only administrators of the group. The group's works are uploaded on the platform for assessment with relevant questions that needed answers posed to the group for contributions to be made.

As part of activities designed to examine the use of WhatsApp as an Innovative Research tools for Collaboration among Business Education Students in Higher Institutions, two sets of questionnaire were distributed to participants via WhatsApp platform in Ms Word Table format, to be filled electronically and returned via the same WhatsApp platform for analysis (Tables 1 and 2). With WhatsApp platform adopted for teaching, learning and research tools, questionnaire distribution/retrieval and data gathering effort are made easier.

RESULTS AND DISCUSSION
Research Question 1: What are the learning facilities in WhatsApp instant messaging that encourages learning and research collaboration?

Table 1: What are the learning facilities in WhatsApp instant messaging that encourages learning and research collaboration?

S/N	Questionnaire Item	RSU $(N_1 = 50)$			IAUOE $(N_2 = 50)$		
		X_1	SD_1	Decision	X_2	Sd_2	Decision
1	WhatsApp is considered a particular favourite Electronic Learning Tools for classroom support among the social networks?	3.07	0.006	Agree	3.03	0.044	Agree
2	WhatsApp has good privacy features designed to allow direct one-on-one and group interaction?	3.06	0.022	Agree	3.12	0.028	Agree
3	WhatsApp group chats feature enables the creation of learning communities and study groups, allowing collaborative learning	3.01	0.068	Agree	3.05	0.009	Agree

Table 1 Continue

4	Information and knowledge are easily constructed and share through the WhatsApp?	3.06	0.022	Agree	3.05	0.060	Agree
5	WhatsApp allows the sharing of text content, videos, audio messages, pictures, music, emoji, symbols that can create strong learning impact on the learner.	3.02	0.060	Agree	3.01	0.100	Agree
6	WhatsApp integrates extra support application function such as T9 text prediction, spellchecker, on-line dictionaries, pronunciation check, internet search within the platform?	2.91	0.172	Agree	3.00	0.077	Agree
7	It is fast and economic means of reaching out to students.	3.00	0.085	Agree	2.93	0.140	Agree
8	Facilitate real-time and effective communication between students to teachers and teachers to parents	3.10	0.148	Agree	3.24	0.141	Agree
9	It can be used directly on Wi-Fi without a data plan and over the Internet via WhatsApp Web?	3.09	0.210	Agree	3.29	0.203	Agree
10	WhatsApp can be accessed from different communication platforms	3.08	0.102	Agree	3.03	0.095	Agree
11	WhatsApp can be used to reach students via the technology they are most familiar with: their phones	3.04	0.039	Agree	3.04	0.046	Agree
12	The use of WhatsApp can be a serious source of distraction in teaching and learning?	3.06	0.015	Agree	3.20	0.008	Agree
Average Mean and Standard Deviation		3.04	0.08		3.08	0.08	

Mean 2.5 and above = Agree while mean of 2.49 and below = Disagree

The study observed that the presence of positive and negative sides of social networks does not diminish the fact that WhatsApp platform are increasingly becoming popular tools in our lives, and contributing significantly towards educational development.

WhatsApp instant messaging is the most favored mobile based applications (SimilarWeb, 2016; Statista, 2016, Church and de Oliveira 2013). They emphasized that the growth in WhatsApp popularity is based on its beneficial application in the field of education.

Table 1 shows some of the reasons why respondents agreed in the usefulness of WhatsApp platform for enhanced teaching, learning and research collaboration.

- It allows free unlimited messaging and can be used to send videos, audio messages, and pictures.

- The Chat features of WhatsApp are powerful interactive platforms designed to hold group and individual conversations.

- It can effectively run on free MBs where there is no data plan.

- It can be used directly over the Internet via WhatsApp Web.

- WhatsApp is a cross platform solution.

- Students are reached via the technology they are most familiar with: their phones

- WhatsApp can be used to maintain effective communication with students and parents compare to other communication models.

- WhatsApp can be used to develop collaboration and learning communities within and outside geographic and demographic boundaries.

Responses from questionnaire items in Tables show agreement that WhatsApp instant messaging encourages learning and research collaboration among individuals and groups with mean scores of 3.04 and 3.08 for RSU and IAUOE respondents respectively.

Distractions emanating from abuse or miss-use of the platform to disseminate information outside the prescribed rules of engagement are major reasons most educators avoid using social media like WhatsApp in teaching and learning. WhatsApp and other social media have great potential in enhancing learning and educators must look at the bigger picture by tapping into the advantage the platform provides for the greater good of the students, notwithstanding the distraction elements inherent in the platform. The model presented in Fig. 1 showcases one such ways of establishing control within a WhatsApp platform. Such control can be achieved by altering the use function (option settings), establishing rules of engagement and ensuring that there will be consequences for those who abuse or miss use the platform especially when used for learning/academic purposes.

Research Question 2: How effective is the use of WhatsApp to achieve innovative and collaborative research among Higher Institutions.

Table 2: How can WhatsApp effectively be utilized for innovative and collaborative research for human capacity development in Higher Institutions in West African Sub-Region?

S/N	Questionnaire Item	RSU (N$_1$ = 50)			IAUOE (N$_2$ = 50)		
		X$_1$	SD$_1$	Decision	X$_2$	Sd$_2$	Decision
1	WhatsApp is a popular Learning Media Systems (LMS) that provides students with the platform to learn in groups and enhance their academic pursuit	2.88	0.137	Agree	2.95	0.049	Agree

Table 2 Continue

2	WhatsApp supports virtual learning, e-learning, distant learning, participatory and contributory learning effort?	3.01	0.154	Agree	2.93	0.186	Agree
3	The use of videos and graphic facilities in platform help create panoramic view and effect on any subject matter for research	3.03	0.137	Agree	2.95	0.049	Agree
4	WhatsApp aids in to highlight and geo-location of the study area of the research	3.01	0.008	Agree	2.98	0.079	Agree
5	WhatsApp can be configured to enable the distribution, filling and retrieval of research data gathering instrument electronically	3.17	0.013	Agree	3.11	0.050	Agree
6	Literature search and research material can easily be gathered using an integrated web search option?	2.90	0.008	Agree	2.96	0.054	Agree
7	The platform can be used to share internet links, review, editing and attachment for all file formats (Ms Word, Excel, PowerPoint, PDF, Html etc) and other mechanisms for information sharing.	3.02	0.120	Agree	3.06	0.077	Agree
8	There are in-built control structure for class management especially when using the WhatsApp platform for teaching and learning.	3.05	0.021	Agree	3.04	0.030	Agree
9	The platform is designed in accordance with the needs of science and information, and can be used to achieve collaborative research among institutions of higher learning in Nigeria	3.04	0.046	Agree	3.04	0.045	Agree
10	It is possible to promote innovative participatory research in human capital development among institutions of higher learning in Sub-regional African countries.	3.07	0.034	Agree	3.01	0.029	Agree
Average Mean and Standard Deviation		3.02	0.05		3.00	0.062	

Mean 2.5 and above = Agree while mean of 2.49 and below = Disagree

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According to Levent (2017) studies on the use of different instant messaging platforms in education has the potential to increase learning, active participation, interaction among students, institutions and content. It also helps to create strong sense of belonging and motivation of students (Smit, 2012; Cifuentes & Lents, 2010; Doering, Lewis, Veletsianos, and Nichols-Besel, 2008; Sweeny, 2010), and elimination of social barriers (Plana et al., 2013). These benefit are in line and supported studies conducted by Bouhnik & Deshen, (2014), Church & de Oliveira, (2013) and Nguyen & Fussell, (2016), which noted that WhatsApp learning platform has become a useful tool for developing learning communities and collaborative work among individual and groups.

learning that promotes distant learning. The programme has the designed capacity for information sharing and exchange such as internet links, review, editing and file attachments, in various formats (Ms Word, Excel, PowerPoint, PDF, Html etc). Analysis of questionnaire items in Table 2 showed that respondents agree that the platform could be innovatively used to conduct collaboratory research among individuals and group and institutions within and across borders. With an average mean score of 3.02 and 3.00 recorded RSU and IAUOE respectively, the respondents agreed that the WhatsApp platform if well configured can be used to promote innovative participatory research among institutions of higher learning in and across borders.

WhatsApp as a Learning Media System can be use for individual and group

Testing hypothesis, 1.
Table 3: Analysis of Variance on the learning facilities in WhatsApp Instant Messaging

Analysis of Variance

SUMMARY

Groups	Count	Sum	Average	Variance
Column 1	10	30.203	3.02	0.0067471
Column 2	10	30.043	3.004	0.0032271

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.00128	1	0.001	0.2566632	0.61857	4.4139
Within Groups	0.089768	18	0.005			
Total	0.091048	19				

Table 3 shows ANOVA results for Hypothesis 1: There is no significant difference in the mean response of RSU and IAUOE students on the facilities in WhatsApp as a support tool for learning and research development revealed that F-Cal, (0.256) is less than F-Critical (4.413); tested at 0.05% degree of freedom. Hence the null hypotheses which states that there is no significant difference in the mean response of RSU and IAUOE on the facilities in WhatsApp as a support tool for learning and research development is accepted.

Testing hypothesis, 2.
Table 4: Analysis of Variance on the effective utilization of WhatsApp as a tool for innovative and collaborative research

Analysis of Variance

SUMMARY

Groups	Count	Sum	Average	Variance
Column 1	12	36.501	3.042	0.0027891
Column 2	12	36.987	3.082	0.011657

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.009842	1	0.01	1.3626376	0.25558	4.3009
Within Groups	0.158907	22	0.007			
Total	0.16875	23				

Table 4 shows ANOVA results for Hypothesis 2: is no significant difference in the mean response of RSU and IAUOE on the use of WhatsApp to achieve innovative and collaborative research among Higher Institutions in sub-regional Africa revealed that F-Cal, (1.362) is less than F-Critical (4.300); tested at 0.05% degree of freedom. Hence the null hypotheses which states that there is no significant difference in the mean response of RSU and IAUOE on the use of WhatsApp to achieve innovative and collaborative research among Higher Institutions in sub-regional Africa is accepted.

Conclusion
Twenty first century has witnessed a revolution in almost every thing known to man in the course of history due to the dominant drive of technology and innovation in the global economy. This has placed everything in the constant stage of change. There is the need to therefore continuously develop new pedagogies and andragogies built around digital mobile technologies that will transform the educational system of our time. The use of Social media (WhatsApp) as a collaborative learning research tool could be one of the strategies to bring our educational practices up to the global standard.

References
Barb, D. (2017, July 28). Fortune.com: One Billion People uses WhatsApp Chat everyday. Retrieved from

http://fortune.com/2017/07/28/whatsapp-one-billion-daily-users/

Bouhnik, D., & Deshen, M. (2014). WhatsApp goes to school: Mobile instant messaging between teachers and students. *Journal of Information Technology Education: Research, 13*, 217-231.

Chokri, B. (2015). The Effectiveness of WhatsApp Mobile Learning Activities Guided by Activity Theory on Students' Knowledge Management. *Contemporary Educational Technology*, 6(3), 221–238.

Cohavi, A. (2013). How did WhatsApp became the strongest social network? *Calcalist*. Retried from http://www.calcalist.co.il/local/article/0,7340,L-3593840,00.html

Church, K., & de Oliveira, R. (2013). What's up with WhatsApp? Comparing mobile instant messaging be-haviors with traditional SMS. *Proceedings of the 15th International Conference on Human-computer Interaction with Mobile Devices and Services (pp. 352-361).* New York, USA: ACM.

Cifuentes, O. E., & Lents, N. H. (2010). Increasing student-teacher interactions at an urban commuter campus through instant messaging and online office hours. *Electronic Journal of Science Education, 14*(1), 1-13.

Deng, L., & Tavares, N. (2013). From Moodle to Facebook: Exploring students' motivation and experiences in online communities. *Computers & Education*, 68, 167–176.

Doering, A., Lewis, C., Veletsianos, G., & Nichols-Besel, K. (2008). Preservice teachers' perceptions of instant messaging in two educational contexts. *Journal of Computing in Teacher Education, 25*(1), 5-12.

Levent, C. (2017). The Impact of Whatsapp Use on Success in Education. http://www.irrodl.org/index.php/irrodl/article/view/3279.

Mingle, J and Adams, M. (2015). Social Media Network Participation and Academic Performance in Senior High Schools in Ghana. Library Philosophy and Practice (*e-journal*), 7.21

Nguyen, D. T., & Fussell, S. R. (2016). Effects of conversational involvement cues on understanding and emotions in instant messaging conversations. *Journal of Language & Social Psychology, 35*(1), 28-55.

Onomo, A.A. (2012). January 15). People power. 15 social media. The Guardian, pp. 38.

Plana, M. G. C., Escofet, M. I. G., Figueras, I. T., Gimeno, A., Appel, C., & Hopkins, J. (2013, July). *Improving learners' reading skills through instant short messages: A sample study using WhatsApp.*4th World-CALL Conference, Glasgow. Retrieved from https://www.researchgate.net/publication/255718202_Improving_learners'_reading_skills_throug

h_instant_short_messages_a_ sample_study_using_WhatsApp

SimilarWeb. (2016). Mobile app ranking. Retrieved from https://www.similarweb.com/

Smit, I. (2012). WhatsApp with BlackBerry; Can messengers (BBM) be MXit? In *Proceedings of the 14th annual conference on world wide web applications*. Cape Town, South Africa: Cape Peninsula University of Technology. Retrieved from http://hdl.handle.net/10394/13628

Tzuk, A. (2013). WhatsApp has 350 Million Active Users a Month. Retrieved from http://www.calcalist.coil/internet/article/0,7340,L-3615097,00.html.

Statista. (2016). Statistics and market data on mobile internet & apps. Retrieved from http://www.statista.com/

Sweeny, S. M. (2010). Writing for the instant messaging and text messaging generation: Using new literacies to support writing instruction. *Journal of Adolescent & Adult Literacy, 54*(2), 121-130.