A SURVEY OF EDUCATIONAL EXPECTATIONS OF STUDENTS: MOBILE DEVICE USAGE IN TERTIARY EDUCATION IN GHANA

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Abstract

Most forms of social collaboration and interaction in education without Information and Communication Technology (ICT), occurs in the classroom or possibly in the teachers' office or staff common room. The proliferation of mobile devices such as Smartphones, Personal Digital Assistants (PDAs) and mobile phones etc. have made an impressive global impact on pedagogy in some institutions while in other institutions of developing nations this impact hasn't been realized yet. The non-realization of the impact of mobile devices could be as a result of the educational modes and systems being run in those particular institutions. This paper focuses on educational expectations of tertiary students regarding the use of mobile devices in two (2) Ghanaian institutions: Accra Polytechnic (AP) and Regional Maritime University (RMU). Questionnaires were administered to a number of students in these institutions to analyze their expectations and elaborate on conclusions and recommendations of students' educational expectations regarding mobile device usage. Through stratified sampling, out of 100 questionnaires distributed to Accra Polytechnic students, we received 80 accurate responses and out of 40 questions distributed to RMU, we received 30 accurate responses. Results of the study revealed that students educational expectations of using mobile devices is not high in the case study tertiary institutions and mobile device impact on education of these institutions hasn't been realized yet.

Index Terms: Mobile Learning, Education, Expectations, Mobile Device (s), Usage, ICT, RMU, AP

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1. INTRODUCTION

As a result of proliferation of mobile networks, social networks and portable devices, modes of education have changed from traditional (face-to-face) and distance learning to electronic learning (e-learning) and mobile learning (m-learning). E-learning has also evolved from desktop computers to mobile computing devices and technologies resulting in Mobile Learning. Mobile Learning is the use of mobile or wireless technology and devices for learning at anytime, anyplace and anywhere *(Quinn, 2000)* [1]. Mobile Learning is advancement in terms of technology and social networks in comparison to e-learning and distance education/learning. Distance Learning

becomes e-learning when ICT is introduced in the learning process. Without the use of ICTs, distance learning and e-learning are not the same *(Guri-Rosenblit, 2005; Asabere and Mends-Brew, 2012)* [2][3].

For example a traditional mode of learning that takes place at a distance away from the institution is distance learning whereas the use of computers especially desktops by learners to access a Learning Management System (LMS) or a learning process is referred to as e-learning [2, 3]. ICT facilities such as videoconferencing, CDs and pen drives are usually augmented in an e-learning process [2][3].

There are many properties that differ when comparing a mobile device and a desktop PC (the usual medium to deliver e-learning). Some of them are the output (i.e. the screen size and resolution capabilities, etc.); input (i.e. keypad, touch-screen, voice input); processing power and memory; Expected applications and media types. In an event or situation of trying to transfer services provided by an e-learning platform into services in an m-learning platform a user realizes that some computing properties should change to fulfill the limitations of the small devices, some are impossible to be delivered in a certain context, but also new services appear, provoked by the mobility (*Trifonova, 2006*) [4]. A comparison of E-learning to M-Learning is depicted below in Table 1.

Table 1: Comparison of E-Learning to M-Learning

Comparison	E-Learning	M-Learning
Portability (easy to carry)	Desktop PCs are not portable	Mobile Devices are Portable
Flexibility	Not Flexible	Flexible
Freedom of Learning	Not Anywhere and Anytime	Anywhere and Anytime
Cost of Devices	Less Expensive	More Expensive
Cost of Technology	Less Expensive	More Expensive
Location Education	Cannot Provide	Can Provide Through GPS

With the growing attention now being given to the role mobile devices play in the educational sector in developing countries such as Ghana, there is a need at this stage to research on the available evidence of the educational benefits that mobile devices provide in developing nations (*Valk et al., 2010*) [5]. Therefore, this article explores mobile device usage by students in two tertiary institutions in Ghana, a University and a Polytechnic. The justification for this is because M-Learning interventions are being researched in Ghana for possible deployment and implementation in tertiary institutions and because developments and proliferations of mobile devices are also increasing in Ghana (*NCA, 2011*) [6]. To explore and research on how mobile device usage contributes to improved educational outcomes and M-Learning, this paper examines two specific issues:

1. The role of mobile devices can play in improving access to education and
2. The role of mobile devices can play in promoting new learning and new learning processes.

According to a recent report from the mobile manufacturer Ericsson (*Ericsson-Jamaica, 2012*) [7], studies show that by 2015, 80% of people accessing the Internet will be doing so from mobile devices. Perhaps more important for education,

Internet capable mobile devices will outnumber computers within the next year. In Japan, over 75% of Internet users already use a mobile as their first choice for access (*Horizon Report, 2011*) [8]. This shift as a means of connecting to the Internet is being enabled by the convergence of three trends: the growing number of Internet-capable mobile devices, increasingly flexible web content, and continued development of the networks that support connectivity (*Woodill, 2011*) [9].

Consequently, to bridge the gaps of mobile device influence and roles in education as well as expectations of mobile device usage amongst students, this paper aims to assess and analyse the educational expectations of students' towards mobile device usage for into teaching and learning at Accra Polytechnic and Regional Maritime University.

1.1 Background of Accra Polytechnic (AP), Ghana

Accra Polytechnic started as a technical School in **1949** to train lower and middle level hands-on skilled manpower for industry. Later in **1957**, it was upgraded to a Technical Institute and in **1963**, renamed Accra Polytechnic by the orders of the first president of Ghana, Osagyefo Dr. Kwame Nkrumah. By the Polytechnic Law, 1992 (PNDC L321), which became fully operative in the 1993/4 academic year, Accra Polytechnic was elevated and attained a tertiary status. The institution was then placed under the Higher Education Council with an autonomous status. Notwithstanding the difficulties that characterized the quick change over from secondary to a tertiary institution, Accra Polytechnic made tremendous progress in its review and expansion of curriculum to suit contemporary needs (*AP, 2006-2012*) [9].

Growth over the years has enabled the polytechnic to develop and improve in infrastructure, teaching and learning facilities. Presently, Accra Polytechnic offers rich curriculum in a variety of programmes and awards Higher National Diploma (HND) certificates through National Board for Professional and Technician Examination (NABPTEX), Ghana and Bachelor of Technology (B-Tech) degrees. Thus, in dictates of the objectives and mission of the polytechnic, a wide range of opportunities are being provided for the Ghanaian populace and feeding of industry with the requisite skilled labour (AP, 2006-2012) [10].

Accra Polytechnic's vision is to become a universally acknowledged centre of excellence for Teaching and Research of applied science, arts and technology and to become a distinguished partner in the provision of Technical, Vocational and Professional Skills to the manpower for the development of Ghana. Accra Polytechnic also has a mission to produce skilled career focused tertiary and middle- level manpower in the areas

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of manufacturing, commence, science, technology, applied social science and applied arts (AP, 2006-2012) [10].

1.2 Background of Regional Maritime University (RMU), Ghana

The Regional Maritime University (RMU), Accra, Ghana, is an international tertiary institution. She attained full University status on the 25th of October, 2007 and was launched as such by His Excellency, John Agyekum Kuffour, President of the Republic of Ghana (RMU, 2010) [11].

The RMU occupies the premises of the old Ghana Nautical College which was established in 1958 to train people for the erstwhile State Shipping Corporation (Black Star Line). On 1st October, 1982, the Government of Ghana promulgated the Regional Maritime Law 1982 which was followed by the signing of the instrument of transfer, handing over the College to the then Ministerial Conference of West and Central African States on Maritime Transport (MINCONMAR), now known as Maritime Organization of West and Central Africa (MOWCA), which negotiated for its regionalization. The College was then re-named The Regional Maritime Academy (RMA). The formal inauguration of the RMA took place on Thursday 26th May, 1983 with the following countries as founding members: Republics of Cameroon, The Gambia, Ghana, Liberia and Sierra Leone. Various academic programmes in levels of Diploma, Bachelor and Master are offered at RMU (RMU, 2010) [11].

2. LITERATURE REVIEW

2.1 Mobile & Social/Collaborative Learning

Mobile and Social/Collaborative Learning is the use of wireless technology-enabled mobile devices for collaborative and interactive learning at anytime, anyplace and anywhere. Mobile and Social/collaborative Learning is advancement in terms of technology and social networks such as Skype, Facebook, Yahoo Messenger, YouTube, Twitter etc. in comparison to e-learning. It is generally recognised that traditional teaching methods have numerous drawbacks. One of them is the fact that very often students attend a course, take notes and leave without any collaboration in the classroom. Mobile Social/Collaborative learning tries to solve this inefficiency (Economides and Vasiliou, 2007) [12].

Mobile and Social/Collaborative Learning is an educational method in which students work together in small groups towards a common goal using mobile devices (Dillenbourg et al., 1996; Hafner and Ellis, 2004) [13][14]. The teacher acts as a coach, mentor or facilitator of the learning process. The successful achievement of the common goal is shared among all group members. The students take initiative and responsibility for learning. They actively learn by doing, by practice, by experience. Collaborative learning is a student-centred, task-based and activity-based learning approach that provides several advantages to the student (Dillenbourg et al., 1996; Hafner and Ellis, 2004) [13][14].

2.2 Mobile Devices for Learning

Mobile devices continue to merit close attention as an emerging technology for teaching and learning. The mobile devices available today are multi-functional and robust. The story of mobile devices is no longer solely about the way they are carried. Mobile devices whether they are mobile phones, Smartphones, i-Pads, or similar "always-connected" devices are doorways to the content and social tapestries of the network connectivity, and they function or work with just a touch *(Ericsson-Jamaica, 2012)* [7].

Mobile Devices embody the convergence of several technologies that lend themselves to educational use, including electronic book readers, annotation tools, applications for creation and composition, and social networking tools. Characteristics of mobile devices such as Global Positioning System (GPS) allows sophisticated location and positioning, accelerometers and motion sensors enable the device to be used in completely new ways, digital capture and editing bring rich tools for video, audio, and imaging. Innovation in mobile device development continues at an unprecedented pace *(Ericsson-Jamaica, 2012)* [7]

The number of mobile devices produced and purchased each year continues to grow, and the new devices like the i-Pad and its counterparts are expanding our notions of portability. With increased screen real estate, battery life, and input options, these new mobile devices have rapidly become a viable alternative to heavier, more expensive laptop computers. It is not uncommon to find that someone carries both a smart phone and a tablet; when a quick glance at email, social networks, or other tools is needed, the smart phone fills the bill (Ericsson-Jamaica, 2012) [7]. There are many mobile devices that can be used for learning as well as teaching: Notable mobile devices for mobile learning include: Mobile phones, Personal Digital Assistants (PDAs), Smartphones, Notebook Computers and lastly Tablet Devices and Computers.

2.2.1 Mobile Phones

The largest categories of devices for mobile learning are mobile phones. Mobile phones (also called cell phones) work by connecting through radio signals to special base stations that are

linked in a cellular network. As a user moves from one cell area to another, there is a handoff (network service/connection) from one base station to the next. Sometimes the handoff loses a signal, especially in locations such as tunnels and lifts *(Woodill, 2011)* [9].

2.2.2 Personal Digital Assistants (PDAs)

Personal digital assistants (PDAs), sometimes referred to as palmtop computers, are mobile devices with personal organization software, multimedia and office productivity functionality in a very small and portable package *(Woodill, 2011)* [9].

2.2.3 Smartphones

As mobile phones became smaller, they also took on more features and functions. Paging devices (Pagers) or "beepers," popular in the 1980s, became incorporated into mobile phones such as the BlackBerry from the Canadian company, Research in Motion (RIM). Many phones also developed personal organizing features such as those found in many PDAs *(Woodill, 2011)* [9].

Gradually, a new type of phone known as a "Smartphone" took shape. Current Smartphones have taken on some of the functionality of laptop computers, allowing access to e-mail, documents, and Microsoft Office productivity software. Smartphones usually have a miniature QWERTY keyboard, just like a PCs virtual keyboard on a touch screen. Smartphones are currently seen as being one of the most suitable platforms for mobile learning purposes *(Woodill, 2011)* [9].

2.2.4 Notebook Computers

According to *(Woodill, 2011)* [9] some people have argued that laptop or notebook computers are not part of mobile computing. Others, including *(Woodill, 2011)* [9], see them as part of the mix of technologies that allows people to easily move around and connect to the information cloud wherever they are. Furthermore, according to *(Woodill, 2011)* [9] notebook and laptop computers have increasingly become thinner, lighter, and smaller, making it even easier for them to be used as mobile learning devices. At the same time, they have become more powerful and much faster than versions available only a few years ago.

2.2.5 Tablet Devices and Computers

Tablet computers are special laptop computers shaped like slates which use an electronic stylus or a digital pen to input information onto a touch screen. In 2010, many tablet computers were introduced into the market, including the Apple i-Pad. Some tablet computers are basically laptop computers with a screen that swivels so that it is on the outside of the computer when it is closed. Other tablet computers have more limited functionality and are used mostly as "e-book readers." These computers, such as the Amazon Kindle, can download documents and books for use by mobile learners at any time *(Woodill, 2011)* [9].

3. RELATED WORK

Research of student educational expectations from mobile devices has been analysed, discussed and elaborated by (Nagi, 2008) [15]. In (Nagi, 2008) [15] a survey was conducted at Assumption University of Thailand to gauge the opinion of students about usage of mobile devices for their education. Using the results of the survey, (Nagi, 2008) [15] further investigated into the expectations of students in Assumption University for enhanced ICT services through mobile devices. The study in (Nagi, 2008) [15] also provided two recommendations for improving student services through mobile learning.

Valk et al., (2010) [5], reviews evidence of the role mobile phone-facilitated Mobile Learning (M-Learning) is contributing to improved educational outcomes in the developing countries of Asia. This was done by exploring the results of six M-Learning pilot projects that took place in the Philippines, Mongolia, Thailand, India, and Bangladesh. In particular (Valk et al., 2010) [5] examines the extent to which the use of mobile phones helped to improve educational outcomes in two specific ways: 1) in improving access to education, and 2) in promoting *new learning*. Analysis of the projects indicates that while there is important evidence of mobile phones facilitating increased access, much less evidence exists as to how to promote new methods of learning.

4. RESEARCH OBJECTIVES AND QUESTIONS

The main objectives of this research paper are to:
- Analyse the educational expectations of selected AP and RMU students regarding mobile device usage.
- Discuss, suggest and contribute on how to improve the found student expectations after analysis.

In order to measure these objectives, the following twelve (12) research questions for both AP and RMU were formulated to be tested.

- **RQ1**: Do students of AP and RMU expect to receive messages through Short Message Service (SMS) about news and announcements through their mobile devices?
- **RQ2**: Do students of AP and RMU expect to listen to audio lectures using their mobile devices?

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- **RQ3**: Do students of AP and RMU expect to watch video lectures using their mobile devices?
- **RQ4**: Do students of AP and RMU expect to read e-Books and articles using their mobile devices?
- **RQ5**: Do students of AP and RMU expect to read lectures notes and power-point slides using their mobile devices?
- **RQ6**: Do students of AP and RMU expect to improve their English skills using mobile devices?
- **RQ7**: Do students of AP and RMU expect to communicate with teachers using their mobile devices?
- **RQ8**: Do students of AP and RMU expect to communicate with each other using their mobile devices?
- **RQ9**: Do students of AP and RMU expect to play educational games using mobile devices?
- **RQ10**: Do students of AP and RMU expect to access their institution's website using their mobile devices?
- **RQ11**: Do students of AP and RMU expect to register their courses using their mobile devices?
- **RQ12**: Do students of AP and RMU expect to pay their institution bills using their mobile devices?

5. RESEARCH METHODOLOGY

We adopted exploratory and integrated literature in this study. We examined current literature about ICT usage in education, mobile devices for learning, and mobile and social/collaborative learning in order to establish a general overview students expectations regarding mobile device usage.

For effective analysis, survey questionnaires were designed in accordance to research questions. The questionnaires took the form of printed questions given to a selected group of students of both RMU and AP (respondents) for answers and responses.

6. DATA ANALYSIS

The populations of this study comprised of students in categories of Bachelor, Higher National Diploma (HND) and Diploma in Business Studies (DBS) of Accra Polytechnic and Master, Bachelor and Diploma students of RMU. The current student population of Accra Polytechnic is approximately 10,619 and that of RMU is approximately 3,000. The study, which was a survey research, adopted a survey design methodology through questionnaires. Gathering of data from the questionnaires which consisted of eleven 11 questions were categorized/divided as follows: Demographic Characteristics of Students (Questions 1 and 2), Educational Level and Stage of Students (Questions 3 and 4), Ownership/Access to a Mobile Device (Questions 5, 6 and 7), Mobile Device Usage Expectations for Learning which represented the Research

Questions of this Paper (Question 8) and General Knowledge about Mobile Learning (M-Learning) (Question 9, 10 and 11). Most of the questions were closed-end and had tick boxes in which students who responded ticked their corresponding answers. Questions 9 and 10 were open-end questions and involved writing brief answers on spaces provided on the questionnaire. We used tables and charts features of Microsoft Office Word and Excel 2010 for our data analysis.

7. RESEARCH FINDINGS

Based on exploratory literature review as discussed above, we developed research questions which analysed the expectations of students' mobile device usage in AP and RMU. These research questions were tested, analysed and elaborated in our research discussions. The sections below elaborate our questionnaire responses.

7.1 Questionnaire Responses – Accra Polytechnic (AP), Ghana

Through stratified sampling, we distributed one hundred (100) survey questionnaires to students of Accra Polytechnic consisting of Bachelor, HND and DBS levels and categories. Out of the 100 questionnaires distributed, we received eighty (80) accurate responses representing 80% in accordance to the information needed for analytical and testing results.

Questionnaires received from Accra Polytechnic indicated that more females (44) representing 55% responded than males (36) representing 45%. The largest age group that responded to the questionnaires was 20-29 years (78.75%) followed by 30-39 years (18.75%) and 40-49 years (2.5%). None of the student respondents (0%) were between the ages of 10-19 years and 50-59 years. Most of the students that filled and responded to the questionnaires among the 80 received were HND students representing 60%, followed by DBS and Bachelor representing 22.5% and 16.25% respectively. Tables 2, 3 and 4 below depict the responses for questions 1, 2 and 3 of the student respondents from Accra Polytechnic.

The elaborations of the received responses of Accra Polytechnic are presented below:
- The responses to Question 1 (Gender of the Respondents) are shown in Table 2.

Table-2: Gender of Student Respondents (Q1)

GENDER	NUMBER	PERCENTAGE
Male	36	45%
Female	44	55%
TOTAL	**80**	**100%**

- The responses to Question 2 (Age Category of the Respondents) are shown in Table3.

Table-3: Age Category of Student Respondents (Q2)

AGE	NUMBER	PERCENTAGE
50-60 years	0	0.0%
40-49 years	2	2.5%
30-39 years	15	18.75%
20-29 years	63	78.75%
10-19 year	0	0.0%
TOTAL	**80**	**100%**

- The responses to Question 3 (Educational Level of the Respondents) are shown in Table 4.

Table-4: Educational Level of Student Respondents (Q3)

EDUCATIONAL LEVEL	NUMBER	PERCENTAGE
Bachelor	13	16.25%
HND	48	60%
DBS	18	22.5%
Unanswered	1	1.25%
TOTAL	**80**	**100%**

- The responses to Question 5 (Mobile Device Ownership of the Respondents) are shown in Table 5. All of the respondents owned a mobile device.

Table-5: Mobile Device Ownership of Student Respondents (Q5)

MOBILE DEVICE OWNERSHIP	NUMBER	PERCENTAGE
Yes	80	100%
No	0	0%
TOTAL	**80**	**100%**

- The responses to Question 6 (Mobile Device Ownership by Type of the Respondents) are shown in Table 6. 9 of the students owned a Smartphone and most of the students (66) representing 82.5% owned a mobile phone. None of the students owned a PDA.

Table-6: Mobile Device Ownership by Type of Student Respondents (Q6)

MOBILE DEVICE OWNERSHIP BY TYPE	NUMBER	PERCENTAGE
Smartphone	9	11.25%
PDA	0	0%
Mobile Phone	66	82.5%
i-pod/i-phone	1	1.25%
Tablet PC	1	1.25%
Other	3	3.75%
TOTAL	**80**	**100%**

The responses to Question 7 (Reasons why Some Respondents Don't Own a Mobile Device) are shown in Table 7. Response numbers to question 7 were zero (0) due to the fact that all students owned a mobile device (100%) – from Table 6.

Table-7: Mobile Device Non Ownership of Student Respondents (Q7)

REASONS FOR NOT OWNING A MOBILE DEVICE	NUMBER	PERCENTAGE
Not necessary/Don't see its use	0	0%
Too expensive/cannot afford	0	0%
TOTAL	**0**	**0%**

- The responses to Question 8 (Mobile Device Educational Usage of Respondents) are shown in Figure 1. Figure 1 shows that 4 out of the total of Bachelor student respondents to question 8 (19) expect to receive SMS from AP (21%). 3 expect to communicate with each other (16%). 2 each of 4 different sets of the student respondents expect to communicate with teachers (10%), register courses (10%), read e-books (10%) and listen to audio lectures (10%). 1 each of 4 different sets of the student respondents expect to watch audio lectures (5%), improving English skills (5%), accessing AP's website (5%) and reading lecture notes (5%). There were no Bachelor student expectations of paying bills (0%) or playing educational games (0%).
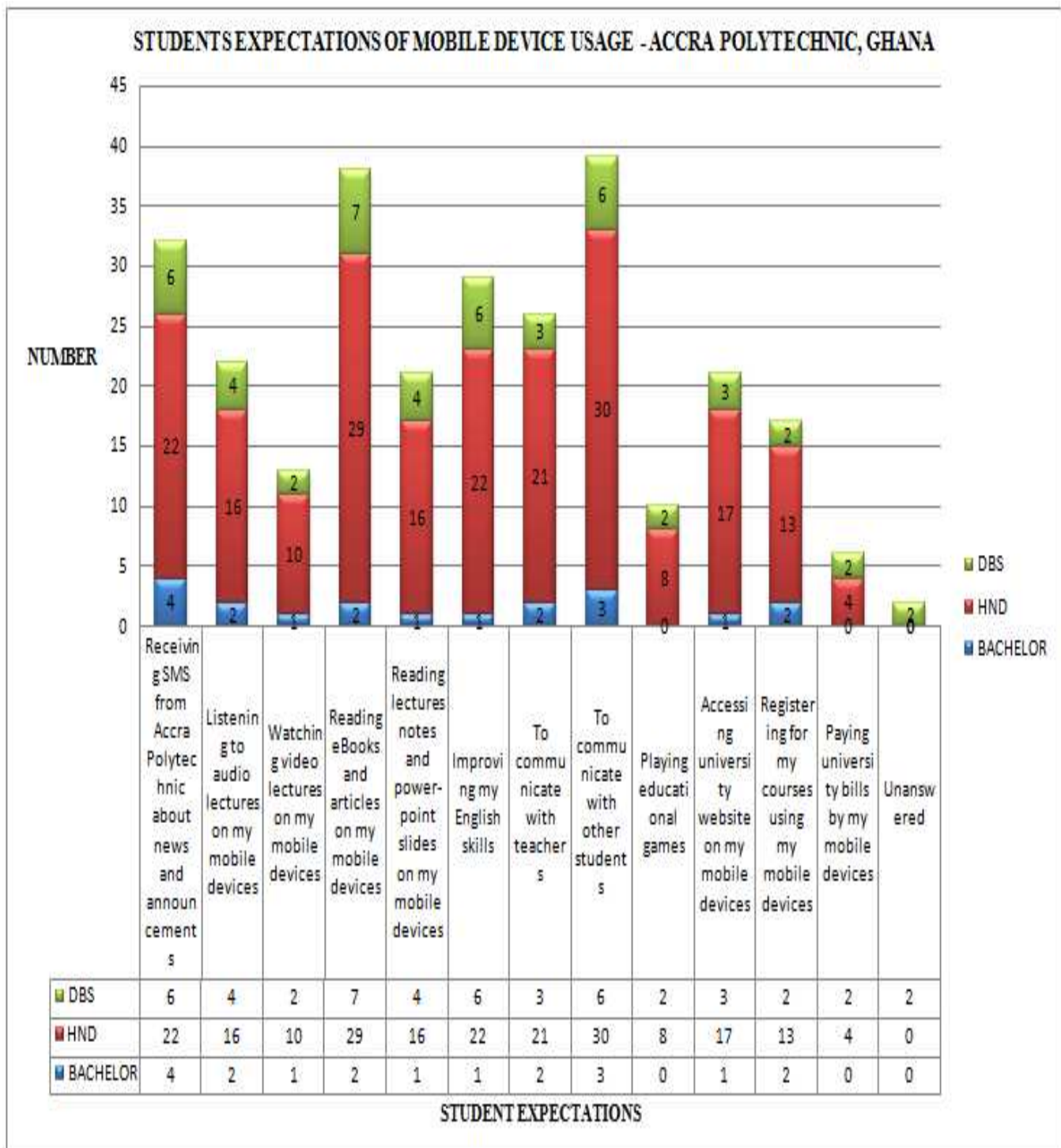
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Fig-1: Mobile Device Educational Usage – Accra Polytechnic Student Respondents (Q8)

Figure 1 also shows that 30 out of the total of HND student respondents of question 8 (208) expect to communicate with each other, (14%), 29 expect to read e-books and articles and 22 each of 2 different sets expect to receive SMS from AP (10%) and improving English skills (10%). The rest of the HND student expectations regarding mobile device usage in education at AP are further depicted in Figure 1.

In the DBS students category shown in Figure 1, 7 out of the total of DBS student respondents (47) expect to read e-books (14%) and 6 each of 3 different sets expect to receive SMS from AP (13%), communicate with each other (13%) and improving English skills (13%). The rest of the DBS student expectations regarding mobile device usage in education at AP are further depicted in Figure 1.

- The responses to Question 9 (*Knowledge about the Meaning of M-Learning*) are shown in Figure 2. Figure 2 shows that out of the total 80 student respondents, 50 of them (63%) don't have any knowledge about the meaning of m-learning, 21 responded that they knew the meaning of m-learning representing 26% and 9 of the students didn't know the meaning of m learning
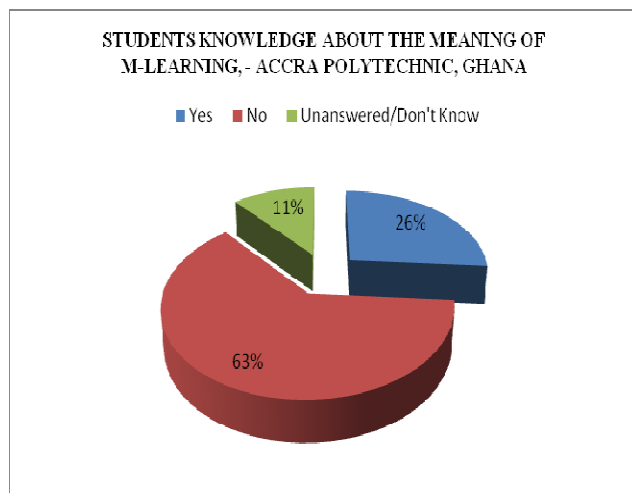

Fig-2: Students Response to Meaning of Mobile Learning (M-Learning) (Q9)

The responses to Question 10 (Whether M-Learning was an Educational Mode at AP) are shown in Figure 3. Figure 3 shows that out of the 21 student respondents who responded to the affirmative in question 9, 7 of them (33%) responded that m-learning is practiced at AP while 14 of them responded "No" to m-learning at AP (67%).
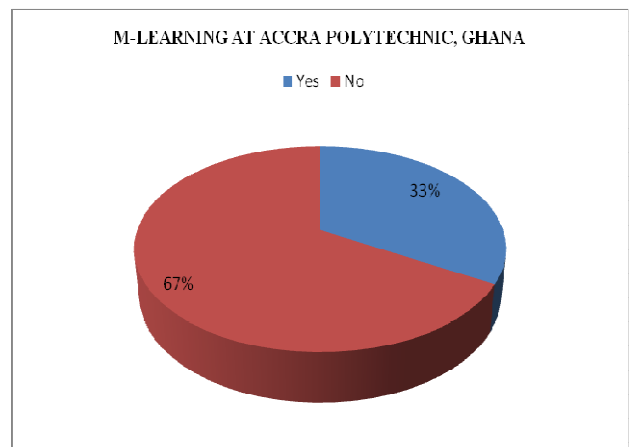

Fig-3: Students Response of Mobile Learning (M-Learning) at Accra Polytechnic (Q10)

The responses to Question 11 (Whether Students who didn't Have Knowledge about M-Learning (Q9) would be Interested Know about it) are shown in Figure 4. Figure 4 shows that out of the 50 students who responded "No" to question 9, 45 of them (90%) expressed interest to know about m-learning and 5 responded that they are not interested to know about m-learning (10%).
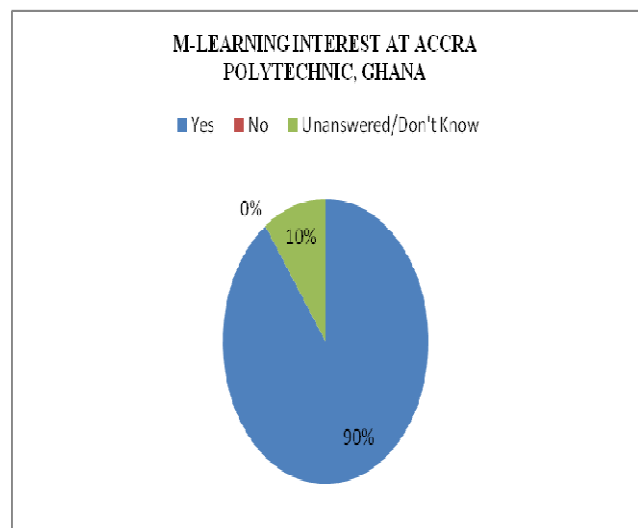

Fig-4: Mobile Learning (M-Learning) Interest of Student Respondents at AP, Ghana (Q11)

- The responses to Question 4 (*Educational Stage of the Respondents*) are shown in Table 8.

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Table-8: Educational Stage of Student Respondents (Q4)

EDUCATIONAL STAGE (Bachelor)	NUMBER	PERCENTAGE
Year One (1)	5	6.3%
Year Two (2)	0	0%
Year Three (3)	0	0%
Year Four (4)	8	10%
EDUCATIONAL STAGE (HND)		
Year One (1)	12	15%
Year Two (2)	5	6.3%
Year Three (3)	31	38.7%
EDUCATIONAL STAGE (DBS)		
Year One (1)	5	6.3%
Year Two (2)	13	16.2%
Unanswered	1	1.2%
TOTAL	**80**	**100%**

7.2 Questionnaire Responses – Regional Maritime University (RMU), Ghana

Through stratified sampling, we distributed forty (40) survey questionnaires to students of RMU consisting of Master, Bachelor and Diploma students. Out of the 40 questionnaires distributed, we received thirty (30) accurate responses representing 75% only from Bachelor students in accordance to the required information needed for analytical and testing results.

Questionnaires received from RMU indicated that all the questions were filled and responded by males (30) representing 100%. The largest age group that responded to the questionnaires was 20-29 years (93.30%) followed by 30-39 years (6.7%). None of the student respondents (0%) were between the ages of 10-19 years, 40-49 and 50-59 years. Tables 9, 10 and 11 below depict the responses for question 1, 2 and 3 of the students from RMU.

The elaborations of the received responses of RMU are presented below:

- The responses to Question 1 (*Gender of the Respondents*) are shown in Table 9.

Table-9: Gender of Student Respondents (Q1)

GENDER	NUMBER	PERCENTAGE
Male	30	100%
Female	0	0%
TOTAL	**30**	**100%**

- The responses to Question 2 (Age Category of the Respondents) are shown in Table 10.

Table-10: Age Category of Student Respondents (Q2)

AGE	NUMBER	PERCENTAGE
50-60 years	0	0.0%
40-49 years	0	0.0%
30-39 years	2	6.70%
20-29 years	28	93.30%
10-19 year	0	0.0%
TOTAL	**30**	**100%**

- The responses to Question 3 (Educational Level of the Respondents) are shown in Table 11.

Table-11: Educational Level of Student Respondents (Q3)

EDUCATIONAL LEVEL	NUMBER	PERCENTAGE
Master	0	0%
Bachelor	30	100%
Diploma	0	0%
TOTAL	**30**	**100%**

- The responses to Question 5 (Mobile Device Ownership of the Respondents) are shown in Table 12. All of the respondents owned a mobile device.

Table-12: Mobile Device Ownership of Student Respondents (Q5)

MOBILE DEVICE OWNERSHIP	NUMBER	PERCENTAGE
Yes	30	100%
No	0	0%
TOTAL	**30**	**100%**

- The responses to Question 6 (Mobile Device Ownership by Type of the Respondents) are shown in Table 13. All of the respondents owned a mobile device. Most of the student

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respondents (29) representing 97% owned a mobile phone and 1 student owned an i-pod/i-phone. None of the students owned a PDA.

Table-13: Mobile Device Ownership by Type of Student Respondents (Q6)

MOBILE DEVICE OWNERSHIP BY TYPE	NUMBER	PERCENTAGE
Smartphone	0	0%
PDA	0	0%
Mobile Phone	29	97%
i-pod/i-phone	1	3%
Tablet PC	0	0%
Other	0	0%
TOTAL	**30**	**100%**

• The responses to Question 7 (Reasons why Some Respondents Don't Own a Mobile Device) are shown in Table 14. Response numbers to question 7 were zero (0) due to the fact that all students owned a mobile device (100%) – from Table 12.

Table-14: Mobile Device Non Ownership of Student Respondents (Q7)

REASONS FOR NOT OWNING A MOBILE DEVICE	NUMBER	PERCENTAGE
Not necessary/Don't see its use	0	0
Too expensive/cannot afford	0	0
TOTAL	**0**	**0**

• The responses to Question 8 (*Mobile Device Educational Usage of Respondents*) which represents only Bachelor students of RMU due to responses received are shown in Figure 5 above. Figure 5 shows that 28 out of the total of Bachelor student respondents (122) expect to communicate with each other (23%), 15 expect to communicate with teachers (12%), 12 expect to receive SMS from RMU (10%) and 12 expect to read e-books and articles (10%). 10 student

respondents expect to listen to audio lectures (8%), 10 expect to access the university website (8%) and 8 expect to read lecture notes and MS PowerPoint slides (7%). The rest of the Bachelor student expectations regarding mobile device usage in education at RMU are further depicted in Figure
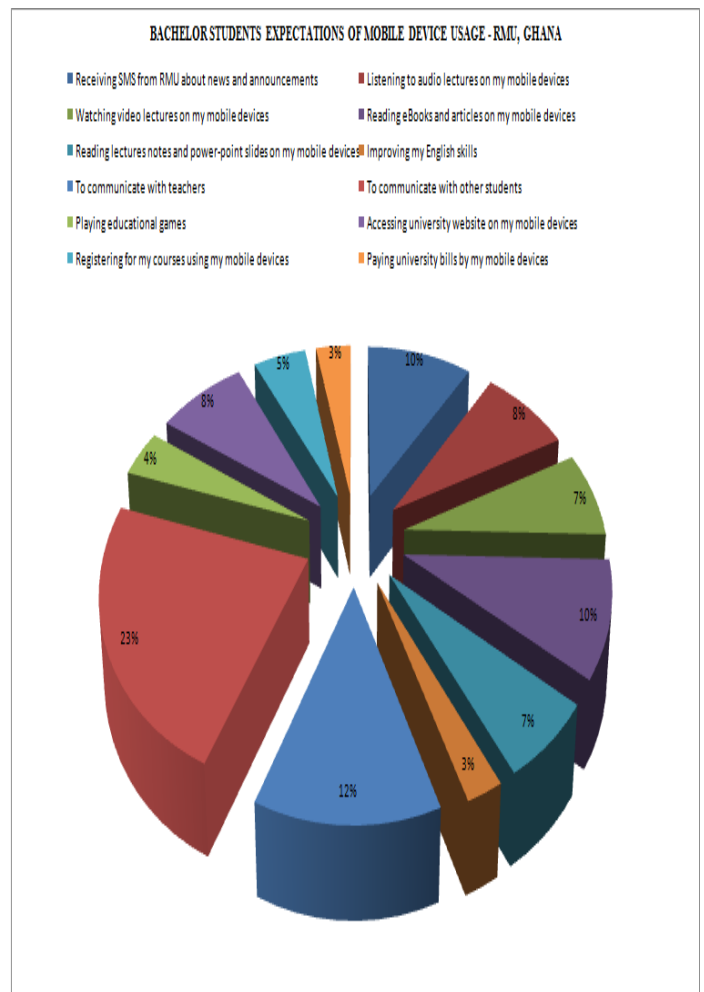

Fig-5: Mobile Device Educational Usage – RMU Student Respondents (Q8)

• The responses to Question 9 (Knowledge about the Meaning of M-Learning) are shown in Figure 6. Figure 6 shows that out of the total 30 student respondents, 10 of them (33%) don't have any knowledge about the meaning of m-learning and 20 responded that they knew the meaning of m-learning representing 67%.
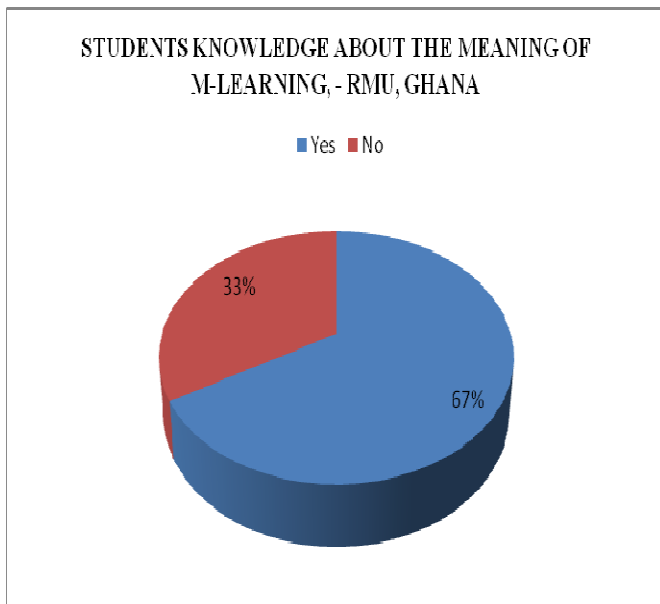
Fig-6: Students Response to Meaning of Mobile Learning (M-Learning) at RMU, Ghana (Q9)

- The responses to Question 10 (Whether M-Learning was an Educational Mode at RMU) are shown in Figure 7. Figure 7 shows that out of the 20 student respondents who responded to the affirmative in question 9, 3 of them (35%) responded that m-learning is practiced at RMU while 17 of them responded "No" to m-learning at RMU (85%).
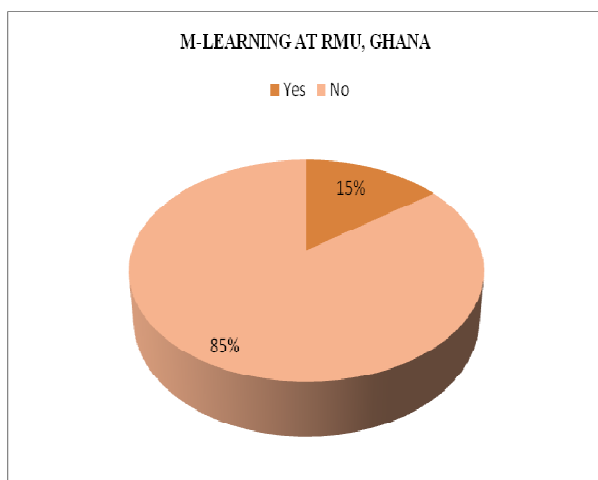

Fig-7: Students Response of Mobile Learning (M-Learning) at RMU, Ghana (Q10)

- The responses to Question 11 (Whether Students who Didn't Have Knowledge About M-Learning (Q9) Would be Interested Know About it)) are shown in Figure 8. Figure 8 shows that out of the 10 students who responded "No" to question 9, 10 of them (100%) expressed interest to know about m-learning and No student responded that they wouldn't like to know about m-learning (0%).
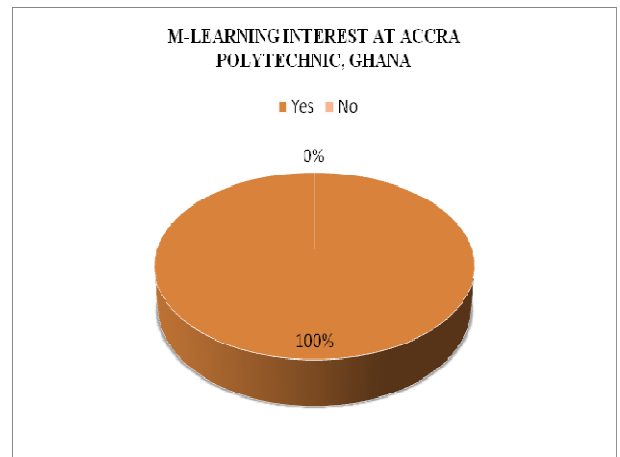

Fig-8: Mobile Learning (M-Learning) Interest of Student Respondents at RMU, Ghana (Q11)

- The responses to Question 4 (Educational Stage of the Respondents) are shown in Table 15.

Table-15: Educational Stage of Student Respondents (Q4)

EDUCATIONAL STAGE (Bachelor)	NUMBER	PERCENTAGE
Year One (1)	4	13.3%
Year Two (2)	15	50.00%
Year Three (3)	11	36.7%
Year Four (4)	0	0%
EDUCATIONAL STAGE (Master)		
Year One (1)	0	0%
Year Two (2)	0	0%
Year Three (3)	0	0%
EDUCATIONAL STAGE (Diploma)	0	0%
Year One (1)	0	0%
Year Two (2)	0	0%
TOTAL	80	100%

8. RESEARCH DISCUSSIONS AND CHALLENGES

According to Tables 5, 6, 7, 12, 13 and 14 of this research study, all student respondents from AP and RMU owned a particular category of mobile devices in which most of them owned mobile phones. Therefore, mobile devices already owned by students have initially paved way for their expectations as well as m-learning. However, educational expectations in both institutions were very low and minimal. According to Figure 1, the research revealed that in Accra Polytechnic, communicating with students was the highest in terms of HND students and other educational expectations involving lecture delivery and facilitation such as listening to audio lectures and watching video lectures were low and minimal, especially concerning DBS and Bachelor students. Referring to Figure 1, other educational expectations such as website accessing, paying bills and course registration had low ratings and percentages. According to Figures 2 and 4, the study revealed that most of the student respondents of Accra Polytechnic didn't have knowledge about the meaning of m-learning and would like to know what m-learning is.

The research also revealed similar findings in RMU. Student respondents of RMU were Bachelor students and all of them owned mobile devices. The highest educational expectation of student respondents in RMU was to communicate with other students. Other educational expectations such as listening and watching video lectures also had low percentage ratings. Referring to Figure 5, other educational expectations such as website accessing, paying bills and course registration had low ratings and percentages. According to Figures 6 and 8, the study revealed that most of the student respondents of RMU know the

meaning of m-learning and the few who don't know would like to know what m-learning is. The research study according to Figures 3 and 7 respectively reveal that m-learning is not highly practiced as an educational mode in both case study institutions. Some of the student respondents especially in Accra Polytechnic, did not understand certain ICT terms in the questionnaire. For example the meaning of current mobile devices such as Smartphones, i-pods/i-pads and tablet PCs. Other terms such as m-learning were also not fully understood at both case study sites. The researchers had a challenge to explain through e-mail and face-to-face the meaning of these ICT terms to the student respondents in order for them to fill in the questionnaires accurately and precisely. Without these explanations we would have got wrong responses.

8.1 Research Questions Testing

The Research Questions for this paper was carried out through review of literature of related work consisting of (Valk et al., 2010) [5] and (Nagi, 2008) [15]. As we described in Section 4, twelve (12) research questions were used for the investigation of this study. A summary of the results of the survey findings of the research questions are presented and elaborated below in Table 16. With reference to figure 1, in terms of the totality expectations, for Bachelor, HND and DBS at AP were 19, 218 and 49 respectively. RMU total Bachelor expectations were 122. In our research questions testing we used a percentage scale in which 80% -100% represents "Very High Expectations", 60% - 79% represents "High Expectations", 40% - 59% represents "Partial Expectations" 20% - 39% represents "Low Expectations" , 11% -19% represents " Very Low Expectations" and 0%-10% represents "Extremely Low Expectations"

Table-16: Summary of Survey of Research Findings – Mobile Device Usage Expectations of Students

Research Questions	Findings	Conclusion
RQ1a: Do students of AP expect to receive messages through SMS about news and announcements through their mobile devices? [5][15]	**Yes**: Bachelor (4 out of 19) - 21% HND – (22 out of 208) - 10% DBS – (6 out of 47) - 13%	Bachelor - Low Expectations HND – Extremely Low Expectations HND – Very Low Expectations
RQ1b: Do students of RMU expect to receive messages through SMS about news and announcements through their mobile devices? [5][15]	**Yes**: Bachelor (12 out of 122) – 10%	Extremely Low Expectations
RQ2a: Do students of AP expect to listen to audio lectures using their mobile devices? [15]	**Yes**: Bachelor (2 out of 19) - 10% HND (16 out of 208) – 8% DBS (4 out of 47) – 8%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations
RQ2b: Do students of RMU expect to listen to audio lectures using their mobile devices? [15]	**Yes**: Bachelor (10 out of 122) – 8%	Extremely Low Expectations

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RQ3a: Do students of AP expect to watch video lectures using their mobile devices? [15]	**Yes**: Bachelor (1 out of 19) – 5%, HND (10 out of 208) – 5% DBS (2 out of 47) – 4%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations
RQ3b: Do students of RMU expect to watch video lectures using their mobile devices? [15]	**Yes**: Bachelor (9 out of 122) – 7%	Extremely Low Expectations
RQ4a: Do students of AP expect to read e-Books and articles using their mobile devices? [15]	**Yes**: Bachelor (2 out of 19) – 10% HND (29 out of 208) – 14% DBS (7 out of 47) – 15%	Bachelor: Extremely Low Expectations HND: Very Low Expectations DBS: Very Low Expectations
RQ4b: Do students of RMU expect to read e-Books and articles using their mobile devices? [15]	**Yes**: Bachelor (12 out of 122) – 10%	Extremely Low Expectations
RQ5a: Do students of AP expect to read lectures notes and power-point slides using their mobile devices? [15]	**Yes**: Bachelor (1 out of 19) – 5% HND (16 out of 208) – 8% DBS (4 out of 47) – 8%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations
RQ5b: Do students of RMU expect to read lectures notes and power-point slides using their mobile devices? [15]	**Yes**: Bachelor (8 out of 122) – 6%	Extremely Low Expectations
RQ6a: Students of AP expect to improve their English skills using mobile devices? [15]	**Yes**: Bachelor (1 out of 19) – 5% HND (22 out of 208) – 10% DBS – (6 out of 47)- 13%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Very Low Expectations
RQ6b: Do students of RMU expect to improve their English skills using mobile devices. [15]	**Yes**: Bachelor (3 out of 122) – 2%	Extremely Low Expectations
RQ7a: Do students of AP expect to communicate with teachers using their mobile devices? [5][15]	**Yes**: Bachelor (2 out of 19) – 10% HND (21 out of 208) – 10% DBS (3 out of 47) – 6%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations
RQ7b: Do students of RMU expect to communicate with teachers using their mobile devices. [5][15]	**Yes**: Bachelor (15 out of 122) – 12%	Very Low Expectations
RQ8a: Do students of AP expect to communicate with each other using their mobile devices? [5][14]	**Yes**: Bachelor (3 out of 19) – 16% HND – (30 out of 208) - 14% DBS – (6 out of 47) - 13%	Bachelor: Very Low Expectations HND: Very Low Expectations DBS: Very Low Expectations
RQ8b: Do students of RMU expect to communicate with each other using their mobile devices? [5][15]	**Yes**: Bachelor (28 out of 122) – 23%	Low Expectations
RQ9a: Do students of AP expect to Play educational games using mobile devices? [5][15]	**Yes**: Bachelor (0 out of 19) – 0%, HND (8 out of 208) – 4% DBS (2 out of 47) – 4%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations
RQ9b: Do students of RMU expect to Play educational games using mobile devices? [5][15]	**Yes**: Bachelor (5 out of 122) – 4%	Extremely Low Expectations
RQ10a: Do students of AP expect to access their institution's website using their mobile devices? [15]	**Yes**: Bachelor (1 out of 19) – 5% HND (17 out of 208) – 8% DBS – (3 out of 47) - 6%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations

RQ10b: Do students of RMU expect to access their institution's website using their mobile devices? [15]	**Yes**: Bachelor (10 out of 122) – 8%	Extremely Low Expectations
RQ11a: Do students of AP expect to register their courses using their mobile devices? [15]	**Yes**: Bachelor (2 out of 19) – 10% HND (13 out of 208) – 6% DBS (2 out of 47) – 4%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations
RQ11b: Do students of RMU expect to register their courses using their mobile devices? [15]	**Yes**: Bachelor (6 out of 122) –5%	Extremely Low Expectations
RQ12a: Do students of AP expect to pay their institution bills using their mobile devices? [15]	**Yes**: Bachelor (0 out of 19) – 0% HND (4 out of 208) – 2% DBS – (2 out of 47) - 4%	Bachelor: Extremely Low Expectations HND: Extremely Low Expectations DBS: Extremely Low Expectations
RQ12b: Do students of RMU expect to pay their institution bills using their mobile devices? [15]	**Yes**: Bachelor (4 out of 122) –3%	Extremely Low Expectations

9. CONCLUSION AND RECOMMENDATION

Mobile learning, a new flexible learning landscape is currently being adopted worldwide in both academia and industry. The use of mobile devices to learn ubiquitously (m-learning) is of utmost and vital importance due to its benefits and contributing factors to education/learning efficiency and sustainability. From this research we can conclude that students of the case study institutions have extremely low expectations regarding mobile device usage for education and haven't yet realized mobile device importance and impact in education.

This study investigated students' educational expectations of mobile device usage in two tertiary institutions in Ghana namely Accra Polytechnic and Regional Maritime University. Table 16 revealed that majority of the educational expectations of students regarding mobile device usage are "Extremely Low" followed by "Very Low". In comparison, the only high percentage ratings of students in these institutions were RQ1a and RQ8b involving Bachelor students of AP and RMU respectively.

This research revealed that m-learning practices and mobile device usage by students in terms of education have limitations and are rarely practiced in AP and RMU (Fig-3 and Fig-7). Therefore, this paper recommends that Accra Polytechnic, Regional Maritime University as well as all other tertiary institutions in Ghana should educate their students on how to facilitate mobile devices for educational usage so that the educational expectations of students elaborated in this paper can be met. Such achievements will further promote training objectives of institutions in order to accomplish their educational mission and vision.

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Nana Yaw Asabere received his BSc in Computer Science from Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana in 2004 and MSc in ICT from Aalborg University, Denmark in 2010. He has eight (8) years of teaching/lecturing experience at tertiary level of education in Ghana and is currently on Lectureship Study Leave granted by Accra Polytechnic, Ghana pursuing his PhD in Computer Software Engineering at School of Software, Dalian University of Technology, Dalian, P.R. China. Nana Yaw has a number of publications to his credits in International Journals and his research interests include: Artificial Intelligence (AI), Software Engineering, Expert Systems, Mobile Learning, E-learning, ICT in Education, Information Systems, Multimedia, Recommender Systems, Social Computing, Wireless/Data/Mobile Communication and Computing Technologies.

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Edwin Mends-Brew Joined Accra Polytechnic as a Lecturer at the Mathematics and Statistics Department in the year 2000 and subsequently appointed Head of Department in 2002. In August 2007, he was elected as the Dean of School of Applied Sciences and Arts. In October 2009, he was appointed the Vice Rector by the Governing Council of Accra Polytechnic having successfully gone through an election. As a Dean for more than a couple of years of the School of Applied Sciences and Arts, he was very instrumental in the successful implementation of the CBT/CBL programme in Fashion Design and Textiles Technology and also the full accreditation of two Bachelor Programmes namely: Science Laboratory Technology and Fashion Design and Textiles. Edwin Mends-Brew believes that quality control and assurance should be the hallmark of all tertiary institutions if the widespread disparity between what educational institutions produce and what the labour market demands is to be reduced significantly. He has attended many conferences, seminars and workshops on research, leadership and management of academic faculties and institutions including: NPT/UCC – Capacity Building Project on Leadership and Management in Polytechnics; NUFFIC/NPT – Training in Project Management; and CAPA – Leadership and Management in Training Institutions. Edwin Mends-Brew has a number of publications in International Journals to his credits and lectures courses /has research interests in Probability, Engineering Mathematics, Operations Research and ICT in Education. He is a product of Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana and holds a BSc in Mathematics and MSc in Operations Research and Numerical Analysis.