

Measuring Students' Penetration and Usage Trends of Information and Communication Technology (ICT) in Polytechnic Education: Ho Polytechnic, Ghana

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Abstract

Polytechnics in Ghana, which are ten (10) in number have a mission to provide practically oriented Polytechnic Education in the areas of science, technology, engineering and business to both Ghanaians and non Ghanaians on a global scale. In order for Polytechnics in Ghana to achieve their mission, Information and Communication Technology (ICT) has a major role to play. The primary focus and aim of this research paper is to analyse students' penetration and usage trends of ICT for learning in one (1) of the ten (10) Polytechnics, namely; Ho Polytechnic, Ghana. Through quantitative research methodology involving administration of questionnaires and review of relevant literature, we were able to thoroughly and critically analyse the current ICT penetration of students in Ho Polytechnic, Ghana. Based on our research findings, we further discussed how to improve ICT penetration in Ho Polytechnic through various ICT developmental objectives and guiding principles.

Keywords: Education, ICT, Students, Ho Polytechnic, Teaching, Learning

1. Introduction

The penetration of current ICT trends in education is very important and a priority for educational development and sustainability. ICT penetration in education proliferates in many different forms and most of its realization and influence has to be gained through knowledge and technical know-how. The main stakeholders of the polytechnic education industry in Ghana involve staff and students. The staff usually have subdivision of Senior Member, Senior Staff and Junior Staff in terms of ranking and the students are also subdivided into records such as the programmes they are pursuing, year level etc. Information and communication technologies (ICTs) have become commonplace entities in all aspects of life. Across the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavours within business and governance. Promoting the development of a knowledge society through ICT in

education is one of the tactics increasingly adopted in recent times by governments around the world who want to encourage economic development at the local, state/province/region and national levels [1]. The use of ICT in education lends itself to more student-centred learning settings and often this creates some tensions for some teachers and students. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century [2].

ICT penetration proliferates in many forms such as computer availability, computer usage, internet availability, internet usage, computer literacy level and efficiency as well as ICT infrastructure. Administrators of Polytechnics will have different uses of ICT from lecturers and students. Students may use ICT in their education depending on the mode of education adopted by the Polytechnic or Lecturer involved in a particular course. However, despite advances in Information and Communication Technology (ICT), colleges and polytechnics in Ghana are posed with complex problems in reaching the goal of promoting the development of a knowledgeable society (See figure 3) [1].

Information and Communication Technology (ICT) literacy rate has become a key tool that has revolutionized how we see the world and how we live in it [1]. ICT literacy is the capability (knowledge, skills and aptitude) of a person to identify, search effectively and present specific information through computing in order to build knowledge and develop critical and creative thinking pertinent to a field of study. This phenomenon has given birth to advances in our ways of life. ICT is having a revolutionary impact on educational methodology both at conventional and distance education levels globally [1]. This paper focuses on students' penetration and usage trends of ICT in one of the Polytechnics in Ghana, namely

Ho Polytechnic. The rest of the paper is as follows: We discuss the Background of Ho Polytechnic in Section 1.2. Our Research Objectives and Research Methodology are discussed in Sections 2 and 3 respectively. We elaborate on the current ICT Situation in Ho Polytechnic in Section 4 and the Importance of ICT in Polytechnic Education in Section 5. Related Work to this Paper is discussed in Section 6. In Section 7, we elaborate on factors that impede ICT in Education Implementation. We discuss our Data Analysis and Research Findings in Section 8 and present our Research Discussions and Hypothesis Testing in Section 9. We finally conclude the paper with a recommendation in Section 10.

1.1 Background of Ho Polytechnic, Ghana

Ho Polytechnic has its antecedents in the former Ho Technical Institute, which was established in 1968 to provide pre-technical training courses in various engineering and building trades. In 1972, the pre-technical courses were upgraded to more advanced programmes in technical, business and other vocational disciplines. Though the Technical Institute was re-designated a Polytechnic in 1986, it was not until 1993 that it got full backing of the law (Polytechnic Law PNDC Law 321) to become a tertiary institution with statutory objectives and functions. The Polytechnic Law (PNDC Law 321) was replaced in September 2007 by the Polytechnic Act (Act 745). Ho Polytechnic's existence as a reputable technological institution in Ghana has a *vision* to contribute actively to national development by providing career-focused education and skills training to the highest level possible and exploiting opportunities for conducting practical research in close collaboration with business and industry. The different *missions* of Ho Polytechnic are to:

- Maintain a conducive teaching and learning environment to promote training of high-skilled and competent manpower imbued with entrepreneurial skills in partnership with other institutions and industry.
- Provide and conduct opportunities for practical research to advance economic growth.
- Provide expert service to satisfy societal needs.
- Pursue diversification of funding sources to support institutional activities.

In order for both Polytechnics to achieve their vision and mission elaborated above, ICT penetration in the Polytechnics is important and has a major role to play.

2. Research Objectives and Hypothesis

The main objectives of this research paper are to:

- Analyse the current ICT penetration and usage trends of students in Ho Polytechnic, Ghana.
- Discuss and suggest improvements of the found students' ICT penetration and usage trends in Ho Polytechnic, Ghana.

In order to measure these objectives, the following hypotheses were formulated to be tested.

- **H1:** Ho Polytechnic students understand the term ICT and what it means.
- **H2:** Ho Polytechnic students use ICT in their studies.
- **H3:** Ho Polytechnic students have possible ICT activities in relation to their education.
- **H4:** Lecturers use ICT to facilitate and deliver lectures to Ho Polytechnic students.
- **H5:** There is access to ICT facilities for studies in Ho Polytechnic.

3. Research Methodology

The following research methodologies were used for the paper:

- **Questionnaire:** This took the form of printed questions given to a selected group of students of Ho Polytechnic (respondents) to answer. Based on the research study, questionnaires were prepared to know the current ICT situation, penetration and usage trends of students in Ho Polytechnic.
- **Literature Review:** The authors adopted integrated and exploratory literature about current ICT trends in education (teaching and learning).

4. Current ICT Situation in Ho Polytechnic

The Computer Science Department found in the "Pentagon Building" of Ho Polytechnic is manned by a Head of Department and is responsible for all academic and non academic ICT issues. There is currently no separate ICT department and all non academic matters relating to ICT is the responsibility of the Head of Computer Science Department. The computer science department provides training services in ICT and computing related courses to other academic departments of the polytechnic and is in the process of mounting a HND programme in Computer Science of their own but has not been given accreditation to run the programme yet. The computer science department has both staff in academic and non academic that performs their assigned duties by the head of department. Statistics of computer availability totaling 207 in Ho Polytechnic are depicted in table 1.

Table 1: Estimated Computer Availability in Offices of Ho Polytechnic

Office/Block/Laboratory/Dept.	No. of Computers
Administration Block	20
School of Engineering	2
School of Applied Science	6
School of Business	6
Examinations Office	2
Computer Laboratories	
Main Octagon	50
Main Octagon Annex	20
Research Centre	100
Library Block	1
TOTAL	207

Figures 1 and 2, respectively shows the Main Octagon - Computer Laboratory and the Main Octagon Annex - Computer Laboratory in Ho Polytechnic.



Fig. 1: Main Octagon Computer Laboratory

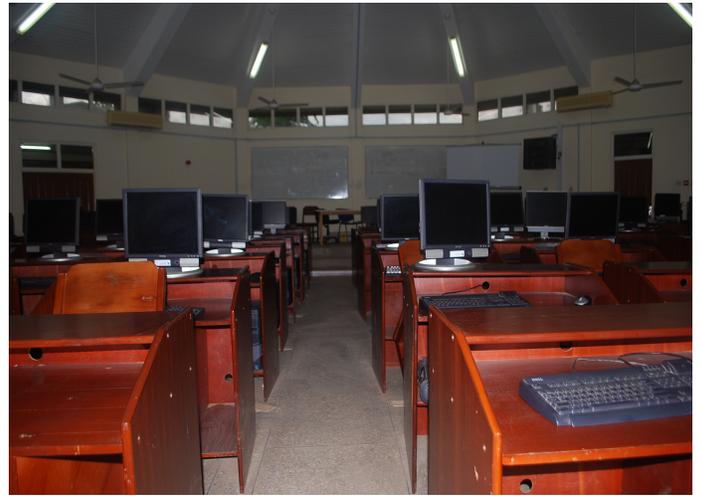


Fig. 2: Main Octagon Annex – Computer Laboratory

5. Importance of ICT in Polytechnic Education

Information and communication technology (ICT) is a force that has changed many aspects of the way we live. For the past two to three decades, ICT has made enormous impacts on fields such as medicine, tourism, travel, business, law, banking, engineering and architecture. The way these fields operate today is vastly different from the ways they operated in the past. But in the field of education, there seems to have been a strange lack of influence and far less change than other fields have experienced [1].

Some reasons why ICT is important in Polytechnic Education include [1][2]:

- ICT can be used as an aid and a basic tool to enhance teaching, communication and collaboration of Lecturers/Researchers with students, peers, and researchers within and outside the Polytechnic.
- Heads of academic and non academic departments as well as Administrators can use ICT to easily access information about the polytechnic's resources in order to manage them, e.g. information on students, courses/programmes, exams, schedules, time-tables, financial issues and admissions.
- Students (on-campus and off-campus) can use ICT for learning and accessing learning resources over various multimedia platforms and social networks.
- ICT in education and classrooms enabled with ICT promotes e-learning and m-learning educational modes for improved productivity in Polytechnics.
- The general public is able to access online educational resources, information on the Polytechnic's research works,

- academic programmes and activities easily from the Polytechnic's web site through ICT.
- Information resources (Research Works, Journals, Books, Students' Financial Statement, Results, Transcripts, etc.) are easily accessible through ICT within Polytechnic's intranet and over the Internet.
- Admission status and issues of prospective students and registration of continuing and new students can be conveniently done electronically and online within and remotely from outside the Polytechnic.

6. Factors That Impede ICT in Education Implementation

According to (Ololube et al., 2007) [1] and (Buabeng-Andoh, 2012) [4] factors such as lack of funding to support the purchase of the technology, lack of training among established teaching practitioners, lack of motivation and need among teachers to adopt ICT as teaching tools are impeding the wholesale uptake of ICT in education across all sectors including polytechnic education. Some other major and notable challenges that are likely to impede ICT in education implementation include: technology usage of ICT equipments by teachers and learners, computer/ICT self-efficacy, personal characteristics, teaching attitudes, ICT competence, gender, teaching experience, teaching workload, institutional characteristics, professional development, ICT accessibility, technical support, leadership support and technological characteristics (Buabeng-Andoh, 2012) [4]. Stakeholders of institutions have to overcome such factors and challenges for successful implementation of ICT in education in order for students to be able to penetrate and acquire ICT usage. Figure 3 depicts some factors that impede successful implementation of ICT.

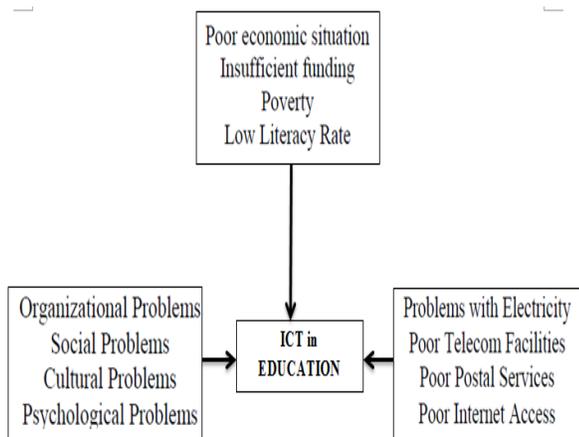


Fig. 3: Some Factors Impeding Successful Implementation of ICT in Education [1]

7. Related Work

In (Ololube et al., 2007) [1] the researchers examined the domain of open and distance education programs in Nigeria. The introduction of ICT usage and its integration and diffusion have initiated a new age in educational methodologies and have radically changed traditional methods of teaching and learning patterns in the domain as well as offering contemporary learning experiences to both instructors and students. The discussions were made in terms of (a) the contexts of distance education in Nigeria (b) the challenges facing ICT usage, integration and diffusion and (c) the need to consider policies' outcomes when evaluating distance education programs. The study in (Ololube et al., 2007) [1] was carried out using a qualitative research method; the uses of document materials and observation were an essential part of the instruments for data gathering. The study involved in (Ololube et al., 2007) [1] found out that the high hopes and enthusiasm for open and distance education are interfered with as the nation is faced with inadequacies in essential services and infrastructures: electricity, postal and telecommunication services and so on. However, there is an ongoing traditional development in distance education resources.

Oliver R. (2002) [2] discusses that within education, ICT has begun to have a presence but the impact has not been as extensive as in other fields. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. Oliver R. (2002) [2] further discusses that the use of ICT in education lends itself to more student-centred learning settings and often this creates some tensions for some teachers and students. His paper highlights the various impacts of ICT on contemporary higher education and explores potential future developments. The paper argues about the role of ICT in transforming teaching and learning and seeks to explore how this will have an impact on the way programs will be offered and delivered in the universities and colleges in the future.

Technological advancements have led to significant changes in the way university education is being provided in developed countries. Whilst universities in developed countries have made great strides in addressing issues of access, cost of higher education and quality through e-learning, Africans are in the 21st century still grappling with these issues. Although the University of Ghana has as one of its strategic directions, the introduction of e-learning, very little information has been provided on its policy direction. The study in (Tagoe, 2012) [3] which is based on the Technology Acceptance Model (TAM), examines students' perceptions on incorporating e-learning into teaching and learning. Using survey research, a total of 534 responded to the survey which relied on the questionnaire. Results from the

study in (Tagoe, 2012) [3] show that students entered the university with computer skills which are critical to the introduction of e-learning; male students were more likely to use the internet than female students; there was a relationship between the length of time students have been using the internet and frequency of use of the internet; students preferred mixed mode and web supplemented courses in the immediate future than web dependent and fully online courses. To make e-learning a reality (Tagoe, 2012) [3] emphasizes that there should some further strategies to improve access to personal computers and improve the broadband width. Special efforts should be made to target female students to use the internet to improve their computer skills.

Global investment in ICT to improve teaching and learning in schools have been initiated by many governments. Despite all these investments on ICT infrastructure, equipments and professional development to improve education in many countries, ICT adoption and integration in teaching and learning have been limited. The study in (Buabeng-Andoh, 2012) [4] reviews personal, institutional and technological factors that encourage teachers' use of computer technology in teaching and learning processes. Also teacher-level, school-level and system-level factors that prevent teachers from ICT use are reviewed. These barriers include lack of teacher ICT skills; lack of teacher confidence; lack of pedagogical teacher training; lack of suitable educational software; limited access to ICT; rigid structure of traditional education systems; restrictive curricula, etc. The study in (Buabeng-Andoh, 2012) [4] concluded that knowing the extent to which these barriers affect individuals and institutions may help in taking a decision on how to tackle them.

8. Data Analysis and Research Findings

The questionnaires were constructed and adopted to solicit information about the students' penetration and usage trends of ICT in Ho Polytechnic, Ghana. The population comprised of Higher National Diploma (HND) and Diploma in Business Studies (DBS) Students. Ho Polytechnic is made up of approximately 6,000 students. Using stratified sampling a sample size of one hundred (100) questionnaires were administered to selected HND and DBS students of Ho Polytechnic. Out of the one hundred (100) questionnaires administered, seventy (70) representing 70% accurate and precise responses were received. Tables and charts were used for the results of the analysis. The questionnaires consisted of 18 closed-end and 2 open-end questions totaling 20 questions.

Question 1 (Q1) of the questionnaire asked about the *Gender of the Student Respondents* and the HND and DBS students that responded are shown below in Table 2.

Table 2: Gender of Student Respondents (Q1)

GENDER	NUMBER	PERCENTAGE
Male	45	64%
Female	25	36%
TOTAL	70	100%

Responses to Question 2 (*Age category of Students Respondents*) are depicted in Table 3.

Table 3: Age Category of Student Respondents (Q2)

AGE	NUMBER	PERCENTAGE
40-50 years	5	7%
29-39 years	6	9%
19-28 years	59	84%
15-18 years	0	0%
TOTAL	70	100%

Responses to Question 3 (*Educational Stage of Students Respondents*) are depicted in Table 4.

Table 4: Educational Stage of Student Respondents (Q3)

EDUCATIONAL STAGE (Bachelor)	NUMBER	PERCENTAGE
Year One (1)	0	0%
Year Two (2)	0	0%
EDUCATIONAL STAGE (HND)		
Year One (1)	14	20%
Year Two (2)	40	57%
Year Three (3)	14	20%
EDUCATIONAL STAGE (DBS)		
Year One (1)	2	3%
Year Two (2)	0	0%
TOTAL	70	100%

Responses to Question 4 (*Whether Student Respondents Understand the term ICT*) are depicted in Table 5.

Table 5: Students Understand the term ICT (Q4)

UNDERSTAND THE TERM ICT	NUMBER	PERCENTAGE
Yes	70	100%
No	0	0%
TOTAL	70	100%

Responses to Question 5 (*Whether Student Respondents Use ICT in Their Studies*) are depicted in Figure 4.

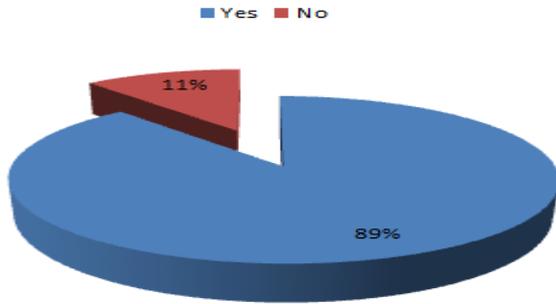


Fig. 4: Use of ICT in Studies – Student Respondents (Q5)

Responses to Question 6 (Possible ICT Activities Relating to Education) are depicted in Figure 5.

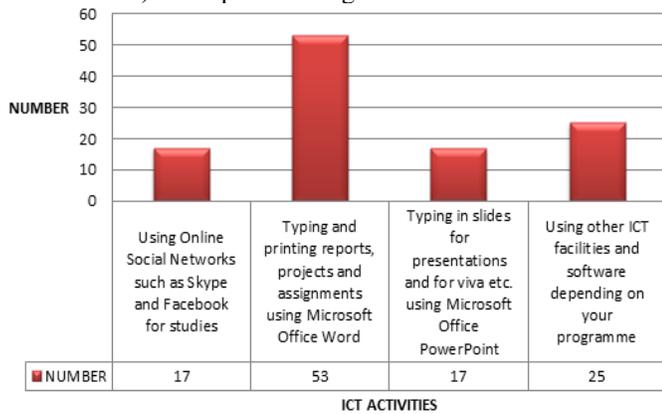


Fig. 5: Possible ICT Activities Relating to Education – Student Respondents (Q6)

Responses to Question 7 (ICT Delivery by Lecturers) are depicted in Figure 6.

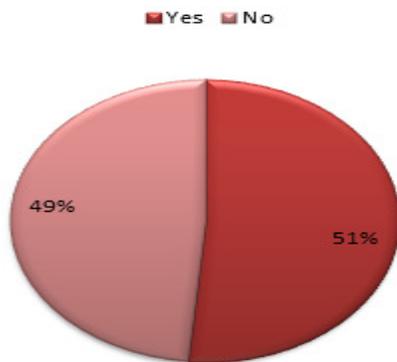


Fig. 6: ICT Delivery by Lecturers in Studies– Student Respondents (Q7)

Responses to Question 8 (Students who responded “Yes” to Q7 - Likeness of ICT Delivery by Lecturers) are depicted in Table 6.

Table 6: Likeness of Lecturers Using ICT to Teach – Student Respondents (Q8)

LIKENESS OF ICT DELIVERY BY LECTURERS	NUMBER	PERCENTAGE
Yes	33	92%

No	3	8%
TOTAL	36	100%

Responses to Question 9 (Students who Prefer ICT in Education) are depicted in Figure 7.

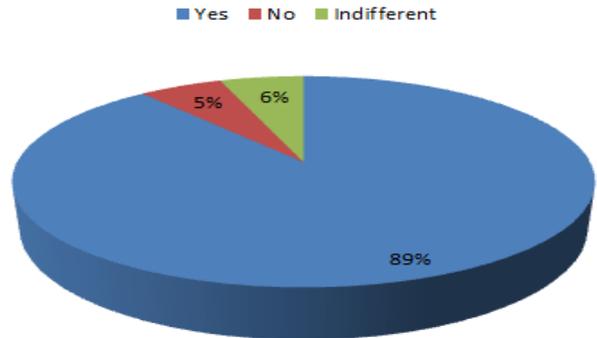


Fig. 7: ICT in Education Preference – Student Respondents (Q9)

Responses to Question 10 (Reasons why Some Students Who Responded “No” to Q9, Don’t Prefer ICT in Education) are depicted in Table 7.

Table 7: None Preference of ICT in Education – Student Respondents (Q10)

WHY RESPONDENTS DON’T PREFER ICT USAGE IN EDUCATION	NUMBER	PERCENTAGE
ICT Teaching Delivery is boring	1	50%
Prefer Face-to-Face education mode	1	50%
Confusion sets in During ICT Teaching Delivery	0	0%
TOTAL	2	100%

Responses to Question 11 (Whether Lecturers Use ICT in Education Modes Such as E-Learning and M-Learning) are depicted in Figure 8.

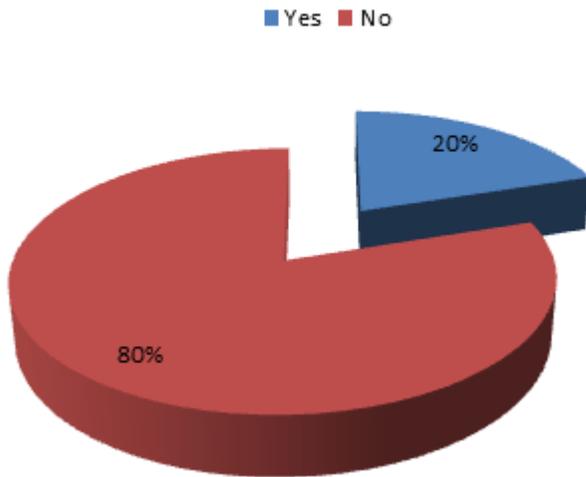


Fig. 8: ICT in Education Modes by Lecturers – Student Respondents (Q11)



Fig. 10: Internet Access, Ho Polytechnic Campus – Student Respondents (Q13)

Responses to Question 12 (*ICT in Education Modes Adopted by Lecturers*) are depicted in Figure 9.

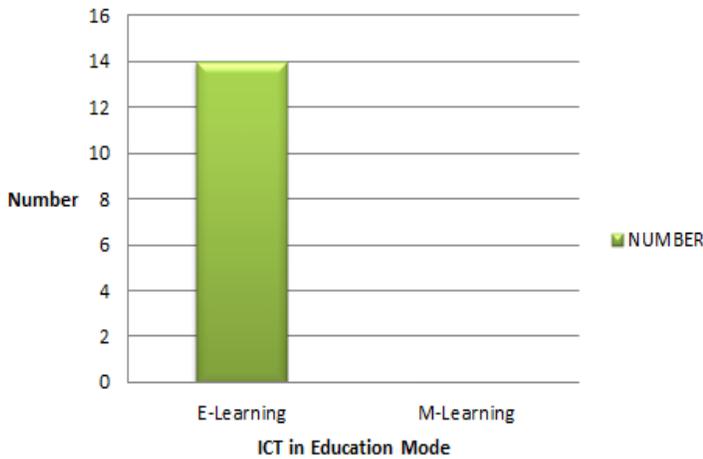


Fig. 9: E-Learning or M-Learning Adopted by Lecturers – Student Respondents (Q12)

Responses to Question 14 (*Internet Source at Ho Polytechnic Campus*) are depicted in Figure 11.

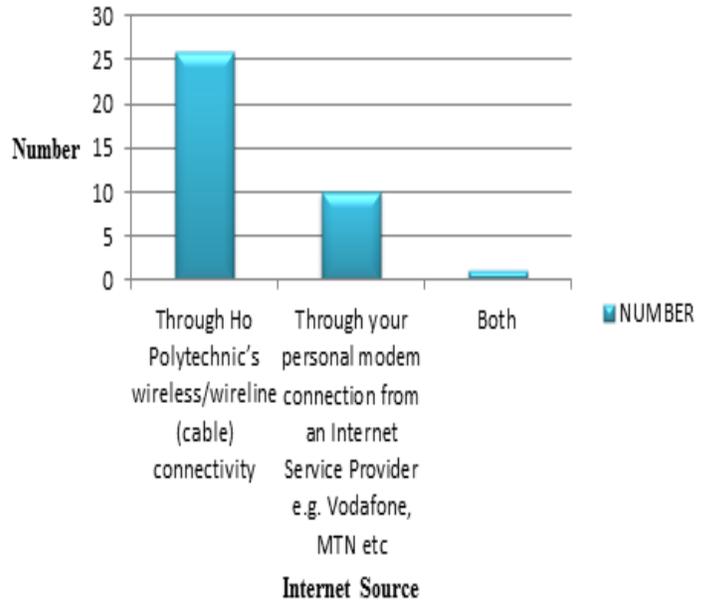


Fig. 11: Internet Source, Ho Polytechnic Campus – Student Respondents (Q14)

Responses to Question 13 (*Access to the Internet at Ho Polytechnic Campus*) are depicted in Figure 10.

Responses to Question 15 (*Free and Abundant Access to PC Usage in Computer Laboratories at Ho Polytechnic Campus*)

PC OWNERSHIP	NUMBER	PERCENTAGE
Yes	34	49%
No	36	51%
TOTAL	70	100%

are depicted in Figure 12.

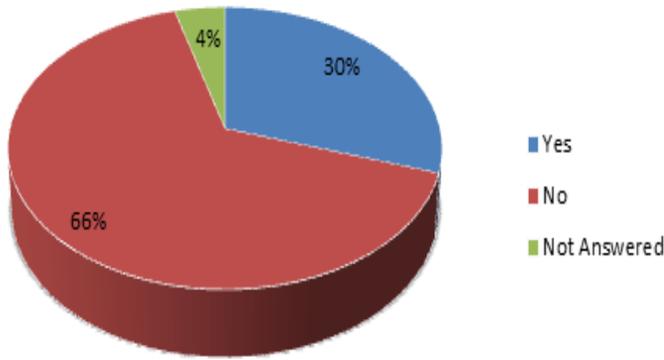


Fig 12: Free and Abundant Access to PC Usage in Computer Laboratories at Ho Polytechnic Campus – Student Respondents (Q15)

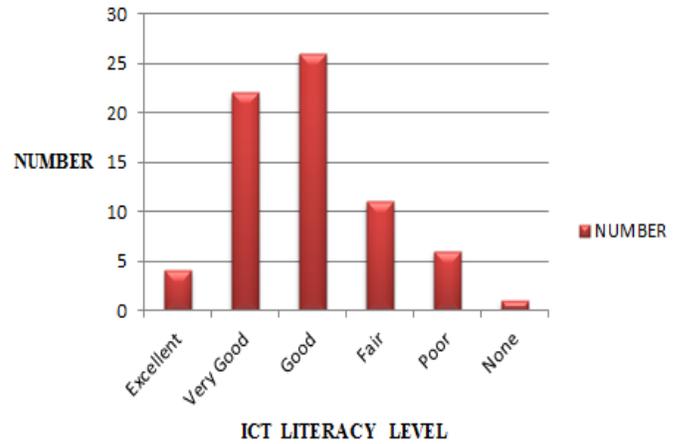


Fig 14: ICT Literacy Level – Student Respondents (Q18)

Responses to Question 16 (*Whether Students Own a PC*) are depicted in Table 8.

Table 8: PC Ownership of Student Respondents (Q16)

Responses to Question 17 (*Reasons for not Owning a PC*) are depicted in Figure 13.

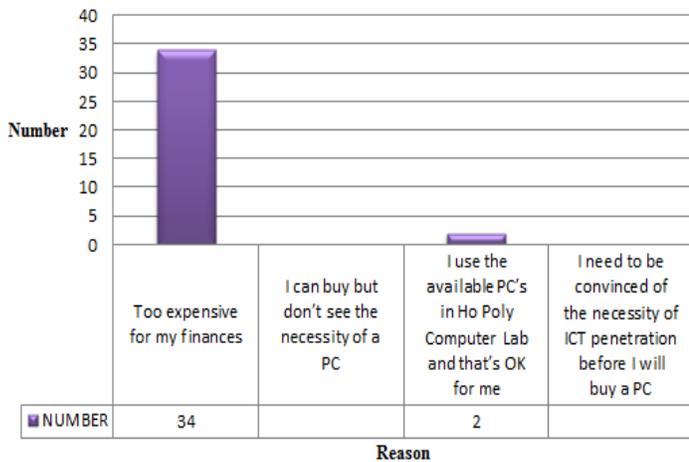


Fig 13: Reasons for not Owning a PC – Student Respondents (Q17)

Responses to Question 18 (*ICT Literacy Level*) are depicted in Figure 14.

9. Research Discussions and Hypothesis Testing

9.1 Discussions

Our research analysis and findings revealed that all the student respondents understood the term ICT and its meaning. According to figure 7, most of the student respondents (89%) prefer ICT in education and very few of them have none preference of ICT in education (table 7). 51% of the students, responded that their Lecturers deliver lectures through ICT and another 49% responded in the negative. This means some of the Lecturers don't use ICT to teach. Students who responded "Yes" to Question 7 also like/prefer their Lecturers to deliver lectures using ICT (table 6).

In terms of Internet accessibility, 53% of the student respondents have access to the Internet through Ho Polytechnic's wireless/wireline (cable) connectivity at Ho Polytechnic campus as opposed to 44% and 3% who don't have access and didn't answer respectively. In terms of computer accessibility, very few students (30%) responded that they had abundant and free access to Ho Polytechnic's computer laboratory facilities as opposed to 66%. This means accessibility of computers for usage by students at Ho Polytechnic campus is very low which is also reflected in Table 1. Ho Polytechnic needs to increase the availability of personal computers in order to improve ICT penetration and usage trends of students.

34 students owned a PC while 36 didn't own a PC with reason boiling down to high finances required to buy a PC. According to figure 5, most of the students engaged in different ICT activities in relation to their studies, however figures 8 and 9 show that lectures adoption to ICT modes in education such as electronic (e-learning) and mobile learning (m-learning) at Ho Polytechnic is relatively low, especially in the case of m-learning. From figure 14, the ICT literacy level of student respondents showed that most of them have relatively high ratings.

9.2 Hypothesis Testing

We further tested our hypothesis as stated in our research objectives and outlined our findings below:

Table 9: Summary of Research Findings

Hypotheses	Findings	Conclusion
H1: Ho Polytechnic students understand the term ICT and what it means.	Yes (100%) Source: <i>Table 5</i>	No Outstanding Issue
H2: Ho Polytechnic students use ICT in their studies.	Yes (89%), No (11%) Source: <i>Figure 4</i>	Find procedures the will allow ALL students to use ICT in their studies
H3: Ho Polytechnic students have possible ICT activities in relation to education.	Yes Source: <i>Figure 5</i>	No Outstanding Issue
H4: Lecturers use ICT to facilitate and deliver lectures to Ho Polytechnic students.	Yes (51%) No (49%) Source: <i>Figure 6</i>	Organisation of professional development workshops and seminars to encourage lecturers to use ICT in teaching delivery
H5: There is access to ICT facilities for studies in Ho Polytechnic	Yes (30%) No (66%) Not Answered (4%) Source: <i>Figure 10</i>	Ho Polytechnic should try and provide more access to ICT infrastructure and facilities to students in order encourage and enhance quality i education through ICT.

Apart from Ho Polytechnic overcoming the factors and challenges enumerated in Section 6 of this paper, we further elaborated on some guiding principles and developmental objectives that Ho Polytechnic should use/adopt in order to encourage and enhance quality of education through ICT. These guiding principles and developmental objectives are enumerated below.

- A well planned program is needed to improve on the student-to-computer ratio in Ho Polytechnic.
- A corps of highly trained personnel is required to support and sustain the growth of ICT implementation in Ho Polytechnic.
- ICTs should be used to transform the teaching and learning systems to meet the challenges of Ho Polytechnic.
- The introduction of ICT in Ho Polytechnic should necessitate the training of management, staff and students.

- Continued training of lecturers, supporting staff (ICT), and administrators is a key to sustainability of ICT.
- The use of digital projectors, multimedia and virtual learning systems should be encouraged in the lecture halls of Ho Polytechnic.
- ICT skills development should be integrated in teaching and learning of the courses in the curriculum of each school/Department of Ho Polytechnic.
- The use of Distance Education and virtual learning systems should be used to absorb the excess of qualified students who have failed to get on-campus admission to Ho Polytechnic.

Some Developmental Objectives for ICT in Education:

- Development of ICT and enhancement of Practical Training in Ho Polytechnic.
- Provide appropriate ICT Training to lecturers, ICT supporting staff and administrators in Ho Polytechnic.
- Use Distance learning to offer training to all qualified applicants of Ho Polytechnic.

10. Conclusion and Recommendation

10.1 Conclusion

ICT in education when encouraged enhances academic quality and sustainability. Although ICT has proliferated in recent years, there are still challenges that need to be solved in the area of education. Some of these challenges have been described in this paper. This paper measured students' penetration and usage trend of ICT in Polytechnic Education in Ghana using Ho Polytechnic as a case study. Results of the study through a quantitative methodology showed that most of the student respondents understood the term ICT and knew what it means. Most of the students also engaged in ICT activities in relation to their studies. However the adoption rate of Ho Polytechnic Lecturers to use ICT to teach as well as students having abundant access to ICT facilities and computer laboratory facilities remains a challenge that Ho Polytechnic has to resolve so that student penetration and usage trends of ICT can increase and quality of education can be enhanced and improved.

10.2 Recommendation

With reference to the importance of ICT in education, this paper recommends that Ho Polytechnic as well as all other Polytechnics and training institutions in Ghana should encourage ICT in their education by overcoming the factors/challenges and also adopting the guiding principles and developmental objectives enumerated in this paper.

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BIOGRAPHIES

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.

Mawuli Kwasi Ahegbebu, received his BSc in Computer Science from Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana in 1984 and MSc in ICT from Aalborg University, Denmark in 2010. He has over 25 years of service and experience in the IT Industry of Ghana in various capacities such as IT Manager, Systems Analyst/Programmer and Database Administrator. He is currently a Lecturer at Ho Polytechnic, Ghana. His research interests include: Computer Programming, Database Management/Information Systems, System Analysis and Design, Computer Logic and Architecture, and Wireless/Data Communication and Computing Technologies.