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Influence of the internet on the academic achievement of Senior High School students in the Cape Coast Metropolis of Ghana

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Abstract
To many, the emergence of Information and Communication Technology (ICT) has done more harm than good to the youth particularly adolescent students. Hence, this study sought to investigate the influence of Information and Communication Technology (ICT) on the academic achievement of students of Holy Child Senior High School in Cape Coast. It specifically examined how ICT improves the academic achievement of students. It also tested relationship between the students' use of computer and their academic performance at 5% significance level. The study design was the Mixed Method Research type with a population consisting of 70 teachers, 1010 students, their parents and internet café operators in the Metropolis. A sample size of 300 was determined for the study comprising 200 students, 50 teachers and 45 parents randomly selected, while five internet café operators in the Metropolis were purposively chosen. The study recorded a 91.3% retrieval rate. Questionnaires and interview schedules were designed to solicit information from the respondents. The SPSS was used to analysis the data gathered. The study confirms that ICT/internet has a positive influence on the academic performance of students. It is recommended that students should be allowed and encouraged to use ICT/internet strictly for only academic purposes.

Key word: Influence; Academic achievement; Information and Communication Technology; Internet

Introduction

The emergence of the information age has brought to light the significant role that information, knowledge and technology can play in expediting socio-economic development. The effective use of information and knowledge has become the most critical factor for rapid economic growth and wealth creation, and for improving socio-economic well-being. There is no doubt that information; knowledge and technology are increasingly becoming the key drivers for socio-economic development world-wide. A nation's capability to accelerate its socio-economic development process and gain global competitiveness and improve the wellbeing of its people depend very much on the extent to which it can develop, use, exploit and sell information, knowledge and technology in one form or another (Tettey, 2006).

Information and Communications Technologies (ICTs), the Internet and the World Wide Web have resulted in a community of people generating, disseminating and sharing information. Improvements in the computer's communication abilities and the Internet are changing the course of national strategic planning for development, delivering education, conducting global trade and business, creating and disseminating information. National strategic planners are focusing on ICTs advancement as a cornerstone of rapid economic development.

In Ghana today, technology is widely used in businesses, industry, homes and schools. These changes are transforming the Ghanaian society into a technology-based and information-rich economy in which new skills are becoming necessary if one desires to be productive participants. In response to this new economic trend, the government of Ghana has formulated an Information and Communication Technology for Accelerated Development (ICT4AD) policy. The policy acknowledges the following:

1. Recognition that the country is experiencing problems and challenges in its socio-economic development.

2. Recognition that the impact of globalization and an emerging information age has given rise to a new global economic order, dominated by knowledge-based and information-rich economy facilitated by ICT.

3. That the country's challenges in the present socio-economic development (agriculture, industry and private sector) are likely to be compounded by the demands of the new global economic order.

4. That knowledge, information and the new economic order provide the fundamental bases for poverty reduction, wealth acquisition and national prosperity.

5. That the nation's capability and ability to accelerate its socio-economic development, gain competitive advantage and improve the welfare of its people depends very much on the extent to which it can develop, use and sell information, knowledge and technology.

6. That ICT can be a key factor for achieving progress in economic and social development – and can be a new source for the creation of quality jobs, rapid economic development as well as a source for facilitating global competitiveness.

The plan maintains a mission to transform Ghana into an information-rich, knowledge-based and technology-driven economy by transforming the educational system to provide the requisite training and an environment capable of producing the right type of skills and human resource. Expectations of the plan, among others, include the development of national human resource capacity to meet the changing demands of the economy. The human resource capacity building needed for a global economy dominated by an information industry include computer literacy, visual literacy and information literacy skills.

The ICT4AD Policy is a representation of the Vision for Ghana in the information age. It is based on the Policy Framework Document: "An Integrated ICT led Socio-economic Development Policy and Plan Development Framework for Ghana" released in March 2003**.** The development of this policy framework document was based on a nation-wide consultative process involving all key stakeholders in the public sector, private sector and civil society.

The following are the objectives specifically for the ICT in education:

1. To ensure that students have ICT literacy skills before coming out of each level of education.
2. To provide guidelines for integration ICT tools in all levels of education.
3. To provide means of standardizing ICT resources for all schools.
4. To facilitate training of teachers and students in ICT.
5. To determine the type and level of ICT needed by schools for teaching and administration purposes.
6. To promote ICT as a learning tool in the school curriculum at all levels – through the help of various agencies including Global e-School and Communities Initiatives (GESCI), a final ICT in education policy document which was finalized and released in 2007 (Republic of Ghana, 2003).

Consequently, the 2007 education reform places greater emphasis on Science and Technology, and Information and Communication Technology (ICT). The primary philosophy behind this emphasis is that ICT should be given prominence in education. In the past twenty years, the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavours including education. Quality is education is crucial in the development of every country. Nketsia (2005) asserts that every society, be it simple or complex is charged with the responsibility of educating its people, young and old to acquire skills, knowledge and aspects of its culture which will enable them to participate and contribute meaningfully to the socio-political and moral development of the society in which they live. Education is a socially oriented activity and quality education has traditionally been associated with strong having high degrees of personal contact with learners. 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.

In one of the concrete steps to have this vision realized, Ghana introduced ICT in her educational institutions, from basic through tertiary as a compulsory subject for all students. Furthermore, to ensure that the younger generation acquired adequate skill in ICT, the then government introduced the "Computer per Child", championed by then minister of finance, Kwadwo Baah-Wiredu. With the emergence of ICT and the Internet, there has been a new development and approach to learning by bringing information close to students even beyond their doorstep and has also brought distant friends closer and pulled the world closer. There is no doubt that Information Technology (IT) is almost everywhere and has dramatically altered

the way we live. As a result, the role of IT in our daily living is growing rapidly to the degree that many of us, especially youngsters, have become dependent on, if not addicted to, our mobile phones and personal computers (PCs), which now constitute the principal tools for our interaction, research, and learning.

The tools of communication technology have transformed socialization and education of adolescents. They are said to be the first generation to be growing up with the Internet, cell phones, iPods, computers, electronic hand held and satellite television. Building friendships and social networks are common experiences online. Most teenagers prefer the Internet as the main source of learning. Because students know things that are unknown to teachers, their traditional relationship can shift to provide greater benefit for both parties if they pursue reciprocal learning. Many studies have shown that among adolescents, the Internet has become indispensable tool for instrumental purposes such as school work and information gathering, as well as for communication purposes. The communication applications of the Internet, such as e-mail, instant messaging, blogs, and chat rooms have entrenched themselves in the lives of adolescents (Gross, 2004) and the Internet has become an important social context in the lives of adolescents today. In fact, a national survey of adolescents (10-17 years of age) revealed that in the year before they were surveyed, 25% of Internet users had formed casual online friendships and 14% had formed close friendships or even romantic relationships (Wolak, Mitchell & Finkelhor, 2002).

However, the Internet can be described as a good yet bad servant because of negative and indecent information and pictures one can gather from the many sites so created. Questions abound as to the impact of online socio-communicative activities on adolescent well-being, particularly on their academic and moral behaviour.

Statement of the problem

Ghana's hope of reducing the high level of poverty and become competitive in today's knowledge-based driven globalized economy lies in her quality education delivery. The nation recognizes that the global economy which is powered by technology, fueled by information and driven by knowledge requires new skills for her citizens. Consequently, current generation of students are expected to acquire 21st Century skills for the globalizing job market, namely, digital age literacy, inventive thinking, higher-order thinking and effective communication.

There is no doubt that in this era of information technology, computers have become integral in the teaching-learning process as a way of enhancing teaching and learning. It is against this background that the government introduced ICT in the curriculum of all teacher preparation institutions and at pre-tertiary and basic education levels. Thus, ICTs (radio, television, computers and internet) have become indispensable tools for educational change, delivery and reform.

However, curious as they are, adolescents use these tools, particularly the internet for other purposes to satisfy their curiosity. They are found engaging in exchanging e-mails, chat rooms, watching pornographic images, seeking information about drugs and other vicious activities like gambling or cyber fraud or "Sakawa" or "419" as it is referred to in Ghana. It is therefore not surprising to see adolescents in certain urban cities like Cape Coast, Accra, Takoradi, and Kumasi in cyber cafés engaging in undesirable acts. These acts have raised much fear that if not checked, this trend could destroy the moral fiber of our youth and defeat the purpose for which ICT was introduced. Consequently, the Police are waging war against cyber fraud and churches advocating for moral education and uprightness for adolescents. Yet it appears the youth are adamant to these efforts of the police and the general public. Surprisingly, while extensive studies on adolescents' use of ICTs have been done in the developed countries and efforts being made to safeguard other undesirable use of them, very little related studies have been done in the developing countries such as Ghana.

It is to address this menace that the researchers seeks to conduct this study as a way of gathering research evidence that will add to the efforts of the public and to seek the youths' use of the ICTs and the Internet and its impact on their academic achievement.

Purpose of the study

The purpose of the study is to explore the influence ICTs on students of Holy Child Senior High School as a way of improving their studies. Additionally, the study will verify if the ICTs, particularly the internet have any adverse impact on the life of the students. Therefore, the objectives of this study will be to:

1. examine the extent to which the students of Holy Child Senior High School utilize the ICTs facilities productively;
2. assess the influence of the ICTs on students' academic performance;
3. identify problems that have emerged through the use of the ICTs;
4. examine the benefits of ICTs to students and other stakeholders like teachers;
5. provide needed information about the use of ICTs to help educational institutions put to proper use.

Research questions and hypotheses

The following research questions would be used for the study:

1. In what ways have ICTs helped to improve the academic achievement of students of Holy Child Senior High School?
2. What other activities aside academic work do students of Holy Child Senior High School use the internet facility for?

The following hypotheses were formulated to complement the research questions; they were tested at 5% significance level:

1. The ability to operate the computer has no association with student's age,
2. ICT has no significant influence on the academic performance of students Holy Child Senior High School in the various programmes of study, and
3. There will be no statistically significant relationship between the students of Holy Child Senior High School's use of computer and their performance; using the Chi-square tests.

Methodology

Research Design

The study adopted the Mixed Method Research type. Specifically, it used the Explanatory Sequential Mixed Method type which involves both quantitative and qualitative approaches. The use of this method enabled the researcher expand on the findings of one method with another method. In the end the use of both approaches produced more in-depth and comprehensive information. The design of the study was a descriptive research design of the survey type. A survey approach was employed to enable the researcher to collect data for the purpose of describing and interpreting existing practices and attitudes among others of the population (Creswell, 2009). Also, a survey design helped the researcher collect evidence about the existing condition to help generalization.

Sample and sampling technique

A sample size of 300 was used. For the purpose of this study, the researchers used simple random sampling and purposive sampling, a type of probability and convenience sampling techniques respectively. According to Seidu (2006), simple random sampling gave every member of the population the probability of being selected to represent the population. It is considered unbiased because every individual in the population has equal and independent chance of being selected as a member of the sample. Two hundred (200) students, fifty (50) teachers and forty-five (45) parents were selected using random sampling technique. The selection of students and teachers were selected during school hours while that of parents was done on a visiting day. However, purposive sampling was employed in selecting five (5) private internet café operators in the Municipality.

Research instrument

A self-designed questionnaire was used to gather data from the students, teachers and parents. The questionnaire was mostly close-ended. The items on the questionnaire was scored on a five point Likert scale which would be "Strongly Agree" 5, "Agree" 4, "Uncertain" 3, "Disagree" 2 and "Strongly Disagree" 1. However, respondents had the opportunity to give comments or remarks. This was to encourage respondents to disclose pertinent information that will not be possible with closed ended questionnaire items. However, the interview schedules catered for responses that the questionnaire was not able to elicit.

Validation and reliability of research instrument

In order to validate the instrument, we submitted the questionnaire to experts in the field of Measurement and Evaluation to help the researcher reconstruct and reshape the instrument to enhance its validity and reliability. Finally, the instrument for students was pilot tested the on students and teachers of Academy of Christ the King Senior High School, Cape Coast.

Report on pilot study

Twenty (20) students and ten (10) teachers participated in the study. However, for the parents, the study was done at AME Zion Senior High School on a visiting day with ten (10) participants. Reliability Test was done after the data collection.

During the pilot testing SPSS was used to capture the data and subsequently used to perform the Cronbach's Alpha reliability test for the students, teachers and parents' questionnaires.

Table 1: Summary of Reliability Test for Students, Teachers and Parents' Questionnaires

Questionnaires	Cronbach's Coefficients	N of Items
Students	0.713	22
Teachers	0.758	24
Parents	0.812	30

The results indicate that the students' questionnaire had a Cronbach's Alpha reliability coefficients was 0.713 based on 22 items. This implies that the instrument for questionnaire had a comparatively high adequacy. Again, the questionnaires for the teachers and parents were 0.758 and 0.812 respectively. The coefficients were greater than 0.600 which according to Cohen (as cited by Leech et al., 2005) are indications of "adequate" internal consistencies of the instruments hence, good ones.

Results and discussion

This section covered presentation of results in line with the research questions

Research Question 1: In what ways have ICTs helped to improve the academic achievement of students of Holy Child Senior High School?

The study sought to find out the means by which ICTs have improved upon the academic performance of Holy Child senior High School students. The study solicited the views of students, teachers and their parents on this. Tables 2, 3 and 4 summarized the responses of the students, teachers and parents respectively.

The study revealed that 183 (95.3%) of the 192 claimed to be able to use the computer, while 3.1% somewhat agreed. Three representing 1.6% were uncertain about their abilities to use the computer. This revelation is consistent with Leuven et al. (2004) that there is an increased educational use of ICTs by students. Again, Berge (1998) and Barron (1998) mentioned that any use of ICT in learning settings can act to support various aspects of knowledge construction and as more and more students employ ICTs in their learning processes, the more pronounced the impact of this will become. Similarly, Amenyedzi, Lartey and Dzomeku (2011) in a study found that 78% of student respondents also had basic knowledge in computer.

The study used means and standard deviations to answer the first research question. From Table 2, the lowest and the highest mean values were 3.37 and 4.14 respectively, while the least and the largest standard deviations were 0.451 and 0.997 respectively.

Table 2: Students' Views on the Influence of ICTs on Academic Achievement of Students

Influence of ICT on Academic Performance	Mean	S.D
The computer gives me lots of information to understand certain topics better.	4.14	0.566
ICT enables me to read broadly.	4.09	0.913
I often access the internet when I am at home for educational purposes.	3.83	0.787
I am able to access the internet at school to do my class assignments.	3.61	0.451
The usage of ICT motivates me to learn independently.	3.60	0.997
I have positive attitude towards ICT.	3.59	0.788
I explore the internet a lot to do my school work.	3.37	0.612

Mean = SA – Strongly agree (5); A – Agree (4); U – Uncertain, (3), D – Disagree (2); and SD – Strongly disagree (1).

With the highest mean value of 4.14 and a standard deviation of 0.566, the students agreed that the computer gave them lots of information to understand certain topics better. The students also claimed that ICT enabled them to read broadly. On whether they often access the internet at home for educational purposes, they rated it with an average value of 3.83. Most students also claimed that they used the computer/internet to learn independently. This was also confirmed during an interview with a student when she stated "I feel that with the computer, particularly, the internet I can do some studies independent of my teachers. In a way it makes me independent. With that also I'm ahead of most of my mates in class. I also tend to get more than just what the teacher gives in class."

Despite the general appreciation of the influence of ICT on the academic achievement of students, some students however, still held the views that the internet was not very useful in their academics as during the interviews, a student said "I must say I depend mostly on textbooks and notes of teachers. Using ICT for learning is rare. Exams are based on

textbook and syllabus and not what you will find on the net. About 90% of textbooks give come in examinations." Another student posited "ICT per se doesn't motivate me to learn. But anyway, reading the news and about people keep me informed but academically, I'm not sure it contributes to my academic performance."

Similarly, majority of the students reported that they had positive attitude towards ICT (M=3.59; S.D=0.788), and with a mean value of 3.37 and a standard deviation of 0.612, they were "uncertain" on the exploration of the internet to do school work. The grand mean for the seven items on the influence of ICT on academic achievement was 3.75 indicating that the students generally agreed that indeed ICT had positive effects on their academic performance. This revelation is consistent with Jackson et al.'s (2008) study that the frequency of computer use was positively associated with grades received and overall grade point average (GPA).

The study showed that overwhelming majority (97.3%) of the 37 teachers was in agreement that Senior High School students should have access to the ICT. However, one teacher disagreed. This supports the position of Amenyedzi, Lartey and Dzomeku (2011) that despite the limited use of computers by teachers in their teaching, many agree that the computer has changed the way students learn. The mean values of 4.00 and 4.59 are the lowest and highest respectively from Table 3.

Table 3: Teachers' Views on the Effects of ICTs on Academic Achievement of Students

Influence of ICT on Academic Performance	**Mean**	**S.D**
I encourage students to use the internet for class assignments or supplementary learning.	4.59	0.711
Students' use of ICT causes them to have more fun than to learn.	4.22	0.452
A student who uses ICT often is better student.	4.16	0.933
SHS students spend lots of time on Facebook, twitter.	4.05	0.421
I feel students' usage of the ICT enhances their academic work.	4.03	0.700
The use of ICT makes students independent learners.	4.00	0.559

Mean = SA – Strongly agree (5); A – Agree (4); U – Uncertain, (3), D – Disagree (2); and SD – Strongly disagree (1).

With a mean value of 4.59 and standard deviation of 0.711, the teachers strongly agreed that they encouraged students to use the internet for class assignments or supplementary learning. Similarly, the teachers somewhat agreed that students who used ICT often were better students. With an average value of 4.03, the teachers agreed that they felt that students' usage of the ICT enhanced their academic work. Again, they reported that ICT use made students independent learners (M=4.00; S.D=0.559). However, majority of the teachers accepted the fact that the use of ICT by their students caused them to have more fun than to learn, and also spent lots of time on Facebook and Twitter. Supporting the above claim, a Chemistry teacher reported "they socialize more than doing serious learning."

The study also sought the views of the parents about the impacts of ICT on the academic achievement of their wards, and their responses are summarized in Table 4 The study initially wanted to know if the parents themselves use the internet very often. Thirty-four representing 72.5% responded positively, whilst 22.0% did not use the internet very often. Only one person was uncertain. On whether the parents encourage their wards to use the internet, the results are presented in Figure 1. Evident from Figure 1, is the point that as many as 94.5% of the parent respondents claimed to have encouraged their wards to surf the internet, while 5.0% of them responded negatively.

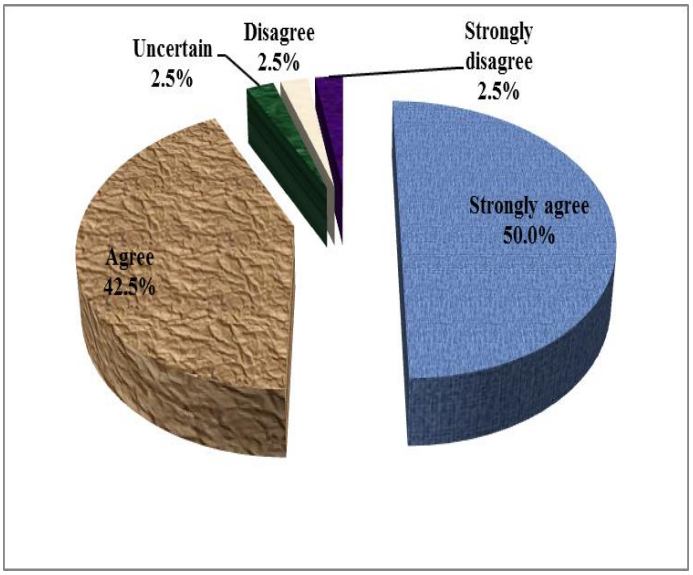

Figure 1: Parents' Encouragement of Wards in the Use of Internet

Table 4: Parents' Responses on the Influence of ICTs on Academic Achievement of Students

Influence of ICT on Academic Performance	Mean	S.D
Internet exposes SHS students to too much information.	4.51	0.452
The use of internet broadens SHS students' academic horizon.	4.30	0.871
SHS students are able to do extensive research with the internet.	4.27	0.698
The internet enables SHS students to learn independently.	4.15	0.377
The internet improves students' academics.	4.15	0.980
In my opinion SHS students should be allowed to study with the internet. .	4.10	0.562
I believe that the use of computer/internet motivates students to study.	4.00	0.500
SHS students often use the computer/internet for academic purposes.	3.64	0.679
Mean = SA – Strongly agree (5); A – Agree (4); U – Uncertain, (3), D – Disagree (2); and SD – Strongly disagree (1).		

According to majority of the parents, the internet exposes SHS students to so much information (M=4.51; S.D=0.452) indication additionally that further broadens their academic horizon. With an average value of 4.27, the parents agreed that SHS students were able to do extensive research with the internet. Again, they indicated that the internet enabled SHS students to learn independently (M=4.15; S.D=0.377).

On whether the internet could improve students' academics, the parents highly agreed with a mean value of 4.15 and a standard deviation of 0.980. They also, to a large extent, believed that the use of the computer/internet motivated students to study. The grand mean for the seven items is 4.21; implying that the parents somewhat agreed that the use of the internet positively influence the academic achievements of their wards. On whether the students often use the computer/internet for academic purposes, the parents rated it with a mean value of 3.64; indicating that were uncertain.

In addressing the Research Question 1, it can be concluded that ICT helped the students in improving their academic fortunes including the providing them with lots of information to understand certain topics better, reading broadly to broaden their academic horizon, doing assignments, and for extensive research. These revelations are in agreement with UNESCO's (2005) publications which describe how ICT potentially offers numerous advantages and provides opportunities for such as facilitating learning for children who have different learning styles and abilities, including slow learners, the socially disadvantaged, the mentally and physically handicapped, the talented, and those living in remote rural areas. However, teachers, parents and they (students) agree that students do not always use the computer/internet for academic purposes.

Research Question 2: What other activities aside academic work do students of Holy Child Senior High School use the internet facility for?

The object of this research question was to identify other uses of the computer/internet by the students of the Holy Child Senior High School. Responses were solicited from students and parents through the both questionnaires and interviews, while the café attendants were only interviewed. The views of the students and their parents are summarised in Tables 5 and 6 respectively.

Table 5: Others Uses of Computer/Internet by Students

Other uses of Computer/Internet	Mean	S.D
I watch movies on computer.	4.36	0.799
I use the internet to send and receive e-mail messages.	4.17	0.520
I use ICT in downloading and uploading music and movies.	3.96	0.766
I prefer using computer/internet to play games.	3.49	0.358
I go to chat rooms when I am on the internet.	3.46	0.680
I spend more time on the internet for fun things than for academic purposes.	3.18	0.911
Mean = SA – Strongly agree (5); A – Agree (4); U – Uncertain, (3), D – Disagree (2); and SD – Strongly disagree (1).		

Table 5 indicates that the students frequently used the computer to watch movies. This was reported by majority of them. Again, with an average value of 4.17 and standard deviation of 0.520, the students

agreed that their used the internet to send and receive e-mail messages. On the use of ICT in downloading and uploading music and movies, the students indicated their agreement. The same view cropped up during an interview with the students when majority of them reported, "I use it to play games and watch movies", and "I also download music a lot." They also reported of using the computer/internet to play games, and chat. This was only confirmed when during the interviews, a student responded, "I'm not sure that ICT is helping most of my peers academically because I often see them engaging in entertainment stuff and not really learning. "Other students said "I don't think the internet is helping us because everybody is 'Facebooking' – spending so much time on Facebook instead of learning." In a similar fashion, another student indicated "I'm often online – Facebook and seeking information." To many of the students, their generation was not using the internet to benefit their academic work but rather used it for entertainment purposes. These findings support that of Jackson et al. (2008: 441) that the frequency of playing video games was negatively related to overall achievement."

Table 6: Parents' Opinions on Others Uses of Internet by Parents

Other uses of internet	Mean	S.D
Students spend a great deal of time on Facebook, Twitter, Stype.	4.53	0.450
SHS students spend too much time on the internet having fun when they should be studying.	4.41	0.772
SHS students are often seen browsing for entertainment purposes.	4.23	0.344
SHS students are often seen playing computer games.	4.08	0.566

Mean = SA – Strongly agree (5); A – Agree (4); U – Uncertain, (3), D – Disagree (2); and SD – Strongly disagree (1).

From Table 6, parents strongly agreed that their wards spent a great deal of time on Facebook, Twitter, and Skype among others. The above finding emerged from the interviews as an HOD and Business Management teacher stated "students are often seen on Facebook, downloading music and movies. Few times I've seen some of them trying to learn typing. But serious academic work, no." Similarly, a Chemistry teacher observed "on Facebook for instance, they publish sentiments, insults, and ridicule people."

On whether SHS students are often seen browsing for entertainment purposes, the teachers largely agreed (Mean=4.23; S.D=0.344). The same response cropped up in an interview as a teacher was quoted as "they upload their pictures and download pictures of stars and some of them can be very suggestive. Watching porno is another practice which can affect their moral behaviour. In fact, some comedies affect their use of decent language."

According to all five café attendants interviewed, students mostly use the internet for Facebook, downloading music, and watching movies. Quoting one of them as "they are mainly here to browse, particularly, Facebook, twitter, download music, watch movies, play games and sometimes do some school assignments. Other times you will see some drawing but mostly they are on social network."

In conclusion with regards to the second research question that "**What other activities aside academic work do students of Holy Child Senior High School use the internet facility for?"** It emerged that the students used the internet for several other activities such as Facebooking, twittering, downloading music, watching movies, and playing games often than for academic purposes. This was said by the students themselves, and confirmed by the teachers, their parents as well as the café attendants.

Hypothesis 1: The ability to operate the computer has no association with student's age.

The study tested 5% significance level the preposition that ages of the students has no influence on her ability to operate the computer.

H_0: There is no association between ability of students to use the computer and their ages.
H_1: There is an association between ability of students to use the computer and their ages.

This was done using the Chi-square tests, and the results are presented in Tables.

Table 7: Association between Ability to Use Computer and Age

Age (in years)	I Know How to Use the Computer					Total
	SA	A	U	D	SD	
12 – 14	1	0	0	0	0	1
15 – 17	53	14	1	0	2	70
18 and above	77	36	3	2	3	121
Total	**131**	**50**	**4**	**2**	**5**	**192**

χ^2 (df = 8, N = 192) = 4.458, $p > 0.05$.

The figures above indicated that the Null Hypothesis should not be rejected since the *p*-value was greater than the significance level of 5%. The implication is that a student age has no association with her ability to use the computer. This means that any student at any age could know how to operate the computer.

Hypothesis 2: ICT has no significant influence on the academic performance of students in the various programmes of study.

Again, the study sought to determine if there is any association between students' programmes of study and the influence of ICTs on their academic achievements.

H_0: There is no association between programmes of study and ICT's influence on academic performance.
H_1: There is an association between programmes of study and ICT's influence on academic performance.
This was done using the Chi-square test, and the results are displayed in Table 8.

Table 8: Programmes of study and ICT's Influence on Academic Achievement

Programme offered	**ICT's Influence on Academic Performance**					Total
	SA	A	U	D	SD	
General Science	5	5	4	1	4	19
General Arts	18	19	23	12	6	78
Business	18	20	7	9	2	56
Visual Arts	12	1	0	0	0	13
Home Economics	4	11	3	5	3	26
Total	**57**	**56**	**37**	**27**	**15**	**192**

χ^2 (df = 16, N = 192) = 44.944, $p < 0.05$.

From Table 8, the Null Hypothesis of no significant association between programmes of study and the contribution of ICT to their academic performance was rejected since the *p*-value is less than 5% significance level. This means that students realise the contribution of ICT to their academic performance depending on the programmes that they study.

Hypothesis 3: There will be no statistically significant relationship between the students' use of computer and their performance.

H_0: There is no significant relationship between the students' use of computer and their performance.

H_1: There is a significant relationship between the students' use of computer and their performance. The Chi-square test was performed, and the results are displayed in Table 9.

Table 9: Use of Computer and Academic Performance

Computer use	**Academic Performance**					Total
	SA	A	U	D	SD	
Strongly Agree (SA)	50	42	26	13	2	133
Agree (A)	7	13	9	14	7	50
Uncertain (U)	0	1	0	0	2	3
Disagree (D)	0	0	1	0	0	1
Strongly disagree (SD)	0	0	1	0	4	5
Total	**57**	**56**	**37**	**27**	**15**	**192**

χ^2 (df = 16, N = 192) = 81.698, $p = 0.000$.

From Table 9, the Chi-square value of 81.698 was obtained at significance level of 0.05 with a degree of freedom of 16. Also, a *p*-value of 0.000 was realised. Since the *p*-value is less than $\alpha = 5\%$, the null hypothesis (H_o) was rejected. The interpretation is there is a significant relationship between

Information and Communication Technology (ICT) usage and academic performance of students. This finding disagrees with the the findings of Terry, Lewer and Macy (2003) that the predicted examination scores for students in the on-line courses were significantly less than those of students in the on-campus and hybrid format. The study's results also contradict the findings of Kulik (1994), Coates et al. (2004), and Leuven et al. (2004) who all found that there was no significant relationship between Information and Communication Technology usage and the academic performance of students.

Conclusions

Evidently from the study, the students, teachers and parents believed that ICT has enormously contributed to improving the academic achievement of students by providing them with lots of information to understand certain topics better, read broadly to broaden their academic horizon, do assignments, and for extensive research. It can be concluded that despite some negativities about ICT, it has positive influence on the academic performance of students by greatly contributing to both students' and teachers' motivation for teaching and learning.

The abuse of ICT/internet by students has been a source of worry to especially teachers and parents, as majority of students use it for several other purposes other than for academic purposes which regrettably consume their time. Among such activities are as Facebooking, twittering, downloading music, watching movies, and playing games. The excessive abuse of ICT/internet has called for its regulation. This should however, must be done not to infringe the rights of students (adolescents). Among the measures are that teachers, parents and café operators should monitor the websites that students visit, school authorities should embark on rigorous education of students on the positives and negatives of ICT/internet. Again, the blocking of illicit websites for students can also be given considerations.

Implications and Recommendations

Despite the ills of the emergence of the Information and Communication Technology (ICT)/internet, students should be allowed and encouraged to use it strictly for only academic purposes since there is a significant and positive relationship between the use of ICT and academic achievement of students.

School authorities should as a matter of urgency, organise intensive education/ sensitisation for students to appreciate the advantages and disadvantages of the use of Information and Communication Technologies (ICTs) on their academic endeavours as well as their moral behaviour. This will obviously reduce, if not eliminate, the excessive abuse of the internet for facebooking, twittering, watching pornographic materials among others.

School authorities and ICT teachers in schools should uninstall all social network websites such as Facebook, Twitter and Skype, and other unfriendly student websites like same-sex, pornographic, movies websites on all computers meant for students. This measure will deny them access to such websites on campus.

Government in collaboration with the Ministry of Communication and the National Communication Authority (NCA), telecommunication companies must urgently enact a legislature that regulates the use of internet by especially youths. This law should clearly indicate the following:

i. Websites that can be visited by kids, adolescents, and adults.
ii. Punishments to be meted to stubborn adolescents who visit websites meant for adults only.
iii. Specific punishments to be applied to hackers such cyber fraudsters, "Sakawa and 419" culprits.

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