Computer Utilization on Academic Performance, Health, and Behavior of Selected Students Enrolled in Board and Non-Board Degree Programs

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Abstract—This study determined how Filipino College students in Lyceum of the Philippines University utilized their computers, the reasons behind the utilization and the differences of students enrolled in board and non-board degree programs in terms of academic performance, health and behavior and how they differ in their reasons of computer usage, frequency per week and average hour per day of computer utilization. Descriptive type of quantitative research method was used in the study for 1,035 proportionately stratified randomly selected students from ten (10) different colleges. Results showed that students enrolled in non-board programs were spending more time in computer than students in board programs. For educational purpose is the primary reason of both groups in computer utilization. However, students from non-board programs have higher possibility of utilizing the computer for entertainment purposes than those from the board programs. Majority of the students enrolled in Board programs have significantly lower GPAs while those enrolled in non-board programs have higher possibility of encountering behavioral problems. One-third of the students were suffering from negative health effects of computer utilization no matter long or short they spent time in online and offline activities.

Index Terms—Computer usage, academic performance, behavior, health.

I. INTRODUCTION

Changes have been made every day to the way people interact, behave, and socialize from the benefits provided by technological innovations. The computer is a part of everyday life, and nowhere is that more the case than with high school and college students [1]. They are in the forefront of modernization and they are the recipients of many advantages and disadvantages of computer utilization including staying online or offline. As adolescent Internet use grew exponentially in the last decade, with it emerged a number of correspondent expectations; among them were that Internet use causes social isolation and depression, especially for teens; and that adolescents use the Internet for anonymous identity experimentation [2].

In one study, Internet usage was categorized in two empirical factors, namely usage profile such reason for using the Internet, average daily use of the Internet and usage patterns like average daily use of the Internet for

communication/e-mailing/chat, information access/downloading/entertainment and electronic services [3]. These factors have something to do with the present study which dealt with the differences in the attributes of the students enrolled in board and non-board degree programs.

Defining the characteristics of students enrolled in these two different degree programs has never been explored rigorously especially in dealing with computer utilization. Different college degree board programs have various means of screening the students who can be allowed to enrol and pursue it until graduation. Those who did not pass the qualifying exam have to take the non-board degree program of their choice. But most students take college degrees without government examination like business administration, communication arts, hospitality management, computer science, computer engineering, information technology, and industrial engineering.

In the Philippines, the Professional Regulation Commission has the main power, function and responsibility to administer, implement, and enforce the regulatory policies of the national government with respect to the regulation and licensing of the various professions and occupations under its jurisdiction including the enhancement and maintenance of professional and occupational standards and ethics and the enforcement of the rules and regulations relative thereto [4].

To pass the licensure examination is really hard to accomplish. Therefore, students with high intellectual capacity will only be allowed to pursue any degree board program. Having given this condition, students should work really hard to achieve their mission of passing the examination after college. So, they have to develop good habits of utilizing educational tools like computer and the internet to help them in academics.

The use of digital technology most recently, on-the-go for recreational purposes, has increased among youth over the past 15 years. Children and adolescent between the ages of 8 to 18 years spend an average of 5-6 hours per day using information and communication technologies. It is a useful progress because of the increase of internet usage which is unlimited, uncontrolled and uninhibited and easiness which arrival all sorts of to information or persons but this state can cause to some important negative results too [5].

Due to long hours of staying in front of the computers either for educational and entertainment purposes, college students represent a particularly vulnerable group of having frequent interpersonal and academic conflicts, and physical health-threatening risks related to problem Internet use [6]. The extent of its effect on the present study in terms of academic performance, health and behaviour might vary to

the two different groups of students under investigation.

II. Purpose of the Study

This study aimed to determine the academic performance in terms of Grade Point Average of the selected Filipino college students at Lyceum of the Philippines University – Batangas and the effects of computer utilization on their behavioral and health problems. It explored the characteristics of students enrolled in board and non-board programs to determine the nature of differences on the way they utilized computer and how they get affected. It analyzed the computer usage of the students in terms of frequency per week and average hour usage per day. Differences in the reasons of computer utilization of the respondents, behavioral and health problems when they are grouped according to Board and Non-Board Programs were also investigated. The result of the findings will serve as substantial input in the proposed student development program that would address the specific needs of each college department in LPU.

III. Design of the Study

A. Quantitative Research

The descriptive type of quantitative research method was utilized in the study. In quantitative descriptive research, the researcher's purpose is to answer questions about a variable status by creating numerical descriptions of the frequency with which one of the variables occurs [7].

B. The Participants

The respondents of the study were 1,035 out of 9,500 or 10.89 percent randomly selected Filipino students enrolled during 2nd Semester of SY 2010-2011in 10 different colleges at Lyceum of the Philippines University (LPU) in Batangas City namely: College of Engineering (COE), College of Allied Medical Professions (CAMP), College of Dentistry (DENT), College of Criminology (CRIM), College of Education, Arts and Sciences (CEAS), College of Nursing (NRSG), College of Computer Studies (CCS), College of Business Administration (CBA), College of International Tourism and Hospitality Management (CITHM), and Lyceum International Maritime Academy (LIMA). Respondents were chosen based on Proportional Stratified Random Sampling technique to ensure that different colleges were adequately represented in the sample with at least 10 percent of the total population of students each college. There were 565 students from Non-Board degree programs and 469 from Board programs.

Meanwhile, the selected student organization officers of each college drawn from the sampling technique used were invited for a focus group discussion to strengthen the result of the survey wherein structured-interview was done to the participants.

C. Data Collection and Analysis

Data were collected using documentary analysis on the academic performance of the respondents and the survey questionnaire used to determine the frequency of computer usage per week and average number of hours per day, reasons of computer utilization, effects of this utilization to students' health and classroom behavior.

Students were given 15 statements to assess the extent of their reasons of computer utilization: seven (7) questions for educational related purposes and eight (8) for non-educational mostly for entertainment purposes.

On the part of the instrument regarding the students' health, the respondents were asked to rate the frequency of the 15 cited health problems that could be possible symptoms related to computer utilization. The respondents were given four (4) options such as: Always, Sometimes, Seldom and Never.

When it comes to classroom behavior, they were asked to describe their agreement if they are experiencing the 15 statements related to the computer utilization due to spending too much time in computer. They were given four (4) options to answer the statements: Strongly Agree, Agree, Disagree and Strongly Disagree.

The instrument for determining the reasons of computer utilization and its perceived effect to their personal behavior and encountered health problems were tested the reliability using the test-retest method to the student – respondents not included in the study. The researcher administered the pilot testing personally to answer some questions of the students on terms and statements which they found confusing in the instrument. Rephrasing and restating the questions were done in the instrument to make it more suitable to the level of respondents' understanding. After a week, the researcher asked the same group to answer again the same set of questions. The computed 0.76 Cronbach – alpha signified that the questionnaire was acceptable based on "rule of thumb" which lies within the range of "Acceptable".

Names of students included in the study were obtained from the University Registrar's Office as well as the weighted average of the respondents during 1st semester of School Year 2010-2011 using documentary analysis of their academic performance.

Survey questionnaires were administered personally by the researcher and some of these were administered by the department secretaries of different colleges during enrolment period. The respondents were informed regarding the main purpose of the study. Names of the respondents were very important because the study intended to determine the academic performance of the students.

The data were collected, classified, tabulated and coded for analysis. The following statistical tools were applied in interpreting the data obtained from the instrument used in the survey, including the frequency count, percentage, weighted mean, rank, Cronbach –alpha for testing the reliability of the instrument, and the reasons of computer usage while Independent Sample T-test was used to determine the differences between students enrolled in board and non-board programs.

IV. Results and Discussion

Table I shows the computer utilization of the students in terms of their number of hours of computer usage per day.

Students from Nursing and Engineering board programs obtained the highest average number of hours per day of computer usage. These are the only two board programs

landed on the first and second highest spots among all departments; they were followed by the non-board programs while the rest of the students from board programs such as accountancy, criminology, dentistry and maritime professions have the least number of hours per day of computer usage. As can be seen in Table IV, students from non-board programs have significantly longer hours of computer usage ranging from 3 to 5 hours per day compared to board programs with 2 to 4 hours only.

TABLE I: COMPUTER UTILIZATION IN TERMS OF NUMBER OF HOURS PER DAY

Rank	Colleges	WM (in hours)	Category	Programs
1	NRSG	3.32	B	Nursing
2	COE	3.22	B	Mechanical Engineering & Electronics Engineering
3	COE	3.14	NB	Computer Engineering & Industrial Engineering
4	CCS	3.09	NB	Computer Science/ IT
5	CITHM	3.04	NB	Hotel & Restaurant Mgmt/Tourism/Culinary Arts
6	CBA	2.97	NB	Business Administration/Office Mgmt
7.5	CEAS	2.95	B	Psychology/Teacher Ed.
7.5	CAMP	2.95	B	Medical Technology, Physical Therapy, Radiologic Technology, Comm. Arts/ Paralegal Studies
9	CEAS	2.79	NB	
10	CBA	2.68	B	Accountancy/Customs Admin.
11	CRIM	2.46	B	Criminology
12	DENT	2.44	B	Dentistry
13	LIMA	2.38	B	Marine Transportation/ Marine Engineering

Note: *B – Board Program*   *NB – Non Board Program*

Generally, almost half of the surveyed respondents utilized the computer with internet almost every day and 20 percent answered thrice a week; 15 percent answered only when need arises and one in every ten answered once a week. This is a manifestation that majority of LPU students were already knowledgeable in the uses and functions of computer and the frequency of their access were based on their interest to connect with people and explore their respective fields of specialization.

Table II shows the respondents' number of days per week of computer utilization.

TABLE II: COMPUTER UTILIZATION IN TERMS OF NUMBER OF DAYS PER WEEK

Rank	Colleges	WM (in days)	Category
1	CCS	4.25	NB
2	COE	4.23	B
3	CEAS	4.14	B
4	NRG	4.09	B
5	CAMP	4.08	B
6	CBA	4.05	B
7	CEAS	4.04	NB
8	CITHM	4.04	NB
9	CBA	3.93	NB
10	COE	3.89	NB
11	DENT	3.88	B
12	LIMA	3.33	B
13	CRIM	3.06	B

Meanwhile, students from CCS obtained the highest number of frequency of computer usage per week followed by the majority of the board programs in engineering, teacher education, nursing, medical professions and accountancy, while the rest of the other non-board programs stayed at the middle rank and other group of board programs in dentistry, maritime and criminology obtained the least frequency of computer usage per week. It is understood due to the nature on how to acquire learning in the CCS, most of their students must stay long hours in doing computer programs and animations in addition to their usual activities of visiting social networking sites.

As can be seen in Table IV, the non-board programs have significantly higher number of days per week of computer usage ranging from 3 – 6 days than their counterparts with 2 – 4 days only.

Table III shows the academic performance of students between board and non-board programs.

TABLE III: ACADEMIC PERFORMANCE OF THE RESPONDENTS

Non- Board	GPA (%)	Remarks	Rank
CBA	86.32	Satisfactory	2.5
CEAS	88.36	Good	1
COE	82.84	Fairly Satisfactory	5
CCS	85.60	Satisfactory	4
CITHM	86.32	Satisfactory	2.5
Total Average	**85.72**	**Satisfactory**	
Board			
CBA	86.08	Satisfactory	3
CRIM	84.28	Satisfactory	5
CEAS	90.76	Very Good	1
COE	85.84	Satisfactory	4
CAMP	87.64	Good	2
DENT	81.40	Fairly Satisfactory	8
NRSG	83.44	Fairly Satisfactory	7
LIMA	83.68	Satisfactory	6
Total Average	**85.12**	**Satisfactory**	

Students from CEAS obtained the highest average GPA of 88.36% among the Non-Board degree programs followed by the group of students from CBA and CITHM with 86.32%. The students from CCS also obtained satisfactory rating of 85.60 % while the students from COE obtained fairly satisfactory rating of 82.84%. Engineering is considered one of the hardest degree programs in college; therefore it is not surprising for Computer Engineering and Industrial Engineering students to obtain the least GPA. In reference [8] emphasized to the Freshman Engineering students at MSU that Engineering is a hard major but it can provide a lifetime of rewards if it matches the students' interests and talents.

Among the board degree programs, students from CEAS taking up Psychology and Teacher Education obtained the highest GPA with 90.76% followed by the group of students with satisfactory performance rating from CAMP (87.64%), CBA (86.08%), COE (85.84%) and LIMA (83.68). However, students from NRSG (83.44%) and DENT (81.40%) obtained the fairly satisfactory performance rating in GPA. Degree program related to Health Care are also considered one of the hardest among the board programs in college if it will be compared to arts, business and management professions.

In the case of LPU, there are more enrollees in Tourism

and Hospitality Management than Engineering and Allied Medical Professions. This can be associated to the trend and development of tourism industry not only in the Philippines but also in the neighboring countries.

As can be seen in Table IV, that the students enrolled in non-board programs have significantly higher GPAs than those students enrolled in degree programs. The difference in the GPA of students could be explained through the different nature and treatment being held in courses of each degree program that affect their GPA but it doesn't mean that students in board programs have low intellectual capacity. In fact, they were admitted in those programs because of their mental prowess.

When the relationship was tested between the academic performance of the students and their computer utilization in terms of frequency of computer usage per week and number of average hour per day, it revealed that there is no significantly relationship between these variables. This signifies that computer utilization in terms of the cited variables in the present study is not a factor that could determine the GPA of the students.

Table IV reveals the differences in the academic performance in terms of GPA, computer utilization in terms of frequency per week, average hour per day and reasons of computer utilization as well as the differences in behavioral and health problems encountered between the students enrolled in board and non – board programs.

TABLE IV: DIFFERENCES BETWEEN THE TWO GROUPS OF RESPONDENTS IN TERMS OF GPA, COMPUTER UTILIZATION, BEHAVIORAL AND HEALTH PROBLEMS

Variables	Mean		t-value	p-value	Remarks
	Non-Board	Board			
GPA	2.81	2.76	2.17	0.03*	S
Frequency /week	4.08	3.80	3.18	0.00**	S
Ave. Hour/day	3.06	2.79	3.46	0.00**	S
Reasons of Computer Utilization	2.88	2.76	4.28	0.00**	S
Behavioral Problems	1.87	1.74	3.23	0.00**	S
Health Problems	2.23	2.21	0.41	0.68	NS

* Significant at α = 0.05 *S - Significant*
** Significant at α = 0.01 *NS –Not Significant*

TABLE V: TOP FIVE REASONS OF COMPUTER UTILIZATION OF THE RESPONDENTS AND ITS DIFFERENCE BETWEEN THE TWO GROUPS

I use computer…	NB	B	P-value	Remarks
1. for educational purposes	3.42	3.40	0.581	NS
2. to send messages using e-mail	3.35	3.28	0.127	NS
3. to look for the answers to my assignments and projects	3.30	3.22	0.069	NS
4. to watch new music videos and hear new sounds	3.32	3.18	0.004**	S
5. to make new friends and develop relationships using social networking sites	3.32	3.16	0.001**	S

** Significant at α = 0.01

Significant difference showed in the GPAs of LPU students included in the college with most of the programs have licensure examinations were significantly lower than the GPAs of students without board examination. This is due to considerable differences in the nature of acquiring knowledge and skills in medical and engineering professions wherein the level of analytical and critical thinking is very

much significant for greater objectivity compared to hospitality management, communication arts and business programs wherein creativity is one of the major advantages for subjective evaluation.

Table V shows the top five (5) reasons of the respondents in computer utilization and how the students enrolled in board and non-board degree programs differ on their responses.

Both groups of respondents between board and non-board programs have utilized computers for educational purposes as most of their reasons like sending messages through e-mail and use the internet primarily for answering their assignments and accomplishing their projects. They do not significantly differ on how they utilize computer for educational reasons. College students are frequently looking for email and checking email at least once a day [9]. However, the students enrolled in non-board programs have significantly higher possibilities of engaging most of their time for entertainment purposes such as watching new music videos, listening to new sounds, making new friends and developing relationships through social networking media as well as playing video games.

Other studies showed that social networking was the most popular computer activity, with *Facebook* being the most popular Social Networking Site (SNS). Students may be able to somewhat regulate their computer use in ways that could benefit them academically. For instance, students spent significantly more time using the university's learning management system when classes were in session and less time watching videos [10]. SNS users sustain bridging social capital through a variety of heterogeneous connections to other SNS users. This appeared to be beneficial for them with regards to sharing knowledge and potential future possibilities related to employment and related areas [11]. Although activities like downloading files and using instant messaging may be categorized as "leisure," they can also be important learning activities that set trends for the types of skills that will be important in the future like learning how to manage a file-sharing system or navigate in a real-time chat can be complicated tasks that teach college students valuable technical skills they might need in the workplace [9].

It is worthy to note that students in board programs have set of priorities to limit their computer usage for any means aside from helping them prepare their assignments and projects. Survey showed that they have low reasons in using computer compared to non-board programs because they are more focused on complying with the requirements of their courses to finish the topics in the syllabi, therefore, they do not have enough time to socialize online. They visit social networking sites to ask their classmates for additional information regarding the lessons discussed in the classroom, activities of the student organization and posting of academic – related announcements.

On the other hand, students in non-board programs have ample time to balance their activities in using computer for academics and leisure. They have more reasons to get connected online because time permits them to do so. Although they have school requirements to prepare for submission, but the volume or amount of effort needs to be exerted just to finish a certain project is not the same with the board programs based on the interviews done to the students.

For example in Engineering, one course requirement for a certain subject is already equivalent to a thesis of other non-board programs. The time they need to accomplish those voluminous projects in front of the computer really gave them too much headache and too many meals escaped. For Medical professions, they have too many textbooks and references to read online and offline just to cope up with their lessons.

Table VI shows the top 6 health problems being encountered by the students related to their computer utilization presented in percentage distribution with corresponding computed weighted mean.

TABLE VI: TOP 6 HEALTH PROBLEMS RELATED TO COMPUTER UTILIZATION ENCOUNTERED BY THE STUDENTS

Health Problems	Percentage				WM	VI
	4	3	2	1		
1. Headaches	15	46	26	13	2.63	S
2. Neck pain	12	49	25	14	2.57	S
3. Eye Strain	10	45	28	17	2.45	Se
4. Shoulder Pain	10	42	30	17	2.43	Se
5.5 Blurred Vision	11	38	32	19	2.39	Se
5.5 Eye Irritation	10	39	34	18	2.39	Se

Note: *A- Always(4); S – Sometimes (3); Se – Seldom(2); N-Never(1)*

Nearly half of the respondents agreed that they are sometimes experiencing headache, neck pain and eye strain after using computer while more than one –third of them are experiencing blurred vision and eye irritation. But the two groups of respondents do not differ significantly in terms of acquiring health problems related to computer utilization based on the result of Table IV. Therefore, respondents were all at risk of the possibility of experiencing the negative health effects of computer usage no matter how long and how often they utilized it.

Table VII reveals the top five (5) observed behavioral problems related to computer utilization being encountered by the students themselves inside the classroom.

TABLE VII: TOP 5 BEHAVIORAL PROBLEMS RELATED TO COMPUTER UTILIZATION ENCOUNTERED BY THE STUDENTS

Behavioral Problems	Percentage				WM	VI
	4	3	2	1		
1. Sleep inside the classroom	9	30	41	20	2.24	D
2. Come to school late	6	22	41	31	1.99	D
3. Am impatient waiting for long class hours	4	19	42	34	1.92	D
4. Am helpless and always prefer to be alone	4	14	42	40	1.81	D
5. Am not motivated to excel or obtain high scores in examination	4	14	42	40	1.81	D

Note: *SA- Strongly (4); A – Agree (3); D–Disagree (2); SD-Strongly Disagree(1)*

Almost 30 percent of the students agreed that they were sleeping inside the classroom due to spending too much time in the computer while more or less 20 percent of them were coming to school late and impatient waiting for long class hours just to get connected online. Meanwhile, 14 percent of them agreed that they are being helpless and always prefer to be alone and not motivated to obtain high scores in examination. Out of 15 stated problems, these are the top 5 behavioral problems being encountered most of the students. Although there is an overall verbal interpretation of "Disagree" in the following statements, but still, there is certain percentage of students that needs to be addressed the problem.

In general, two (2) in every ten (10) respondents agreed that they were experiencing personal behavioral problems caused by computer utilization. Students in non-board programs have significantly higher possibility of experiencing these problems inside the classroom based on the result presented in Table IV.

V. CONCLUSION

The LPU academic community must support extra-curricular activities related to computer technology that would help the students realize the value of having high functional computer literacy without sacrificing the health of the end-users.

Students enrolled in board programs must be given enough motivation to increase their standards of getting more high grades than be satisfied of just obtaining passing remarks through developing study habits with the ease of computer aided materials.

More enrichment activities must be given students enrolled in non-board programs to lessen their time of spending in computer using the internet without any educational output.

Parents and guardians are convinced reasonably to have computer units at home and some laptops to be used in school for educational purposes but they must be vigilant of the virtual entertainment activities of their children and they must advised their children to consider the bad health effects of spending long hours of computer usage.

Educators need to create learning environments that enable students to acquire and use information that helps them understand their world and experiences and, eventually, generate new information and knowledge [12]. Teachers must strengthen their teaching capability to integrate computer technology in their curriculum even for general education subjects through giving the students with research projects that would enhance their writing communication skills and capability to evaluate, synthesize and summarize the contents of other researches to come up with a good set of related literature. Therefore, they have to encourage the students to use online journals as reference for their studies.

Integrating Information and Communication Technology in the curricula would advance the learning of the students both in managing technology and study habits. Using e-learning would enhance the interest of both students from board and non-board programs to participate in the online group discussion with an aid downloadable study materials. Computer attitudes not only play an influential role in determining the extent to which students accept the computer as a learning tool but also future behaviors towards the computer such as using it for further study and vocational purposes [13].

Students from non-board programs would be more interested to learn the lessons and participate in classroom discussion with an aid of internet and information coming from reliable sources. They must be motivated to join groups in social networking sites with an aim of enhancing their

communication skills especially forming a group whose purpose is to encourage posting of pure English messages, original quotations, short poems or essays, so that the students from non-board programs would be able to participate in intellectual discussion. In this way, they can limit their time posting messages without any rational purpose. Rewards will be given by a certain department or the administrator of the page to select the best among the posted messages or opinion.

Students with two or more absences or frequent tardiness must be reported to the guidance counseling especially those students with untoward behavior, which could be possibly a cause of excessive use of computers which sometimes leading to student drop outs or failing grades. Proper counseling would help them realize the consequences of their actions.

Pupils must be given an opportunity to develop their computer skills as early as pre-school or grade school to help them advance in improving their logical and analytical thinking with proper guidance and restriction of parents on the activities that would be carried out in the computer. Parents with children in primary and secondary levels must monitor the online activities of their children so that when they go to college, they have proper habit and direction towards the achievement of their goal of accomplishing either a board or non-board program with flying colors.

Students must learn how to manage or balance their time between working with computer and working with people. They must realize that they are still living with real individuals and they must not only engage most of their time in dealing with virtual community to lessen the bad health effects of computer. Lack of exercise would be a cause of body pains from excessive use of computers. Headaches would also be avoided if students could take enough food before sitting in front of computers for long hours or eating while working would feed both the stomach and the mind with enough nutrients it needs to process and work properly.

The researcher proposed a student development program and it must be implemented to enhance the level of their good computer habits and skills at the same time balancing the way they live with real and virtual community.

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