Univ. of Min. Intl. Mult. Res. Jour. vol. 1, no. 1, pp. 1-13
Received: July 5, 2015; Accepted: December 10, 2015; Released: January 15, 2016
www.uminjournals.org

Educational technology and academic performance of students in basic English in selected higher education institutions in Davao del Sur

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ABSTRACT

Use of e-learning strategies and its relationship on academic performance of 252 college students in Basic English of UM Digos College (UMDC), Cor Jesu College (CJC), Polytechnic College of Davao del Sur (PCDS), South Philippines Adventist College (SPAC), Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST), and Holy Cross of Bansalan College (HCBC) is presented. A non-experimental quantitative research design following descriptive and correlation methods was used Results revealed that most of the second year Bachelor of Science in Information Technology female respondents ages 18-20 years old are average in terms of their academic performance. The overall level of use of e-learning strategies was found to be high. Among of the five indicators of e-learning, only learner-faculty interaction was found to be significantly correlated with academic performance.

Keywords: *Davao del Sur, Education, Survey.*

INTRODUCTION

Educational Technology (ET) is a learning system adoting the methods, processes, and products to serve identified educational goals in an organization for its efficient implementation (National Council of Educational Research and Training, 2006). Moreover, it is the use of computers as one of the major peripherals in the implementation of the system with networks, software, and internet included in the e-learning process.

E-learning in the field of education is the trend that is already adopted as an aid to classroom delivery (Galy, et al. 2011). It is rapidly emerging as a predominant paradigm in the delivery of education in the society and has been observed that the use of e-learning is the best way to transfer knowledge from the teacher to

students (Santiago, 2011). There are evidences that the e-learning has now become an essential component in the delivery of many higher education courses and has been instrumental in supporting and facilitating teaching and learning. Research shows that there are issues and challenges that threaten the adoption and sustainability of e-learning especially in rural communities (Attwell, 2007). The importance of this is that the performance of a teacher will be based on the performance of the students that has captured the lesson delivered in the classroom (RAND, 2011). This performance is weighted according to the grade of the student in the class (Oye, et al. 2012). Therefore the use of e-learning would have an impact on the performance of students.

In a certain research conducted in California, one of the negative findings pertaining to the use of educational technology is the enduring difficulty about technology and a lot of people thinking about the technology first and then education later (Schacter, 1999). There are some recommendations ranging from access, adequacy, and equity in educational technology to the increase of educators and students access to high speed internet services and appropriate instructional software with increase technical assistance and maintenance support in using technology (National Education Association, 2008).

In the Philippines, e-learning has been gaining ground in the education sector with a big push from governmental efforts. The government and the institutions that supply education services in the Philippines and in other countries give high recommendation to this e-learning concept (Suplido & Rodrigo, 2000). The Executive Order No. 47 series of 2011 emphasized the need for continuous innovations of e-learning in the country including the creation of an e-learning environment by actively promoting it to all education levels (Padolina, 2002). This study looked into the level of implementation of educational technology in the selected HEIs of Davao del Sur and investigates if it correlates with academic performance of students in Basic English.

METHODS

This study utilizes a non-experimental quantitative research design following descriptive and correlation methods. There are 252 students coming from the different HEIs in Davao del Sur offering Bachelor of Science in Information Technology (BSIT) program, namely: UM Digos College (UMDC), Cor Jesu College (CJC), Polytechnic College of Davao del Sur (PCDS), South Philippines Adventist College (SPAC), Southern Philippines Agri-Business and Marine and

Aquatic School of Technology (SPAMAST), and Holy Cross of Bansalan College (HCBC).

A non-probability sampling specifically purposive judgmental sampling involving non-random selection of elements based on the researcher's judgment and knowledge about the population was used (Nalzaro, n.d.) which is a cost-efficient alternative research method of the study (Schillewaert, et al., 1998). Purposive sampling was applied by selecting first the year level of the respondents to be chosen as the final sample.

Research Instrument

The survey questionnaire used in the study was adopted from Curada (2007) which determined the e-learning status in an institution. This used Structural Equation Modeling (SEM) in identifying critical factors that played in technology-rich learning contexts or the educational technology. The learner-hardware interaction, learner-faculty interaction, learner-software interaction, collaboration among learners, and provision of learning activities are vital in ensuring quality of learning in technology-rich contexts. Two higher factors were identified, learning community and technology integration (Curada, 2012).

Procedure

This study is a collaboration of six (6) - HEIs in Davao del Sur and conducted using the following procedures: seeking permission from the University of Mindanao Research and Publications Center in the conduct of the study, sending letters of permission to the respective deans and directors of the HEIs, administration and retrieval of instruments, and data analysis and interpretation.

Data Analysis Tools

The statistical tools used in this study are the mean and the Pearson Product Moment Correlation. Mean is use to determine the level of e-Learning Strategy in the Classroom of the HEIs in Davao del Sure and the rate of the year level, type of school, course, age and sex of student in the result on the use of the e-learning. The Pearson Product Moment Correlation is used to determine the relationship of the level of use of e-Learning strategy and the academic performance of students in Basic English.

RESULTS AND DISCUSSION

Profile of participants

Participants include 252 college students from six (6) higher education institutions (HEIs) in Davao del Sur where 134 are females and 118 males. 50 participants belong to 15 to 17 year-old group, 156 participants with ages 18 to 20, 35 belong to 21 to 23 year-old group, 8 on 24 to 26 year-old group, and only 3 participants for the 27 years old and above. In terms of year level, 10 students came from first year, 104 students from second year, 78 students from third year and 60 students from fourth year. When grouped in terms of school type, 166 came from nonsectarian institutions and 86 from their sectarian counter parts. Based on course profile 188 students are enrolled in BSIT, 7 students enrolled in BSCS, 2 BSECE students, 26 education students, 1 student is enrolled in BSHRM, 1 BSAT student, 8 BSBA, 10 BSN, 1 BSOA, and 8 BSBA students.

Profile of the schools

Table 1 presents the distribution of respondents from participating institutions. A total of 252 students from six schools participated in the study. These schools include UM Digos College (UMDC), Cor Jesu College (CJC), Polytechnic College of Davao del Sur (PCDS), South Philippines Adventist College (SPAC), Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST), and Holy Cross of Bansalan College (HCBC). UMDC and SPAC have meet the requirements set in this study on the quota sampling which is 50 respondents or 19.8% and SPAMAST resulted to have the lowest respondents of 30 respondents or 11.9%.

Table 1. Distribution of participants by school

School	Frequency	Percentage
UMDC	50	19.8
HCB	49	19.4
SPAMAST	30	11.9
PCDS	37	14.7
CJC	36	14.3
SPAC	50	19.8
Total	**252**	**100.0**

Demography of respondents
A little more than half of the respondents are females (53.2 percent) ages 18-20 years old (61.9 percent) mostly second year students (41.3 percent) enrolled in the degree Bachelor of Science in Information Technology (74.6 percent).

Level of use of e-learning characteristics among HEIs in Davao del Sur
Presented in Table 2 are the characteristics on the use of e-learning in terms of learner-hardware interaction, learner-faculty interaction, learner-software interaction, collaborations among learners, and provision of learning activities. The overall mean score on the use of e-learning characteristics is x=3.61 means 'High' based on descriptive interpretation. This further means that students among higher education institutions in Davao del Sur exhibited high level on the use of e-learning characteristics.

The first indicator on the level of use of e-learning strategy which is the provision of learning activities was considerably 'moderate'. However, instances points to condition that font style, size, and color facilitate ease in reading the texts (x=3.81) contributing to positive adoption of e-learning. This makes the objective visible on screen when lessons are presented (x=3.80). Though both sub-indicators reveals high description the posting of lectures, quizzes, or assignments reveals to be moderate specially when it is not frequently posted in the website x=3.47. This could only mean that connection is very important in implementing e-learning and students who have internet access in their homes may have an advantage to those seeking internet connections outside (Mihalcescu & Sion, 2010).

The learner-faculty interaction indicator reveals 'high' when teachers gives feedback on how to improve student performances (x=3.78) and when available help is ready when technical problem arises (x=3.74) contributes to satisfactoriness of e-learning in the classroom. However, there is still uncomfortable feeling to the students in asking questions and guidance from the teacher (x=3.60) to be addressed to meet the expected result. This corresponds to the study in Arizona that using e-learning also create challenges especially on maintaining educational accuracy and openness among students and teachers compared to the rigor of face-to-face learning (Ayars, 2011).

This gives a positive result on the learner-software interaction especially when pictures and figures are properly presented (x=3.88) and gives a link to related materials via the internet (x=3.88). This corresponds to a study in the United States that knowledge on software use can help faculty/designer sequence and

prioritize tasks, allocate time, resources to task execution, and focus tasks on user performance and client goals (Jury, 2007).

The biggest challenge in the implementation of e-learning as perceived by the students is the hardware specification that an institution can provide. Hardware is the key for a successful implementation of technology aided software for it needs training in using peripherals and other socio-economic factors (Romero, 2012). This reflects on the result of the study that the intention of using the computer gives high comfort (x=3.87) and gives high results on the adequate availability of computer units in the campus. Though result is high still there is an issue on the incorporation of the lesson to the computer (x=3.52).

Social media is very rampant on the field of technology but still there are opportunity to improve unto the collaboration among learners for it has a moderate result. A study from New Zealand illustrates that students did not work collaboratively and struggled to use the web-based tools to advance their learning. Investigations revealed that students preferred individual offline approaches than to the demanding processes required in a collaborative online environment (Butson & Thomson, 2014). Personal interaction resulted to students encouragement with other students on the lesson (x=3.45), received actual comments from the classmates (x=3.35) and discussion using e-learning application (x=3.30) descriptively moderate scores.

Table 2. Use of e-learning

Characteristics of E-Learning	**Mean**	**Verbal Description**
Provision of Learning Activities	**3.47**	**Moderate**
Lectures, quizzes or assignments are frequently posted in the website.	2.79	Moderate
The front style, size and color facilitate ease in reading the texts.	3.81	High
The objectives of the lessons are presented on screen.	3.80	High
Learner-Faculty Interaction	**3.71**	**High**
I feel comfortable to ask questions and guidance from the teacher.	3.60	High
The teacher gives feedbacks on how to improve student's performance.	3.78	High

Help is available when faced with technical problems.	3.74	High
Learner-Software Interaction	**3.81**	**High**
Onscreen pictures and figures help in better understanding the lesson presented.	3.88	High
Useful internet links are integrated in the learning material.	3.88	High
Onscreen graphics are placed near the text it illustrates.	3.68	High
Learner-Hardware Interaction	**3.67**	**High**
There are adequate computer units in the campus.	3.60	High
I don't have difficulty using computer in our lesson.	3.52	High
I am comfortable using computers.	3.87	High
Collaboration among Learners	**3.37**	**Moderate**
Students are encouraged to give helpful comments and suggestions related to the lessons through discussion board e-mail or chat.	3.45	Moderate
We discuss lessons or requirements using the discussion board, e-mail or chat.	3.30	Moderate
I get helpful comments from my classmates through discussion board, e-mail or chats.	3.35	Moderate
Overall	**3.61**	**High**

Table 3 revealed the overall level of use of e-learning characteristics per higher education institution. Students from the Polytechnic College of Davao del Sur (PCDS) have the highest use of the indicators of e-learning having a mean score of 4.06 with a descriptive interpretation of High. Followed by Cor Jesu College (CJC) whose usage has a weighted mean score of 3.72, equally High; Holy Cross of Bansalan College (HCBC) having a mean score of 3.66 and a descriptive interpretation of High; UM Digos College (UMDC) students with a mean score of 3.64 with a descriptive interpretation of High. Two schools have a moderate use of e-learning namely: Southern Philippines Adventist College (SPAC) with mean score of 3.33 and Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST) having a mean score of 3.23.

Table 4. Level of e-learning among HEIs in Davao del Sur

School	Level of e-Learning	Verbal Description
UM Digos College (UMDC)	3.64	High
Holy Cross of Bansalan College (HCBC)	3.66	High
Southern Philippines of Agri-Business and Marine and Aquatic School of Technology (SPAMAST)	3.23	Moderate
Polytechnic College of Davao del Sur (PCDS)	4.06	High
Cor Jesu College (CJC)	3.72	High
Southern Philippines Adventist College (SPAC)	3.33	Moderate

The result of the two areas in the level of e-Learning among colleges in Davao del Sur reveals moderate in implementation. Among six HEIs in the area only this two is located in a very secluded area of the Davao del Sur that internet connection is not yet available and café are not yet visualize. Base on the study from India that due to technical glitches and slow speed of internet in rural area, students have to spend more for applying online as the cyber cafe owners are taking an undue advantage of the situation and fleecing the rural students (Online admissions bane for rural students, 2011).

Level of academic performance of students among HEIs in Davao del Sur
Presented in Table 5 are the level of academic performance of students in Basic English taught in the higher education institutions in Davao del Sur. Academic performance is presented in terms of point average converted using UM's grading system, where 100 is 1.0 and 75 is rated 3.5. Presentation was done per higher education institution or college.

The institutions with the highest mean for academic performance are UM Digos College (UMDC), Polytechnic College of Davao del Sur (PCDS) and Southern Philippines Adventist College (SPAC) have similar weighted mean score of 2.4, and is interpreted as Average. The overall mean has a numerical equivalent of 86 percent. This means that performance of the students in the said institutions in Basic English is at the average level. Followed by Holy Cross of Bansalan College (HCBC) having an overall mean of 2.6 which has a numerical equivalent of 84 percent interpreted as Average. On the other hand, HEIs with

students who have the least overall academic performance are Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST) and Cor Jesu College (CJC) with an overall mean of 2.7, numerical equivalent of 83 described as Average.

Table 5. Academic performances of schools

School	Academic Performance	Verbal Description
UM Digos College (UMDC)	2.4	Average
Holy Cross of Bansalan College (HCBC)	2.6	Average
Southern Philippines of Agri-Business and Marine and Aquatic School of Technology (SPAMAST)	2.7	Average
Polytechnic College of Davao del Sur (PCDS)	2.4	Average
Cor Jesu College (CJC)	2.7	Average
Southern Philippines Adventist College (SPAC)	2.4	Average

Relationship of level of use of e-learning and academic performance of students in basic English

Table 6 showed the correlation analysis performed to determine whether the indicators of e-learning have significant relationship with the academic performance of students in Basic English. The indicators were statistically-tested for significance using Pearson product moment correlation r_{xy} coefficient and significance determined by ensuring that the *p*-value is less than or equal to 0.05. Results revealed that among five indicators of e-learning only learner-faculty interaction was found to significantly correlate with academic performance having an r value of .630, *p*-value of .017 significant at 0.05 level.

On the other hand remaining four e-learning indicators, learner-hardware interaction, learner software interaction, collaboration among learners and provision of learning activities, were found to have no significant relationship with academic performance of students. The respective r-values showing the degree of relationship between the indicators to academic performance were found to have *p*-values higher than 0.05 level. Hence, there is no significant

relationship that exists between said e-learning indicators and academic performance.

Table 6. Correlation analysis of e-learning and academic performance

Independent variables	Pearson r_{xy}	p-value	Remark
Provision of Learning Activities	0.052	0.412	Not Significant
Learner-Faculty Interaction	0.630	0.017	Significant
Learner-Software Interaction	0.024	0.709	Not Significant
Learner-Hardware Interaction	0.021	0.740	Not Significant
Collaboration among Learners	0.076	0.280	Not Significant

Correlation analysis of the implementation of e-learning strategy in the classroom and the academic performance of the student in Basic English in five indicators revealed that only learner-faculty interaction showed strong relation to academic performance. This conform to the study of Okonta (2010) that there is a relationship between the academic performances of students in the implementation of e-learning in the learner-faculty interaction indicator. The factors related to instructional interaction predicted perceived learning achievement and satisfaction better than factors related to social interaction and satisfaction with empirical evidence (Kang & Im, 2013).

RECOMMENDATIONS

The performance of the trainer must also be taken to consideration. The researchers recommend that educators explore more variables and factors that may contribute to high academic performance of the students when e-learning is used.

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