Blended Learning with Online Assessment in Higher Education: Its Global Environmental Dimensions of Sustainability

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Abstract: *This study aimed at determining the Blended Learning with Online Assessment in Higher Education as basis for Global Environmental Dimensions of Sustainability. Specifically, this study sought answers to the following: students' assessment on blended learning with online assessment and significant features of blended learning with online assessment as perceived by the students. It was found that blended learning changes the way that students of all types and ages interact and access information. Blended learning is very well accepted by the students and the program is very acceptable among experts. Likewise, the integrity of learning is kept as it does not have a significant relationship with level of acceptability. A well-developed blended learning course just like a well-developed traditional course could open up new worlds of learning for students. To address the current findings, the institution has to do the following: provide state-of-the-art technologies that pave the way for more opportunities so that learners would maximize their skills and knowledge thru online learning environment, upgrade themselves in order to plan lessons and design activities employing varied modern strategies based on the needs of their learners, prepare the facilities so students can have access to the internet, come up with models to monitor interaction time of teachers and students' engagements, offer tutorial program that included basic operation and improving keyboarding skills, and finally further in-depth studies should be conducted on the impact of technology both on the study habits of learners and teaching strategies of teachers in the academe.*

Keywords: *Blended learning, online assessment, students' performance*

Introduction

Blended learning may be defined as the design of learning experiences that draw on a combination of face-face, distance, or online delivery methods, learning technologies, delivery multimedia, and pedagogical methodologies to achieve a mix of learning outcomes in educational or training contexts (Caird, S., & Roy, R., 2019).

Blended learning (BL) is frequently referred to as the "new conventional model" or the "new normal" in course delivery in higher education (Ross and Gage 2006; Norberg et al. 2011). However, determining the precise extent of its dissemination has proven difficult due to definitional ambiguity (Oliver and Trigwell 2005), as well as institutions' difficulty tracking a creative activity that frequently emerges spontaneously.

Blended learning compels us to think about the features of digital technology in general, and information communication technologies (ICTs) in particular. Floridi (2014) suggest an answer proffer by Alan Turing: those

digital ICTs can process information on their own, in some sense just as human and other biological life. ICTs can also communicate information to each other, without human intervention, but as linked processes designed by humans. Blended Learning has progressed to the point where humans should be "on the loop" of technology rather than "in the loop" (Floridi 2014), designing and adapting the process. We increasingly perceive our world in informational terms rather than as physical entities (Floridi 2008).

The evolution of blended learning (Dziuban, et al., 2018; Boelens, et al., 2017; Pulham, et al., 2018; Gambari, et al., 2018) is inseparably bound to contemporary information communication technologies that are resembling some aspects of human thought processes, although it preceded modern instructional technologies. The four key challenges of blended learning environments are as follows: (1) incorporating flexibility, (2) stimulating interaction, (3) facilitating students' learning processes, and (4) fostering an affective learning climate.

The personalization as well as the monitoring of students' learning progress is commonly organized through online instructional activities because it is believed that social interaction is generally stimulated through introductory face-to-face meetings. Online learning hitches technology (Powell, et al., 2015; Hetsevich, 2017) to convert what is potential in teaching and learning. New learning models were planned to enable better results in student-teacher communication and interaction, and then augmented each student's learning experiences through vigorous modified learning. Today, online learning represents the only worthwhile means of providing high-quality course selections within their schools.

Collaborative learning persuaded involvement and participation (Mahmud, et al., 2018; Roux, et al., 2018; Alpert, et al., 2016) among learners. Due to the joint risks in the case of social mooching or overbearing learners, the sharing of tasks within a collaborative environment may lead to uneven assistances of mutual roles and tasks.

With the advances in Information and Communication Technology (Wade, 2012; Syed, 2013; Hall & Fernandez, 2011; Arinto, 2016; Pappas, 2013) such as the internet, mobile devices and telecommunication-many have adopted "blended learning" methods to deliver education courses. From the traditional classroom teaching to online teaching, higher educational institutions experienced paradigm shift in their teaching practices and the way their students learn.

It is in this light that the conduct of this study has been conceived to shed some light on Blended Learning Methodology. It is now on significant since the new generations are showing increased interest to both confrontational and online undertakings.

Materials and Methods

This study aimed at determining the Blended Learning with Online Assessment in Higher Education as basis for Global Environmental Dimensions of Sustainability particularly, the Bachelor of Science in Information Technology students in Siquijor State College, Larena, Siquijor, Philippines. The study was conducted during the Academic Year 2017-2018 at Siquijor State College. It sought answers to the following: 1)

students' assessment on blended learning with online assessment in terms of: Accessibility of facilities or instructional resources; Readiness; Feedbacking; and Interaction; and 2) significant features of blended learning with online assessment as perceived by the student respondents.

Accessibility of Facilities or Instructional Resources

Adequacy of facilities or instructional resources provided at all levels to cater the need of the ever-increasing number of students which help improve their knowledge, abilities, skills and assimilation.

Table 2. Students Assessment in terms of Accessibility of facilities or instructional resources

Variable	Yes		No	
	f	**%**	***F***	**%**
1.1. Do you have a personal computer (PC) or laptop or notebook at home?	45	100	0	0
1.2. For the computer system (PC, notebook, laptop, etc.) that resides in your home, does it have Internet capabilities and access?	45	100	0	0
1.3. At school Computer laboratory, there is enough computer units that I can use every time I have activities and exercises	45	100	0	0
1.4. There is internet connection which I can use.	45	100	0	0
1.5. There is a free Wi-Fi internet connection in which I am able to use it anytime, anywhere at school campus.	40	88.89	5	11.11
1.6. I possess sufficient computer keyboarding skills for doing online work	39	86.67	6	13.33
1.7. I have basic computer programming skills	30	66.67	15	33.33
Total Responses	289	91.75	26	8.25

Table 2 reveals that in terms of accessibility of facilities and availability of resources, 91.75% gave an affirmative response which means computer and internet connection is available at home and in school. However, the problem lies in the basic programming skills which are only at 66.67% the same with the need to improve on keyboarding skills which are at 86.67%. It is interesting to note that these basic programming skills should have been taught in the basic education curriculum. Nevertheless, there is a need to strengthen basic programming skills among the freshmen college students.

Readiness

Online education offers new ways of learning. Students' readiness to accept new learning modes, specifically in terms of connectivity and skills those were resolved into positive perceptions, attitudes and intentions.

Table 3. Students' Level of Assessment in terms of Readiness

Variable	Yes		No	
	f	***%***		***F***
2.1. I am able to manage my study time effectively and easily complete assignments on time.	42	93.33	3	6.67
2.2. As a student, I enjoy working independently.	40	88.89	5	11.11
2.3. I feel comfortable composing text on a computer in an online learning environment.	39	86.67	6	13.33
2.4. I feel comfortable communicating online in English.	38	84.44	7	15.56
2.5. I feel that face-to-face contact with my instructor is necessary to learn.	37	82.22	8	17.78
2.6. I am motivated by the material in an Internet activity outside class.	35	77.78	10	22.22
2.7. I believe a complete course can be given by the Internet without difficulty.	35	77.78	10	22.22
2.8. I could pass a course of the internet without any teacher assistance.	28	62.22	17	37.78
2.9. Learning is the same in class and at home on the internet.	25	55.56	20	44.44
Total	319	78.77	86	21.23

Table 3 shows the total readiness of students in college for self-paced learning is at 78.77% which is expected for a state college. It is not that students does not want to learn because their assessment reveal that online classes provide them with the ability to manage their time at 93.33% but they are still used to the traditional way that learning should be in school because only 55.56% are ready for internet blended learning in contrast to the traditional learning in the classroom. Likewise, only 62.22% believes they can pass the subject without the teacher's guidance and assistance.

This indicates that students now are self-directed learner and motivated for e-learning. Yesilyurf et. al. (2014) proved that students who use computers and the internet at home are developing the concept's skills and self-learning skills which lead to student's academic achievement and retention. However, a study conducted by the Hopkins International Partners, the official Philippine representative to the group called test of English for International Communication (TOEIC) said that the level of English proficiency of College graduates is lower that affects the chances of Filipinos getting jobs abroad.

Feed backing

Online learning environment provides feedbacking with peers, collaborative learning, collectivism in terms of sharing educational resources and self-managed learning.

Table 4. Students' Level of Assessment in terms of Feed backing

	Yes		No	
Variable	***f***	***%***		***F***
3.1. I am comfortable communicating electronically	41	91.11	4	8.89
3.2. I can ask my teacher questions andreceive a quick response during Internet activities outside of class.	31	68.89	14	31.11
3.3. I can collaborate with other students during Internet activities outside class.	30	66.67	15	33.33
Total	102	75.56	33	24.44

In terms of the ability to receive immediate feedback only 75.56% believes so. Although 91.11% is comfortable with electronic communication, only around 68.89% believes that their teacher will provide them with feedback. In addition, only 66.67% believes their classmates or schoolmates would be able to help them with their queries.

The result shows that communicating, collaborating and surfing information online proved to be a positive and important factor in their studies. According to Junco et. al. (2011) the usage to social media encouraged student engagement to improved communication and interactive connections between students and instructors. Gaudreau, et. al. (2016) listed the following nine (9) types of feedback: First, *appreciation* by replying a positive, appreciative comment after the student submit their assignments online which make them feel respected and engage any additional feedback provided. Second, *say back* which encompasses reading and restating their post to let them know that they're on the right track. Third, *links to resources* by sharing some links to enhance learning. Fourth, *questions* which clarify the students thinking to encourage, inspire and expand learner's knowledge and skills. Fifth *providing next steps* to expand their work. Sixth, *providing guidance* by providing suggestions, advices and insights to support student learning. Seventh, *sharing personal experiences*, linking to students and sharing experiences makes feedback more authentic and meaningful. Eight, *facilitators connecting learners*, involving learners enhance social learning and improves learning process. The last, *providing encouragement* which regenerates students' enthusiasm and motivates them to keep forward.

Interaction

Nowadays, Internet Generation learners value online interaction so much. Interaction in Online Learning Environments provides important teaching strategy, collaboration and participation to enhance learning.

Table 5. Students' Level of Assessment in terms of Interaction

Variable	Yes		No	
	f	***%***	***F***	***%***
4.1 I am willing to actively communicate with my classmates and instructors electronically.	45	100	0	0
4.2. As a student, I enjoy working with other students in groups.	43	95.56	2	4.44
4.3. I like a lot of interaction with my instructors.	43	95.56	2	4.44
4.4. I can work in a group during Internet activities outside class.	38	84.44	12	26.67
4.5 I believe that learning on the internet outside ofclass is more motivating than a regular class.	33	73.33	17	37.78
Total	202	85.96	33	14.04

Table 5 exemplifies that in terms of interaction, 85.96% are ready to interact with each other in fact, 100% is willing to actively communicate with classmates and professor and enjoy working with students online. Only one-third or 37.78% are still hesitant believing that regular class is more motivating while the rest of the 73.33% believes otherwise.

This is amplified by Strom and Strom (2009) when they claim that "the tools of communication technology have transformed socialization and education of adolescents.

They are the first generation to be growing up with Internet, cell phones, ipods, computers, electronic handhelds 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" (p.4).

Table 6. Summary on Students' Assessment on Blended Instruction with Online Assessment

Variable	Yes		No	
	F	***%***	***f***	***%***
1. Accessibility of Facilities	289	91.75	26	8.25
2. Readiness	319	78.77	86	21.23
3. Feed backing	102	75.56	33	24.44
4. Interaction	202	85.96	33	14.04
Total	912	83.67	178	16.33

The overall assessment of students on blended learning is at 83.67% approval. Majority of the responses is on accessibility of facilities at 91.75%. The institution provided enough resources necessary for the integration of blended learning. Student interaction is rated as 85.96 % saying it is successful enough. The lowest is on feedback mechanism suggesting that the professors should engage more of their time on online feedback. Student readiness should also be addressed prior to the integration of blended learning program.

SIGNIFICANT FEATURES OF BLENDED LEARNING WITH ONLINE ASSESSMENT

This portion presents the significant features to address a blended instruction with online assessment.

Table 7. Significant features of a Blended Instruction with Online Assessment

Variable	Freq	Rank
Capable of enrolling online	44	1
Flexibility	43	2
Can view my performance	43	2
Can view my grades	42	4
Learning becomes accessible	42	4
User friendly	41	6
capable of accessing online exam	40	7
Can view my records	40	7
Convenience	38	9
Can take test set by his/her instructor	38	9
Time Management	37	11
Appropriate technical resources / proficiency	37	11
Capable of accessing post from the instructor online	36	13
Generate graph of students pretest and post test results.	34	14
Enhanced Learning	33	15
Faster internet connection	32	16
Cost-Savings	30	17
Total	650	

Findings:

Based on the data gathered the following are the findings: 1) Students' assessment blended learning with online assessment on Accessibility of facilities or instructional resources. Evidently, 91.75% gave an affirmative response which means computer and internet connection is available at home and in school. However, the problem lies in the basic programming skills which are only at 66.67% the same with the need to improve on keyboarding skills which is at 86.67%. It is interesting to note that these basic programming skills should have been taught in the basic education curriculum. Nevertheless, there is a need to strengthen basic programming skills among the freshmen college students.

On readiness, the total readiness of students in college for self-paced learning is at 78.77% which is expected for a state college. It is not that students does not want to learn because their assessment reveal that on line classes provide them with the ability to manage their time at 93.33% but they are still used to the traditional way that learning should be in school because only 55.56% are ready for internet blended learning in contrast to the traditional learning in the classroom. Likewise, only 62.22% believes they can pass the subject without the teacher's guidance and assistance.

In terms of the ability to receive immediate feedback only 75.56% believes so. Although 91.11% is comfortable with electronic communication, only around 68.89% believes that their teacher will provide them with feedback. In addition, only 66.67% believes their classmates or schoolmates would be able to help them with their queries.

In terms of interaction, 85.96% are ready to interact with each other in fact, 100% is willing to actively communicate with classmates and professor and enjoy working with students on line. Only one-third or 37.78% are still hesitant believing that regular class is more motivating while the rest of the 73.33% believes otherwise.

Conclusions:

The overall assessment of students on blended learning is at 83.67% approval. Majority of the responses is on accessibility of facilities at 91.75%. The institution provided enough resources necessary for the integration of blended learning. Student interaction is rated as 85.96 % saying it is successful enough. The lowest is on feedback mechanism suggesting that the professors should engage more of their time on online feedback. Student readiness should also be addressed prior to the integration of blended learning program.

In terms of significant features of blended learning being able to enroll online, flexibility of schedule and viewing of performance are the top 3 features they find to be most helpful while cost, speed of internet connection are the things they find as hindrance to blended learning.

Recommendations:

Based on the conclusions, the following recommendations are hereby presented:

1. Siquijor State College has to provide state-of-the-art technologies which open more opportunities that allow learners to maximize their skills and knowledge thru online learning environment.
2. Educators in particular, have to upgrade themselves in order to plan lessons and design activities employing varied modern strategies based on the needs of their learners.
3. Prior to blended learning institution should provide or prepare the facilities so students can have access to the internet.
4. It should come up with models to monitor interaction time of teachers and students' engagements.
5. There should be tutorial included in the program for basic operation and improving keyboarding skills.
6. Upcoming researchers have to conduct in-depth studies on the impact of technology both on the study habits of learners and teaching strategies of teachers in the academe.

Global Environmental Dimensions of Sustainability:

1. Blended learning designs can support sustainable development, including the social, economic, and environmental dimensions of sustainability and protect global environmental resources to meet the needs of the present and future generations.
2. Blended learning can enhance students' learning outcomes, improve students' motivation, and it is effective way for achieving learning objectives.
3. Teachers who employ blended learning should learn to see themselves as people with three distinct responsibilities such as research and development, integration, and guidance.
4. Challenges to blended learning models include the following such as but not limited to: (1) lack of or poor internet service and lack of or outdated hardware; (2) inadequate training; (3) poor motivation/self-directness; (4) lack of time and/or time management skills; (5) the need to adapt content for blended learning; (6) decreased motivation; and (7) weakened relationships between students and teachers.

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