# Comparative Study on the Performance of Bachelor of Secondary Education (BSE) Students in Educational Technology Using Blended Learning Strategy and Traditional Face-to-Face Instruction

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## ABSTRACT
Technology offers various tools of improving the teaching – learning process. It revolutionizes teaching from traditional face-to-face to distance and online learning. This study described and compared the performance of BSE II students in educational technology using the traditional face-to-face classroom interaction and the blended learning strategy. Two sections were used in the study, one section was exposed to traditional face-to-face and the other one was for blended learning strategy. Findings revealed that students who were exposed in the two strategies have comparable performance in educational technology. Students from both sections perform superior and excellently in their activities and very good in their quizzes and final grades. However, students from blended learning encountered challenges on lack of access to computers and internet connection. Also, the teacher spent a lot of time in the posting of activities online as well as in the retrieval of submitted activities because of very slow connectivity. In general, the use of blended learning strategy was viewed as very effective in teaching educational technology.

## INTRODUCTION
Information and Communications Technology (ICT) provides educators and students with various opportunities which are not possible in traditional face-to-face learning situation. These technologies are used as tools to improve the quality of teaching and learning process as well as to provide alternative delivery of instruction. Software such as productivity programs, educational games, tutorials, simulations, multimedia and internet are designed to support learning process in various ways. The use of internet in learning provides recent and unlimited information and tools that can be used to advance education. Moreover, it enables the teachers and students to provide opportunity for independent and individualized learning activity.

Professional competences including ICT skills, critical thinking and processing information skills are absolutely necessary for specialists of the 21st century. Such competences can and should be developed via integrating technologies into students' teaching and learning (Nazarenko, 2015). The use of ICT provides opportunity for the teachers to use technology-mediated instruction such as blended learning approach. Blended learning is a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, and at least in part at a supervised location away from home (Watson et al., 2012). In this approach, students learn through face-to-face classroom instruction with the teacher and students and partly through the delivery of content and assessment via digital and online media at students' control of time, place, path and pace (Clark, 2003). This includes the use of web applications, multimedia presentations and video lessons with hands-on activities to improve critical thinking and perceptual abilities of the learners. Students become learners as they are provided with access to information. They establish a novel relationship with knowledge when they create or assimilate information at their own pace.

Blended learning is increasingly becoming prominent nowadays in tertiary education because of colleges' and universities' increasing needs for classrooms and teachers. It provides a dynamic, flexible, and interactive environment for teaching - learning process by taking advantage of the 21st Century technology which our digital natives' learners are adept into (Garrison, D. & Vaughan, N., 2008). It also addresses some of the concerns on individualized learning and learning style of the students.

Students today learn differently, and teachers and schools must adapt to cope with this technology-driven society. More flexible learning environment is needed to make learning personalize and improve students' engagement and motivation. Hence, this study was conducted to compare the performance of the students who are exposed in traditional face-to-face classroom instruction and blended-learning strategy.

**Objectives of the Study**

This study was conducted to determine and compare the performance of BSE II students in educational technology using blended learning strategy and face-to-face instruction. Specifically, the study aims to:

1. describe the performance of the BSE II students in educational technology using face-to-face instruction and blended learning strategy;
2. determine the extent of difference of the performance of BSE II students in educational technology who are exposed in face-to-face instruction and blended learning strategy;
3. determine the challenges encountered by the students and teacher in using blended learning strategy; and
4. identify the strengths of using blended learning strategy.

**Significance of the Study**

ICT has revolutionized the way we do things especially in the field of education. It transforms students into owners of their learning. It provides educators and students the opportunities which are not possible in a face-to-face learning through the use of various technologies. Based on the 2014 report of the International Association for K-12 Online Learning (iNACOL), blended learning is one of the fastest growing areas in the educational system today. Allen and Seaman (2013) stated that students taking at least one online course increased dramatically from 570,000 to over 6.5 million students. Researchers have predicted that by 2019, 50-percent of all high school courses will be delivered in an online format. The move to blended or online courses in schools holds the potential to revolutionize education by making it more accessible and individualized (Horn & Staker, 2011). Hence, this study aims to investigate the effectiveness of blended learning approach in comparison to the traditional face-to-face instruction in teaching educational technology among teacher education students.

The result of this study may provide information regarding the performance of students who are exposed in blended learning as well as the challenges encountered by the teacher and students in the implementation of blended learning approach. This will serve as basis in crafting framework and policies for the adoption and implementation of blended learning as an alternative delivery in the 21$^{st}$ century education.

To the students, the adoption of blended learning approach will give them provision for independent/ individualized learning with a little control on time, place and pace when they are given the content via internet or other digital devices. They can establish novel relationship with knowledge when they create or assimilate information at their own pace. They may develop and master their ICT skills in accessing information via digital technology. They may also learn how to act and decide independently, think critically and present their outputs creatively. Through these, students may realize that learning is their responsibility and they should have control over the process.

To the teachers, the use of blended learning will serve as an alternative way of facilitating instruction taking advantage of the students' interests in technology. This may also trigger the creative talents of the faculty to develop computer-based lectures suited to the needs of their students. This may provide them opportunity to offer electronic access to course materials and carry out assessments as well as online interactions between faculty and students which will save time, efforts and other resources both for the students and teachers.

To the school officials, since some of the contents will be delivered through digital media, it will lessen the face-to-face contact time of the teachers and students inside the classroom. This may address the concerns on lack of classrooms and teachers as well as to save resources of the University.

**Scope and Delimitation of the Study**

This study focused on determining and comparing the performance of the BSE II students in Educational Technology using traditional face-to-face instruction and blended learning strategy. This was conducted during the first semester of the school year 2015-2016.

**Theoretical Framework**

This study was anchored on the Networked Learning and Connectivism Theory of George Siemens (2004). According to the theory, learning is a network phenomenon influenced by socialization and technology. To know something is to be organized in a certain way to exhibit patterns of connectivity. To learn is to acquire certain patterns. Instead of knowledge resides only in the mind of an individual, knowledge resides in a distributed manner across a network. Learning is a process of connecting to a specialized nodes or information sources.

In light of this study, the researcher conceptualized that when students are given alternative way of acquiring knowledge aside from what is provided in the four corners of the classroom, learning will be enhanced. Much more if the given alternative is in-line with their interest and they can work at their own pace. Instead of presenting content/information/knowledge in a linear sequential traditional manner, learners may be provided with a rich array of tools, activities and information sources to use in creating their own learning pathways. The links and connections are formed by the learners themselves. In the implementation of the blended learning strategy, the framework below was considered.

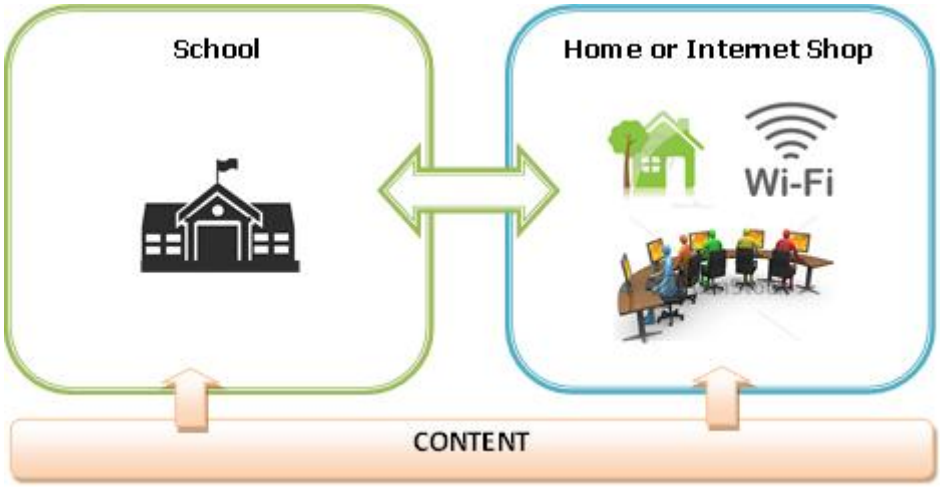


Figure 1. Paradigm of the Blended Learning Strategy implemented.

## METHODS AND PROCEDURES

### Research Design

The descriptive-comparative research design was utilized in this study. It is descriptive because it described the performance of the students who are exposed in traditional face-to-face instruction and in blended learning strategy, and the challenges encountered by the students and teacher in implementing the blended learning approach. It is comparative because it compares the performance of the students exposed in face-to-face instruction and in blended learning strategy.

### Subject of the Study

The subjects of the study were the BSE II students enrolled in Educational Technology 1 during the School Year 2015-2016.

### Data Gathering Procedure

Two sections of BSE II students were utilized in the study. One section was exposed to traditional face-to-face instruction while the other section was exposed to blended learning strategy. Students assigned for each section were randomly chosen and statistically comparable in terms of their academic performance prior to the study. They were given the same set of lessons in educational technology and were taught by the same teacher.

In the Traditional face-to-face instruction, all the contents were delivered by the teacher through lecture, discussion and interaction among the students inside the brick and mortar classroom. Lectures were delivered through power point presentation and other forms of visual materials. Learning activities (individual and collaborative) and assessments are done inside the classroom within each lesson.

In Blended learning strategy, parts of the contents were delivered through lecture-discussion in the classroom and the other parts were delivered via digital media (internet). The students were required to complete activities online prior to the face-to-face meetings to ensure that everyone shares a common knowledge base. Then during class time the content were supplemented and enriched with application and problem solving activities (Smart, K., & Cappel, J. 2006). The face-to-face time were used to learn the material at a deeper level and link the content to broader topics (Collopy, R.M.B., & Arnold, J.M., 2009). This allowed students some element of control with regards to time, location and pace on how they accessed the content and does and submits their activities.

Lectures and activities for the blended learning strategy were posted in a blog created and managed by the teacher for that purpose. Links were given to the students through email or facebook for them to access their online lectures and activities. Given the instructions and time frame, the individual students prepared their

activities and submit them to the teacher via email or facebook private message. The teacher retrieved the activities, evaluate and then do some follow up activities during their classroom interaction. The process was repeatedly done throughout the duration of the course.

Lecture and demonstration on the use of application programs in the blended learning strategy were also provided to the students prior to the implementation of the study. The facebook group was created and were used for class online interaction and communications. Other application programs were also utilized such as gmail, youtube, blogger, google docs, and yahoo messenger.

**Unit of Analysis**
The units of analysis were the BSE II students enrolled in Educational Technology I.

**Statistical Analysis**
For objective no. 1, frequency counts, percentage, and verbal description were used to describe the performance of the BSE II students.
For objective no. 2, frequency counts, percentage, and t-test were used to compare the performance of the students exposed in traditional face-to-face instruction and in blended learning strategy.
For objective no. 3, frequency counts and rank were used to describe the challenges encountered in the implementation of blended learning approach.

## RESULTS AND DISCUSSION

This chapter presents the discussion of the results of the study based on the problems identified in the statement of the problems.

### Performance of BSE II students in Educational Technology Using Face-to-face Instruction and Blended Learning Strategy

**Performance in Classroom Face-to-face Instruction**
Table 1 shows the performance of BSE II students in educational technology using the traditional face-to-face instruction. On this session, all the contents were delivered by the teacher through lecture-discussion and interaction among students inside the classroom. No contents are delivered through digital media.

**Table 1. Performance of the BSE II Students in Face-to-face Instruction**

| PERFORMANCE | QUIZZES | | ACTIVITY | | TERM TEST | | FINAL GRADE | |
|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % |
| Excellent (1.0 – 1.10) | 0 | 0 | 17 | 43 | 0 | 0 | 0 | 0 |
| Superior 1.11 – 1.50) | 5 | 13 | 12 | 30 | 0 | 0 | 1 | 2 |
| Very Good (1.51 – 2.00) | 20 | 50 | 8 | 20 | 0 | 0 | 33 | 83 |
| Good (2.01 – 2.50) | 10 | 25 | 1 | 2 | 26 | 65 | 5 | 13 |
| Passing (2.51 – 3.00) | 5 | 13 | 2 | 5 | 10 | 25 | 1 | 2 |
| Conditional Failure (3.01 – 4.00) | 0 | 0 | 0 | 0 | 4 | 10 | 0 | 0 |
| Failure (4.01 – 5.00) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **40** | **100** | **40** | **100** | **40** | **100** | **40** | **100** |

In terms of students' performance in their quizzes, five or 13% are superior, 20 or 50% are *very good*, 10 or25% are *good*, and five or 13% are *passing*. While in terms of their activities, 17 or 43% are *excellent*, 12 or 30% are *superior*, eight or 20% are *very good*, one or 2% is *good*, and two or 5% are *passing*.

With regards to the students' performance in their term tests, majority (26) or 65% are *good*, 10 or 25% are *passing*, while 4 or 10% are *conditional failure*. While in terms of their final grades, one or 2% is *excellent*, 33 or

83% which is majority of the students obtained a *very good* performance, 5 or 13% got a *good* performance, and one or 2% registered a *passing* performance. No one among the students got a conditional and failing grade.

**Performance in Blended Learning Strategy**

Table 2 shows the performance of BSE II students in educational technology using the blended learning strategy. On this session, one half of the contents were delivered through technology-enriched classroom instruction and the other halves were delivered through digital media.

In terms of students' performance in their quizzes, one or 2% is excellent, majority (42) or 64% are *very good*, 14 or 21% are *good*, six or 9% are *passing*, and three or 4% are *conditional failure*. While in terms of their activities, nine or 14% are *excellent*, majority (42) or 64% are *superior*, eight or 12% are *very good*, four or 6% are *good*, and three or 4% are *passing*.

With regards to the students' performance in their term tests (mid-term and final tests), five or 8% are *good*, majority (43) or 65% are *passing*, while 18 or 27% are *conditional failure*. While in terms of their final grades, 47 or 71% which is majority of the students obtained a *very good* performance, 15 or 23% got a *good* performance, and four or 6% registered a *passing* performance. No one among the students got a conditional and failing grade.

**Table 2. Performance of the BSE II Students in Blended Learning Strategy.**

| PERFORMANCE | QUIZZES | | ACTIVITY | | TERM TEST | | FINAL GRADE | |
|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % |
| Excellent (1.0 – 1.10) | 0 | 0 | 9 | 14 | 0 | 0 | 0 | 0 |
| Superior 1.11 – 1.50) | 1 | 2 | 42 | 64 | 0 | 0 | 0 | 0 |
| Very Good (1.51 – 2.00) | 42 | 64 | 8 | 12 | 0 | 0 | 47 | 71 |
| Good (2.01 – 2.50) | 14 | 21 | 4 | 6 | 5 | 8 | 15 | 23 |
| Passing (2.51 – 3.00) | 6 | 9 | 3 | 4 | 43 | 65 | 4 | 6 |
| Conditional Failure (3.01 – 4.00) | 3 | 4 | 0 | 0 | 18 | 27 | 0 | 0 |
| Failure (4.01 – 5.00) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **66** | **100** | **66** | **100** | **66** | **100** | **66** | **100** |

The result was congruent to the findings of Kenney, J. & Newcombe, E. (2011). Their study showed that in terms of unit test, the blended section had a slightly higher average score (47.46 out of 60) than the large, non - blended section (44.34) and the small, non-blended section (47.40). Moreover, iNACOL (2014), on their report shared five areas where over 50% of the teachers responding reported student academic ability were either better or much better in their classrooms that used blended learning models. Teachers reported the development of higher level thinking skills, improvement of homework and test scores and higher levels of student perseverance. At the University of Central Florida, researchers found the blended model having learning outcomes comparable to, and in some cases, better than face-to-face while lowering attrition rates in comparison with the fully online students (Dziuban et.al, 2004)

Whether through face-to-face or blended delivery, many studies show no significant differences in student learning outcomes (Napier, N.P., & Smith, S. (2009), Garrison, D.R., & Vaughan, N.D., (2008), Albrecht, B., (2006)). These results were promising and revealed that students can be responsible for their own learning through online. The impact on students' learning did not suffer using a blended learning approach, but it was comparable with face-to-face and slightly better in some aspects.

**Differences in the Performance of the BSE II Students in Educational Technology who are Exposed in Face-to-face Instruction and Blended Learning Strategy**

Table 3 shows the percentage comparison of the performance of BSE II students who are exposed in blended learning and face-to-face instruction.

**Table 3. Percentage Comparison of the Performance of BSE II Students using Blended Learning and Face-to-face Instruction.**

| PERFORMANCE | QUIZZES | | ACTIVITY | | TERM TEST | | FINAL GRADE | |
|---|---|---|---|---|---|---|---|---|
| | BL | F2F | BL | F2F | BL | F2F | BL | F2F |
| Excellent (1.0 – 1.10) | 0 | 0 | 14 | 43 | 0 | 0 | 0 | 0 |
| Superior 1.11 – 1.50) | 2 | 13 | 64 | 30 | 0 | 0 | 0 | 2 |
| Very Good (1.51 – 2.00) | 64 | 50 | 12 | 20 | 0 | 0 | 71 | 83 |
| Good (2.01 – 2.50) | 21 | 25 | 6 | 2 | 8 | 65 | 23 | 13 |
| Passing (2.51 – 3.00) | 9 | 13 | 4 | 5 | 65 | 25 | 6 | 2 |
| Conditional Failure (3.01 – 4.00) | 4 | 0 | 0 | 0 | 27 | 10 | 0 | 0 |
| Failure (4.01 – 5.00) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

*BL – Blended Learning*
*F2F – Face-to-face Instruction*

Result shows that in terms of quizzes, majority (64%) of the students who are exposed in blended learning are *very good* while only 50% for the students who are exposed in face-to-face instruction. However, higher percentage (13%) from the face-to-face instruction was registered for the *superior* performance compared to the 2% from the blended learning strategy.

As to the students' performance in their activities, result shows that majority (64%) of the students who are exposed in blended learning are *superior* while only 30% from the students who are exposed in face-to-face instruction. However, higher percentage (43%) from the face-to-face instruction was registered for the *excellent* performance compared to the 14% from the blended learning strategy.

With regard to the students' performance in the term tests, majority of the students under the blended learning are *passing*, while majority of the students from face-to-face instruction are *good*. In terms of the overall performance in the final grade, both strategies registered majority students in the *very good* performance.

Table 4 shows the differences in the performance of BSE II students in educational technology using blended learning and traditional face-to-face instruction.

**Table 4. Difference in Performance of BSE II Students using Blended Learning and Face-to-face Instruction.**

| PERFORMANCE INDICATOR | MEAN OF GRADES | | t-computed | t-critical | Probability | Remarks |
|---|---|---|---|---|---|---|
| | BLENDED LEARNING | FACE-TO-FACE | | | | |
| Quizzes | 2.080 | 2.015 | 0.634 | 1.995 | 0.527 | NS |
| Activity | 1.423 | 1.425 | -0.017 | 1.997 | 0.986 | NS |
| Term Test | 2.867 | 2.482 | 6.843 | 1.986 | 9.49E-10 | HS |
| Final Grade | 1.898 | 1.787 | 1.989 | 2.005 | 0.052 | NS |

*NS – Not Significant*
*HS – Highly Significant*

Results reveal that no significant differences existed on the performance of students exposed in blended learning and students exposed in pure face-to-face classroom instruction in terms of their performance in quizzes,

activity, and final grade. This was the result of the comparison made using t-test where the computed t-values were compared to the t-critical. This goes to show that performance of students exposed to the two strategies are statistically comparable as to the three above-mentioned performance indicators.

However, result further shows that highly significant difference existed in terms of students' performance in the term tests in favor to those who are exposed in face-to-face classroom instruction. This can be attributed to the fact that more time for lecture-discussion and teacher-student interaction was provided to the students who were exposed in face-to-face instruction.

**Challenges Encountered by the Students and Teacher in Blended Learning Strategy**

**Challenges Encountered by the Students**

Table 5 shows the different challenges encountered by the subject students in the implementation of the blended learning strategy.

Result shows that the most pressing challenge majority of the students experienced were the "lack of budget for computer rental especially for those who do not have personal computer/laptop", and it was followed by "lack of access to computers in the school". These problems emerged because there are no available computers in the University dedicated to be utilized by the students for free to do their blended learning activities. Hence, majority of them went to the internet shops to do their activities which required them to spend extra money for the computer and internet rentals. According to Dmitry Matukhin and Elena Zhitkova (2015), for effective delivering the academic courses by means of blended learning, it is necessary to develop methodological support which consists of teaching materials and computer support, designed on the basis of modern information and communication technologies. Rossett (2003) declares that information support of educational activities of the universities in the field of blended learning is largely dependent on the type of the university system, educational process organization, the level of computerization as well as information and communication training technology.

**Table 5. Challenges Encountered by the Students in Blended Learning Strategy.**

| CHALLENGES | RANK |
|---|---|
| Difficulty in sending activities especially in areas with weak or limited internet signal | 3 |
| Lack of budget for computer rental especially for those who have no personal computer/laptop | 1 |
| Students lack of access to computer in the school | 2 |
| No internet connection available in the area | 4 |
| Power interruption during the preparation and submission of online activities | 5 |
| Lack of knowledge and skills in using computer and internet | 6 |

The other challenges were the "difficulty in sending activities especially in barangays with weak or limited internet signal" and "no internet connection available in the area". These problems were experienced by the students who reside in barangays/areas where there is no internet signal or weak signal is available. This shows that until the present time, internet connectivity is still a problem in our society.

The other challenges encountered by the students were "Power interruptions" and "Lack of knowledge and skills in using computer and internet". Despite the demonstration activity conducted on the use of application programs and internet prior to the blended learning activities, there were still students who encountered problems on the lack of necessary (ICT) skills in doing their activities. This seems to be unexpected of young people today, who are real "digital natives", "generation Z", etc., not imagining their life without smart electronic devices and gadgets (Nazarenko, 2015).

**Challenges Encountered by the Teacher**

Table 6 shows the different challenges encountered by the subject teacher in the implementation of the blended learning strategy.

The major challenge the teacher encountered was the "Lack of training and specific framework to implement blended learning approach". Developing a course to work in a blended format is not easy. It needs technological and pedagogical knowledge combined with mastery of the contents to effectively integrate online with face-to-face instruction. It can be best understood when there is a chance to attend formal training and interact with practitioners or qualified trainers.

Another challenge the teacher encountered was the extra time allotment devoted in the preparation of online activities as well as in the retrieval of student activities. It requires time more than what was expected especially in checking and evaluating student outputs and in giving feedbacks to the students. The "slow internet connection in the school and at home" was added problem. This is needed in the posting and retrieval of online activities. If the internet connection is slow, it consumes time in addition to the time devoted in the preparation of online activities.

Also, there was a challenge on getting the students on board with the individual online activity especially those who have low motivation. Since some of the activities were online, students have to do their activities on their own with minimal supervision from the teacher. There is a need to develop a framework on how to encourage and motivate students to do their activities. According to Nazarenko (2015), it is necessary to know what particularly attracts youngsters to technologies (findings of complex multidisciplinary investigation of the problem) and make use of those particular characteristics (like keeping a reasonable balance of textual and visual learning materials).

Another challenge the teacher encountered was the "copying of activities among students". The teacher should be vigilant in assessing the student's activity to determine whether it is authentic or just copied from others. The teacher should come up with mechanisms to identify copied activities.

**Table 6. Challenges Encountered by the Teacher in Blended Learning Strategy.**

| CHALLENGES | RANK |
|---|---|
| Time consuming on the preparation of materials, posting and retrieval of online activities | 2 |
| Slow internet connection in the school and at home | 3 |
| Copying of works among students | 5 |
| Lack of framework to encourage learners who have low motivation for the online activity | 4 |
| Lack of formal training and specific framework to implement blended learning approach | 1 |

**Strengths of the Blended Learning Strategy as observed by the Teacher**

Blended learning strategy as applied in the classroom has strengths and weaknesses as compared to other strategies.

The greatest strength of the blended learning approach is the ability to personalize the instruction and address the individual needs of each student in a more effective manner. Using curricula specifically designed for online instruction (rich content, interactive media, and state-of-the-art instructional tools), online teachers lead interactive sessions and encourage class participation and discussion (www.connectionslearning.com).

This instruction can be customized for each student to encourage acceleration in students who are ahead or to provide remediation for students who are behind. Online instruction can be customized to each student's skill level and can be adjusted because of the flexibility of the online format and the sophistication of performance tracking tools (Blended Learning Primer).

The following are the observed strengths in the implementation of blended learning approach:

***Lessons can be accessible, anytime and anywhere.*** Since some of the lessons are delivered online, they can be accessed by the students in the school, at home, in the internet shops or anywhere they want at their own convenience. They can be accessed anytime and students can do their assigned activities and submit it within the period specified by the teacher. They are given a little control on time, place and pace in their learning.

***Variety of activities can be given to the students using ICT.*** Blended learning provides opportunity for the teacher to integrate ICT in the lesson. The teacher can present the lesson in various ways taking advantage of the 21st century tools for education. Moreover, students can be given varied activities where they can utilize the various resources and array of tools available in the web. This may provide opportunity for the students to express their creativity and use their learning style in doing their activities. This further develops the multiple intelligences of the students.

***It saves space and other resources of the school.*** The use of blended learning approach reduced the contact time of the teacher and students inside the classroom. With this, schools may save space which can be utilized by other classes. This may lessen the need for additional classrooms which is one of the perennial problems of any higher education institution. When the contact time inside the classroom is minimized, then, the other resources may also be reduced such as electric energy consumption derived from lighting and ventilation facilities,

teaching aids such as chalk, board marker, meta cards and other visual materials, and even waste materials produced by the students may also be minimized.

***Supplementary materials can be easily provided to the students.*** Since some parts of the lessons are delivered online, supplementary reading materials can be easily provided to the students by providing links to the different websites and other online resources. Electronic materials can be uploaded in the web or they can be published through webpages or blogs which can be accessed by the students freely.

***Classroom interactions are improved.*** Students who are exposed in blended learning are observed to be more interactive in classroom discussions. Werth et.al (2013) reported that students in the blended learning are perceived to be more motivated to participate in the classroom. This may be due to the advance activities provided to them and the readily available materials online which make their understanding of the lesson more comprehensive. Student engagement positively changes when blended learning is utilized (iNACOL 2014).

***It develops and improves the digital literacy of the students.*** ICT literacy is necessary in blended learning. Students can access their lessons using digital media, hence, they need to develop and enhance their skills in using technology. Because of the need to use ICT tools to do their activities, students continuously explore and unconsciously deepening their knowledge on the use of ICT resources.

***Students' progress is easily and accurately monitored.*** Monitoring of student's outputs in face-to-face is tiresome especially in big classes. The teacher needs to wait for the students to submit their outputs while the students tend to rush just to finish within the period. The result may be a half-baked, inferior in quality or just for compliance output. In blended learning, online activities can be easily monitored. With just few clicks, the information can be easily gathered such as "*who did not submit yet*", "*who did not submit in time*", "*what activities are they lacking*", etc. The teacher can also give immediate feedbacks or comments regarding the students' outputs. Since the students are given the leeway to do their activities at their own pace and time, it is expected that they would have superior outputs.

***Flexibility in time, pace and place.*** The advantage of blended learning both for teacher and students is the flexibility in time, pace and place. Learning does not only take place inside the classroom but it can happen anywhere and anytime as long as there is internet connection. Classes may happen even the teacher and students do not meet due to inevitable circumstances such as inclement weather conditions. Lessons can be continued even the teacher is out of the school because of other academic related activities. It can minimize the disruption of classes among students.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

The following conclusions were drawn based from the results of the study:

1. The use of blended learning is viewed by the students as very effective in teaching educational technology. Students who are exposed in blended learning strategy and face-to-face instruction both perform superior and excellently in their activities and very good in their quizzes and final grades.
2. Students who are exposed in blended learning and face-to-face instruction have comparable performance in quizzes, activity, and final grade. However, students who are exposed in face-to-face instruction perform better in their term tests.
3. The most pressing challenge in the implementation of blended learning strategy as experienced by the students is the lack of available computers and internet connection to be utilized by the students for their online activities. While on the part of the teacher, the most pressing challenge is the slow internet connection which is time consuming in the posting of online lectures and activities, and in the retrieval and checking of students' online activities.
4. Blended learning provides alternative way for teachers to deliver their lessons which saves time, space, and resources of the school. It makes lessons accessible, anytime and anywhere allowing students to work on their own pace.

### Recommendations

Based on the results and conclusions of the study, the following are hereby recommended:

1. For effective implementation of blended learning strategy, the university may provide dedicated computer laboratory with internet connections or free wifi access for the students for their blended learning activities.
2. The use of mobile phones and mobile applications in the delivery of the lessons is highly encouraged to address the issue on lack of access to computers and internet since almost all students have mobile phones.

3. The teacher who utilizes blended learning approach should device mechanisms to prevent and distinguish copying of works among students.
4. The integration of motivational activities as part of the students' online activities is highly encouraged to motivate the individual learners in doing their activities.
5. The University may organize and implement training programs for teachers who may want to implement blended learning. The training may focus on designing a course for blended learning and integrating online activities with face-to-face instruction.
6. The 50% lecture – discussion in the classroom and 50% online learning activity is highly suggested for blended learning strategy.

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