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EDMODO as Supplemental Tool to Blended Learning: The Case of Filipino University Students

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Abstract: ***E-learning has established a paradigm shift in all educational institution worldwide. This paper determines the knowledge, attitudes, and practices of Filipino university students on blended learning using Edmodo. In particular, this evaluates the relationship of utilizing Edmodo as medium of instruction on online learning and the academic performance of the 44 Information Technology students of Cagayan State University (CSU) at Aparri Philippines. The profile of the respondents, knowledge, attitudes and practices of students on online learning with Edmodo was described from the data obtained thru Google form, and correlation to determine the relationship of utilizing Edmodo in instruction, sex, and academic performance. Results showed that majority of the respondents were female, with considerable level of 21st century IT skills, and has obtained very satisfactory academic performance in web programming using PHP with MySQL. Findings revealed that a substantial percentage of the respondents strongly agree (4.26) on the assessment of knowledge, attitudes and practices along online learning using Edmodo. The term-based academic performances in the semester had been very satisfactory. The utilization of Edmodo has greatly influenced the academic performances of the students. The positive attitudes on blended learning has been found contributory to high utilization of Edmodo as medium of instruction. Findings further opened clear pathways to its prospective use in other similar courses at CSU and other educational institution in the Philippines. Higher education institutions should integrate blending learning approach towards its vision of educating for the best.***

Keywords: blended learning, Edmodo, Information Technology, 21st-century learning, academic performance, Filipino

1. Introduction

The 21st-century teaching and learning has evolved from the traditional way of managing student's diverse activities towards learning and the teacher'smanagement of instructional processes, in nearly all countries around the world. Online learning has become a vital tool to supplement classroom activities with a wide array of the internet of things usable and viably available for utilization to enhance management of learning and advancing the ICT skills of both the students and the teachers. The 21st-century workplace is a knowledge society characterized by value-added innovation, community of practice, and multicultural diversity. Higher education institutions are expected to produce professionals that the 21st-century workplace requires, professionals that are dynamic and contributory to the achievement of the goals and objectives of an organization. The 21st-century student outcomes include integrated and whole person, media and IT literacy, lifelong learner, problem-solver, creative thinker, self-manager, critical thinker, and imbued with collaborative skills.

Like many other higher education institutions in the Philippines, Cagayan State University has endeavored to integrating technology in the classroom set-up. In fact, as demanded by its updated curricula, most instructional processes indicated an integral role of utilizing web tools in enhancing the delivery of instructions. There have been undocumented practices of faculty members maximizing the potential of Internet-of-Things and various web tools in learning to their classes. With the evidences of a high computer self-efficacy levels and positive attitudes towards the Internet among students of CSU[1], it is already a must that teachers maximize instructional tool embedding the Internet and educational technologies. In fact, IT educators of Cagayan State University are ready in institutionalizing online learning[2]. This has been evident with the need to improving instructional delivery affecting employability of Information Technology graduates [3].

Online learning tools emerged to be a complementary teaching and learning platform in classrooms all over the world. For instance, Google Education, YouTube Edu, and related sites has paved the way to educational institutions of the evolution of the blended learning approach. Blended learning has become a key concept in teaching and learning in the last two decades. In fact, the term "blended" is extensively and differently used within the context of teaching and learning. Ata (2016) defined blended learning as a combination of pedagogical approaches to produce optimum learning outcomes or as a combination of face-to-face learning and teaching mediated by technology[4] . It is strongly believed that, in a blended course, conventional learning is supplemented with the use of proper learning technologies. The utilization of technologies with new teaching methodologies can create state-of-the-art learning atmospheres that enable teachers to establish their teaching in a more efficient and effective ways. For instance, classroom time can be spent to teach the content suitable for face-to-face meetings. Practices and complementary resources for the subject matter are offered through the technological tools selected to suit the course contents. Blended learning can remove deficiencies found in the learning process such as time limit of face-to-face classroom [5] and has yielded a positive result on learners' performance [6].

The use of educational technology in the teaching and learning approaches stimulates learning outcomes. In order to achieve the learners' goals in online learning, motivation in learning serves as a driving force that propels classrooms to become active[7]. How the learning interactions and classroom performance are being attained to its higher extent has been found associated to learner's motivation. Learners had been increasingly stimulated to learn due to the

introduction and utilization of innovations found successful [8]. A more favorable attitude towards learning had been developed when they experienced blended learning (or hybrid or mixed-mode), a combination of actual class time and online learning, where they were allowed a certain amount of control over when, where, and how they learned. Further, in the study of Bhatti, Tubaisahat, & El-Qawasmeh (2004), the less learners depended on the teacher's assistance, the more satisfied they felt with blended learning. Teaching and learning that the blended approach were implemented were able to produce more active learning and motivations when compared to traditional approaches.

Edmodo combines a secure social network platform with the functionalities of a learning management System (LMS). This is founded by Nick Borg and Jeff O'Hara, allows teachers and students to collaborate on assignments, share resources, and start discussions. Teachers can also privately share their learning resources with colleagues in their internal network. It allows teachers to fully customize their online learning spaces.[9]. New features of Edmodo designed to make it easier to connect with resources and gain insight into students' feelings about assignments, classroom discussions, and shared content. Edmodo creates online communities for teachers, students, and parents for the purpose of facilitating communication and collaboration. Teachers can post messages, discuss classroom topics, assign and grade work, share content and materials with students, and collaborate and share content with other teachers; students can use it to access projects, assignments, and quizzes; and administrators can use it to track school and classroom engagement, view grades, and schedule events[10]. Edmodo, a free web 2.0 classroom management and learning tool, is a social media network developed in 2008 available at www.edmodo.com[11]. Featured like Facebook, Edmodo is much more oriented to assist instructors in content management, and management of teaching and learning. It is more secured because instructors and student create their accounts and allow students to access and join the group using a code to register in the group.

1.1 Objectives

Exploring the benefits of the blended learning concept, this paper discussed the utilization ofEdmodo as a means to integrating blended learning, how this tool advances classroom instruction, and the attitudes of the participants towards Edmodo. In a programming class for Information Technology students, while it is more practical to convey programming skills and competencies via hard outputs and practical experiences in-campus and online, this study demonstrated how student's learning can occur with the support of technology and how much effort were exerted on activities in an online learning environment had on their learning outcomes and academic performances. If utilizing Edmodo for a blended-learning approach leads to better programming competencies and acquisition of the technical skills and knowledge as well as increased motivation, then it is hoped that it will serve as benchmark data for redesigning the course syllabus for related IT courses. Specifically, the study described profile of the respondents, their reported 21st-century skills, knowledge, attitudes, and practices in utilizing Edmodo as supplementary tool to learning.

2. Methodology

The study utilized a descriptive research and triangulation research method. The 44 Information Technology students enrolled in a programming class during the 2nd Semester of school year 2016-2017 at Cagayan State University at Aparri. Only regular, has completed all pre-requisite subjects, and junior level IT students were included as source of data. The College dean verified thru the office of the registrar verified the qualification of the students enrolled in the class. The participants were taught for an academic semester in web programming using PHP and MySQL which aimed to enhance students' dynamic web development skills, abilities to do collaborative learning, team dynamics, and communication skills. Before the start of the classes, students were required to create an account at Edmodo were modules, assessment of learning, and discussions are made. Participants were oriented of the need to integrate Edmodo in the class since many activities were included as practical real-life device and that the course required students to meet in class once a week for 5 hours. With the availability of Internet access in the Campus, participants were able to monitoring activities, handle discussions, take online polls, and quizzes. The primary tool was a modified self –developed survey-questionnaire first utilized and tested in various programming classes from Dirain and Javier (2015). Some statements were also taken from the study of Uzun (2015). Responses were collected thru Google Forms elicited towards the end of the semester. Moreover, the researchers conducted interview to some participants which were later transcribed and researched related literature about the current research. While the study focused on the knowledge, attitudes, and practices utilizing Edmodo to a programming course, this have limited generalizability as the results may vary among other programming courses in IT Education.

Table 1: Profile of the Participants

	Female (28)		Male (16)		Total (44)	
Age						
below 17	1	3.57	1	6.25	2	4.55
17-19	21	75.00	11	68.75	32	72.73
20-22	3	10.71	2	12.50	5	11.36
above 22	3	10.71	2	12.50	5	11.36
Civil Status						
Single	26	92.86	16	100.00	42	95.45
Married	2	7.14	0	0.00	2	4.55
Internet Connection Preferences						
School Wifi	10	35.71	7	43.75	17	38.64
Personal Pocket Wifi	10	35.71	4	25.00	14	31.82
Home Broadband	6	21.43	3	18.75	9	20.45
Internet Shops	2	7.14	2	12.50	4	9.09
Ownership of Computer / Mobile Devices						
Desktop PC	4	14.29	5	31.25	9	20.45
Laptop/Netbook	22	78.57	12	75.00	34	77.27
Net-Ready Mobile Phones	28	100.00	16	100.00	44	100.00
iPads	5	17.86	3	18.75	8	18.18
Educational Sites Known and Used						
Google Edu	12	42.86	8	50.00	20	45.45
YouTube	25	89.29	16	100.00	41	93.18
Wikipedia	14	50.00	5	31.25	19	43.18

w3cschools	26	92.86	16	100.00	42	95.45
Academia.edu	7	25.00	3	18.75	10	22.73
Answers	8	28.57	6	37.50	14	31.82
University Sites	9	32.14	6	37.50	15	34.09
Library Sites	4	14.29	3	18.75	7	15.91
News Sites	10	35.71	4	25.00	14	31.82
Technology Sites	19	67.86	10	62.50	29	65.91

3. Results and Discussions

Findings from the current research support those of previous studies on the impact of online learning environments on the perceptions of students regarding its usefulness on their learning an education.

3.1 Profile of the Participants

The profile of the participants (Table 1) revealed an ample percentage of female (28) than their male counterpart (16), majority were between 17 to 19 years of age, and single. The participants were asked of their internet connection preferences, ownership of applicable devices, and identified their educational sites being utilized. Although has other means of connection, majority of the participants (38.64%) enjoyed and preferred the free WiFi connection service in the campus. This relates to ownership of computer or mobile devices where students connect to the internet. Participants owned not only one device, majority owned a net-ready mobile phone and a laptop / netbook for use in school and at home.

Table 2: Self - Reported 21st Century ICT Skills / Competencies

	Female (28)		Male (16)		Total	
	W. Mean	Adjectival Value	W. Mean	Adjectival Value	Overall W. Mean	Adjectival Value
Office Productivity Tools (e.g. Word, Excel, PowerPoint)	4.45	Very High	4.36	Very High	4.41	Very High
Social Media and Communication Tools (Email, Chat, Viber)	4.72	Very High	4.78	Very High	4.75	Very High
Using of Search Engines	4.58	Very High	4.60	Very High	4.59	Very High
Multimedia Authoring	4.09	High	4.27	Very High	4.18	High
Graphics Editing	4.02	High	4.39	Very High	4.21	Very High
Digital Audio and Video Editing	3.17	Intermediate	4.15	High	3.66	High
Database and File Management Tools	3.88	High	4.27	Very High	4.08	High
Content Management Tools	2.90	Intermediate	3.89	High	3.40	Intermediate
Content Sharing Tools	3.92	High	4.03	High	3.98	High
Web and PC Security Tools	3.89	High	4.11	High	4.00	High
Learning Management Systems	3.78	High	4.12	High	3.95	High
Web Page Design and Development	4.05	High	4.67	Very High	4.36	Very High
Wikis and Blogs	3.04	Intermediate	3.55	High	3.30	Intermediate
Overall Weighted Mean	3.88	High	4.25	Very High	4.06	High

The participants were asked of their top 3 known and utilized educational sites. Responses shown of the usual utilization of the w3cschools (95.45%), YouTube (93.18%) educational videos, and Google (45.45%) and its related products.

3.2. Self-Reported 21st Century ICT Skills / Competencies

The 21st-century ICT skills or competencies were taken from the learning outcomes of the revised policies and guidelines of the BS Information Technology program. However, it was limited to IT skills only. Results shown a generally high level (4.06) of ICT skills or competencies (Table 2). Since the study focused on blended learning experiences of the participants, it is expected from them the possession of the skills and competencies in dealing with the current course in the IT program, the utilization of various tools and technologies for learning. Male participants exhibited very high ICT skills compared to their female counterparts with only high level (3.88). Both female and male respondents disposed a very high level of skills or competencies in social media and communication tools (4.75), using search engines (4.59) and office productivity tools (4.59) as well as web page design and development (4.36). The findings agree in a study of the advanced level of users along email, web search engines, and office productivity tools and along web[12].

3.3. Knowledge, Attitude, and Practices on Online Learning using Edmodo

Utilizing the blended learning approach with Edmodo, the paper determines the assessment of the knowledge, attitudes and practices on online learning using Edmodo as perceived by the participants. Upon the completion of the course, the participants assessed Edmodo as educational tool or supplemental tool towards learning web programming with PHP and MySQL course. The 30 statements disclosed 11 along attitudes, 7 along knowledge, and 11 along practices. Findings revealed that participants agree (4.12) of the statements along knowledge. Participants strongly

Table 3: Knowledge, Attitudes, and Practices on Online Learning using Edmodo

Statements	W. Mean	Verbal Interpretation
A1. Edmodo allows me to easily interact/participate with my classmates and teacher about assignments, group tasks, and other course activities.	4.77	Strongly Agree
A3. Edmodo allows me to easily access reference materials (e.g. internet articles, online videos, PowerPoint files, etc.) provided by the teacher.	4.55	Strongly Agree
A10. Using Edmodo could better enhance my learning in the subject.	4.47	Strongly Agree
A11. Assignments, quizzes, and other online tasks given by the teacher in Edmodo help me improve my learning and comprehension skills.	4.66	Strongly Agree
A19. My interaction with other students increased.	4.34	Strongly Agree
A22. I have trouble using the technologies in this subject.	3.41	Agree
A23. I feel more anxious (worried) in this subject.	3.00	Neither Agree nor Disagree
A24. I am satisfied with Edmodo.	4.70	Strongly Agree
A27. I feel connected with the teacher and other students in this subject.	4.34	Strongly Agree
A28. I feel isolated in this subject using Edmodo.	3.00	Neither Agree nor Disagree
A30. With Edmodo, this subject required more time and effort.	3.59	Agree
Weighted Mean	4.07	Agree
K2. Edmodo is convenient in submitting assignment, taking online quizzes and doing other activities.	4.23	Strongly Agree
K4. Online activities and discussions in Edmodo motivate me to learn more about the course.	4.77	Strongly Agree
K5. Online activities such as quizzes, assignments, discussions in Edmodo are time-consuming.	3.93	Agree
K6. Students with no access on the internet could be left behind on activities and discussions in Edmodo.	4.82	Strongly Agree
K7. Being able to share and access other students' files or answers, this leads to copying of other's works.	3.75	Agree
K8. Edmodo procedure is difficult to follow.	2.59	Disagree
K9. Edmodo is useful for me.	4.31	Strongly Agree
K12. Reference materials posted by teachers are useful in understanding the contents/topics of the course better.	4.58	Strongly Agree
Weighted Mean	4.12	Agree
P13. I prefer to ask questions using Edmodo rather than face-to-face.	4.00	Agree
P14. I enjoyed the "poll".	3.93	Agree
P15. I enjoyed the practice quizzes uploaded on Edmodo	4.57	Strongly Agree
P16. I enjoy giving feedback.	4.57	Strongly Agree
P17. I enjoy the links and clips uploaded on Edmodo.	4.57	Strongly Agree
P18. I am more engaged in this subject.	4.34	Strongly Agree
P20. I feel that the quality of my interaction with other students in this subject was better.	4.57	Strongly Agree
P21. I feel that the amount of interaction with my teacher in this subject increased.	4.34	Strongly Agree
P25. Given the opportunity I would like to take another subject in the future that has both online and face-to-face components (blended learning approach).	4.77	Strongly Agree
P26. This subject experience has improved my opportunity to access and use the class contents.	4.57	Strongly Agree
P29. I am overwhelmed with information and resources in this subject using Edmodo.	4.57	Strongly Agree
Weighted Mean	4.44	Strongly Agree

agree along convenience with Edmodo, motivation, and usefulness. However, they discern Edmodo as time-consuming and will not work for students with no access on the Internet (4.82). Table 3 outlined the results underscoring their positive attitudes (with a weighted mean of 4.12) towards Edmodo specifically participation with classmates and teachers (4.77), improvement of learning and comprehension skills (4.66), satisfaction (4.70) and easy access to reference materials (4.55). In general, the participants strongly agree with their practices (4.44) along utilization of Edmodo. Most of the participants strongly agree with the blended learning approach using Edmodo (4.77), enjoyed the practice quizzes (4.57), giving feedback (4.57), improved experience in the subject (4.57), and overwhelmed with the information and resources in the subject using Edmodo (5.47).

During the entire research study, academic performances of the participants were recorded based on the grading system of Cagayan State University. In the 3-term period during the semester where the study was conducted through which the classes were held using blended learning approach, there exists an improving performances from the beginning term until its full turn in the finals period. The mean grades of both male and female participants where increasingly improving (Table 4) from fair to poor until it changed from satisfactory to outstanding performances.

Table 4: Term-based Academic Performances in the Semester

	Prelims		Midterms		Finals	
	Female	Male	Female	Male	Female	Male
Outstanding (96-100)	0	0	1	1	2	4
Very Satisfactory (91-95)	1	1	1	5	14	8
Satisfactory (86-90)	4	2	9	4	12	4
Fair (81-85)	7	8	14	6	0	0
Poor (75-80)	16	5	3	0	0	0
Mean Grade	79.84	80.89	84.24	86.413	90.41	91.68
Overall mean grade	91.045	Very Satisfactory				

Table 5: Correlation matrix between academic performance, sex and assessment of online learning with Edmodo

Attributes	Sex	Assessment of online learning with Edmodo	Final Grade in Subject
Sex	1	0.231	0.082
Assessment of online learning with Edmodo	0.231	1	0.176
Final Grade in Subject	0.082	0.176	1

The study aimed at determining the relationship of select variables with the participant's utilizing Edmodo. Results shown a significant relationship between the participants' assessment on online learning with Edmodo and sex (r=0.231). Further, the participants' assessment on online learning with Edmodo shown significant relationship to their final grade in the subject. This is an indication that their positive attitudes and their appreciation of Edmodo as a learning tool aids in the advancement of their skills and knowledge in the subject matter thereby improving their academic performances.

The participants expressed their views on the advantages of Edmodo as supplementary learning tool. Most of the respondents stated their appreciation of Edmodo's features to engage participation and motivation via the activities, increases their learning strategies, and an effective and ideal way to blend online learning and classroom setting. In fact, most working students are able to adjust and perform well in class thru the instructional setup. Finally, almost all of the respondents expressed engaging into other classes with blended learning in Edmodo. It helped them become more productive and helped them engage with the subject easily with Edmodo. They suggested to integrate the Edmodo and blended learning thru mobiles into classroom curriculum to make learning interactive anytime, anywhere. The participants generally consider Edmodo as an effective learning tool when asked about their experiences. On the other hand, Edmodo becomes disadvantageous to some participants on issues of Internet connectivity, besides going time-consuming when online. The same expression was found related with the findings of Enriquez in 2014.

4. Conclusion and Recommendations

Considering the high level of 21st-century IT skills, blended learning with Edmodo has improved academic performances especially among male Information Technology students of Cagayan State University at Aparri. The positive assessment of the knowledge, attitudes, and practices along online learning with or utilization of Edmodo has greatly influenced the academic performances of the students. Blended learning with Edmodo has indeed taken instruction into a greater leap opening clear pathways to its prospective use in other similar courses at CSU and other educational institution in the Philippines.

From the findings, it is strongly recommended that the University may fully integrate blended learning approach towards its vision of educating for the best as well as other higher education institutions advancing instruction to a greater leap. Edmodo and other related tools may be introduced to faculty members to across all courses looking at the benefits and impact to motivation and learning in the students' academic performances. Related study may look into the relationship of online learning in the University level, teachers' knowledge, attitudes, and skills in the use of web tools and educational tools to augment advancement of instruction.

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