

# Organizational E-Learning Readiness in a State University in Northern Philippines: Inputs for Refining Instructional Quality

Billy S. Javier

College of Information and Computing Sciences, Cagayan State University, Aparri Cagayan, Philippines.

Email: billyjavier@csu.edu.ph

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## **Abstract:**

This study examines the organizational readiness along with online learning among a substantial percentage of the faculty members of the Cagayan State University or CSU Aparri. The profile of the faculty members, their 21st-century competencies towards online learning, and the perceived assessment on the organizational e-learning readiness were described based on the data retrieved through manually and online-administered, validated, self-administered questionnaire and Josenberg's (2000) e-learning readiness survey. Findings revealed that majority of the faculty-respondents were male, ages 35 to 45, married, with masters or doctorate degree aligned to their academic specialization, and has been teaching for 16-20 years already. There was a balance of perception on online learning, instructional delivery, and its benefits to the university. Respondents were found competent along 21st-century competencies towards online learning, however, not so much ready for utilizing online learning. The organization readiness has been assessed with evident with initiatives underway, including how respondents perceive the changing nature of learning and e-learning, the value of instruction and information, the role of change management, training and support, and the e-learning industry in general. Progress is being made at CSU along with online learning, considering the readiness of the faculty members, their 21st-century competencies, and readiness of CSU along with online learning.

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## **I. INTRODUCTION**

Educational institutions and academic organizations make decisions on the application of e-learning through the convergence of technology in pedagogy and student learning. Electronic-based learning or e-learning is the attainment and usage of information distributed and facilitated primarily by electronic means [1]. The implementation of this platform depends mainly on the integration of computers and networks, and a further advance to structures through a variety of channels, either wireless or satellites, and varying

technologies such as mobile phones, and smart devices. E-learning could be in the form of courses as well as learning modules and reduced learning entities. E-learning may integrate synchronous or asynchronous access and maybe disseminated geologically with diverse limits of time [2] [3]. Meanwhile, the word online learning in its widest form refers to all forms of learning that happen via the computer [4]. It is more of teaching wherein pedagogy and contents are delivered mainly over the internet anytime and anywhere [1]. As such, education has tremendously stretched outside the four walls of the classrooms

breaking barriers, where ever you are, and whatever you do.

All schools are anticipated to implement e-learning. However, the effective implementation of e-learning highly depends on the level of readiness of ICT infrastructure and its users. The implementation in schools should attain a projected level of physical infrastructure progress, as well as a unified technical competency with positive attitudes and appreciation towards e-learning [5], [1].

E-learning application requires physical infrastructure, technical expertise, and mental and emotional eagerness. E-learning platform can only be managed and used by people with some level of technical skills. In addition to professors' ICT aptitude, as cited by [6], Broadley (2007) asserts that the professors' attitude towards e-learning, is critical in the e-learning operation. However, for some students and teachers, e-learning is too relaxed and distant, and a number of teachers feel that technology takes a lot of control off their hands [7]. To effectively adopt e-learning, it is necessary to look at users' technical capacity and views towards technology as well as the readiness of the organization to discover the possibilities of the virtual classrooms and online learning.

In the Philippines, the online learning phenomenon has moved educational institutes to a big leap from the traditional way of instruction [8]. As information and communication technologies traverse its way, Filipinos way of learning has crossed borders making them non-existent. However, in general, the Philippines struggles to level-up to its fullest the utilization of online learning systems and strategies to educational institutions at all academic levels, especially in the countryside. In fact, in the recent report of Barbour, et. al, of the 23 reported countries, the Philippine government made no funding for online learning. Aligning to the Millenium Development Goals, the Philippines' Education for All (EFA 2015) program has been silent on online education.

Seemingly, online learning in public education is concentrated at the tertiary level. Some of the known universities have paved the way to embracing e-learning anchored to their degree programs: the University of the Philippines Open University known of its MODEL, De La Salle University, Ateneo De Manila University, Polytechnic University of the Philippines, and EDIS of the St. Paul University Philippines which promotes online learning.

Notwithstanding the key obstructions to educators and organization leaders (i.e. lack of essential ICT skills, ICT-related pedagogical skills, the presence of IT infrastructure) in developing countries, like Philippines, educational systems are looking to e-learning programs to help address these challenges and to substantially improve the content delivery, and of quality education [9], [5]. Teacher's success in handling the e-learning program depends on their prior technical experience in information technology. E-learning is too demanding to let educators learn to practice these tools only by experience[2]. It is generally believed that the e-learning proficiencies for educators require an extensive course about the technical usage of the computer-generated learning environment [10]. Educators must take advantage of computer networks to advance the methods and technologies organized for distance education and to nurture the growth of learning communities [11].

The Cagayan State University or CSU, almost 4 decades since its establishment in 1978 through Presidential Decree 1494, is a state university in the Northern Philippines. Educating for the best, the University brags to be the reliable and distinguished higher education institution for having excelled in various disciplines, topping board examinations in health sciences, medicine, engineering, criminology, and teacher education. For years, CSU has not yet fully established an online learning management system for teachers and students. Efforts have been made,

however, CSU has not jumped start into fully implementing educational technologies like LMS into the academic context. Though some undocumented learning management system has been utilized by some ITE faculty, there was no evidence in the University of an online learning management structure made available for utilization by the students and teachers to further enhance the delivery of quality instruction. Hence, the study looks into the readiness of the faculty of instruction of the Cagayan State University as the basis for policy development, instructional development, and administrative initiative.

The readiness for getting online is recognizing as one of the most serious aspects of realizing the effective operation of e-learning programs in higher education. Understanding the role of the factors that could help university management to implement effective and efficient e-learning project [12]. Assessing the readiness of an educational institution includes its stakeholders, governing policies and procedures, processes, and infrastructure would provide decision-makers to make necessary improvements. This study examines the organizational readiness along online learning among a substantial percentage of the faculty members of the Cagayan State University or CSU at Aparri. In particular, the study took into account the key profile of the faculty members, their 21<sup>st</sup>-century competencies towards online learning, and the perceived assessment of the organizational e-learning readiness. In addition, while the readiness of the faculty members will partially assess the readiness of the organization, the study further evaluated the organizational readiness considering such factors to ascertain possible institutionalization of online learning. From these, the study extracted the gaps for possible training towards online learning. The self-perceived challenges prior to the institutionalization of online learning were obtained as part of this survey. It is hoped that the findings of the study will provide a concrete view

for CSU administrators to make necessary development towards instructional quality, cost-effectiveness in ICT infrastructure, and policy development for students' development.

### Conceptual Framework

The study is anchored on the context that towards the institutionalization of online learning, it is essential to determine the readiness among individuals, organization, course, and context as described by [1]. The 21<sup>st</sup>-century competencies on online learning and profile characteristics form part of the assessment of the organizational e-learning readiness as well as narrowing the challenges in its institutionalization. It is believed that from the study, a clear policy recommendation shall be made, training needs were identified to fill in the gaps, and shall shed light on the developments in the instructional processes.



Figure 1 Conceptual Framework

### Objectives

The research study generally aimed to assess the organizational readiness of Cagayan State University in the institutionalization of online learning. It further aimed at determining the readiness and the 21<sup>st</sup>-century competencies of faculty members, as well as perceived challenges on the institutionalization of online learning.

## II. METHODOLOGY

The study, conducted in Cagayan State University Aparri, Cagayan Valley, Northern Philippines, utilized a descriptive method obtaining the

responses of a substantial percentage of the permanent faculty-participants teaching at CSU qualifying the inclusion criteria. Assessing the readiness of the faculty members was made through a survey-form utilized in a related study [10]. The reliability test carried out via the test-retest method using both the Spearman-Brown coefficient and Guttman split-half coefficient was generally 0.81. The organizational readiness as perceived by the faculty has been recorded utilizing an e-learning readiness survey[11]. The collection was done manually via a paper-based questionnaire and online through the aid of Survey Monkey. Consented participation was strictly observed. Those with an email address and Facebook accounts were sent with the survey and were made available to the participants for 4 weeks. No multiple responses were allowed. Both responses made online and manually were gathered, validated, and collated. The profile of the 54 respondents, their perceived 21st-century teaching competencies, perception of online learning, and perceived challenges were described. The respondents included 7 deans from the Colleges and junior and senior faculty members.

### III. RESULTS AND DISCUSSIONS

From the more than 80 plantilla faculty members, a total of 54 valid responses from all faculty members from the different colleges substantially responded in the survey. The respondents

composed of College Deans, senior, and junior faculty members all of which are plantilla or permanent faculty. The majority of the respondents belong to the age bracket 25 to 45 years old, matured and skilled enough to perform College teaching and equipped with the training and competencies. Female faculty members (61.11%) outnumbered their male counterparts. A significant number (85.19%) of the respondents were married, more than their 8 single counterparts. On the number of years in teaching, only permanent faculty were included in the study. While some have already aged in the University as a regular faculty member, the majority or 24.07 percent reported having taught at the university for 16 to 20 years already, some 5 to 10 years (22.22%) and 11 to 15 years (22.22%). A noteworthy figure of faculty-respondents were assistant professors (35.19%), while a handful represents instructors (33.33%) and associate professors rank (29.63%) respectively. The entry-level for a permanent position in CSU requires a master's degree, thus, a substantial percentage (53.70%) or 29 of the faculty-respondents completed their master's degree. The majority of the faculty-respondents were along with business, hospitality industry management, and information and computing sciences. The profile of the respondents suggests a female-dominated, matured and experienced, and academically qualified teaching faculty in their respective program.

Table I: Perceptions of the Faculty Members on Online Learning

Statements	W. Mean	Adj. Value
1. Online learning is difficult to manage because there are barriers to communication between the teachers and students	1.96	PD
2. Online learning is only for financially capable students	1.72	SD
3. Online learning can only happen when there are high-tech ICT equipment and machines in the University	2.45	PD
4. Online learning is only feasible and fitted to private HEIs because they have the necessary resources.	1.53	SD
5. Online learning is only for young teachers because they are technology-savvy	1.34	SD
6. Online learning will make the work tedious and difficult for the teachers	1.47	SD

7. Online learning will bring more opportunities for me in my work	3.18	A
8. Online learning will improve my teaching strategies	3.22	A
9. Online learning will provide opportunities for schools to improve their instructional delivery	3.18	A
10. Online learning will eliminate some teaching job positions. It is a threat to my work	1.47	SD
11. Online learning will result in making the teacher's work heavier because we need to write the learning modules.	1.95	PD
12. Online learning brings opportunities for students to enroll in the university	3.05	A
13. Online learning will make education simpler or less complex	3.31	A
14. Online learning does not change the way how we teach in the traditional way, it is just lecturing online or using computer technology	2.43	PD
15. I feel that I am ready to integrate e-learning into my teaching	3.15	A
16. I feel enthusiastic about the thought that e-learning will be adopted in my school	3.19	A
17. I like to be part of the committee to initiate e-learning in Cagayan State University	3.20	A

Online learning has revolutionized the pedagogy and management of classes among teachers. The study ascertained how CSU teachers' view of online learning. The perceptions of the faculty members on online learning is presented in table 1. The statements consist of positive and negative perceptions of online learning. Results present that respondents generally disagree (1.78) with the 9 negative statements. Meanwhile, they largely agree (3.23) with the 8 positive statements. The respondents strongly disagree along the perception that online learning is only feasible to private higher education institutions or HEIs (1.58); that online learning is for young teachers only (1.39); that online learning makes the teacher's job tedious and difficult (1.52), and that online learning is a

threat to the work or teaching job (1.48). In contrast, the respondents agree that online learning will bring more opportunities in the work (3.18), believing it will improve teacher's teaching strategies (3.22) and that online learning will provide opportunities for schools to improve its instructional delivery (3.18). It is satisfying to note that respondents are eager to initiate and take part in the institutionalization of an e-learning facility in the University (3.20) especially among males, with the strong hope that it will be plausible in the system (3.19). The perception of the faculty members generally indicated their positive outlook on the impact of online learning particularly the benefits it can bring upon to them and the University.

Table II: 21<sup>st</sup> Century Competency Skills on Online Learning

Competencies or Skills	W. Mean	Adj. Value
1. Facilitation Skills (able to conduct a discussion with ease and confidence)	3.33	Competent
2. Research skills online (able to search for an open educational resource that fits the lesson)	3.32	Competent
3. Learning management system (equipped with skills in using the LMS)	2.00	Advanced Beginner
4. e-learning tools i.e. wikis (can develop collaborative activities through wikis)	2.16	Advanced Beginner

5. Creative development of activities (has the ability to create interesting online activities for the students to learn the theories and concepts)	2.00	Advanced Beginner
6. Communication skills in English (has the ability to communicate or express him/herself)	2.73	Competent
7. The setting of target and objectives (can identify the course outcomes of activity targets)	3.19	Competent
8. Course design and development (can develop online modules and activities)	1.72	Novice
9. Test and measurement (can develop test questions based on the objectives or expected learning outcomes)	3.32	Competent
10. I can develop activities in the forum, chat, and the like.	2.73	Competent
11. Highly influential and motivated (can drive students to complete their work or outputs)	3.82	Proficient
12. Computer and internet skills (Can utilize office productivity software and internet tools for content delivery)	3.07	Competent
<b>Overall Weighted Mean</b>	<b>2.79</b>	<b>Competent</b>

The task of doing online learning depends on the skills and competencies the user possesses. It depicts the level of accomplishing the true benefits of online learning whether as teachers, students, or administrators. The study obtained the competencies of the respondents towards online learning. Table 2 presents the 21st-century competencies of the faculty members of Cagayan State University towards online learning.

Generally, the faculty-respondents were competent with the required 21st-century skills towards online learning with an overall weighted mean of 2.79. As faculty members are expected to be, the respondents were generally proficient being highly influential and motivated (3.83), disposed competence along computer and internet skills (3.07), development of test questions based on the objectives or expected to learn outcomes (3.33), setting of target and objectives (3.19), facilitation

skills (3.33) and along research skills (3.33). While a learning management system is not yet available in CSU, it is believed that faculty members do possess the necessary 21st-century competencies being competent along with facilitation skills, learning management system skills, communication skills, course design and development, and research skills online. The findings suggest that faculty members are quite competent and equipped with the necessary competencies or skills towards online learning. The respondents recognize the positive benefits of online learning when being institutionalized in the University. They are even equipped with the 21st-century competencies towards online learning. But why does CSU has not yet institutionalized one? Table 3 presented the challenges that need to be addressed prior to the implementation of online learning in CSU.

Table 3: Challenges prior implementation of online learning

Challenges	W. Mean	Adj. Value
1. Limited or no training yet – there must be substantial training on e-learning first	3.25	Agree
2. e-learning materials are not available yet – e-learning materials must be developed and validated first	3.20	Agree
3. No Learning Management System (LMS) yet – CSU must set-up and design the LMS	3.10	Agree

4. The limited motivation of the faculty – provide opportunities or incentives to faculty who will use e-learning facility	3.18	Agree
5. No policy on using e-learning – policies, and procedures or e-learning handbook must be prepared	3.42	Strongly Agree
6. ICT infrastructure not yet fully ready – CSU should prepare the necessary ICT infrastructure first.	3.29	Strongly Agree
Overall Weighted Mean	3.24	Agree

Acknowledging the	Statement	W. Mean	A
institutionalizing online faculty-respondents in general, the challenges that need to be addressed prior to the institutionalization of online learning at Cagayan State University. This specifically includes training for the non-IT faculty members (3.25) and ICT staff, setting up of a university LMS (3.10), and motivation (3.18). The prioritization in the budget to prepare the ICT infrastructure and the entire university (3.29) and policy development (3.42). Most of the respondents underscored investing in CSU’s ICT infrastructure, while some proposed the conduct of training on online learning to faculty members, and motivate all faculty members to engage in online learning and teaching.	1. Availability of the necessary skills of the faculty on e-learning	2.51	
	2. Availability of the necessary support of the administration towards adopting e-learning	1.87	M
	3. The openness of the faculty to adopt e-learning	2.84	
	4. Availability of the necessary hardware facilities and stable internet connections	2.12	M
	5. Availability of the necessary technical support of the ICT infrastructure	1.52	M
	6. Availability of the necessary skills of the administration to monitor online learning	1.54	M
	7. Availability of the necessary e-learning skills of the ICT staff	1.44	
	8. A positive attitude of the students towards e-learning	2.69	
	9. Availability of the necessary computer skills of the students to adopt e-learning	2.52	
	10. Overall readiness of CSU towards e-learning.	2.19	
	Overall Weighted Mean	2.124	

Like any other institution of learning, CSU hardly struggles in investing in ICT infrastructure [12]. In fact, in 2015, [1] also identified the cost and access to the internet as major challenges to online learning. Also, the findings are similar to [17], underscoring some of the above-mentioned factors that degrade the performance of the web-based e-learning systems. Teachers’ motivation and training were found as the most important predictor of e-learning outcomes [18].

From the above findings, it can be noteworthy to consider the positive perception of the faculty members on online learning including the possession of the 21st-century competencies or skills towards online learning. The foregoing table finally assessed the readiness of faculty members on online learning.

Table IV: Readiness of Faculty Members on Online Learning

Table V: Perceived Organizational Readiness of CSU Aparri using Josenberg's (2000)

	W. Mean	Adjectival Value
<u>General Organizational Readiness</u>		
How well is CSU using (internet and intranet) technology to run the organization?	2.5	One or more core processes or functions are web-based, but most of the internal work and communication are offline
How prepared (skills, knowledge, motivation) is CSU to compete and win in the high-tech, new economy?	3.12	Our workforce is becoming more high-tech all the time. There are still significant pockets of people who are not prepared.
<u>The Changing Nature of Learning and E-Learning</u>		
How does the CSU define e-learning?	2.94	E-Learning is new to us so there is an opportunity and an openness to broadly define e-learning; we're working on it
How will CSU overcome any bad prior experiences you and others have had with technology-based learning?	4.03	We understand that this is a marathon, not a sprint. Our clients and stakeholders look at prior bad experiences as lessons learned and we try to improve over time
How much access do people have to the web (anyone, anytime, anywhere)?	1.99	We are working with IT people to assure that people can access the web for learning as well as key organizational applications.
Do you differentiate between instructional needs (training) and informational needs (knowledge management), and do you make the right decisions about when to use each?	2.05	We are beginning to become involved in the delivery of information as a form of learning; it's difficult but we are making some progress in selling this concept.
<u>The Value of Instruction and Information</u>		
What is the level of CSU's expertise in instructional and information design?	2.78	Growing. We are aware of the increasing importance of these professional skills and we're spending time and money to significantly upgrade our skills through hiring and/or training.
Is CSU ready to move beyond a predominant reliance on classroom training to a more balanced approach with e-learning?	2.88	We have demonstrated the viability of a combined e-learning and classroom strategy, but it is still a tough sell.
<u>The Role of Change Management in Building a Durable E-Learning Strategy</u>		
Does senior management support e-learning?	2.76	We have access, but maintaining their interest and gaining long-term support for this new approach to learning is difficult.
Does CSU have a change management plan for introducing e-learning?	1.07	We have no change management plan, unfortunately, we tend to move unsystematically from event to event.
Can CSU demonstrate the benefits of e-learning?	2.50	We are working to demonstrate the organizational benefits of e-learning, and we've made some progress in cost, quality, service, and speed. But there is a long way to go.
<u>How Training Organizations Must Reinvent themselves to Support E-Learning</u>		
Does CSU have a plan to help the training function reinvent itself for the digital age?	4.00	We are implementing both e-learning and change management strategies to help our people adapt to the changes that are coming.
Is training CSU's economic model predominately dependent on selling seats in the classroom?	4.35	No, we are moving to an investment model that involves our stakeholders in decisions about how we spend our money and where it comes from.
What is the climate at CSU to learning in alternative locations, especially the work site?	2.99	There is an understanding that work and learning go hand-in-hand, and that learning can take place anywhere. However, people still need support to find time to learn, free of interruptions.
Is CSU willing to allow e-learning to thrive, perhaps at the expense of some of the more traditional parts of the training organization?	3.0	We're willing to implement e-learning only in areas that do not conflict with our classroom business.
How prepared is CSU to invest in, and incubate e-learning for several years in order to get it firmly established?	2.14	We are working to set up a process that will fund e-learning on a multi-year basis, but we still have to convince senior management.
<u>The E-Learning Industry</u>		
How prepared is CSU to deal with a large and increasingly complex e-learning marketplace?	0.89	We've been primarily internally focused; we really don't know much about what's going on in the industry.
Does CSU have a good handle on what it is buying in the e-learning marketplace – can it differentiate quality products and weed out redundancies?	0.86	Purchasing is haphazard and uncoordinated. We have no strategy for evaluating the quality and avoiding redundancy. It's extremely difficult to know who is buying what.
Is CSU prepared to outsource some of its functions and manage them externally so that it can concentrate its resources on more valuable areas?	2.51	We are experimenting with outsourcing some of our organization's functions so that we can focus on more valuable areas.
<u>Personal Commitment</u>		
How committed are you personally to e-learning? Are you ready?	4.15	I am totally committed to e-learning and have taken the time to educate myself on the major issues. I am ready to implement a durable e-learning strategy.
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The faculty-respondents generally assess the readiness of CSU on online learning as not so much ready with a general weighted mean of 2.124 although the overall readiness of CSU towards e-learning revealed a ready remark on the availability of necessary skills (2.51), openness to adopt e-learning (2.84), positive attitudes of the students towards e-learning (2.69), and availability of necessary computer skills (2.52) In particular, the support of the administration (1.87), availability of necessary hardware facilities (2.12), technical support of the ICT infrastructure (1.52), administration skills (1.54) as well as e-learning of the ICT staff (1.44) attributed to the not so much ready remark. From the table, it can be thought that CICS faculty members are ready along institutionalizing online learning, possessing the e-learning skills and openness to adopt online learning although a majority still was not so much ready.

When asked to assess the organizational e-learning readiness of CSU, the faculty-respondents indicated that initiatives are underway but progress is fleeting (mean = 2.81). One or more processes or functions are web-based, but most of the internal work and communication are offline. Further, they perceived the workforce is becoming more high-tech all the time, however, there are still significant pockets of people who are not prepared. As regards the changing nature of learning and e-learning, the participants generally (2.75) perceived to CSU having initiatives underway with some sustainable success probable down the road. In particular, respondents looked at e-learning as an opportunity and managing improvements, as well as issues on access to the internet and instructions. Looking at the value of instruction and information, respondents also perceive these statements considering initiatives are underway with some sustainable success probable down the road (2.78). Along with the role of change management in building a durable e-learning strategy, the faculty-respondents see the

organizational readiness as “initiatives underway but progress is fleeting” with a weighted mean of 2.11. When asked about how training organizations must reinvent themselves to support e-learning, the respondents assessed CSU’s readiness with initiatives underway with some sustainable success probable down the road (mean =3.30). Looking at the e-learning industry, the respondents generally assess CSU having little evidence but there are potential improvement opportunities with a mean of 1.42. In particular, these statements look at how CSU deals with a large and increasingly complex e-learning marketplace as well as outsourcing some of its functions and resources. Finally, when asked about how committed were the respondents to e-learning, very positive responses were made indicating a total commitment to e-learning and their readiness to implement durable e-learning strategy (4.18). In general, with an overall weighted mean of 2.76, the respondents assess the organizational readiness with CSU’s initiatives getting underway with some sustainable success probable down the road.

#### **IV. CONCLUSION AND RECOMMENDATION**

In light of the foregoing findings, CSU as a higher education institution indicated a little readiness particularly considering readiness, 21<sup>st</sup>-century ICT competencies, and attitudes towards e-learning as well as the organizational readiness with CSU’s initiatives getting underway with some sustainable success probable down the road. Further, some issues along with ICT infrastructure, training of non-IT faculty members, and institutionalized policies along LMS are along with the challenges needed to be addressed.

Based on the results, it is recommended that while existing ICT infrastructure needed to be fully integrated and systematized, CSU may invest in a notable learning management system utilizing open-source solutions such as Moodle. Training of non-IT faculty members may consider inviting lead

institutions to share best practices and possible collaborations. Geared towards its vision of educating for the best, CSU needs to institutionalize clear policies on instructional processes maximizing various ICT tools and educational learning platforms. While the study is limited to teacher's views along with organizational readiness of CSU Aparri, a separate study to cover all faculty members, administrators, and students of the CSU system, and a third-party validating team assessing the general readiness of the CSU system towards institutionalizing online learning.

## V. REFERENCES

1. C. Mercado, "Readiness Assessment Tool for an E-Learning Environment Implementation," 2008.
2. T. L. Wentling, J. C. Waight, J. Gallaher, J. La Fleur, C. Wang and A. Kanfer, University of Illinois, 2000. [Online]. Available: [www.google.com](http://www.google.com). [Accessed July 2017].
3. D. E. Marcial, R. D. B. Caballero, J. B. Rendal and G. A. Patrimonio, "I Am Offline: Measuring Barriers to Open Online Learning in the Philippines," *Information Technologies and Learning Tools*, pp. 28-41, 2015.
4. E. R. Red, H. G. S. Borlongan, T. T. Briagas, and M. J. M. Mendoza, "An Assessment of the eLearning Readiness State of Faculty Members and Students at Malayan Colleges Laguna," *International Journal of the Computer, the Internet and Management*, pp. 20-26, 2013.
5. B. E. Mansour and D. M. Mupinga, "Students' positive and negative experiences in hybrid and online classes," *College Student Journal*, vol. 41, pp. 242-248, 2007.
6. B. S. Javier and E. L. Dirain, "EDMODO as Supplemental Tool to Blended Learning: The Case of Filipino University Students," *International Journal of Science and Research*, vol. 8, no. 6, pp. 352-357, 2019.
7. J. Olson, J. Codde, K. DeMaagd, E. Tarkleson, J. Sinclair, S. Yook and R. Egidio, "An Analysis of e-Learning Impacts & Best Practices in Developing Countries," Michigan State University, 2011.
8. T. Eslaminejad, M. Masood and N. A. Ngah, "Identifying Instructors' Readiness Factors on e-learning for the Continuing Medical Education Program in Iran," in *Elearning in Corporate, Government, Healthcare, and Higher Education (ELEARN) 2009*, Vancouver Canada, 2009.
9. K. K. Esteves, "Exploring Facebook to Enhance Learning and Student Engagement: A Case from the University of Philippines Open University," *Malaysian Journal of Distance Education*, pp. 1-15, 2012.
10. Hetty Rohayani.AH, Kurniabudi and Sharipuddin, "ScienceDirect.com," 2015. [Online]. Available: [www.sciencedirect.com/science/article/pii/S1877050915020931](http://www.sciencedirect.com/science/article/pii/S1877050915020931).
11. B. Javier, E. Lanojan, G. Battung, and E. Cosidon, "Moving towards E-learning Paradigm: Readiness of the IT Faculty Members in a Philippine State University," in *International Conference in Education*, Nonthaburi, Thailand, 2017.
12. M. Josenberg, 2000. [Online]. Available: [www.google.com](http://www.google.com). [Accessed May 2017].
13. A. Andersson and A. Gronlund, "A Conceptual Framework for E-Learning in Developing Countries: A Critical Review of Research Challenges," *Electronic Journal of Information Systems in Developing Countries*, vol. 38, no. 8, pp. 1-16, 2009.
14. G. O. Ouma, F. M. Awour and B. Kyambo, "Evaluation of E-Learning Readiness on Secondary Schools in Kenya," in *WAP Journal*, 2013.
15. M. Bauer, C. Bräuer, J. Schuldt and H. Krömker, "Adaptive E-learning for supporting motivation in the context of engineering science," *Advances in Intelligent Systems and Computing*, 2019.
16. E. Poitras, T. Doleck, L. Huang, S. Li, and S. Lajoie, "nBrowser: An intelligent web browser for studying self-regulated learning in teachers' use of technology," *Strategies for Deep Learning with Digital Technology: Theories and Practices in Education*, 2018.
17. G. Babu and T. Azhagan, "Research on Personalized and Secured E-Learning Systems using Data Mining Technique," *International Journal of Innovative Technology and Exploring Engineering*, vol. 8, no. 11S, pp. 664-667, 2019.
18. A. Kermati, M. Mofrad, and A. Kamrani, "The role of readiness factors in e-learning outcomes: An empirical study," *Computers & Education*, vol. 57, no. 3, pp. 1919-1929, 2011.
19. G. Deena and K. Raja, "Sentence selection using latent semantic analysis for automatic question generation in e-learning system," *International Journal of Innovative Technology and Exploring Engineering*, vol. 8, no. 9, pp. 86-91, 2019.