

# Appraising The Extent of Availability and Accessibility of Online Resources in A State University

JEDERICH F. BALAUAG

Cagayan State University, Andrews Campus  
jfbalauag03@gmail.com

## Abstract

The gap that this study hopes to solve is the inclusion of pedagogical proficiencies together with the technical abilities in operating LMS. These are the kinds of skills that ought to be experimentally discovered before the establishment of a training program using that software as its basis. This inquiry made use of a descriptive-correlational design, a quantitative technique in the presentation and analysis of the data, and a census in the collection of data utilizing an adopted and modified instrument. In conclusion, the LMS subscription for LENS, Internet connectivity, and online subscriptions such as EBSCO, ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc. are SOMETIMES available, however video conferencing platforms (messenger, Zoom, Viber, group chat, etc.) are only occasionally accessible. The findings of the survey are concerning since they have an impact on the quality of online and remote learning. The fact that these online journals are readily available to the faculty thanks to the institution's subscription to them could be of great assistance to them. They were unable to attend the school library or any other public libraries during the time that the campuses were temporarily closed, thus it was difficult for them to get their hands on the physical copies of the literature that they needed. They are able to conduct study without leaving the comfort of their own homes and have access to this library subscription that the university maintains.

**Keyword:** accessibility, availability, online resources, pedagogical proficiencies,

## Introduction

The COVID-19 pandemic has brought significant changes in the Philippine educational system. Since the implementation of enhanced community quarantine in the entire Luzon on March 16, 2020, through Proclamation Number 922, s. 2020, schools were ordered by the President to suspend regular classes in all levels. Later, additional areas in the Visayas and Mindanao were also placed either under enhanced or general community quarantine and school operations were also suspended.

As a contingent measure, some schools especially in the tertiary level implemented alternative learning modalities and continued the delivery of learning content through distance or remote learning so that students would still accumulate the minimum learning competencies during the term.

In CHED Memorandum Order number 4 series of 2020 “Guidelines on the Implementation

of Flexible Learning”, the COVID-19 Pandemic was acknowledged as a national health crisis which has interfered usual conduct of educational activities in the Philippine schools. In an instant it classes nationwide was suspended abruptly. The said CMO 4 has institutionalized the adherence of higher educational institutions to flexible learning modalities. One of which is the online learning whereby students and teachers shall engage themselves in online interaction through electronic devices with the assistance of internet connectivity. The rationale behind this is to help the schools and the students to cope with the prevailing health crisis without compromising the need for quality education. Other schools, however, did not implement any supplementary delivery mode of instruction and just relied on the available records or outputs of students.

Online learning is the acquisition of knowledge from the web or internet which could be

done at home, in the internet shops, in the library or inside the classroom. It is used interchangeably with web-based learning. In a flipped classroom, for instance, the teacher may ask students to read articles on a particular website or watch a video on YouTube or do simulation activities on the web that can facilitate better understanding of the lesson. After reaching the allotted time for online learning, the teacher switches back to traditional teaching to process what the students have learned from the online activity.

### Statement of the problem

1. What is the extent of availability of the following online resources in the CSU campus affiliated as experienced by the faculty-respondents:
  - 1.1 LMS subscription (LENS)
  - 1.2 Video conferencing platforms (messenger, Zoom, Viber, group chat, etc.)
  - 1.3 Internet connectivity
  - 1.4 Online resources (EBSCO, ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc.)?
2. What is the extent of access of the following online resources in the CSU campus affiliated as experienced by the faculty-respondents
  - 2.1 LMS subscription (MOODLE)
  - 2.2 Video conferencing platforms (messenger, Zoom, Viber, group chat, etc.)

Internet connectivity

Online resources (EBSCO, ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc.)?

## METHODOLOGY

### Research Design

This investigation utilized descriptive-correlational design, a quantitative method in data presentation and analysis, and a census in collecting data using an adopted and modified instrument. The data shall be collected from the target participants on a census basis using an adopted instrument. The data collected shall be presented in a quantitative format which are summarized using tables and graphs.

### Participants of the Study

The participants of this research include 136 teachers of the College of Teacher Education of the seven campuses of Cagayan State University offering teacher-education programs. The entire population or census shall be obtained as respondents. The inclusion criteria are (a) full time, (b) permanent or probationary, (c) currently teaching, and (d) currently using the LENS.

*Distribution of respondents*

CAMPUS	NO. OF CTE FACULTY	No. of CTE students	Total no. of respondents
Andrews	52	1021	
Piat	21	284	
Lasam	10	116	
Lallo	11	233	
Aparri	8	225	
Sanchez Mira	24	244	
Gonzaga	10	173	
<b>Total</b>	136	2296	

## Instrumentation

The study utilized an adopted and modified instrument authored by Dr. Heherson M. Angel, Editor-in-Chief of the Global education and Social Sciences Journal. It is a 2 set self-administered questionnaire (for faculty-respondent and for student-respondent). It shall be floated through Google forms for efficient administration.

It comprises two parts which are (1) profile of respondents with six items, and (2) competence of the teachers in utilizing LMS comprising five domains. Domain 1 measures the competence of teachers in drafting knowledge content for LENS, domain 2 measures competence on designing activities for LENS, domain 3 measures competence in creating media content for LENS, domain 4 measures competence in developing assessment tools, and domain 5 measures competence in operating LENS.

Since the instrument is adopted, with consent, it does not require the administration of pilot test, validation, and reliability test. The researcher modified certain questions to contextualize the desired response from the respondent's level of perception.

Those modified content include LENS which is an exclusive terminology for the LMS of CSU and the inclusion of measures on bandwidth, as recommended by the panel, in which the author has agreed.

## Data Gathering Procedure

The following procedures were undertaken by the researcher.

First, the researcher will obtain clearance from the Ethics Review Committee of St. Paul University Philippines to ensure that ethical standards will be complied accordingly.

Second, the researcher will seek endorsement from the Dissertation adviser and the Dean of the Graduate School for data gathering directed to the proper authorities of CSU.

Third, the researcher obtained permission from the Deans of the College of Teacher Education to conduct data gathering.

Fourth, the researcher asked the list of target faculty along with their email addresses.

Fifth, upon approval of the Deans, the instrument with a letter request and Informed consent form shall be emailed to the participants.

## DISCUSSION OF RESULTS AND FINDINGS

### 1. Extent of availability of the following online resources in the CSU campus affiliated

Online resources in the seven campuses of CSU are SOMETIMES available according to the faculty of the College of Teacher Education of the entire CSU system.

Table 12. Mean and Standard Deviation distribution of Availability of the online resources

Online resources	CSU Campus							CSU Mean	SD
	Andr	Apar	Gonz	Lallo	Lasa m	Piat	San M		
LMS subscription (LENS)	2.75	2.95	2.83	2.78	2.80	2.79	2.76	2.81	0.06
	SOM	SOM	SOM	SOM	SOM	SOM	SOM	SOM	
	ETI	ETI	ETI	ETI	ETI	ETI	ETI	ETI	
Video conferencing platforms (messenger, Zoom, Viber, group chat, etc.)	2.24	2.24	2.24	2.22	2.23	2.22	2.20	2.23	0.01
	Seld	Seld	Seld	Seld	Seld	Seld	Seld	Seld	
	om	om	om	om	om	om	om	om	
Internet connectivity	2.70	2.81	2.75	2.73	2.71	2.71	2.70	2.73	0.04
	SOM	SOM	SOM	SOM	SOM	SOM	SOM	SOM	
	ETI	ETI	ETI	ETI	ETI	ETI	ETI	ETI	
Online subscription (EBSCO,	3.40	3.55	3.57	3.43	3.46	3.48	3.44	3.48	0.0
	MES	MES	MES	MES	MES	MES	MES	MES	

<i>ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc.)</i>	SOM	Alwa	Alwa	SOM	SOM	SOM	SOM	SOM	6
	ETI	ys	ys	ETI	ETI	ETI	ETI	ETI	
	MES			MES	MES	MES	MES	MES	
	<b>2.77</b>	<b>2.89</b>	2.85	2.79	2.80	2.80	<b>2.77</b>	2.81	
GRAND MEAN	SOM	SOM	SOM	SOM	SOM	SOM	SOM	SOM	0.0
	ETI	ETI	ETI	ETI	ETI	ETI	ETI	ETI	4
	MES	MES	MES	MES	MES	MES	MES	MES	

LEGEND: 4-Always available (4.00-3.51); 3-SOMETIMES available (3.50-2.51); 2-Seldom available (2.50-1.51); 1- Not available (1.50-1.00); NA- Not applicable

Red font= Highest value Blue font- Lowest value

As reflected in Table 12, the faculty-respondents of the seven campuses reported that the LMS subscription for LENS of Cagayan State University is SOMETIMES available with a mean of 2.81 (SD=0.06). Of the seven campuses, Rank 1 is Aparri having a mean of 2.95 which means SOMETIMES available. Rank 2 is *Gonzaga* with a mean of 2.83 which follows that it is SOMETIMES available. Rank 3 is Lasam and its mean is 2.80 or SOMETIMES available. Rank 4 is Piat and the corresponding mean is 2.79 which is interpreted as SOMETIMES available. Rank 5 is Lallo which mean is 2.78 which signifies SOMETIMES available. Rank 6 is Sanchez Mira having a mean of 2.76 which means SOMETIMES available. Lastly, Rank 7 is Andrews and its mean is 2.75 which adjectival is SOMETIMES available.

For the resources Video conferencing platforms (messenger, Zoom, Viber, group chat, etc.), the faculty-respondents of the seven campuses reported that it is SELDOM available with a mean of 2.23 (SD=0.01). As to its availability per campus, Andrews, Aparri and *Gonzaga* are tie having a mean of 2.24 or SELDOM available. Next is *Lasam* with a mean of 2.23 or SELDOM available. Next are Lallo and Piat with a mean of 2.22 or SELDOM available. They are followed by Sanchez Mira and the corresponding mean is 2.20 which is interpreted as SELDOM available.

In terms of Internet connectivity, the faculty-respondents of the seven campuses reported that its SOMETIMES available in CSU. 2.73 (N=0.04) which means SOMETIMES available. As to its availability per campus, Rank 1 is Aparri having a mean of 2.81 which means SOMETIMES available. Rank 2 is *Gonzaga* with a mean of 2.75 which follows that it is SOMETIMES available. Rank 3 are Lasam and Piat and its mean 2.71 or SOMETIMES available. Rank 4 are Andrews and

Sanchez Mira and the corresponding mean is 2.70 which is interpreted as SOMETIMES available.

Finally, Online subscription (EBSCO, ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc.) are also SOMETIMES available in the seven campuses CSU with a mean 3.48 (SD=0.06). As to its availability per campus, Rank 1 is *Gonzaga* having a mean of 3.57 which means ALWAYS available. Rank 2 is *Aparri* with a mean of 3.55 which follows that it is ALWAYS available. Rank 3 is Piat and its mean 3.48 or SOMETIMES available. Rank 4 is Lasam and the corresponding mean is 3.46 which is interpreted as SOMETIMES available. Rank 5 is Sanchez Mira which mean is 3.44 which signifies SOMETIMES available. Rank 6 is Lallo having a mean of 3.43 which means SOMETIMES available. Rank 7 is Andrews and its mean is 3.40 which adjectival is SOMETIMES available.

In a summary, LMS subscription for LENS, Internet connectivity, are Online subscription like EBSCO, ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc. are SOMETIMES available and Video conferencing platforms (messenger, Zoom, Viber, group chat, etc.) is seldom available. The survey result is somewhat alarming as it affects the quality of online distance learning.

In a related study conducted by Ivwighrehweta and Igere (2014, p.47), it was “revealed that Power outage, slow internet speed, lack of computer terminals, too many hits or information overload, Insufficient computer were some of the problems militating against effective internet access in tertiary institutions in Nigeria”. The authors recommend “Tertiary institution should ensure that adequate internet services are been provided in their respective libraries, so as to enable students meet their information needs” (p.54).

## 2. Extent of access of the following online resources in the CSU campus affiliated

faculty of the College of Teacher Education of CSU.

Online resources in the seven campuses of CSU are SOMETIMES accessible according to the

Table 13. Mean and Standard Deviation distribution of Extent of access experienced by faculty-respondents of the following online resources

Online resources	CSU Campus							CSU Mean	SD
	Andr	Apar	Gonz	Lallo	Lasam	Piat	San M		
LMS subscription (LENS)	3.19	3.28	3.26	3.21	3.20	3.23	2.78	3.17	.16
	SOM	SOM	SOM	SOM	SOM	SOM	SOM	SOM	
	ETI	ETI	ETI	ETI	ETI	ETI	ETI	ETI	
Video conferencing platforms (messenger, Zoom, Viber, group chat, etc.)	MES	MES	MES	MES	MES	MES	MES	MES	.22
	2.76	2.66	2.72	2.74	2.73	2.76	3.35	2.82	
	SOM	SOM	SOM	SOM	SOM	SOM	SOM	SOM	
Internet connectivity	ETI	ETI	ETI	ETI	ETI	ETI	ETI	ETI	.09
	MES	MES	MES	MES	MES	MES	MES	MES	
	3.30	3.40	3.35	3.32	3.32	3.35	3.58	3.37	
Online subscription (EBSCO, ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc.)	SOM	SOM	SOM	SOM	SOM	SOM	Alwas	SOM	.17
	ETI	ETI	ETI	ETI	ETI	ETI	ys	ETI	
	MES	MES	MES	MES	MES	MES	MES	MES	
GRAND MEAN	3.56	3.74	3.67	3.61	3.61	3.62	3.17	3.57	.02
	Alwas	Alwas	Alwas	Alwas	Alwas	Alwas	SOM	Alwas	
	ys	ys	ys	ys	ys	ys	ETI	ys	
	3.20	3.27	3.25	3.22	3.21	3.24	3.22	3.23	
	SOM	SOM	SOM	SOM	SOM	SOM	SOM	SOM	
	ETI	ETI	ETI	ETI	ETI	ETI	ETI	ETI	
	MES	MES	MES	MES	MES	MES	MES	MES	

LEGEND: 4-Always available (4.00-3.51); 3-SOMETIMES available (3.50-2.51); 2-Seldom available (2.50-1.51); 1- Not available (1.50-1.00); NA- Not applicable

Red font= Highest value; Blue font= lowest

Banking from the data in Table 13, the faculty-respondents of the seven campuses reported that the LMS subscription (LENS) of Cagayan State University is SOMETIMES accessible with a mean of 3.17 (SD=0.16). As to its availability per campus, Rank 1 is Aparri having a mean of 3.28 which means SOMETIMES accessible. Rank 2 is Gonzaga with a mean of 3.26 which follows that it is SOMETIMES accessible. Rank 3 is Piat and its mean is 3.23 or SOMETIMES accessible. Rank 4 is Lallo and the corresponding mean is 3.21 which is interpreted as SOMETIMES accessible. Rank 5 is

Lasam whose mean is 3.20 which signifies SOMETIMES accessible. Rank 6 is Andrews having a mean of 3.19 which means SOMETIMES accessible. And rank 7 is Sanchez Mira and its mean is 2.78 which adjectival is SOMETIMES accessible.

For the resources Video conferencing platforms (messenger, Zoom, Viber, group chat, etc.), the faculty-respondents of the seven campuses reported that is SOMETIMES accessible in CSU with a mean of 2.82 (SD=0.22). As to its availability per campus, Rank 1 is Sanchez Mira

having a mean of 3.35 which means **SOMETIMES** accessible. Rank 2 and 3 are Andrews and Piat whose means are 2.76 or **SOMETIMES** accessible. Rank 4 is Lallo and its mean 2.74 or **SOMETIMES** accessible. Rank 5 is Lasam and the corresponding mean is 2.73 which is interpreted as **SOMETIMES** accessible. Rank 6 is Gonzaga which mean is 2.72 which signifies **SOMETIMES** accessible. Lastly, rank 7 is Aparri and its mean is 2.66 which adjectival is **SOMETIMES** accessible.

In terms of Internet connectivity, the faculty-respondents of the seven campuses reported that it is **SOMETIMES** accessible with a 3.37 (N=0.09). As to its availability per campus, rank 1 is Sanchez Mira having a mean of 3.58 which means **ALWAYS** accessible. Rank 2 is *Aparri* with a mean of 3.40 which follows that it is **SOMETIMES** accessible. Ranks 3-4 are Gonzaga and Piat and each mean of 3.32 or **SOMETIMES** accessible. Rank 5-6 are Lallo and Lasam and the corresponding each mean is 3.32 which is interpreted as **SOMETIMES** accessible. Rank 7 is 1. Andrews whose mean is 3.30 and its adjectival is **SOMETIMES** accessible.

As to Online subscription (EBSCO, ERIC, JSTOR, Wiley, Ovid, McGraw Hill, etc.), the faculty-respondents of the seven campuses 2. reported that it is **ALWAYS** accessible as seen in its mean of 3.57 (N=0.17). Looking into its availability per campus, rank 1 is *Aparri* having a mean of 3.74 which means **ALWAYS** accessible. Rank 2 is 1. *Gonzaga* with a mean of 3.67 which follows that it is **ALWAYS** accessible. Rank 3 is Piat and its mean 3.62 or **ALWAYS** accessible. Rank 4 are Lallo and Lasam and the corresponding mean is 3.61 which is interpreted as **ALWAYS** accessible. Rank 5 is 2. Andrews which mean is 3.56 which signifies **SOMETIMES** accessible. Rank 6 is Sanchez Mira having a mean of 3.17 which adjectival is **SOMETIMES** accessible.

To sum up, the seven campuses reported that *LMS subscription for LENS* is **SOMETIMES** accessible. *Video conferencing platforms (messenger, Zoom, Viber, group chat, 4. etc.)* as also **SOMETIMES** accessible. Likewise, Internet connectivity is **SOMETIMES** accessible. The only resource that is **ALWAYS** accessible is *Online subscription (EBSCO, ERIC, JSTOR, Wiley, 5. Ovid, McGraw Hill, etc.)*.

The accessibility of the school's subscription to these online journals could be of big

help to the faculty. With the temporary closure of the campuses, they could hardly access the hard copies of these materials since they could not enter to the school library and any other public libraries. They can do research within the confines of their homes and access this library subscription of the University.

This is an indication that the University is also addressing the demand of the pandemic times like other institutions. "Many public libraries have embraced the use of e-books and e-readers in their efforts to promote reading, keep up with client demands and address the specific needs of young readers. Academic libraries really led the way by embracing digital access to professional and academic articles and full-text e-books" says Doiron, R. (2021, p.2).

### Recommendations

From the results of the investigation, the following recommendations are proposed:

- Capacity-building training-workshops may be conducted in different categories like intensive, standard, and enrichment trainings for faculty whose competencies in utilizing LENS are low, moderate, and high respectively.
- The action plan herein proposed may be adopted by the ICT department of CSU.

### References

- Almenara, J. C., Arancibia, M. & Del Prete, A. (2019). Technical and didactic knowledge of the Moodle LMS in higher education: Beyond functional use. *Journal of New approaches in educational research*, 8(1), 25-30.
- Andre, T. (2017). Advances in Human Factors in Training, Education, and Learning Sciences. *Advances in Intelligent Systems and Computing*, v.56. Springer.
- Autry Jr, A. & Berge, Z. (2011). Digital natives and digital immigrants: getting to know each other. *Industrial and Commercial Training*. Vol. 43 No. 7, pp. 460-466.
- Balajadia, (D. M. (2017). Gauging the ICT-based teaching readiness of preservice teachers in the light of 21st century education. *International Journal of Social Sciences*, Special Issue, 11-30.
- Cullinan, J., Flannery, D., Jason Harold, J., Lyons, S. and Palcic, D. (2021). The disconnected: COVID-19 and disparities in access to quality broadband for higher education students.

- International Journal Educational Technology in Higher Education. 18(26).
6. De Oliveira, P.C., Castro, C.J., & Nakayama, M.K. (2016). Learning management systems (LMS) and e-learning management: an integrative review and research agenda. *Journal of Information Systems and Technology Management*, 13(2), 157-180.
  7. Dhull, I. & Sakshi, M.S. (2017). Online learning. *Astronomy*, 3(8), 32-34.
  8. Dias, S.B., Diniz, J.A., Hadjileontiadis, L. J. (2014). *Towards an Intelligent Learning Management System Under Blended Learning: Trends, Profiles and Modeling Perspective*. Springer.
  9. Doiron, R. (2021). Using E-Books and E-Readers to Promote Reading in School Libraries: Lessons from the Field. A paper submitted to IFLA Conference in Puerto Rico. [conference.ifla.org/ifla77](http://conference.ifla.org/ifla77).
  10. Donner, C., Ambrosino, N., & Goldstein, R.S. (2020). *Pulmonary Rehabilitation*. CRC Press.
  11. Dumova, T. & Fiordo, R. (2009). *Handbook of Research on Social Interaction Technologies and Collaboration Software: Concepts and Trends: Concepts and Trends*. IGI Global.
  12. EduGorilla Prep Experts (2021). KVS TGT (Trained Graduate Teacher) Recruitment Exam | 1900+ Solved Question. EduGorilla Community Pvt. Ltd.
  13. Emtinan, A. (2019). *Handbook of Research on Fostering Student Engagement with Instructional Technology in Higher Education*. Advances in Educational Technologies and Instructional Design. IGI Global.
  14. Epler, Pam L. (2019). *Advanced Strategies and Models for Integrating RTI in Secondary Schools*. IGI Global.
  15. Fahmi, B.H. et al. (2021). *Educational Innovation in Digital Trends: Bintang Pustaka: Research on Innovative Teaching Through Digital Platform*. Bintang Pustaka Madani.
  16. Field, J., Burke, R.J., and Cooper, C.L. (2013). *The SAGE Handbook of Aging, Work and Society*. SAGE.
  17. Gong, Z., Chiu, D. & Zou, D. (2016). *Current developments in web based learning*. Switzerland: Springer Publishing.
  18. Haomin, W. (2012). *Interactivity in E-Learning: Case Studies and Frameworks: Case Studies and Frameworks*. IGI Global.
  19. Ivwighrehweta, O. & Igere, M.A. (2014). Impact of the Internet on Academic Performance of Students in Tertiary Institutions in Nigeria. *Journal of Information and knowledge management*. 5(2). Pp. 47-56.
  20. Jefferies, A. & Marija Cubric, M. (2015). *Proceedings of the 14th European Conference on e-Learning*. Academic Conference and Publishing International Limited.
  21. Jung, J.J. (2015). *Character Formation in Online Education: A Guide for Instructors, Administrators, and Accrediting Agencies*. Zondervan Academic.
  22. Kamamia, L.N., Ngugi, N.T., Thinguri, R.W. (2014). To establish the extent to which the subject mastery enhances quality teaching to student-teachers during teaching practice. *International Journal of Education and Research*. 2(7).
  23. Khan, B. H. & Ally, M. (2015). *International Handbook of E-Learning Volume 1: Theoretical Perspectives and Research*. Routledge.
  24. Moore, M. G. (2013). *Handbook of Distance Education*. Publisher Routledge.
  25. Ngunjiri, F. W., Madsen, S.R., Longman, K. A. and Cherrey, C. (2015). *Women and Leadership around the World: Women and Leadership International Leadership Association Series Women and Leadership*. IAP.
  26. Noesgaard, S.S. & Orngreen, R. (2015). The Effectiveness of E-Learning: An Explorative and Integrative Review of the Definitions, Methodologies and Factors that Promote e-Learning Effectiveness. *The Electronic Journal of e-Learning*, 13 (4), 278-290.
  27. Papong, E. (2014). The influence of John Dewey's educational thought on philippine education. *Bulgarian Journal of Science and Education Policy (BJSEP)*, 8(1), pp. 62-69.
  28. Picciano, A. G. (2017). Theories and frameworks for online education: Seeking an integrated model. *Online Learning*, 21(3), 166-190. doi: 10.24059/olj.v21i3.1225.
  29. Piña, A.A. (2010). An overview of learning management systems. In Y. Kats (ed) *Learning management system technologies and software solutions for online teaching: Tools and solutions*. Information Science Reference.
  30. Plomp, T., Anderson, R.E., Law, N., & Quale, A. (2003). *Cross-national Information and Communication: Technology Policy and Practices in Education*. Research in Education Policy: Local, National, and Global Perspectives. IAP.
  31. Reynolds, N. & Turcsányi-Szabó, M. (2010). *Key Competencies in the Knowledge Society*. IFIP

- Advances in Information and Communication Technology. v.324. Springer
32. Rogers, P., Berg, G., Boettcher, J., Howard, C., Justice, L. & Schenk, K. (2009). *Encyclopedia of Distance learning*, 2nd Ed. Information Science Reference.
33. Scarlet, W.G. (2015). *The SAGE encyclopedia of classroom management*. SAGE.
34. Serpell, R. and Marfo, K. (2014). *Child Development in Africa: Views from Inside*. John Wiley & Sons.
35. Sigafos, J. and Vanessa Green, V. (2007). *Technology and Teaching*. Nova Publishers.
36. Stevenson, C.N., & Bauer, J.C. (2019). *Enriching Collaboration and Communication in Online Learning Communities*. IGI Global.
37. Suryanto, T. et al (2020). ICETLAWBE 2020. European Alliance for Innovation.
38. Tsiatsos, T., Demetriadis, S., Mikropoulos, A., and Dagdilelis, V. (2021). Research on E-Learning and ICT in Education. Technological, Pedagogical and Instructional Perspectives. Springer Nature.
39. Underwood, J. and Shelbourn, M. (2021). *Handbook of Research on Driving Transformational Change in the Digital Built Environment*. Advances in Civil and Industrial Engineering. IGI Global.
40. UNESCO (2018). *UNESCO ICT Competency Framework for Teachers*. UNESCO Publishing.
41. Vai, M. & Sosulski, K. (2016). *Essentials of Online Course Design: A STANDARDS-Based Guide*. Routledge.
42. Wang, Victor C. X. (2014). *Handbook of Research on Education and Technology in a Changing Society*. Advances in Educational Technologies and Instructional Design (2326-8905). Publisher IGI Global.
43. Wispriyono, B., Mallongi, A., Pisaniello, & Hadju, D.V. (2019). ICER-PH 2018: Proceedings of the 3rd International Conference on Environmental Risks and Public Health, ICER-PH 2018, 26-27, October 2018, Makassar, Indonesia. European Alliance for Innovation.
44. Yogesh Hole et al 2019 J. Phys.: Conf. Ser. 1362 012121