

# Investigating Online Teaching Competency and Satisfaction Level of a Private School Secondary Teachers

# Renato P. Ngoho<sup>1</sup>, Ariel O. Tinapay<sup>2</sup>

<sup>1, 2</sup>College of Teacher Education, Cebu Roosevelt Memorial Colleges Inc., San Vicente St., Bogo City, Cebu, Philippines 6010 Email address: <sup>1</sup>renatongoho9@gmail.com, <sup>2</sup>arieltinapay288@gmail.com

Abstract— This study aimed to determine the online teaching competency and satisfaction level of a private school secondary teachers at the Cebu Roosevelt Memorial Colleges for S.Y. 2021-2022. Findings served as the basis of a proposed action plan presented in this paper. In the perceived level of online teaching competency, respondents mainly state their lessons clearly, make preparations and utilize teaching methodologies that enable participation among their students, build a positive attitude, support them in building and maintaining a learning community online, and tend to be inclined towards utilizing hardware tools, have a positive inclination on class administration. Furthermore, they effectively use the existing components of the LMS, such as homework, calendar, etc., and find ways to organize their classes in a synchronous structure and effectively apply discussion forums in their online classes.

**Keywords**— Online Teaching Competency, Facilitation, Affordances, Online Teaching Satisfaction, Online Distance Learning.

# I. INTRODUCTION

Technology has become the most valuable and essential aspect of modern life, symbolizing modern civilization (Menz, 2009; Ozturk & Can, 2013; Zhang, 2017). Education is one of the industries that regularly adopt new technological ideas. The growth of students and the amount of information they are exposed to, the accessibility of low-cost Internet, the widespread use of mobile devices that enable access from anywhere, and changes in people's needs can all be attributed to advancements in information and communication technology. These factors can also be considered among education's primary drivers of change and transformation. The differentiation of the teaching approaches has been wildly successful in reflecting the changes in the social order in the learning settings due to these elements (Gurley, 2018; Schmid & Petko, 2019).

In education, ideas about innovative teaching strategies and methodologies have gained popularity. Examples include distance learning, e-learning, virtual classrooms, and computer-supported teaching. Online education is increasingly commonplace worldwide due to recent technological advancements and social shifts. The World Health Organization (WHO) has declared the Corona Virus (COVID19) a disease that first appeared in the fourth quarter of 2019 and quickly spread worldwide. This global epidemic has dramatically increased the popularity of distance learning. Most nations have established harsh laws against social interaction to slow the rate at which this global illness spreads.

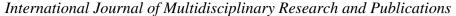
Work-from-home policies and flexible work schedules are only a few of the restrictions put in place. Others include outright bans on closed locations like theaters, malls, and movie theaters where huge crowds gather. The abrupt changes in the social and cultural spheres will inevitably impact the educational systems of the various nations at this juncture. According to Telli Yamamoto and Altun (2020), education is the most affected field by COVID19 after health. According to UNESCO (2020) data, while the education life of approximately 300 million students (17.1% of students receiving education) was restricted in March due to the epidemic, this number reached approximately 1.5 billion (84.3%) within a month. As a result, educational institutions have had to urgently stop face-to-face education at all levels, from kindergartens to higher education, and switch to distance education practices.

Machynska and Dzikovska (2020) stated that educational institutions that try to carry out their activities by taking urgent measures during the pandemic face various difficulties. One of them is to decide on the learning platforms to be used in distance education and ensure that teachers are competent to teach in these environments. In providing effective online teaching, the instructors must be competent to teach in online environments. In this direction, studies have been carried out in the literature to reveal the competencies of online tutors.

#### II. LITERATURE REVIEW DISCUSSION

Online Teaching Competencies And Satisfaction

There are several different categories of online teaching Technology/technical abilities, competencies. communication skills, pedagogical knowledge, teaching techniques and tactics, online education and content, field expertise, personal characteristics, process management and facilitation, planning and preparation, course management, and evaluation are some of the categories that can be found in the literature (Aydin, 2005; Denis et al., 2004; Klein & Fox, 2004; Reid, 2002; Richey et al., 2001; Salmon, 2012; Shank, 2004). Instructors need to be experts in these areas to deliver effective online instruction. The instructors' self-efficacy is crucial at this point. Self- efficacy significantly impacts participants' goals, efforts, and accomplishments, so it is crucial to comprehend how it relates to different academic practices throughout the educational process (Kundu, 2020). Self-efficacy and the potential to use technology effectively are strongly correlated, according to studies on the significance of instructors' self-



efficacy in the online teaching process (Corry & Stella, 2018; Sun & Chen, 2016). Compared to physical and virtual classroom settings, tutors tend to feel less self-efficient about online teaching (Johnson et al., 2020). However, Bandura (1997) noted that instructional self-efficacy might be altered, and studies have linked it to positive student results (Goddard et al., 2000; Tschannen-Moran & Hoy, 2001). Additional study is required to define and establish the instructional self-efficacy structure in online education and the significance of quality in both technology and curriculum (Corry & Stella, 2018; Ma et al., 2021).

Online Pedagogy is a teaching philosophy, approach, or strategy that allows it to deliver online education in a virtual classroom by utilizing technology and digital communication tools. It is the current trend in education as a result of the Covid 19 pandemic problem. This is done by the Department of Education (DepEd), the Commission on Higher Education (CHED), and other educational institutions to ensure that students study efficiently. From the classroom to the online learning environment, student-centered learning pedagogy is unique and sensitive. Techniques and tactics have various learning, flow, and style processes. It describes how the learning pedagogy is implemented, prepared, and ethical in an online setting and how context learning is established. It offers a learning viewpoint that emphasizes teaching methods. behavior, course design modules, subjects, and course structures. This could enhance students' learning during online instruction (Robinson, Al-Freih, & Kilgore, 2020). Various tools are introduced on the subject of collaborative learning and teaching quality. It examines how pedagogical design affects students' development of academic proficiency in various forms digital learning focused on technology-enhanced collaborative learning. According to Serdyukov (2015), pedagogy encompasses essentially any method that improves the learning process, such as instructional strategies, use of technology, delivery methods for content, and emphasis on the context and interactions of the teaching and learning dynamic. Recharging an educational program for powerful instructing and learning requires self-adequacy to acquire average results (Amores & Tinapay et. al, 2022).

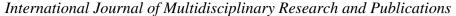
Evaluations of online and remote learning institutions and their teachers can yield a wealth of valuable data that can subsequently be used to the advantage of students and improve learning. These evaluations could also be used to optimize the design and operation of courses for the most excellent possible learning environment. However, Thomas and Graham (2018) claim that the systematic evaluation of online courses and teachers is incredibly lacking, given the enormous increase in online education. In the context of evaluating online courses and the instructors leading them, Berk (2013) claims that the metrics currently available and the quality of those measures lag significantly behind course development. To gauge the efficiency of online educators at first, conventional face-to-face student evaluation tools were employed (Berk, 2013; Dziuban & Moskal, 2011).

Later, generally speaking, checklists and rubrics were either created in-house or acquired from other institutions to evaluate the online courses, the teachers, and especially the course design

(Pia & Bohn, 2014). One of the most popular evaluations in online higher education courses has always been student feedback on the instructor's teaching (Thomas, 2018). For instance, Loveland (2007) modified the Student Evaluation of Teaching (SET), used widely and accepted as a valid and reliable instrument to evaluate instructors in a face-to-face classroom by substituting "oral" communication skills with "written" communication skills to evaluate the online instructors. The Educational Testing Services- administered Electronic Student Instructional Report II (e-SIR II) is a further indicator that draws on conventional assessments to assess distant learning (Klieger et al., 2014). The measure considers course organization and preparation, interaction, specific course tasks including grading, tests, and assignments, teacher instruction and course content, course outcomes, student effort, and involvement, and the workload, pace, and complexity of the course (Liu, 2012). Northcote et al. (2011) attempted to categorize the range of expertise needed for a successful online educator in the context of evaluating online instruction. Bigatel et al. (2012) looked into the skills necessary for effective online teaching.

Practical online teaching competencies were recognized as attitude/philosophy, community building, class management, workload management for faculty, teaching and learning, and technological proficiency. Kavrat and Turel (2013) created a scale to assess teachers' online instruction abilities. In their analysis, the instructor's communicative, technical, social, and educational functions were noted. Gosselin et al. (2016) also looked at their study's instructors' threshold ideas, attitudes, and abilities. These included the instructors' perceptions of the course design, facilitated interaction, meaningful engagement in online learning contexts, self-efficacy and confidence in online teaching, management of the assessment process, setting up and modifying online learning, and monitoring student attendance and progress. However, they still believe that there is a need for more research to clarify the threshold concepts and self-efficacy levels in academic staff within the context of online teaching and learning. Reyes-Fournier et al. (2020) also concluded that the available measures and scales that evaluate online and distance teaching efficiency have significant limitations. Thus, online teaching competencies scales cannot shed light comprehensively on instructors' online teaching competencies from the online teaching process. (Wang et al., 2019) Reyes-Fournier et al. (2020) add to this by highlighting the dearth of research and suitable techniques for evaluating online instruction and claiming that reliability and validity data are lacking.

Online educational activities can typically be carried out in synchronous and asynchronous modes. As opposed to synchronous distant learning, in which all participants carry out learning activities at the same or different locations, asynchronous learning entails students and instructors carrying out teaching activities at multiple times and locations (Allen & Seaman, 2008). However, most teachers asserted that the existing teaching materials were only transferred to the online environment while offering online training (Wang et al., 2019). Teachers have primarily focused on delivering face-to-face (F2F) educational activities through live sessions during this



transition because all educational institutions are urgently transitioning to distance learning. At this point, video conferencing applications such as Google Meet, Microsoft Teams, Zoom, storage areas such as Google Drive, Dropbox, Yandex Drive, learning management systems such as Moodle, Google Classroom, Canvas, or various Web 2.0 applications are used to increase interaction in the course. The correct technical expertise is required of instructors in order for them to employ these technologies in the online learning process effectively.

The ability of educators to use technology effectively often determines their ability to teach online, according to Gang & Shanxi (2015). However, the online instructor must be qualified to help students by organizing their academic activities while they are learning online and providing pertinent educational materials for the online environment (Allen & Seaman, 2008; Wang et al., 2019). In this regard, it is evident that attention must be paid to the issue of "achieving the proficiency of teachers in teaching platforms to be utilized in distant education," as stated by Machynska & Dzikovska (2020). These competencies should be determined while also taking into account the pedagogical abilities of online instructors (Machynska & Dzikovska, 2020), including their capacity to organize themselves and their students for online learning, to select the proper tools with suitable teaching methods and techniques, to facilitate learning, and to manage online courses (Wang et al., 2019). In the contemporary environment, where all educators from preschool through higher education perform the role of online teachers, determining the online teaching competencies of teachers is essential for improving the online learning experience. The primary goal of this study was to determine the degrees of skill in this field of higher education teachers. These levels were based on their self-efficacy and confidence in online instruction. The objective of this study is to create a valid and accurate evaluation of the teaching abilities of online teachers.

# Faculty Satisfaction

The definition of instructor satisfaction in the context of this study is the belief that the process of teaching in the online environment is effective, efficient, and advantageous for the student. It is a component of the quality framework for online learning created by the Sloan Consortium (Moore, 2002). Numerous teachers are happy and willing to continue teaching online, according to research (Conceiço, 2006; Hartman, Dziuban, & Moskal, 2000; Fredericksen, Pickett, Shea, Pelz, & Swan, 2000). However, some teachers are unfavorable toward online learning. In addition to being aware that online teaching is time- consuming and labor-intensive and can easily result in burnout, instructors are concerned about the lack of interaction (Bower, 2001). (Hogan & McKnight, 2007).

In addition to being two essential components of the quality framework, faculty and student satisfaction also frequently have an impact on one another (Moore, 2002). According to Bolliger and Wasilik (2009), student happiness is a crucial component of instructor satisfaction (2009). Student satisfaction is referred to as the importance that students place on their formal educational experiences (Astin, 1993). Essential factors in student satisfaction are the instructor, technology, and

interactivity (Bolliger & Martindale, 2004). When students are satisfied with their online learning experiences, one can argue that faculty may be more satisfied with their online teaching experience than when students are less satisfied.

Four significant literature themes related to online teaching from the faculty perspective emerge. They include: (a) interaction between students and peers and between instructors and students; (b) instructor planning, designing, and delivering online instruction; (c) necessary institutional support; and (d) affordances of online teaching and learning. Each element is discussed below.

#### Interaction

One must keep in mind that when creating an online course, contact between students should be prioritized over course content (Simmons, Jones, &Silver, 2004). Others concur that making connections with classmates and instructors and encouraging engagement and communication are essential components of online learning (Duncan & Young, 2009; Fredericksen et al., 2000; Hartman et al., 2000). The success of classroom learning depends on interaction. Student benefits and successful learning outcomes will result from good interaction (Tirol, 2022). Warmth and sensitivity promote sound reasoning and weak interactions. Moore and Kearsley (2012) cited peer interaction, interaction with content, and instructor interaction as the three most significant types of interaction in distance learning.

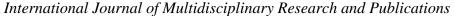
#### Faculty-to-Student Interaction

According to Moore and Kearsley (2012), interactivity is crucial to online education and is a desirable quality for educators. When compared to less satisfied teachers, Wasilik and Bolliger (2009) showed that more satisfied online instructors engaged in "high levels of interaction with online students." The authors make the critical point that interactional quantity and quality are essential to faculty satisfaction. Faculty are also motivated by high- quality interactions (Hiltz, Shea, & Kim, 2007).

Some professors who teach online miss the interpersonal interactions that come with being able to meet with students in person, and some administrators are worried about a potential decline in personal contact with students (Rockwell, Schauer, Fritz, & Marx, 1999). (Fish & Gill, 2009). In contrast, several professors believed they built good ties with students because they could interact with them more personally online (Hiltz et al., 2007; De Gagne & Walters, 2009). Active communication between students and online professors is also vital to them (Bolliger & Wasilik, 2009). Panda and Mishra (2007) claim that online educators frequently desire to use technology and are enthusiastic about doing so. Several information and communication technologies and more current media formats can be utilized. Instructors are tasked with answering students' questions and providing feedback while measuring learning outcomes for each student and creating effective interventions to improve performance (Moore & Kearsley, 2012).

#### Student-To-Student Interaction

Because students view peer connection as "stimulating and encouraging," teachers and course designers should offer



possibilities for peer involvement in settings where students do not share the same physical space (Moore & Kearsley, 2012, p. 133). Instructors are pleased when students actively engage with the course materials, engage in conversation in class, and engage with the readings (Bolliger & Wasilik, 2009). According to professors Moore and Kearsley (2012), Online instruction has advantages, including high levels of contact and students exchanging resources with classmates (Wasilik & Bolliger, 2009). The idea, point of view, and experience exchanged by online students are highly valued by online teachers. Experts suggest this tactic to promote small group collaboration with students: divide the class into teams or groups (Moore & Kearsley, 2012). Due to the requirement for student involvement in most online courses, all student perspectives are considered regardless of gender or other demographics. This is another element that tempts educators to use online instruction (Anderson & Haddad, 2005).

#### Online Facilitation

The techniques, strategies, and communications an instructor employs to support and guide students who are enrolled in online distance learning are referred to as online facilitation. Facilitation involves people in the creation, acquisition, and application of new information (Huggett and Wilkinson, 2014). The role of the facilitator is to encourage learners to use their best judgment (Kaner, 1996). Online facilitation focuses on involving, directing, and inspiring learners while fostering an environment conducive to learning and conversation (Australian Flexible Learning Framework, 2003). Even if there is a physical distance between the teacher and the students when the lesson is being given, online distance learning allows the teacher to take on the role of facilitator by encouraging the students' active engagement through the use of a variety of tools accessed online (Llego, 2020).

# Affordances

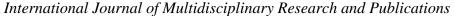
New teaching options that were not practical in conventional classroom settings are now possible because of the usage of technology in online learning. These aspects of online learning offer the potential for effective methods of instruction and learning (Day & Lloyd, 2007). The ability of the online learning environment to provide various benefits to various types of students is one of its main features (Webb & Cox, 2004). Online communication, for instance, can allow reserved students to participate in asynchronous discussions and enable flexibility for students who have other commitments, such as a job or a family. The two advantages that instructors mention the most when talking about online education are flexibility and convenience. A wide variety of resources, such as external links, tutorials, audio or video files, and so forth, can be included in a course's materials by an online instructor. They stated they had simple access to online course resources for themselves and their students (Bolliger & Wasilik, 2009; Fish & Gill, 2009; Seaman, 2009; Wasilik & Bolliger, 2009). Online courses give access to student populations that would not otherwise have access to higher education, which is a significant factor in online educators' happiness. This makes it possible for educators to connect with pupils in urban areas and rural ones (Betts, 1998; Hiltz et al., 2007; Rockwell et al., 1999; Wasilik

& Bolliger, 2009). Online teachers attest that having more scheduling flexibility benefits online learning (Green, Alejandro, & Brown, 2009; Hiltz et al., 2007; Wasilik & Bolliger, 2009; Young, Cantrell, & Shaw, 2001). Due to scheduling flexibility, students with additional family or employment responsibilities can still pursue their educational goals. One of the other advantages of using online tools is that they promote the development of student-centered learning activities. By utilizing various learning tools, online instructors can develop immensely engaging, motivating, communicative, and social learning environments that are pedagogically sound. It is crucial to remember that the specific advantages of online communication and learning tools do not always determine how advantageous they are for teaching (Burden & Atkinson, 2008). Instructors should receive training, workshops, and assistance from the school for their lessons if they wish to take advantage of these devices' capabilities to the utmost extent.

### Institutional Support

"Among the most crucial problems is the development and implementation of distance learning receiving institutional support. (Milheim, 2001, p. 538). Instructors who teach online ought to receive fair compensation (Bower, 2001; Milheim, 2001; Simonson et al., 2009). Teachers who deliver courses online believe compensation should be on par with inperson instruction. The heavy workload, however, led to the perception that remuneration was insufficient (Green et al., 2009; Hiltz et al., 2007). Others expressed concern about a lack of financial support, such as stipends (O'Quinn & Corry, 2002). "One of the most crucial challenges is the general institutional support for the creation and execution of distance learning" (Milheim, 2001, p. 538). Instructors who teach online ought to receive fair compensation (Bower, 2001; Milheim, 2001; Simonson et al., 2009). Teachers who deliver courses online believe compensation should be on par with in-person instruction. The heavy workload, however, led to the perception that remuneration was insufficient (Green et al., 2009; Hiltz et al., 2007). Others expressed concern about a lack of financial support, such as stipends (O'Quinn & Corry, 2002). The right technology, including hardware and software, must be available to teachers who deliver online courses (Betts, 1998; Fredericksen et al., 2000). Institutions involved in online education must properly train pedagogical issues and technological know-how (Eliason & Holmes, 2010). These changes must be available not just before creating and teaching an online course for the first time but also on an ongoing basis for faculty growth (Ray, 2009).

In research by O'Quinn and Corry (2002), participating instructors in distant education expressed anxiety over their lack of technological proficiency. Once instructors and students are online, they require assistance when a technical problem occurs. People were worried about a lack of technical help because it is essential. Some participants felt so strongly that they could not teach in distant learning situations due to their lack of technological expertise and technical support (Betts, 1998; O'Quinn & Corry, 2002). Before launching online courses and programs, institutions must have firm rules in place. Researchers discovered that there were instances where



instructional policies were not in place (Hiltz et al., 2007). Teaching online could have a detrimental effect on faculty tenure and promotion decisions if the institution does not value distance education programs and has poor systems for evaluating and recognizing such professors (Milheim, 2001). The availability of appropriate and transparent copyright and intellectual property policies is yet another concern (Durette, 2000; Palloff & Pratt, 2001; Passmore, 2000; Simonson et al., 2009). Institutional support and the foundations for student disciplinary proceedings are linked in the sense that institutional support and service units play a critical role in imposing disciplinary consequences on students. The presence of adequate institutional support in schools leads to well-enforced discipline among students (Tinapay,2021 & Tirol)

# Online Course Design, Development, and Teaching

The planning, preparation, and delivery of online distance learning and its effects on workload are among the top worries of prospective or experienced online educators (Betts, 1998; Green et al., 2009; O'Quinn & Corry, 2002). There are a variety of perspectives on whether the burden increases when planning and instructing online classes. DiBiase (2000) discovered that teaching online classes took less time than teaching classes oncampus. When the class size was considered, Hislop and Ellis (2004) discovered that online instruction did not add to teachers' workload. These findings directly contradict Conceiço (2006) and Visser (2000), who discovered that developing and delivering an online course needed more time and effort than a campus-based course. According to Seaman's 2009 research, over 64% and 85% of respondents believed that developing and teaching online courses required more work. Others contend that the delivery of online courses alone requires more time and effort than campus-based courses because interactions with online students are more time-consuming for teachers and because online communication, in general, requires a lot more time than face-to-face communication (Conceiço, 2006; De Gagne & Walters, 2009; Hiltz et al., 2007; Stacey & Rice, 2002). According to Young et al. (2001), some online teachers feel as though they are constantly teaching. Teachers care about the caliber of their student's learning experiences and are dissatisfied when they feel they have little or no control over online courses or programs (Betts, 1998; Bower, 2001). Online courses provide extensive assessment, which can take time (Simmons et al., 2004). Teacher satisfaction rises as a result of student performance. It is superior (Fredericksen et al., 2000), and high levels of student motivation help instructors feel more satisfied with their work. Classes were managed well, according to instructors, which was a benefit of online instruction. Some professors felt that online learning environments made it easier to manage classes than in other settings. Furthermore, technology integration achievement takes measured in terms of how widely or prominently it has been used in classrooms rather than if the teacher able to use to achieve learning outcomes that are "new, better, or more "relevant" (Moyle, 2010; Tinapay & Tirol, 2021).

#### III. CONCLUSION

One of the reasons for the increase in student enrollment in online courses is the increased need for students to access alternative education methods. The student body at many universities has changed to include a high percentage of nontraditional learners (Blakely & Tomlin, 2008; Snyder & Dillow, 2011) who might be unable to attend a university campus due to many other roles and responsibilities such as work or family (Caffarella, 2002; van Enckevort, Harry, Morin, & Schütze, 1986). However, many individuals feel the need or wish to continue their formal education or participate in professional development opportunities. For them, online academic courses and programs provide access to education and are a good fit for individuals with busy schedules. The enrollment growth in online courses offered by colleges and universities has continued for the past seven years-to meet student demand. It has by far exceeded overall student enrollment growth, and this trend is expected to continue. In the fall of 2009, the number of learners enrolled in at least one online course exceeded 5.6 million (Allen & Seaman, 2010).

As the number of online students and, subsequently, online course and degree program offerings increase, so does the number of instructors tasked to teach online. In a study by Seaman (2009), 34.4% of instructors surveyed had taught at least one online course, and approximately 23.6% were teaching an online course when the study was conducted. Many research efforts have been devoted to investigating essential elements of faculty adoption of technology in teaching (D'Silva & Reeder, 2005), participation in distance education (Clay, 1999; O'Quinn & Corry, 2002), and what motivates instructors to teach online (Panda & Mishra, 2007). Instructors are crucial in meeting university goals and outcomes, and they also impact the success of academic programs because "faculty play an essential role in developing and rethinking online courses" (Meyer, 2006, p. 43). The commitment of faculty to deliver quality programs and courses is documented in the literature (Curran, 2008). Faculty satisfaction is so crucial to online education that the Sloan Consortium has made it one of the five pillars (Moore, 2002)

#### IV. PROPOSED PLAN OF ACTION

Training/ Seminar-Workshop on Enhancing Online Teaching Competency and Satisfaction Level of the Teachers Rationale

A proposed plan of action to enhance online teaching competency and satisfaction level of the teachers. One of the main focuses is to enhance the online teaching competency of the teachers by introducing new strategies in online teaching. The school could offer varied professional development to upgrade the competence of teachers towards online distance learning delivery mode to increase their level of satisfaction. It facilitates innovation in teaching to keep abreast with change and to adjust in times of any adversities (Tirol et al., 2022). These training seminar-workshops would have the following objectives: to upgrade teaching approaches towards online distance learning to become more effective in asynchronous and discussion forums in LMS, improve teaching strategies to increase teacher-to-student and student-to-student interactions

# International Journal of Multidisciplinary Research and Publications

ISSN (Online): 2581-6187



that might be potential, and train teachers who have low competency about appropriate technology in the online distance learning platform. The focus of this plan is to provide school-based pieces of training and workshops for faculty enhancement and development. These school-based training and workshops will assist teachers in their online teaching competency in pedagogy, facilitation, technology, and administration.

#### REFERENCES

- [1]. Piaget, J (1983). Handbook of Child Psychology
- [2]. Bandura, A. (1997). Guide for Constructing Self-Efficacy scales.
- [3]. Cresswell, J. W. (2013). Qualitative Inquiry & Research Design: Choosing among Five Approaches (3<sup>rd</sup> Ed.). Thousand Oaks, CA:SAGE
- [4]. Dede (2005), DoED (2016), Dede et al. (2016). Dede, C., A. Eisencraft, K. Frumin, and A. Hartley, eds. 2016. Teacher learning in the digital age: Online professional development in STEM education. Cambridge, MA: Harvard Press.
- [5]. DepEd Memorandum, (2019). Administration of Trends in International Mathematics and Science Study 2019 main survey.
- [6]. NASEM, (2015). National Academies of Sciences, Engineering, and Medicine (NASEM).
- [7]. 2015. Science teachers' learning: Enhancing opportunities, creating supportive contexts. Washington, DC: The National Academies Press.
- [8]. Allen, I. E., & Seaman, J. (2004). Entering the mainstream: The quality and extent of online education in the United States, 2003 and 2004. Needham, MA: Sloan Consortium. Retrieved from http://sloanconsortium.org/sites/default/files/pages/entering\_mainstream. pdf
- [9]. Allen, I. E., & Seaman, J. (2010). Class differences: Online education in the United States, 2010. Needham, MA: Sloan Consortium. Retrieved from http://sloanconsortium.org/publications/survey/class\_differences
- [10]. Amores, J. N., Tinapay, A. O., Tirol, S. L., Samillano, J. H., & Cortes, J. A. L. Self-Efficacy Beliefs of Secondary Teachers in Teaching Language Subjects: A Literature Review, *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, 5(4), pp. 58-64
- [11]. Anderson, D. M., & Haddad, C. J. (2005). Gender, voices, and learning in online course environments. Journal of Asynchronous Learning Networks, 9(1), 3-14. Retrieved from sloanconsortium.org/sites/default/files/v9n1\_anderson\_1.pdf
- [12]. Astin, A. W. (1993). What matters in college? Four critical years revisited. San Francisco, CA: Jossey-Bass.
- [13]. Betts, K. S. (1998). An institutional overview: Factors influencing faculty participation in distance education in postsecondary education in the United States: An institutional study. Online Journal of Distance Learning Administration, 1(3). Retrieved from http://www.westga.edu/~distance/Betts13.html
- [14]. Blakely, P. N., & Tomlin, A. H. (Eds.). (2008). Adult education: Issues and developments. NewYork, NY: Nova Science Publishers.
- [15]. Bolliger, D. U., & Martindale, T. (2004). Key factors for determining student satisfaction in online courses. International Journal on E-Learning, 3(1), 61–67.
- [16]. Bolliger, D. U., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. Distance Education, 30(1), 103-116. doi: 10.1080/01587910902845949
- [17]. Bourne, J., & Moore, J. C. (Eds.). (2005). Elements of quality online education: Engaging communities. Needham,MA: Sloan Consortium. Retrieved from http://sloanconsortium.org/publications/books/vol6\_summary.pdf
- [18]. Bower, B. L. (2001). Distance education: Facing the faculty challenge. Online Journal of Distance Learning Administration, 4(2). Retrieved from http://www.westga.edu/~distance/ojdla/summer42/bower42.html
- [19]. Burden, K., & Atkinson, S. (2008). Evaluating pedagogical affordances of media sharing Web 2.0 technologies: A case study. In Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008 (pp. 121-125).
- [20]. Caffarella, R. S. (2002). Planning programs for adult learners: A practical guide for educators, trainers, and staff developers (2nd ed.). San Francisco, CA: Jossey-Bass.

- [21]. Cattell, R. B. (1966). The scree test for the number of factors. Multivariate Behavioral Research, 1(2), 245-276. doi:10.1207/s15327906mbr0102\_10
- [22]. Clay, M. (1999). Development of training and support programs for distance education instructors. Online Journal of Distance Learning Administration, 2(3).
- [23]. Conceição, S. C. O. (2006). Faculty lived experiences in the online environment. Adult Education Quarterly, 57(1), 26–45. doi:10.1177/1059601106292247
- [24]. Curran, C. (2008). Online learning and the university. In W. J. Bramble & S. Panda (Eds.), Economics of distance and online learning: Theory, practice, and research (pp. 26–51). New York, NY: Routledge.
- [25]. Day, D., & Lloyd, M. (2007). Affordances of online technologies: More than the properties of the technology. Australian Educational Computing, 22(2), 17-21. De Gagne, J.
- [26]. C., & Walters, K. (2009). Online teaching experience: A qualitative metasynthesis (QMS). Journal of Online Learning and Teaching, 5(4), 577-589. Retrieved from http://jolt.merlot.org/vol5no4/degagne\_1209.pdf
- [27]. DiBiase, D. (2000). Is distance teaching more work or less work? The American Journal of Distance Education, 14(3), 6-20. doi:10.1080/08923640009527061
- [28]. D'Silva, R., & Reeder, K. (2005). Factors that influence faulty members' uptake and continued use of course management systems. British Journal of Educational Technology, 36(6), 1071-1073. doi: 10.1111/j.1467-8535.2005.00578.x
- [29] Duncan, H. E., & Young, S. (2009). Online pedagogy and practice: Challenges and strategies. The Researcher, 22(1), 17-32.
- [30]. Durette, A. (2000). Legal perspectives in web course management. In B. L. Mann (Ed.), Perspectives in web course management (pp. 87–101). Toronto, Canada: Canadian Scholars' Press.
- [31]. Eliason, S. K., & Holmes, C. L. (2010). Reflective practice and inquiry in professional development for online teaching. Journal of Online Learning and Teaching, 6(2), 454-465. Retrieved from http://jolt.merlot.org/vol6no2/eliason\_0610.pdf
- [32]. Fish, W. W., & Gill, P. B. (2009). Perceptions of online instruction. The Turkish Online Journal of Educational Technology, 8(1),53-64.
- [33]. Fredericksen, E., Pickett, A., Shea, P., Pelz, W., & Swan, K. (2000). Factors influencing faculty satisfaction with asynchronous teaching and learning in the SUNY learning network. Journal of Asynchronous Learning Networks, 4(3), 245–278.
- [34]. Green, T., Alejandro, J., & Brown, A. H. (2009). The retention of experienced faculty in online distance education programs: Understanding factors that impact their involvement. International Review of Research in Open and Distance Learning, 10(3), 1-15.
- [35]. Hartman, J., Dziuban, C., & Moskal, P. (2000). Faculty satisfaction in ALNs: A dependent or independent variable? Journal of Asynchronous Learning Networks, 4(3), 155–177.
- [36]. Hiltz, Š. R., Shea, P., & Kim, E. (2007). Using focus groups to study ALN faculty motivation. Journal of Asynchronous Learning Networks, 11(1), 107-124.
- [37]. Hislop, G. W., & Ellis, H. J. C. (2004). A study of faculty effort in online teaching. The Internet and Higher Education, 7(1), 15-31. doi:10.1016/j.iheduc.2003.10.001
- [38]. Hogan, R. L., & McKnight, M. A. (2007). Exploring burnout among university online instructors: An initial investigation. The Internet and Higher Education, 10(2), 117–124. doi:10.1016/j.iheduc.2007.03.001
- [39]. Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis.
- [40]. Psychometrika, 30(2), 179-185. doi:10.1007/BF02289447
- [41]. Kaiser, H. F. (1960). The application of electronic computers to factor analysis. Educational and Psychological Measurement, 20(1), 141-151. doi:10.1177/001316446002000116
- [42]. Mertler, C. A., & Vannatta, R. A. (2010). Advanced and multivariate statistical methods: Practical application and interpretation (4th ed.). Los Angeles, CA: Pyrczak.
- [43]. Meyer, K. A. (Ed.). (2006). Cost-efficiencies in online learning: ASHE Higher Education Report, 32(1), 1-123. Hoboken, NJ: Wiley. Retrieved from ERIC database. (EJ791630) doi:10.1002/aehe.3201
- [44]. Milheim, W. (2001). Faculty and administrative strategies for the effective implementation of distance education. British Journal of Educational Technology, 32(5), 535-542. doi:10.1111/1467-8535.00223
- [45]. Moore, J. C. (2002). Elements of quality: The Sloan-CTM framework. Needham, MA: Sloan Consortium.



# International Journal of Multidisciplinary Research and Publications

ISSN (Online): 2581-6187

- [46]. Moore, M. G., & Kearsley, G. (2012). Distance education: A systems view of online learning (3rd ed.). Belmont, CA: Wadsworth.
- [47]. O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. Behavior Research Methods, Instruments, and Computers,32(3),396-402.doi:10.3758/BF03200807
- [48]. O'Quinn, L., & Corry, M. (2002). Factors that deter faculty from participating in distance education. Online Journal of Distance Learning Administration, 5(4). Retrieved from http://www.westga.edu/%7Edistance/ojdla/winter54/Quinn54.htm
- [49]. Palloff, R. M., & Pratt, K. (2001). Lessons from the cyberspace classroom: The realities of online teaching. San Francisco, CA: Jossey-Bass.
- [50]. Panda, S., & Mishra, S. (2007). E-learning in a mega open university: Faculty attitude, barriers and motivators. Educational Media International, 44(4), 323–338. doi:10.1080/09523980701680854
- [51]. Passmore, D. L. (2000, May). Impediments to adoption of web-based course delivery among university faculty. Impediments to adoption of web-based course delivery among university faculty. Paper presented at the EdTech 2000 conference, Sligo, Ireland. Retrieved from http://train.ed.psu.edu/documents/edtech/edt.pdf
- [52]. Ray, J. (2009). Faculty perspective: Training and course development for the online classroom. Journal of Online Learning and Teaching, 5(2), 263-276. Retrieved from http://jolt.merlot.org/vol5no2/ray\_0609.pdf
- [53]. Reinheimer, D. A. (2005). Teaching composition online: Whose side is time on? Computers and Composition, 22(4), 459-470. doi:10.1016/j.compcom.2005.08.004
- [54]. Rockwell, S. K., Schauer, J., Fritz, S. M., & Marx, D. B. (1999). Incentives and obstacles influencing higher education faculty and administrators to teach via distance. Online Journal of Distance Learning Administration, 2(4). Retrieved from http://www.westga.edu/~distance/ rockwell24.html
- [55]. Seaman, J. (2009, August). Online learning as a strategic asset: Volume II: The paradox of faculty voices: Views and experiences with online learning. Washington, DC: Association for Public and Land-Grant Universities. Retrieved from http://www.aplu.org/document.doc?id=1879
- [56]. Simmons, S., Jones, W., & Silver, S. (2004). Making the transition from face-to-face to cyberspace. TechTrends, 48(5), 48-53. doi:10.1007/BF02763531
- [57]. Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2009). Teaching and learning at a distance: Foundations of distance education (4th ed.). Boston, MA: Allyn & Bacon.
- [58]. Snyder, T. D., & Dillow, S. A. (2011). Digest of education statistics: 2010. Washington, DC: National Center for Education Statistics. (NCES 2011-015)

- [59]. Stacey, E., & Rice, M. (2002). Evaluating an online learning environment. Australian Journal of Educational Technology, 18(3), 323-340. Retrieved from http://www.ascilite.org.au/ajet/ajet18/stacey.html
- [60]. Stevens, J. (2010). Applied multivariate statistics for the social sciences. Mahwah, NJ: Lawrence Erlbaum.
- [61]. Tabachnick, B. G., & Fidell, L. S. (2007). Using multivariate statistics (5th ed.). Boston, MA: Allyn & Bacon.
- [62]. Tinapay, A., & Tirol, S. (2021). Social Learning Perspectives on School Policies in A Higher Educational Institution. NVEO-NATURAL VOLATILES & ESSENTIAL OILS Journal/NVEO, 9666-9686.
- [63]. Tinapay, A. O., & Tirol, S. L. (2021). Teachers' Primary Roles in the New Normal: Through the E-Learning Perspective. *International Journal of Innovative Science and Research Technology*, 6(10), 90-91.
- [64]. Tirol, S. L. (2022). Spiral Progression Approach in the K to 12 Science Curriculum: A Literature Review. *International Journal of Education* (*IJE*), 10(4), 29-44. DOI:10.5121/ije.2022.10403
- [65]. Tirol, S., Cortes, S., Tinapay, A., & Samillano, J. (2022). A teacher training program on designing participatory educational action research proposal. Ho Chi Minh City Open University Journal of Science Social Sciences, 12(1), 23-40. https://doi.org/10.46223/hcmcoujs.soci.en.12.1.2214.2022
- [66]. Van Enckevort, G., Harry, K., Morin, P., & Schütze, H. G. (Eds.). (1986). Distance higher education and the adult learner. Heerlen, Netherlands: Dutch Open University.
- [67]. Velicer, W. F. (1976). Determining the number of components from the matrix of partial correlations. Psychometrika, 41(3), 321-327. doi:10.1007/BF02293557
- [68]. Visser, J. A. (2000). Faculty work in developing and teaching web-based distance courses: A case study of time and effort. The American Journal of Distance Education, 14(3), 21-32. doi:10.1080/08923640009527062
- [69]. Wasilik, O., & Bolliger, D. U. (2009). Faculty satisfaction in the online environment: An institutional study. The Internet and Higher Education, 12(3/4), 173-178. doi:10.1016/j.iheduc.2009.05.001
- [70]. Webb, M., & Cox, M. (2004). A review of pedagogy related to information and communications technology. Technology, Pedagogy and Education, 13(3), 235-286. doi:10.1080/14759390400200183
- [71]. Young, S., Cantrell, P. P., & Shaw, D. G. (2001). Online instruction: New roles for teachers and students. Academic Exchange Quarterly, 5(4), 11-16
- [72]. Simsek, I., Kucuk, S., Biber, S. K., & Can, T. (2021). Development of an Online Teaching Competency Scale for University Instructors. Open Praxis, 13(2), 201–212. DOI: http://doi.org/10.5944/openpraxis.13.2.137