**British Journal of Teacher Education and Pedagogy**
ISSN: 2755-1482
DOI: 10.32996/bjtep
Journal Homepage: www.al-kindipublisher.com/index.php/bjtep

BJTEP
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

**| RESEARCH ARTICLE**

# Exploring E-Learning Environment of Senior Secondary School Learners: Basis for Enhancing Online Instruction Materials

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**| ABSTRACT**
This proposed study aimed to explore the e-learning environment of Secondary Senior leaner in an online distance learning set-up. More so, the result of this study will become the basis for creating an online instructional framework for the overall academic performance of learners amidst the new normal education.The research design that was used and utilized in this study was sequential exploratory mixed method design as it focused on the exploration of HUMSS Senior High School learners, particularly with their challenges and coping mechanisms in an e-learning environment – which can be considered as an emergent variable. In a 2012 review of mixed methods, Johnson and Christensen demonstrated that they have useful and valid data using a combination of qualitative and quantitative approaches. Cresswell & Clark (2011) stated that sequential study design produces qualitative data from the initial phase to a greater number of the collected samples from the second phase, based on certain participants. The demographic profile of the learner participants showed that the majority were female. This has implied the view that many female learners were enrolling in the Senior Secondary School since the career pathways in this strand are more on education, communication, social work, and psychology.

**| KEYWORDS**

Learning Management System, E-Learning, Senior High School Students, Enhancing Online Instruction Materials.

**| ARTICLE INFORMATION**

**ACCEPTED:** 15 July 2024 **PUBLISHED:** 13 August 2024 **DOI:** 10.32996/bjtep.2024.3.2.12

## 1. Introduction

The sudden shift of our educational system worldwide due to the occurrence of the coronavirus disease 2019 (COVID-19) has greatly impacted, many of which including China. As an effort to curb the spread of the virus, governments-imposed quarantine protocols and have opted to temporarily shut down the sector of education at all levels. This resulted in more than a billion learners around the globe being affected (Biana et al., 2020).

Despite the pandemic and its complications, preventive measures were taken in the hopes of providing education for all. In China, the flexible model of distance learning was adopted and implemented by the Ministry of Education despite numerous disagreements from parents, learners, and teachers alike (Fernando & Navarosa, 2020).

There are three (3) leading learning modalities that were offered by the said agencies: Modular, Blended, and Pure Online.

According to Malaya (2020), modular distance learning entails individualized instruction that allows learners to use self-learning modules (SLMs) either in print or digital/electronic format. More so, learners can also use other educational resources such as Learner's Manual, learning activity sheets, textbooks, and study guides. The learners can also access the materials by downloading electronic copies through their smart android phones, laptop, computer, or PC.

Blended learning is the combination of online and offline learning instructional delivery with the use of technology. During the online phase of learning, learners with their teachers utilize various educational applications in the teaching-learning process. On the other hand, offline, the learners are provided with their task or lesson, which they can accomplish at their own pace and submit within the deadline. Hereafter, all will be graded and submitted through online processes and procedures (Paramount Direct, 2020).

According to Pacheco (2020), the enormous adjustment of learners from physical face-to- face learning to pure online learning impacts both student learning and the educational institutions through which the learning environment becomes disembodied, transformed into digital and not actual, and there are no longer physical learning spaces such as buildings, gardens, laboratories, instead virtual and websites.

On the other hand, the secretary-general of the Alliance of Concerned Teachers (ACT), Mr. Raymond Basilio said that online synchronous or real-time learning mode may have its specified challenges and complications, but it has the greatest amount of potential to emit true learning among learners given the current situation as it allows teachers to regularly interact with and give feedback towards their learners (Mateo, 2020).

Henceforth, the need for providing a conducive e-learning environment for learners such as learning assessment and teaching strategies in a digital classroom, LMS, and technological equipment (laptops, tablets, or smartphones) arise as these are considered essential tools in the new normal online education being implemented in the China. Fund-raising campaigns and donation drives have been carried out by various organizations to help those who are in calamitous need of gadgets and e-learning tools for their education. A remarkable online campaign dubbed #PisoParaSaLaptop has made way for learners to raise funds to buy their laptops before classes have started (Dino, 2020).

Additionally, educational institutions and universities are utilizing ways to aid their learners, particularly those who lack the e-learning devices needed for their online classes. With the given statements, the importance of having a favourable e-learning environment for distance education is paramount as this can improve the virtual educational experience of learners.

According to National University in the USA (2022), the trend and popularity of digital and virtual education have risen due to the COVID-19 Pandemic. With this, factors such as government support and readiness of various schools, colleges, and universities are the concerns and loopholes in this new kind of educational structure. Some of them were the readiness and challenges of teachers. These may be summarized as follows: (1) time management which shows that 48% of them do not have ample time to produce and create coursework. Also, people thought that online classes were more difficult because having additional tasks such as moderating discussion boards, updating class websites, checking notifications, responding to an increased number of e-mails and messages on Facebook, messenger as well as sharing and uploading educational resources learners will be observed; (2) Delayed and unclear communication which entails that teachers in asynchronous sessions are often structured, and purely objective unlike in a conventional classroom setting: instantaneous and organic.

Furthermore, digital educators do not have the chance and benefit of being able to observe and monitor body language, non-verbal cues, and even snippets of classroom conversations which foster proper feedback and communication on how learners are progressing and feeling. Lastly, technical difficulties such as unstable Wi-Fi connection and/or poor audio quality can greatly decrease the success of learning as it is harder for teachers to respond and understand to their learners' queries and concerns; and (3) Feed backing which is one of the major challenges of online educator due to the lack of synchronous communication and non-verbal cues. Without responding and receiving clear and relevant feedback, learners can become uncertain about their academic performance leading to lower self-esteem, worse teacher-learner communication, and irrelevant education.

Many academic institutions in China are committed to its core values and strategic objectives to provide authentic, quality, and relevant education to all its learners as the 21st century occurs. Further, due to the occurrence of the COVID-19 Pandemic, academic institutions planned and developed a sudden shift of operational and strategic educational plans, one of which was virtual learning. Teachers in general faced various circumstances and challenges with the new educational structure. Due to the generation gap and differences, most generation X teachers were not equipped and advanced relative to utilizing and maximizing various educational tools, applications, and technologies. More so, the topmost concern was the socio-economic status for both teachers and learners where lack of learning spaces, lack of gadgets, poor internet connectivity, and poor knowledge with no background in using modern-day technologies. These, undeniably, will hinder the preparation of the school, teachers, and learners in conducting and implementing online distance learning successfully. As a result, the school managements prepared various campaigns in helping and supporting its employees and learners to overcome these challenges such as financial assistance allowing learners who have extreme monetary difficulties to borrow some gadgets (tablets) coming from the university for one school year.

The Primary Education Schools prepared for the shift of education due to the COVID-19 Pandemic from the conventional face-to-face classroom to digital/virtual classroom. Reviewing, analyzing, and modifying various school forms and resources such as syllabi, learning plans, learning activities, learning competencies, teaching pedagogies – strategies and approaches, and learning environment were some of the basic steps that the department conducted. Moreover, preparing educators to become online instructors is also vital to retool in line with enhancing their skills and capabilities in an online world through webinars, workshops, and write-ups. Meanwhile, the department does not have a general and/or specific (per strand/track) online instructional framework applicable to distance education but instead, e-learning protocols were made for both teachers and learners as to how online distance learning will be facilitated in various institutions. For this, the researcher will create and/or produce an online instructional framework for the Senior Secondary students that will serve as a guiding principle on how and why things should work in a holistic system such as online distance education.

Thus, the researcher emphasized these topics to provide a deeper understanding of online distance education at present given the circumstances brought on by the current pandemic. And, to supply information regarding the challenges encountered in the e-learning environment by the learners that may affect the effectiveness of e-learning and to stress the coping mechanisms of learners in the e-learning environment to know what further developments and improvements may be applied to obtain its full potential in carrying out its purpose about education. Further, the review is structured thematically for better comprehension. Included in the review were works of literature concerning the impact of COVID-19 on the education sector and factors that may be put into consideration by educators and learners concerning online distance education.

To increase the relevance of the results from the key informants/respondents, one must understand the current situation that all learners have been experiencing which is the new normal way of teaching known as "Online Learning." As online distance learning is growing, educational institutions and educators have become more interested in knowing and utilizing what factors influence learners' learning in an online learning environment. This becomes more essential for them when the results of the research studies show the challenges and coping mechanisms of learners to their e-learning environment as well as examine various factors of an e-learning environment that influence learners' overall performance with online distance learning.

## 2. Review of Related Studies

### *2.1 E-Learning Environment*

An E-learning environment in online distance learning is vital to deliver a quality teaching-learning process. Thus, the following related studies offered the factors and significance of the e-learning environment, digital-educational technologies, mobile and online learning, and learning management systems.

According to the study of Nortvig et al. (2017), entitled "A Literature Review of the Factors Influencing E-Learning and Blended Learning in Relation to Learning Outcome, Student Satisfaction and Engagement". E-learning is gaining more and more impact in 21st-century education, especially in the format of distance learning, and this contemporary style of conventional teaching and learning can be practiced in various ways.

According to the study by Choi (2016), entitled "How people learn in an asynchronous online learning environment: The relationships between graduate students' learning strategies and learning satisfaction". In an online environment, learning is mainly dependent on the capacity of the person to guide and control the learning process. Learners are required to set goals in this setting and to adopt effective strategies for successful learning.

Based on the study "The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets" by Di Pietro, et al. (2020) from Europe, the occurrence of COVID-19 does not equally affect learners in every aspect they have tackled. The government abruptly implemented online classes due to the health crisis, and learners with their teachers suffered the consequences as the preparation seems deficient until now. Inequality and discrimination may provide a larger gap between the learners, particularly learners who are migrants, disabled or PWDs, and those who are intellectually challenged. Socioeconomic status may hinder students' learning capacity and capability as technology is not always affordable or available. As time goes by, children and parents may opt for working rather than schooling the children to survive and for the lack of better privileges according to the status quo.

The pandemic ushers in a "new" normal, in which digitalization enforces ways of learning and working. It forces education further into development already well underway. According to Davies (2019), in the research "The Potential of the 'Internet of Things' to Enhance Inquiry in Singapore Schools" various institutions had plans to make greater use of technology in the teaching-learning process, but the outbreak of COVID-19 has meant that changes intended to occur over months or years had to be implemented. Digital technologies are the noticeable face of the immediate changes taking place in society—the commercial society—and schools. The immediate solution to the closure of schools and universities is distance learning, with platforms proliferating and

knowledge downgraded to information to be exchanged. Digital technologies and economic rationality based on performance are significant determinants of the commercialization of learning. Moving from physical face-to-face education to virtual contact (synchronous and asynchronous), the learning space becomes disembodied, virtual, and not actual, impacting both student learning and the organization of schools, which are no longer infrastructures but websites. These transnational initiatives have not only acknowledged traditional school matters but have also shifted the curriculum toward timely and sensible topics dedicated to understanding the emergencies of the day (Spiller, 2017).

In the research study entitled "Diffusion of Innovations Approach to the Evaluation of Learning Management System Usage in an Open Distance Learning Institution" by Mkhize et al. (2019), it was explained that the University of South Africa (Unisa) uses information and

### *2.2 Current Trends in E-Learning*

In recent years, educational technology has advanced at a rapid rate. Once learning experiences are customized, e-learning content becomes richer and more diverse (El-Sabagh & Hamed, 2020; Yang et al., 2013). E-learning produces constructive learning outcomes, as it allows students to actively participate in learning at anytime and anyplace (Chen et al., 2010; Lee et al., 2019). Recently, adaptive e-learning has become an approach that is widely implemented by higher education institutions. The adaptive e-learning environment (ALE) is an emerging research field that deals with the development approach to fulfill students' learning styles by adapting the learning environment within the learning management system "LMS" to change the concept of delivering e-content. Adaptive e-learning is a learning process in which the content is taught or adapted based on the responses of the students' learning styles or preferences. (Normadhi et al., 2019; Oxman & Wong, 2014). By offering customized content, adaptive e-learning environments improve the quality of online learning. The customized environment should be adaptable based on the needs and learning styles of each student in the same course. (Franzoni & Assar, 2009; Kolekar et al., 2017). Adaptive e-learning changes the level of instruction dynamically based on student learning styles and personalizes instruction to enhance or accelerate a student's success. Directing instruction to each student's strengths and content needs can minimize course dropout rates, increase student outcomes and the speed at which they are accomplished. The personalized learning approach focuses on providing an effective, customized, and efficient path of learning so that every student can participate in the learning process (Hussein & Al-Chalabi, 2020). Learning styles, on the other hand, represent an important issue in learning in the twenty-first century, with students expected to participate actively in developing self-understanding as well as their environment engagement. (Klasnja-Milicevic et al., 2011; Nuankaew et al., 2019; Truong, 2016).

In current conventional e-learning environments, instruction has traditionally followed a "one style fits all" approach, which means that all students are exposed to the same learning procedures. This type of learning does not take into account the different learning styles and preferences of students. Currently, the development of e-learning systems has accommodated and supported personalized learning, in which instruction is fitted to a students' individual needs and learning styles (Beldagli & Adiguzel, 2010; Benhamdi et al., 2017; Pashler et al., 2008). Some personalized approaches let students choose content that matches their personality (Hussein & Al-Chalabi, 2020). The delivery of course materials is an important issue of personalized learning. Moreover, designing a well-designed, effective, adaptive e-learning system represents a challenge due to complication of adapting to the different needs of learners (Alshammari, 2016). Regardless of using e-learning claims that shifting to adaptive e-learning environments to be able to reinforce students' engagement. However, a learning environment cannot be considered adaptive if it is not flexible enough to accommodate students' learning styles. (Ennouamani & Mahani, 2017).

On the other hand, while student engagement has become a central issue in learning, it is also an indicator of educational quality and whether active learning occurs in classes. (Lee et al., 2019; Nkomo et al., 2021; Robinson & Hullinger, 2008). Veiga et al. (2014) suggest that there is a need for further research in engagement because assessing students' engagement is a predictor of learning and academic progress. It is important to clarify the distinction between causal factors such as learning environment and outcome factors such as achievement. Accordingly, student engagement is an important research topic because it affects a student's final grade, and course dropout rate (Staikopoulos et al., 2015).

The Umm Al-Qura University strategic plan through common first-year deanship has focused on best practices that increase students' higher-order skills. These skills include communication skills, problem-solving skills, research skills, and creative thinking skills. Although the UQU action plan involves improving these skills through common first-year academic programs, the student's learning skills need to be encouraged and engaged more (Umm Al-Qura University Agency, 2020). As a result of the author's experience, The conventional methods of instruction in the "learning skills" course were observed, in which the content is presented to all students in one style that is dependent on understanding the content regardless of the diversity of their learning styles.

According to some studies (Alshammari & Qtaish, 2019; Lee & Kim, 2012; Shih et al., 2008; Verdú, et al., 2008; Yalcinalp & Avc, 2019), there is little attention paid to the needs and preferences of individual learners, and as a result, all learners are treated

in the same way. More research into the impact of educational technologies on developing skills and performance among different learners is recommended. This "one-style-fits-all" approach implies that all learners are expected to use the same learning style as prescribed by the e-learning environment. Subsequently, a review of the literature revealed that an adaptive e-learning environment can affect learning outcomes to fill the identified gap. In conclusion: Adaptive e-learning environments rely on the learner's preferences and learning style as a reference that supports to create adaptation.

To confirm the above: the author conducted an exploratory study via an open interview that included some questions with a sample of 50 students in the learning skills department of common first-year. Questions asked about the difficulties they face when learning a "learning skills" course, what is the preferred way of course content. Students (88%) agreed that the way students are presented does not differ according to their differences and that they suffer from a lack of personal learning that is compatible with their style of work. Students (82%) agreed that they lack adaptive educational content that helps them to be engaged in the learning process.

### *2.3 Adaptive e-learning environments based on learning styles*

The adaptive e-learning employment in higher education has been slower to evolve, and challenges that led to the slow implementation still exist. The learning management system offers the same tools to all learners, although individual learners need different details based on learning style and preferences. (Beldagli & Adiguzel, 2010; Kolekar et al., 2017). The interactive e-learning environment requisite evaluating the learner's desired learning style, before the course delivery, such as an online quiz or during the course delivery, such as tracking student reactions (DeCapua & Marshall, 2015).

In e-learning environments, adaptation is constructed on a series of well-designed processes to fit the instructional materials. The adaptive e-learning framework attempt to match instructional content to the learners' needs and styles. According to Qazdar et al. (2015), adaptive e-learning (AEL) environments rely on constructing a model of each learner's needs, preferences, and styles. It is well recognized that such adaptive behavior can increase learners' development and performance, thus enriching learning experience quality. (Shi et al., 2013). The following features of adaptive e-learning environments can be identified through diversity, interactivity, adaptability, feedback, performance, and predictability. Although adaptive framework taxonomy and characteristics related to various elements, adaptive learning includes at least three elements: a model of the structure of the content to be learned with detailed learning outcomes (a content model). The student's expertise based on success, as well as a method of interpreting student strengths (a learner model), and a method of matching the instructional materials and how it is delivered in a customized way (an instructional model) (Ali et al., 2019). The number of adaptive e-learning studies has increased over the last few years. Adaptive e-learning is likely to increase at an accelerating pace at all levels of instruction (Hussein & Al-Chalabi, 2020; Oxman & Wong, 2014).

Many studies assured the power of adaptive e-learning in delivering e-content for learners in a way that fitting their needs, and learning styles, which helps improve the process of students' acquisition of knowledge, experiences and develop their higher thinking skills (Ali et al., 2019; Behaz & Djoudi, 2012; Chun-Hui et al., 2017; Daines et al., 2016; Dominic et al., 2015; Mahnane et al., 2013; Vassileva, 2012). Student characteristics of learning style are recognized as an important issue and a vital influence in learning and are frequently used as a foundation to generate personalized learning experiences (Alshammari & Qtaish, 2019; El-Sabagh & Hamed, 2020; Hussein & Al-Chalabi, 2020; Klasnja-Milicevic et al., 2011; Normadhi et al., 2019; Ozyurt & Ozyurt, 2015).

The learning style is a parameter of designing adaptive e-learning environments. Individuals differ in their learning styles when interacting with the content presented to them, as many studies emphasized the relationship between e-learning and learning styles to be motivated in learning situations, consequently improving the learning outcomes (Ali et al., 2019; Alshammari, 2016; Alzain et al., 2018a, b; Liang, 2012; Mahnane et al., 2013; Nainie et al., 2010; Velázquez & Assar, 2009). The word "learning style" refers to the process by which the learner organizes, processes, represents, and combines this information and stores it in his cognitive source, then retrieves the information and experiences in the style that reflects his technique of communicating them. (Fleming & Baume, 2006; Jaleel & Thomas, 2019; Jonassen & Grabowski, 2012; Klasnja-Milicevic et al., 2011; Nuankaew et al., 2019; Pashler et al., 2008; Willingham et al., 2105; Zhang, 2017). The concept of learning style is founded based on the fact that students vary in their styles of receiving knowledge and thought, to help them recognizing and combining information in their mind, as well as acquire experiences and skills. (Naqeeb, 2011). The extensive scholarly literature on learning styles is distributed with few strong experimental findings (Truong, 2016), and a few findings on the effect of adapting instruction to learning style. There are many models of learning styles (Aldosarim et al., 2018; Alzain et al., 2018a, 2018b; Cletus & Eneluwe, 2020; Franzoni & Assar, 2009; Willingham et al., 2015), including the VARK model, which is one of the most well-known models used to classify learning styles. The VARK questionnaire offers better thought about information processing preferences (Johnson, 2009). Fleming and Baume (2006) developed the VARK model, which consists of four students' preferred learning types. The letter "V" represents for visual and means the visual style, while the letter "A" represents for auditory and means the auditory style, and the letter "R/W" represents "write/read", means the reading/writing style, and the letter "K" represents the word "Kinesthetic" and means the practical style.

Moreover, VARK distinguishes the visual category further into graphical and textual or visual and read/write learners (Murphy et al., 2004; Leung, et al., 2014; Willingham et al., 2015).

### *2.4 Online Student Support*

A provision of student support is a necessary element of online student success (Rumble, 2000) that has been recognised in the past (Woodley & Simpson, 2014) and continues to be relevant within the research on student's attrition, retention, and dropout (Rotar, 2020). Different support models offer valuable conceptual frameworks for thinking about the approach to online student support (see Floyd & Casey-Powell, 2004; Ryan, 2004; Simpson, 2008). Ryan (2004) advocated a "centrality of student–student communication for retention and study success" (p. 131). He proposed a logical framework for maintaining support for online learners with a student as a centre of the model and argued that his framework "is best situated within the knowledge of the distance student's lifecycle, from initial interest in distance education as a possible avenue for study, to inquiry at a particular institution, through academic counselling, to study and eventual graduation" (p. 127).

Floyd and Casey-Powell (2004) offered an Inclusive Student Services Process Model (ISSPM) where they summarised characteristics of successful support service and distinguished five phases of the learning cycle where support can be provided. Another model developed by Simpson (2008) advocates the need for proactive rather than reactive support interventions. Simpson's Proactive Motivational Support model (Simpson, 2008) contains motivation and psychology elements and determines a proactive student outreach as an effective support intervention.

The models of online student support evolved since the invention of the Internet. The Internet facilitated the emergence of customised and automated services that can be delivered by computers rather than humans (Brindley, 2014; Dollingeret al., 2020; Walsh et al., 2020). It also enabled an opportunity to include social elements, e.g., online interactions and engagement, into support interventions. As Zawacki-Richter and Anderson (2014) emphasised, "the online world itself affords new tools for communication, knowledge and skill acquisition, and peer and group support that was not available to earlier generations of distance students" (p. 23).

Within the discourse on the affordances of the Internet, Moore and Kearsley (2012) introduced a theory of transactional distance that placed a significant emphasis on the development of an understanding of the very concept of online learner support. A new approach presented online student support as an intervention that intends to decrease a transactional distance between learners, a tutor, and an educational institution and helps the learner develop autonomy.

Whilst offering multiple benefits for providing new forms of student support via advanced technological and pedagogical tools, there has been a criticism of the potentially oppressive nature of online learning environments (Öztok, 2019; Rice et al., 2020). Such criticism resulted in the turn to the humanistic view on online student support, which placed a greater emphasis on personalised learner support. Research on online students' experiences and perceptions also confirmed that embodied humanistic (as opposed to mechanistic) approaches for online learning support are critical for transformative learning experiences (Brown & Wilson, 2016; Sewart, 1993; Stone, 2019; Thorpe, 2002).

The reviewed literature highlights the evolution of support strategies from depersonalised and additional services into the more targeted and tailored to diverse student bodies' needs, emphasises the increasing utilisation of the affordance of the Internet in offering support interventions. As Brindley (2014) states, "support systems for distance learners have become more proactive, more purposeful, and more effective in helping learners succeed in their studies". (p. 305). Furthermore, the literature suggests that the consideration of the stage where support is offered is essential for the support strategy to be effective (Floyd & Casey-Powell, 2004; Ryan, 2004). However, little research has been done to systematically analyse specifically designed for online students support strategies or interventions in relation to the stages where they can be best implemented. By bringing together research on online student support strategies and interventions, this paper aims to generate insights into the development of the embedded support system that incorporates different phases of the learning cycle. In doing so, this paper offers a unique contribution to the research on student support within the field of online education.

### *2.5 Significance of the Study*

**Educational Institutions.** They can be mindful of the challenges of each learner in an e-learning environment and integrate these meaningful insights for future institutional planning and evaluation in their respective schools and campuses.

**School Administrators.** They can use the research study as a basis for initiating and implementing improvement plans for academic and non-academic curriculums; this is for long- term planning specifically for the e-learning environment of learners.

**Teachers.** The findings of this study can aid teachers and facilitators to better understand the challenges experienced by the learners in an e-learning environment, especially those learners who belong to Generation Z; these individuals are highly exposed to technology in the 21st century hence, they are coined as digital savvy respectively; they must be the immediate authority in molding learners holistically.

**Parents.** The study can be of great benefit to the parents of the learners since they should be responsible, and they must be mindful of the conditions of their children, especially in an e- learning environment.

**Students.** The findings of this study can serve as an inspiration for them to endlessly expand their skills because they can become aware of the challenges and coping mechanisms brought about by the e-learning environment experienced by their fellow peers and classmates. More so, the online instructional framework will serve as an aid to improve their academic performance.

**Future Researchers.** This study can serve as one of their references if in case their research topic is related to the e-learning environment of learners. Specifically, the findings of this study can serve as input for related studies and relevant findings of future researchers in case they have a similar topic or if they have variables aligned with this study.

### *2.6 Theoretical Framework*

John Dewey is well known for his principle: "learning by doing." or the so-called Experiential Learning theory. This indicates that a learner will become successful in the learning process through relevant and meaningful experiences. Pragmatism teaching is the highlight of this paradigm wherein education must consider the interaction of learners in their environment at large to become adaptable, malleable, and flexible. It also believes that teaching learners the reality of life through real-world experiences is the best way to help, guide, and support them to develop their full potential holistically and become productive citizens in the global arena (Bredo, 2000).

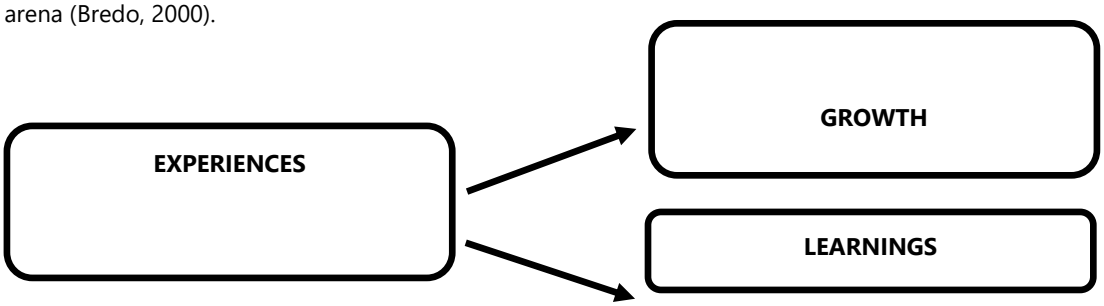


Figure 1. Dewey: Learning Through Experience

Maria Montessori or so-called Montessori Education highlights self-directed method and collaborative play. Learners are free to create, produce, explore as well as discover learning through their styles and strategies as well as through teamwork. Inclusive and liberal are some of the terms that will describe this type of philosophical education. It also tackles exploration and discovery of knowledge of the world through individual and group activities with proper help and guidance of a teacher to cultivate their maximum potential. Creating their learning environment means that they have developed a deeper understanding of the different learning goals and objectives in the various learning areas from academic to co-curricular activities.


**Figure 2. Montessori: The Prepared Environment**

Jean Piaget, his theory of cognitive development pertains that a child faced different stages of brain development particularly it focuses on knowledge (prior and acquire) that will help them to become intelligent and understandable. Furthermore, considering his four stages of mental development will encourage learners to become active in the teaching-learning process. Experimentations, observations, and adaptation to changes are some of the key highlights of this philosophy/theory (Puss, 2004).

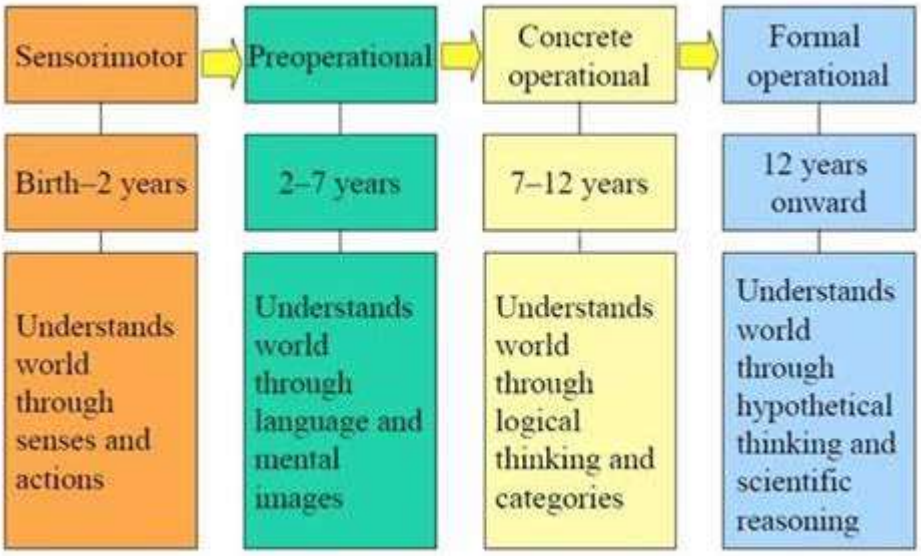


**Figure 3. Piaget: Developmental Growth**

The Constructivism Theory of Jean Piaget states that learners are not passive recipients of knowledge but are more active in the teaching-learning process. Learners build on prior experience to make sense of what they are learning. Learners are more active in the creation of knowledge and meaning. This leads to a more learner-centered approach in which the learner guides his/her learning. Constructivism's essential idea is that human learning is constructed and that learners build new and novel knowledge upon the foundation of previous learning. This prior understanding influences what modified or new knowledge an individual will construct from new learning experiences. Information may be inactively received, but understanding cannot be, for it must come from making meaningful connections between prior knowledge, new knowledge, and the progressions involved in learning.

The Constructivism Theory was conceptualized in the acquisition of insights in the new learning environment which is online or e-learning. This research study assumed that e-learning is more of a learner-centered approach because the goal is to create and produce a meaningful environment that includes collaboration, creativity, critical thinking, and communication. New digital-technological technologies allow for the construction of knowledge through what is a deeper reflection by the learner. Through groups and other learning interactions with their online peers, students acquire deeper understanding and comprehension because of the opportunities for exposure to multiple perspectives and interpretations. The individual learner then assimilates and interprets the new knowledge, embedding it within his or her experience (McLeod, 2019)

### *2.7 Conceptual Framework*

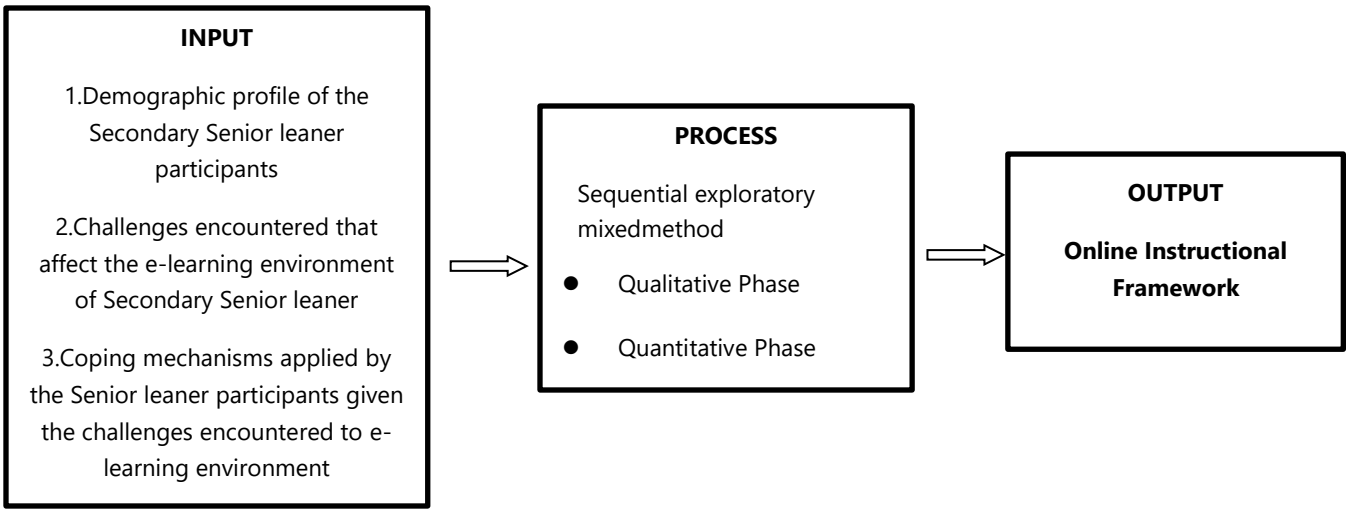


**Figure 1. Conceptual Framework of the Study**

The conceptual framework of the study used was designed to answer the main objective of exploring the e-learning environment of Senior Secondary students participants. More so, the researcher used the -P Model as shown in Figure 4 below. As per Cristobal & Cristobal (2017), the -P model is used in research studies that propose a program and intend to create a framework or any intervention measure.

As illustrated in the paradigm, the first table consisted of the demographic profile of the Secondary Senior student-participants namely: sex, ethnicity, and socio-economic status.

More so, it presented the various challenges encountered by the Secondary Senior student participants in the e-learning environment in terms of self-regulation, teacher instructional delivery, assessments, and modern-day technologies. It also revealed the coping mechanisms applied by the Secondary Senior student participants brought by the e-learning environment.

For the second table, the researcher used a sequential exploratory mixed method for the research paper. This sequential exploratory mixed method was composed of both qualitative and quantitative phases. For the qualitative phase, the development and validation of the interview guide are vital for the collection of data. After this, the researcher proceeded to pilot testing for non-participating learners. Before the collection of the actual data, the key informants were ensured confidentiality and ethical consideration.

For the quantitative phase, the development and validation of survey questions are necessary. Afterwards, the researcher has undergone pilot testing for non-participating learners. Before the collection of the actual data, ethical considerations were given to the respondents.

The next table focused on the data gathering and collection of the profile, challenges, and coping mechanisms of the Secondary Senior student participants using qualitative research that applied thematic analysis through a semi-structured open-ended interview guide and quantitative research which was descriptive statistics through survey questionnaires.

Lastly, the development of an online instructional framework that the school may use to help and assist the Secondary Senior student participants to cope with the challenges of the e- learning environment.

### *2.8 Statement of the Problem*

This proposed study aimed to explore the e-learning environment of Secondary Senior leaner in an online distance learning set-up. More so, the result of this study will become the basis for creating an online instructional framework for the overall academic performance of learners amidst the new normal education.

Specifically, the researcher sought to answer the following questions:

1. What is the profile of the Senior Secondary School leaner participants in terms of the following:
    1.1 Sex; and
    1.2 Socio-economic status?
2. What are the challenges encountered that affect the e-learning environment of Senior Secondary School learner participants in terms of:
    2.1 Self-regulation;
    2.2 Teacher instructional delivery;
    2.3 Assessments; and
    2.4 Modern-day technologies;
        A. Hardware;
        B. Learning Management Systems;
        C. Technological tools and applications; and
        D. Internet?
3. What are the coping mechanisms employed by the Senior Secondary School leaners in coping with the challenges encountered in an e-learning environment?
4. What online instructional framework may be developed to help Senior Secondary School leaners cope with the challenges of an e-learning environment?

**3. Definition of Terms**

The following terms are operationally defined related to the researcher's study as follows:

**Assessments.** refers to the wide variety of methods or tools that educators use to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, or educational needs of students.

**eLearning environment.** can include various forms of electronically supported learning and teaching, such as online courses, degrees, programs, films, and presentations

**Hardware.** use of machines and other mechanical devices in the process of education.

**Internet.** This is an information exchange, communication, and the creation of knowledge.

**Learning Management Systems.** is a software application or web-based technology that is used to create, distribute, manage, and assess educational content, courses, programs, or materials

**Modern-Day Technologies.** [1]online learning, social networking, interactive whiteboards, podcasting, class blogs and wikis, and mobile devices. [2]provides benefits such as collaboration, communication, organization, efficiency, virtual experiences, additional support and more.

**Self-regulation.** allows students to sustain attention and motivation during lessons, switch focus between tasks and follow instructions.

**Senior Secondary School Learner.** refers to the later part of secondary education, from approximately age 15 to age 18, and includes eleventh and twelfth grade, and sometimes also tenth grade

**Sex.** In this study, it refers to either male or female senior secondary education teachers as respondents of the research

**Socio-Economic Status.** is relevant for educational policymaking, research, practice, and advocacy, as it can shape and predict academic outcomes and educational inequalities. [2]is a concept that includes income, education, occupation, and social class

**Teacher instructional Delivery.** Instructional competencies are essential practices that teachers must master for effectively instructing students to maximize knowledge and skill acquisition.

**Technological Tools and Applications.** It describes using technology tools for teaching and facilitating the learning process. For example, an online school could develop an active learning application to help students practice their knowledge instead of memorizing information.

### *3.1 Scope and Delimitation of the Study*

This study was focused on the participants' profiles, challenges encountered, and the coping mechanisms of Senior Secondary School leaners in dealing with the e-learning environment in online distance learning for the School Year 2022 – 2023.

The experiences were restricted to four (4) key areas of the e-learning environment namely: self-regulation, teacher instructional delivery, assessments, and modern-day technologies.

The data that have analyzed were limited due to the comprehension and perspective of the sole researcher. Since there is only one researcher, comprehension of the extent of the analysis about the different challenges and e-learning environment was limited to the spectrum of the researcher.

## 4. Methodology of the Study

The research design that was used and utilized in this study was sequential exploratory mixed method design as it focused on the exploration of HUMSS Senior High School learners, particularly with their challenges and coping mechanisms in an e-learning environment – which can be considered as an emergent variable. In a 2012 review of mixed methods, Johnson and Christensen demonstrated that they have useful and valid data using a combination of qualitative and quantitative approaches. Cresswell & Clark (2011) stated that sequential study design produces qualitative data from the initial phase to a greater number of the collected samples from the second phase, based on certain participants.

Because of this, the purpose of this design was to expand insights and information that can be used by future researchers. Hence, the researcher used this method in the research study to determine the challenges and coping mechanisms of the Senior Secondary School learner participants to their e-learning environment. Moreover, it served as evidence for further improvement to online instructions.

### *4.1 Data Gathering Procedure*

The researcher will utilize the survey methodology to gather data, wherein participants will complete the survey questionnaire through online forms. The survey questionnaire will be disseminated to the Senior High School Teachers within a span of two (2) weeks. Utilizing data gathered from appropriate literature and other pertinent sources will support the research assertion. Respondents who consent to partake in the survey will not undergo interviews if the collected data demonstrates adequate coherence for analysis.

Data collection will be conducted using the following procedures:

1. The survey questionnaire will be sent to a group of specialists for the purpose of validating the research instrument.
2. The research instrument will be submitted to the Graduate School Office for permission for the dissemination of the survey questionnaire.
3. A formal request letter will be written to the Human Resource Manager of the chosen vocational schools in China, seeking permission to gather data. The letter will also clarify that there is no conflict of interest between the parties involved in conducting the research.
4. Once the human resources manager gives consent, the researcher will distribute the questionnaires to the respondents via online forms. The researcher will elucidate the strict adherence to the Data Privacy Act of 2012 in regards to maintaining the confidentiality of the information collected from the respondents.
5. The researcher will verify whether all the items will be completed for the implementation of the study following a ten- to fifteen-minute period of response from the participants in order to prevent any undue stress on their behalf.
6. The researcher will ensure that a duplicate of the result will be given to the study location.

### *4.2 Data Processing and Statistical Treatment*

In order to present, organize, analyze and interpret the data gathered with accuracy and scientifically, the following statistical tools were utilized: frequency counts, percentage, weighted mean, simple ranking, arithmetic mean, verbal description and verbal interpretation, and arbitrary set of five (5) point evaluation scale.

**Frequency Count and Percentage.** These two were utilized to present the profile of the respondents when classified according to age, gender, civil status, religion, educational attainment, monthly income and teaching experience.

**Weighted Mean.** This was used to determine the teacher‟s health profile preference given the formula:

$$WM = \frac{\sum wf}{N}$$

Where: WM: Weighted Mean w : weight
f : frequency
N : number of cases

Obtained weighted mean were interpreted based on the standard scale with referenced verbal interpretations specifically used in the study.

### *4.3 Presentation, Analysis, and Interpretation of Data*

#### *4.3.1 Demographic Profile of the Qualitative Participants*

**Table 4**
**Distribution of participants in terms of sex**

| **Sex** | Frequency | Percent |
|---|---|---|
| Male | 4 | 26.67% |
| Female | 11 | 73.33% |
| **Total** | **15** | **100%** |

Table 4 described the demographic profile of the qualitative participants in terms of sex. As seen in the table, majority of the participants were female while only 26.67% of the participants were male.

**Table 5**
**Distribution of participants in terms of socio-economic status**

| **Socio-economic status** | Frequency | Percent |
|---|---|---|
| Below 10,957 | 0 | 0.00% |
| 10,957-21,914 | 5 | 33.33% |
| 21,914-43,828 | 4 | 26.67% |
| 43,828-76,669 | 3 | 20.00% |
| 76,669-219,140 | 2 | 13.33% |
| 219,140 and above | 1 | 6.67% |
| **Total** | **15** | **100%** |

Table 5 reflected the participants' socio-economic status. As shown in the table, 5 (33.33%) participants were in the bracket 10,957-21,914, while 4 (26.67%) participants were in the bracket 21,914-43,828, 3 (20.00%) participants were in the bracket 43,828-76,669, 2 (13.33%) participants were in the bracket 76,669-219,140, 1 (6.67%) participant was in the bracket 219,140 and above, no participants were in the bracket below 10,957.

#### *4.3.2 Challenges encountered to e-learning environment*

**Table 6**
**Challenges encountered by the Senior Secondary School Learners**

| **THEME** | **SUB-THEMES** |
|---|---|
| **Self-management and control barriers** | Time Management |
| | Adaptation to new school culture |
| | Socialization crisis |

The following sub-themes from the theme about self-management and control barriers highlighted Senior Secondary School learners' challenges: time management; adaptation to new school culture; and socialization crisis. The Senior Secondary School learners encountered this kind of self-regulation struggle amidst online distance learning during the School Year 2022 – 2023.

**Table 7**
**Challenges faced by the Senior Secondary School learner in terms of teacher instructional delivery**

| THEME | SUB-THEMES |
|---|---|
| **Teachers' actions as hindrance to learning** | 1. Learners' engagement and interaction |
| | 2. Teachers' professionalism towards online learning instructions, delivery, and pedagogy |
| | 3. Feedbacking to learners' works and outputs |

The following sub-themes from the theme about teachers' actions as hindrance to learning highlighted Senior Secondary School learners' responses: learners' engagement and interaction; teachers' professionalism towards online learning instructions, delivery, and pedagogy; and feedback to learners' works and outputs. The Senior Secondary School learners encountered this kind of teacher instructional delivery struggle amidst online distance learning during the School Year 2022 – 2023.

**Table 8**
**Challenges faced by the Senior Secondary School learners S.Y. 2022-2023 in terms of assessments**

| THEME | SUB-THEMES |
|---|---|
| **Problems of group-based online learning** | 1. Collaborative and cooperative learning-based activities |

The following sub-themes from the theme about the problems of group-based online learning faced by the Senior Secondary School learners were the following: collaborative and cooperative learning-based activities. The Senior Secondary School learners encountered this kind of assessment struggle amidst online distance learning during the School Year 2022 – 2023.

**Table 9**
**Challenges faced by the Senior Secondary School learners S.Y. 2022-2023 in terms of modern-day technologies**

| THEME | SUB-THEMES |
|---|---|
| **Facing technological shortcomings** | Malfunctions of hardware technologies |
| | Outmoded Technologies |
| | LMS connection and internal service errors |
| | Too many available LMS for e- teaching and learning processes |
| | Technical glitching and lagging issues |
| | Time limit and ranking system features |
| | Discomfort with utilization of various video conferencing applications |
| | Unsteady Wi-Fi connectivity |
| | Mobile data lagging issues |

The following sub-themes of the theme about the technological shortcomings faced by the Senior Secondary School learners attested the following: malfunctions of hardware technologies; outmoded devices; LMS connection and internal service errors; too many available LMS for e-teaching and learning processes; technical glitching and lagging issues; time limit and ranking system features; discomfort with the utilization of various video conferencing applications; unsteady Wi-Fi connectivity; and mobile data lagging issues. The Senior Secondary School learners encountered these kinds of modern-day technologies struggles amidst online distance learning during the School Year 2021 – 2022.

### *4.3.3 Coping mechanisms applied to e-learning environment*

**Table 10**
**Coping mechanisms applied by the Senior Secondary School learners S.Y. 2022-2023 regarding the challenges encountered to e-learning environment**

| THEME | SUB-THEMES |
|---|---|
| **Implementation of effective coping mechanisms used by the SHS learners** | To-do lists / write-away strategies |
| | Family Support |
| | Accountability partner/buddy |
| | Self-motivation and open-mindedness |
| | Relaxation and recreation |
| | Self-discipline and goal-driven |

The following sub-themes of the theme about the coping mechanisms applied by the Senior Secondary School learners concerning the challenges encountered in e-learning environments affirmed the following: to-do lists / write-away strategies; family support; accountability partner/buddy; self-motivation and open-mindedness; relaxation and recreation; and self-discipline and goal-driven. The Senior Secondary School learners applied and implemented these kinds of coping mechanisms/strategies amidst online distance learning during the School Year 2022 – 2023.

**Table 11**
**Best coping mechanisms applied by the Senior Secondary School learners S.Y. 2022-2023 concerning to the challenges encountered to e-learning environment**

| THEME | SUB-THEMES |
|---|---|
| **Effective self-planning** | Calendar Method |
| | Adaptation to new education |
| | Planning and organizing |
| | Relaxing and self-motivation |

The following sub-themes of the theme about the best coping mechanisms applied by the Senior Secondary School learners concerning to the challenges encountered to e-learning environment were the following: calendar method; adaptation to new normal education; planning and organizing; and relaxation and self-motivation. The Senior Secondary School learners applied and implemented these kinds of coping mechanisms/strategies amidst online distance learning during the School Year 2022 – 2023.

### *4.3.4 Demographic Profile of the Quantitative Participants*

**Table 12**
**Distribution of participants in terms of sex**

| **Sex** | Frequency | Percent |
|---|---|---|
| Male | 5 | 16.67% |
| Female | 25 | 83.33% |
| **Total** | **30** | **100%** |

Table 12 described the demographic profile of the quantitative participants in terms of sex.

As observed in the table, majority of the participants were female while only 16.67% of the participants were male.

**Table 13**
**Distribution of participants in terms of socio-economic status**

| Socio-economic status | Frequency | Percentage |
|---|---|---|
| Below 10,957 | 2 | 6.67% |
| 10,957-21,914 | 11 | 36.67% |

| | | |
|---|---|---|
| 21,914-43,828 | 8 | 26.67% |
| 43,828-76,669 | 3 | 10.00% |
| 76,669-219,140 | 4 | 13.33% |
| 219,140 and above | 2 | 6.67% |
| **Total** | **30** | **100%** |

Table 13 reflected the interview participants' socio-economic status. As shown in the table, 11 (36.67%) participants were in the bracket 10,957-21,914, while 8 (26.67%) participants were in the bracket 21,914-43,828, 4 (13.33%) participants were in the bracket 76,669-219,140, 3 (10.00%) participants were in the bracket 43,828- 76,669, 2 (6.67%) participants each for both below 10,957 and 219,140 and above.

**Table 14**
**Responses of the participants about the challenges encountered in self-regulation.**

| Indicators | Mean Scores | Verbal Interpretation |
|---|---|---|
| 1. I did not achieve the objectives that I set for my learning. | 2.47 | Disagree |
| 2. I cannot concentrate when having online classes compared to traditional classes. | 2.97 | Neutral |
| 3. I have limited preparation before an online class. | 3.00 | Neutral |
| 4. I have poor time management skills during online classes. | 2.80 | Neutral |
| 5. I feel emotionally disconnected or isolated during online classes. | 3.40 | Agree |
| 6. I feel disinterested during an online class. | 2.73 | Neutral |
| 7. I experience financial challenges when purchasing and accessing e-learning resources. | 2.43 | Disagree |
| **General Weighted Mean** | **2.83** | **Neutral** |

Table 14 showed the responses of the participants about the challenges encountered in self-regulation. As can be seen in the table, the participants answered neutrally to the listed statement of challenges. This was proved by the 2.83 general weighted mean. The 5th statement, "**I feel emotionally disconnected or isolated during online classes."** garnered the highest mean of 3.40 (agree). On the other hand, the 7th statement, **"I experience financial challenges when purchasing and accessing e-learning resources."** garnered the lowest mean of 2.43 (disagree).

**Table 15**
**Emerging challenges encountered by the participants concerning teacher instructional delivery**

| Indicators | Mean Scores | Verbal Interpretation |
|---|---|---|
| 1. My teachers do not use methodologies that actively engage learners through the learning process. | 1.83 | Disagree |
| 2. My teachers do not employ real-life examples during the online discussion as well as formulated explanations that allow me to appreciate the relevance of the subject taught. | 1.53 | StronglyDisagree |
| 3. My teachers are not approachable when I have questions, concerns, and issues. | 1.80 | Disagree |
| 4. My teachers do not portray professionalism. | 1.57 | Strongly Disagree |

| | | |
|---|---|---|
| 5. My teachers' level of knowledge does not contribute to my learning. | 1.43 | StronglyDisagree |
| **General Weighted Mean** | **1.63** | **Strongly Disagree** |

Table 15 displayed the responses of the participants concerning to the challenges encountered in teacher instructional delivery. As can be seen in the table, the participants answered strongly disagreed with the listed statement of challenges. This was proved by the 1.63 general weighted mean. The 1st statement, **"My teachers do not use methodologies that actively engage learners through the learning process."** garnered the highest mean of 1.83 (disagree). On the other hand, the 5th statement, **"My teachers' level of knowledge does not contribute to my learning."** garnered the lowest mean of 1.43 (strongly disagree).

**Table 16**
**Emerging challenges encountered by the participants concerning assessments.**

| Indicators | Mean Scores | Verbal Interpretation |
|---|---|---|
| 1. The learning assessments for each part of the lesson were notclear, precise, and specific. | 1.93 | Disagree |
| 2. The required activities, quizzes, and projects inaccurately measured my attainment of the learning outcomes. | 2.33 | Disagree |
| 3. The time frame provided to finish the learning assessments is not enough. | 2.77 | Neutral |
| 4. The learning assessments for student-to-student interaction are not articulate in the course subject. | 2.27 | Disagree |
| 5. Instructional materials used in the learning assessments do not contribute to my learning. | 1.73 | Strongly Disagree |
| 6. The learning assessments given are challenging in an e-learning environment. | 3.13 | Neutral |
| **General Weighted Mean** | **2.36** | **Disagree** |

Table 16 labeled the responses of the participants about their challenges encountered on assessments. As can be seen in the table, the participants answered disagreed with the listed statement of challenges. This was proved by the 2.36 general weighted mean. The 6th statement "The learning assessments given are challenging in an e-learning environment." garnered the highest mean of 3.13 (neutral). On the other hand, the 5th statement "Instructional materials used in the learning assessments do not contribute to my learning." garnered the lowest mean of 1.73 (strongly disagree).

**Table 17**
**Emerging challenges encountered by the participants concerning modern-day technologies**

| | Indicators | Mean Scores | Verbal Interpretation |
|---|---|---|---|
| **T** | 1. I do not have enough necessary technological tools and equipment that I can use for e-learning. | 1.57 | StronglyDisagree |
| **H** | 2. I am not satisfied with the opportunities to use hardware technologies provided by the institution. | 2.20 | Disagree |
| **L** | 3. I have not received help or assistance with problems related to my LMS accounts. | 1.63 | Strongly Disagree |
| **L** | 4. The institutions' Learning Management Systems do not work properly. | 2.03 | Disagree |

| | | | |
|---|---|---|---|
| **L** | 5. I have difficulties understanding or navigating new Learning Management Systems. | 2.10 | Disagree |
| **H** | 6. I experience disparities concerning access to and use of modern-day technologies (hardware) during online classes due to unstable socioeconomic and physical conditions. | 2.60 | Neutral |
| **H** | 7. I have outdated hardware technologies. | 2.03 | Disagree |
| **I** | 8. I experience technical difficulties in completing my learning tasks and assignments due to the unstable Wi-Fi connection. | 3.33 | Neutral |
| **T** | 9. I have insufficient access to e-library resources | 3.10 | Neutral |
| **T** | 10. I have limited access to learning modules, e-worksheet, and learning packets for my learning. | 2.20 | Disagree |
| **I** | 11. I have an unstable Wi-Fi internet connection at home. | 2.93 | Neutral |
| **I** | 12. I do not have Internet access during online classes. | 1.43 | Strongly Disagree |
| **General Weighted Mean** | | **2.26** | **Disagree** |

*Legends:*
*H-Hardware* *L-Learning Management Systems*
*T-Technological Tools and Application* *I-Internet*

Table 17 revealed the responses of the participants in relation to the challenges encountered with modern-day technologies. As can be seen in the table, the participants answered disagreed with the listed statement of challenges. This was proved by the 2.26 general weighted mean. The 8th statement **"I experience technical difficulties in completing my learning tasks and assignments due to the unstable Wi-Fi connection."** garnered the highestmean of 3.33 (neutral). On the other hand, the 12th statement **". I do not have Internet access during online classes."** garnered the lowest mean of 1.43 (strongly disagree).

**Table 18**
**Coping mechanisms applied by the participants concerning e-learning environment(learner factors)**

| Learners Factors | Frequency | Percentage |
|---|---|---|
| Adaptation and Innovation | 18 | 9.09% |
| Concentration and Focus | 24 | 12.12% |
| Goal Setting | 23 | 11.62% |
| Motivation | 23 | 11.62% |
| Optimism | 12 | 6.06% |
| Peer learning and support | 12 | 6.06% |
| Family Support. | 10 | 5.05% |
| Psychological Support | 8 | 4.04% |
| Reflection, relaxation and recreation | 23 | 11.62% |
| Self-discipline | 22 | 11.11% |
| Time Management | 21 | 10.61% |
| Others | 2 | 1.01% |
| **Total** | **198** | **100.00%** |

Reflected in table 18 were the coping mechanisms applied by the participants concerning the e-learning environment (learner factors). As can be seen in the table, concentration and focus garnered the highest frequency of 24 (12.12%). On the other hand, other answers, such as philosophical belief support, garnered the lowest frequency of 2 (1.01%).

**Table 19**
**Coping mechanisms applied by the participants concerning e-learning environment(teacher factors)**

| Learners Factors | Frequency | Percentage |
|---|---|---|
| Adaptation and Innovation | 17 | 10.76% |
| Concentration and Focus | 18 | 11.39% |
| Goal Setting | 13 | 8.23% |
| Motivation | 16 | 10.13% |
| Optimism | 10 | 6.33% |
| Peer learning and support | 15 | 9.49% |
| Family Support. | 9 | 5.70% |
| Psychological Support | 10 | 6.33% |
| Reflection, relaxation and recreation | 13 | 8.23% |
| Self-discipline | 19 | 12.03% |
| Time Management | 18 | 11.39% |
| Others | 0 | 0.00% |
| **Total** | **198** | **100.00%** |

Reflected in table 19 were the coping mechanisms applied by the participants concerningthe e-learning environment (teacher factors). As can be seen in the table, **self-discipline** garneredthe highest frequency of 19 (12.03%). On the other hand, **family support** garnered the lowest frequency of 9 (5.70%). More so, 0 (0.00%) for other answers.

**Table 20**
**Coping mechanisms applied by the participants concerning e-learning environment(technological factors)**

| Learners Factors | Frequency | Percentage |
|---|---|---|
| Adaptation and Innovation | 20 | 15.27% |
| Concentration and Focus | 13 | 9.92% |
| Goal Setting | 7 | 5.34% |
| Motivation | 9 | 6.87% |
| Optimism | 10 | 7.63% |
| Peer learning and support | 12 | 9.16% |
| Family Support. | 17 | 12.98% |
| Psychological Support | 4 | 3.05% |
| Reflection, relaxation and recreation | 11 | 8.40% |
| Self-discipline | 12 | 9.16% |
| Time Management | 16 | 12.21% |
| Others | 0 | 0.00% |
| **Total** | **198** | **100.00%** |

Reflected in table 20 were the coping mechanisms applied by the participants concerning the e-learning environment (technological factors). As can be seen in the table, adaptation and innovation garnered the highest frequency of 20 (15.27%). On the other hand, psychological support garnered the lowest frequency of 4 (3.05%). More so, 0 (0.00%) for other answers.

## 5. Summary of Findings, Conclusions and Recommendations

### *5.1 Summary of Findings*

The data gathered in this research study were evaluated, transcribed, and coded to facilitate qualitative as well as quantitative data analysis. Based on the consolidated results of the study, six main themes were acquired in identifying and analyzing how the Senior Secondary School learners faced the different challenges as well as applied various coping mechanisms about their e-learning environment during the S.Y. 2022 – 2023.

### *5.2 Demographic Profile of the Participants*

Based on the results, 83.33% of the participants were female. The remaining participants were male (16.67%). For the socio-economic status of the participants, 11 (36.67%) participants were in the bracket 10,957-21,914, while 8 (26.67%) participants were

in the bracket 21,914-43,828, 4 (13.33%) participants were in the bracket 76,669-219,140, 3 (10.00%) participants were in the bracket 43,828-76,669, 2 (6.67%) participants each for both below 10,957 and 219,140 and above.

### *5.3 Challenges encountered to e-learning environment (Self-regulation)*

There were difficulties and shortcomings encountered by the Senior Secondary School learners during the S.Y. 2022 – 2023 concerning self- regulation in their e-learning environment such as time management, adaptation to new school culture, and socialization crisis.

The implication was that the Senior Secondary School learners were facing self-management and control barriers during the School Year 2022– 2023.

### *5.4 Challenges encountered to e-learning environment (Teacher instructional delivery)*

Furthermore, there were challenges faced by the Senior Secondary School learners in terms of teacher instructional delivery such as learners' engagement and interaction; teachers' professionalism towards online learning instructions, delivery, and pedagogy; and feedback to learners' works and outputs.

It is also evident that majority of the participants had limited preparation before an online class started because they were emotionally alienated or isolated amidst online distance learning as reflected in the quantitative results.

The findings have implied the truth that there were teachers' actions, pedagogy, and delivery that hindered successful learning, to be more specific, engagement and interaction during the synchronous period; teachers' professionalism in terms of the deadline of activities; time limit during online discussion; and approach to learners in need. More so, feedback on the learners' outputs was also lacking brought to the new mode of education which was online distance learning which the school implemented during the S.Y. 2022 – 2023.

Teachers' professionalism toward online learning instruction and delivery were some of the considerations that need to be contemplated. Although the overall interpretation in the quantitative analysis about this aspect has disagreed, it might be a good start for teachers to create an e-classroom that is more engaging, conducive, and positive space.

These findings affirmed the explanation of Gayton and McEwen (2007) when teacher-to- learner engagement is not evident, learning would be boring and irrelevant, especially in online distance learning. Using various communication channels is important for a learner to engage in the subject course.

Joughin (2010) explained the reason for the notion that in a virtual learning space, teachers are experiencing challenges in transporting their intentions accurately and providing relevant/appropriate feedback to assist learners in achieving the learning standards and outcomes.

### *5.5 Challenges encountered to e-learning environment (Assessments)*

Moreover, in terms of assessments, problems with collaborative and cooperative learning-based activities were evident to have been faced by the Senior Secondary School learners during the S.Y. 2022 – 2023.

For this, problems with group-based online learning were highlighted. This has implied the notion that there were considered shortcomings and challenges faced by the Senior Secondary School learners for the School Year 2022 – 2023 on collaborative learning-based tasks which involve video production, group work, and cooperative activities.

Participants' responses highlighted the overall challenges concerning learning assessments in their e-learning environment which ironically the results were problems with group and collaborative online activities that had helped them to foster social and interpersonal skills, but still, they felt isolated and emotionally detached concerning their online distance education journey.

These findings were in support of Hannafin et al. (2013) who noted that web-based activities render difficulty in the aspect of observational and participatory assessments due to the absence of face-to-face interaction.

### *5.6 Challenges encountered in e-learning environment (Modern-day technologies - Hardware)*

Other results in the research study showed that in terms of modern-day technologies, Senior Secondary School learners encountered challenges and struggles, to be more specific, hardware technologies; learning management systems; technological tools and applications; and the internet.

Overall, in terms of hardware technologies, there were two major circumstances faced by the learners such as malfunctions of hardware technologies and outmoded devices.

The findings have implied the notion that the learners of Senior Secondary School during the S.Y. 2022 – 2023 faced challenges regarding their outdated hardware technologies and equipment as well as malfunctioning technologies during virtual learning sessions.

Participants experienced social inequalities and physical differences in utilization and access to hardware technologies during online distance learning. It is noticeable that some of them have outdated/old model devices for online learning as well as encountered malfunctioning devices with which they felt frustrated.

These findings affirmed the analysis of Ibrrahim et al., (2016) that with the absence of appropriate and updated equipment as well as easy access to it, the implementation of e-learning will be difficult and not manageable. More so, it can be observed that hardware technologies are considered a vital factor among the technological aspects of the e-learning environment which determine the overall readiness of individuals to adopt new normal education by having available hardware technologies to successfully carry out learning.

***5.7 Challenges encountered to e-learning environment (Modern-day technologies - LMS***

Statements from the results said that the learners from the Senior Secondary School learners encountered and faced some challenges as well as difficulties in terms of learning management systems such as LMS connection and internal service errors and too many available LMS for the teaching-learning process.)

In the aspects of learning management systems, there were struggles and shortcomings when referring to internal service errors of some LMS that the Senior Secondary School learners utilized. Senior Secondary School learners found it more difficult and frustrating when there were multiple LMS used in classes. As a result, they found this time-consuming and stressful which hindered them to work efficiently and productively.

The quantitative results reflected that the majority of the participants disagreed concerning their difficulties in navigating as well as understanding new learning management systems. This means that the interpretation from qualitative analysis signified that since the respondents were digital natives, they only felt frustration and they thought that it is non-essential to use three (3) LMSs in their e- learning environment. It does not mean they cannot utilize and know how to use them but because it was time-consuming and resulting mismanagement and confusion.

As specified by Sharma (2015), Learning Management Systems (LMS) are used to help learners to access various educational courses. It also aims to improve and increase learning delivery in online education. It is used for overall intellectual development and skills.

In contrast, according to D'Angelo (2018), using different digital platforms and tools, such as LMS, can create confusion, increase failures in terms of completing tasks, and be time- consuming in exploring their technical features.

***5.8 Challenges encountered to e-learning environment (Modern-day technologies – Technological tools and application)***

On the other hand, in the aspect of technological tools and applications, Senior Secondary School learners encountered some challenges and shortcomings concerning their e- learning environment in an online set-up such as technical glitching and lagging issues; time limit and ranking system feature; and discomfort with the utilization of various video- conferencing application.

In general, the Senior Secondary School learners during the School Year 2022-2023 experienced technical and lagging issues on their video-conferencing applications (Zoom, MS Teams, Google Meet) same with online quiz/interactive games applications (Kahoot, Mentimeter, Quizlet). More so, discomfort concerning the utilization of different video conferencing applications was also evident wherein the learners need more file space and high- end gadgets to accommodate all applications. Also, ranking system features and time limits gave the learners frustration and low self-esteem that eradicating the purpose of the applications which is to provide meaningful learning experiences.

It is also reflected that participants encountered disparities in socioeconomic and physical conditions concerning hardware technologies. Insufficient access to e-library resources might be a factor in their e-learning environment. This will be an essential point on why they might have limited knowledge and access to various e-library resources of Senior Secondary School. Technical glitching, lagging issues, and discomfort with the utilization of various applications were the possible and valid reasons why they might not use the e-library resources of the school and chose google scholar as the top search engine app in the world.

These findings affirmed the explanation of Demir and Akpinar (2018) that learning with the use of mobile applications, tools, and resources could improve the intellectual attainment and attitude of learners, however, accessibility, not easy navigating, and technical problems are still hindrances for learners to achieve the importance and goal of using technological tools and application.

***5.9 Challenges encountered in e-learning environment (Modern-day technologies – Internet)***

In terms of the internet, the Senior Secondary School learners faced some difficulties and struggles in their e-learning environment during the School Year 2022 – 2023 such as unsteady Wi-Fi connectivity and mobile data lagging issues.

With this, the learners of Senior Secondary School during the School Year 2022-2023 experienced unstable Wi-Fi connection and mobile data lagging issues and concerns during their distance education. It disrupted and delayed learning. As a result, they have not felt like catching up with the lessons and other updates in each subject area likewise left out because of the slow to no Wi-Fi connection at home and/or in the community during online discussions.

Instability and technical shortcomings concerning the Wi-Fi internet were major factors to the participants resulting in inefficiency concerning their submission of learning activities on time likewise in their projects and performance tasks.

These findings affirmed the analysis of Schumacher and Kent (2020) that in China, 86% of learners nationwide use the Internet amidst new normal education, on the other hand, 61% strongly agreed that they experienced unstable internet connection whereas there were some, while having online classes utilized various websites to answer their modules.

To generalize, the Senior Secondary School learners faced technological shortcomings in hardware technologies, learning management systems, technological tools and applications, and the internet. These have impeded the quality of education amidst online distance learning.

***5.10 Coping mechanisms applied to the e-learning environment***

The aspect of coping mechanisms applied by the Senior Secondary School learners S.Y. 2022-2023 were as follows: to-do lists/write- away strategies; family support; accountability partner/buddy; self-motivation and open- mindedness; relaxation and recreation; and self-discipline and goal-driven.

For this, the Senior Secondary School learners applied various coping mechanisms to their e-learning environment brought by the challenges they encountered in a virtual learning space. These are to-do lists which pertain to lists of daily, weekly, or monthly activities; family assistance and support; accountability buddy which symbolizes peer support; self-motivation and open-mindedness to adapt and/or respond to the changes in society; recreation and relaxation to maintain work-life/study-life balance; and goal- oriented as well as self-discipline.

With this, the importance of implementing effective coping mechanisms for Senior Secondary School learners helps them to survive and cope with the circumstances and struggles they faced during the School Year 2022-2023 in their e-learning environment in online education.

The Senior Secondary School learners used and applied some best coping mechanismsthat they used in the School Year 2022-2023 regarding the challenges encountered in their e- learning environment such as calendar method; adaptation to new normal education; planning and organizing; and relaxation and self-motivation.

The top three (3) most frequently identified coping mechanisms (learner factors) of the participants about the e-learning environment during the School Year 2022-2023 were (1) concentration and focus; (2) goal setting; (3) motivation; and (4) reflection, relaxation, and recreation. These findings affirmed one of the identified coping mechanisms of Choi (2016) that learning is primarily dependent on the capacity of the person to control and guide the learning process in distance education. More so, learners are required to set goals in this setting and to adopt effective strategies for successful learning.

Wandler & Imbriale (2017) found that self-regulated learning thus plays an essential role in the context of online education to make learning happen.

The top three (3) most frequently identified coping mechanisms (teacher factors) of the participants regarding the e-learning environment during the School Year 2021-2022 were (1) self-discipline; (2) concentration and focus; and (3) time management. These findings affirmed one of the identified coping mechanisms of Barrette (2011), that innovations and changes concerning teaching methods and strategies in each discipline will help the learners to foster self- efficiency. It also helps educators to expose themselves to macro learning demands and expectations given the growing needs of today's new normal education.

Furthermore, there should also be an efficient, positive, and smart application of teaching strategies to the adaptation of learners and professionals amidst distance learning (Vegas and Winthrop, 2020).

The top three (3) most frequently identified coping mechanisms (assessment factors) of the respondents concerning the e-learning environment during the School Year 2022-2023 were (1) concentration and focus; (2) goal setting; and (3) time management. These findings affirmed one of the identified coping mechanisms of Aziz et al., (2012) that the use of appropriate learning assessments for both objective and subjective types will ensure that the information is transmitted to learners efficiently, effectively, and significantly. Group-based learning is one of the methods of design that can create relevant learning if they are well-designed and not time- consuming the activities can be more influential and powerful.

Moreover, Martin and Bolliger (2018) explained that giving learners an appropriate time frame for creating and producing learning assessments will result in effective and valuable learning.

The top three (3) most frequently identified coping mechanisms (technological factors) of the respondents about their e-learning environment during the School Year 2022-2023 were (1) adaptation and innovation; (2) family support; and (3) time management. These findings affirmed one of the identified coping mechanisms of Lagua (2019) that learning how to navigate different video conferencing applications such as Google Meet, MS Teams, and the like is not easy. That goes for Canvas LMS, Edmodo, and Moodle too, which are the learning management systems that one must be familiarized with, depending on what the institution has subscribed to. Learners must confidently adapt and learn the various educational technologies in the new normal. This also indicates that a mindset of adaptation and innovation has a significant effect on the utilization and maximization of different modern-day technologies.

Mkhize et al., (2019) stated that family support monetary assistance, will help the learners to achieve success in learning efficiently and effectively amidst the new normal education.

As a generalization, the learners of Senior Secondary School learners applied some best and most efficient coping mechanisms to surpass the challenges given to their e- learning environment during the School Year 2022-2023. To be more specific, making time with friends, families, and self through recreation and relaxation; planning and organizing to facilitate management between academic, personal, and non-academic matters; self-motivation to maintain healthy physical and mental health; and calendar method to have a summary of activities to avoid procrastination and overwork. With all the stated best coping mechanisms above, this reflects effective self-planning.

**6. Conclusions**

Based on the findings of the research study, the following conclusions were drawn:

1. The demographic profile of the learner participants showed that the majority were female. This has implied the view that many female learners were enrolling in the Senior Secondary School since the career pathways in this strand are more on education, communication, social work, and psychology.

2. More so, in terms of socio-economic status, most of the learner participants were in the bracket 10,957-21,914. This means that majority of the Senior Secondary School learners were in the bracket of lower-middle class, and it is stipulated in the article of Chua (2020).

3. Based on qualitative data analysis, there were four (4) themes that appeared in the challenges encountered by the learner participants. These themes were as follows: (1) Self- management and control barriers; (2) Teachers' actions as a hindrance to learning; (3) Problems of group-based online learning; and (4) Facing technological shortcomings.

4. Furthermore, there were two (2) themes that surfaced in the coping mechanisms of the learner participants. These themes were as follows: (1) Implementation of effective coping mechanisms used by the SHS learners; and (2) Effective self-planning.

5. Based on quantitative data analysis, feeling emotionally disconnected or isolated amidst online distance learning was among the top answer of the learner participants in terms of self- regulation.

6. In the aspect of teacher instructional delivery, the top answer was the use of appropriate teaching methodologies and active engagement through the teaching-learning process. Although it resulted disagreed, it might be a good opportunity and a reflection for teachers to more engage the learners during discussions.

7. Learner participants thought that learning assessments in virtual learning were challenging to them as the top answer under the aspect of assessments which gave them frustrations, especially in collaborative-based activities.

8. More so, they experienced a sense of disparities concerning access and utilization of hardware technologies due to physical and socio-economic conditions that hindered successful learning.
9. In terms of learning management systems, the top answer was they faced difficulties in navigating and understanding new LMS. Although it has resulted in disagreeing manner, still they might feel frustrated since they have at least three (3) LMS to understand and use.

10. Insufficient access to e-library resources and disparities concerning access and use of e- technologies were the top answers in the aspect of technological tools and applications that signified an essential point why they have little to no knowledge of the various e-library resources. Moreover, lagging issues and discomfort with the use of various technological applications were the reasons why they do not prefer to use e-library resources. It was also reflected that there were lagging issues with video-conferencing applications and online interactive games.

11. Concentration and focus; time management; and adaptation and innovation were among the top coping mechanisms applied by the participants to their e-learning environment during the S.Y. 2022-2023.

12. Lastly, premised on the findings, it was concluded that there was a felt need for an Online Instructional Framework in the Humanities and Social Sciences courses

**7. Recommendations**
These recommendations were formulated by the researcher based on the results, findings, and conclusions:

1. The Principal's Office, Guidance Office, Grade-level Office (GLC), Senior Secondary School Formation Office, as well as the Class Advisers, would work together harmoniously to create a program and/or activity that will help and guide learners with their personal, socio- emotional, and psychological difficulties such as strengthening the homeroom period and conducting frequent greeting sessions related to mental health.

2. The school should enhance and prepare the teachers to become equipped and competent in both conventional and digital education through conducting capacity-building workshops, webinars, educational summits, and symposiums related to 21st-century education.

3. The school should maximize and strengthen the use of PLC, also known as a professional learning community (peer learning communities). Teachers should always consider that the learning assessments given to learners are aligned with the content and performance standards. Also, for group-based activities, creating a systematized peer/group evaluation signifies accurate feedback and proper monitoring.

4. The School Scholarships Office should extend and strengthen its programs related to vouchers/grants for those in need of hardware technologies in their online classes. More so, the Senior Secondary School Parents-Teachers Office should also investigate how they can increase and expand their scholarship and grants programs for those learners who have outdated technologies to no online class technologies.

5. Systematize and implement the use of one (1) learning management system (LMS) as well as one (1) video-conferencing application for the entire school year so that learners would be able to work efficiently with their academic requirements. Furthermore, this innovative step can lessen confusion and time-consuming in utilizing and maximizing various LMS and video-conferencing applications.

6. The school leaders, together with the Library Office, should take appropriate plans and action to strengthen the promotion of e-library resources usage in all subject areas, especially for those areas related to research, writing, and technology.

7. Creating a Wi-Fi primer that tackles steps on how to deal and cope with an unstable internet connection, steps, and guidelines as to how learners should approach teachers when there is no connection at home to catch up with the lessons and activities.

8. The learners together with the SHS student activities office, class advisers, and classroom officers need to create a program/system that fosters a conducive atmosphere where they can use their time efficiently while learning effectively by having an accountability buddy and classroom to-do lists/writing aways strategies.

9. An Online Instructional Framework for Humanities and Social Sciences subjects should be provided to learners so that their encountered challenges self- regulation; teacher instructional delivery; assessments; and modern-day technologies, could be addressed properly.

10. Testing the validity and reliability of the Online Instructional Framework to other subjects such as Accountancy, Business Management; Science, Technology, Engineering, and Mathematics); General Academic subjects; and Technical-Vocational and Livelihood.

The researcher recommends to similar research study to describe and analyze the struggles and coping mechanisms of Senior Secondary School learners during the School Year 2022 – 2023 concerning the e-learning environment, particularly in self-regulation, teacher instructional delivery, assessments, and modern-day technologies. More so, the researcher suggests to future researchers use this research as their reference in case their study is similar and or related to it. They can also modify the research design, research locale, number of participants, and elements of the e-learning environment.

**Funding:** This research received no external funding.
**Conflicts of Interest:** The authors declare no conflict of interest.
**Publisher's Note**: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers.

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