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Long Paper

Sentiment Analysis of Students' Experiences during Online Learning in a State University in the Philippines

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Abstract

Purpose - This paper investigated the students' opinions during online learning. Performing sentiment analysis (SA) of students' experiences during online learning helps academic institutions and educators to understand their students, gauge their existing processes and delivery of instruction, and promote meaningful learning experiences from it.

Method - The study utilized the sentiment analysis approach in obtaining the polarity, subjectivity, and presentation of visualization results. The student-respondents were conveniently chosen for they were available to answer the question using Google form. A total of 94 unstructured responses were retrieved, preprocessed, analyzed using sentiment analysis, and interpreted.

Result - The result revealed that students' opinion during online learning was dominated by positive experiences. The subjectivity of their sentiments was based on opinions. Further, it was found that the most frequent sentiments are positive, neutral, and negative attributes about "*online*", "*class*", "*time*", "*need*", "*also*" followed by "*internet*", "*connection*", "*study*", "*learning*", and "*struggle*".

Conclusion - Students during online learning adapted new methods and approaches to learning despite some challenges. Their sentiments will guide educators to see the situation of learners from different perspectives and improve online teaching strategies to better serve the student-clienteles in cases such as emergency and remote or online learning.

Recommendation – The research suggests that online learning can be successful if educational institutions, educators, and other stakeholders will work together in identifying and asserting the gaps, adapting the pedagogy of care, and filling the learners with the right learning resources and technology in ways that are meaningful and helpful.

Implication – The overall students' experiences during online learning in a state University in the Philippines will serve as a reference point for faculty and school administrators of other HEIS' to look at how online teaching strategies can be tailored fit to the needs of the learners.

Keywords – COVID-19, students' experiences, online learning, flexible learning, opinion mining, sentiment analysis

INTRODUCTION

The COVID-19 global pandemic has forced universities to temporarily shut down across the world which resulted in around 1.6 billion learners being displaced from the physical learning institutions (UNICEF, 2020). UNESCO calls on prioritizing education recovery and supporting countries in their efforts to mitigate the impact of school closures; address learning losses, and adapt education systems (UNESCO, 2021). Particularly, the governments and stakeholders are encouraged to pursue policy responses such as; suppressing transmission of the virus and planning thoroughly for school re-opening; protecting education financing and coordinating for impact; building resilient education systems for equitable and sustainable development; and reimagining

education and accelerating change in teaching and learning (United Nations, 2020). Collectively, the education system has changed, and e-learning has risen to undertake teaching remotely on digital platforms. Learning institutions switched their entire instructional approaches from face-to-face to remote education. To mirror the classroom environment, virtual learning was one of the most ideal modalities to continue the goals of the teaching and learning process. This has embarked the Philippine higher learning institutions to flexible learning modalities adapting the Commission on Higher Education [CHED] (2020) guidelines by private and public higher education institutions (HEIs) beginning AY 2020-2021. The implementing guideline is expected to be continued in the school year 2021 and thereafter (CHED, 2020). The shift from conventional learning to flexible learning during pandemics becomes the new norm. Adapted teaching and learning processes were in a form of online, offline, or blended modes. This learning situation of students magnified inequities among lower-income families in the underdeveloped and developing countries just like the Philippines; thus an opportunity for technology designers to capitalize on e-learning. Jandrić (2020) stated that academics have a unique opportunity, and moral duty, to immediately start conducting in-depth studies of current events, to which (Bozkurt & Sharma, 2020) assert its relevance during the Covid-19 pandemic which emphasizes the pressures on the educational system as the shift to the online medium requires a specific set of technical and pedagogical knowledge and skills. The current educational setup underscores what has been known from the study of Liyanagunawardena, Williams and Adams (2013) about a "steep learning curve and an overload of information", which could have negative impacts on learners as they may feel demotivated and discouraged especially for those who are not familiar or experienced in online learning and teaching.

The learning experiences of students during the pandemic can be analyzed using machine learning and natural language processing techniques. It is useful in gaining insights and understanding the learners' situation. The Cavite State University – Silang Campus (CvSU-SC) is one of the tertiary learning institutions and a satellite campus of the CvSU system which adapted online learning as a flexible mode since March 2020. Students have to stay at home and press the button of remote or online learning using computers, laptops, smartphones, and online learning resources and tools in their academic coursework (Santiago, Ulanday, Centeno, Bayla & Callanta, 2021). As cited in Balahadia (2022), students' voices and opinions regarding online learning will give a clear picture of their experiences, be positive experiences, neutral or negative experiences during online class delivery. To gain insights and to understand the students' experiences, sentiment analysis will be involved or used in applying the automatic text analysis to extract their opinions. Through this, students 'experiences will be better understood and the implications on the effectiveness of teaching strategies will be given attention and addressed by the stakeholders of the learning institutions (El Mansour & Mupinga, 2007). Sentiment analysis is also considered the computational treatment of opinions, wherein the process involves analyzing, processing, and classifying subjective texts with sentiment techniques (Medhat, Hassan & Korashy 2014; Wang & Zhang 2020). The idea behind sentiment analysis is to classify data into positive, neutral, or negative ones (e.g.

how do they feel about a certain topic, current situation, perceived event, or phenomenon). Conducting studies on sentiment analysis of experiences of online learners can play a crucial role in enhancing the educational systems' policies, teaching pedagogies, modalities, and services offered by the learning institution. Kechaou, Ammar & Alimi (2011), assert its fitness to improve the quality of the e-learning system and to identify new opportunities. More so, as stated by Wang & Zhang (2020) the association and implication of sentiment analysis can improve the accuracy of teaching content and can optimize the knowledge coherence.

Hence, this study was conducted to determine the students' learning experiences in an online modality at CvSU-SC. Particularly, (a) to determine the polarity of sentiments' scores of students' learning experiences, (b) determine the subjectivity and objectivity of their feedback about learning experiences, and (c) to present a visualization of students' experiences in online learning.

LITERATURE REVIEW

The new normal of online learning has drawn positive and negative implications. Concerns of students over online learning during the pandemic became a growing issue among the learning institutions, educators, learners, school administrators, and parents. Shreds of evidence on these issues were reported by researchers. Issues include technical issues such as unstable or weak internet connectivity (Asio, Gadia, Abarintos, Paguio & Balce, 2021; Balahadia, 2022; Coman, Tiru, Masesan-Schmitz, Stancu & Bularca, 2020; Rotas & Cahapay, 2021), lack of availability of gadgets (e.g. smartphones, laptops) (Asio et al., 2021; Balahadia, 2022; Bazimaziki, 2020; Rana, 2021), limited collaborative learning opportunities (Bączek et al., 2021; Henderikx, Kreijinsm Munoz, & Kalz, 2019; Rotas & Cahapay, 2021; Yates, Starkey, Egerton, & Flueggen, 2020), low quality of instruction and misuse of technology, (Santiago et al., 2021; Valentine, 2002), low motivation in learning (Best, 2020; Henderikx et al., 2019), increased learning burdens (Niemi & Kousa, 2020, Yan et al., 2021), poor learning environment and struggles on mental health (Rotas & Cahapay, 2020), inefficiency and difficulty in maintaining academic integrity (Mukhtar, Javed, Arooj & Sethi, 2020); ineffective feedback and lack of study materials (Musingafi, 2015); students not being well prepared for e-learning use before the pandemic (Mailizar, Almanthari, Maulina & Bruc, 2020), lack of social interaction (Al-Maweeh, Kwayu, & Gharaibeh, 2021), teachers' lack of technical skills and their teaching style improperly adapted to the online environment (Coman et al., 2020); and, schools not prepared to implement online systems during pandemic (Alshwiah, 2021; Toquero, 2020). The lack of essential personal interactions is the most noticeable disadvantage of online learning, not only among colleagues but also between instructors and students (Islam, Beer, & Slack, 2015).

There is a lack of community in the online learning environment because students' engagement is much less important than student-instructor interaction. Moreover, Sharma (2020) agreed that while online programs have many advantages and

provide astounding access to quality education, there are some drawbacks to using this medium that can jeopardize the accomplishment of any online program such as equity and accessibility to technology. In addition to that, for a student to keep up with the pace of the course and successfully participate in an online program, they must be well prepared, self-motivated, and possess a high level of time management skills. Students who lacked self-motivation and autonomy had lower success rates than their classmates (Sarkar, 2012). Learners who lack self-regulation tend to not allot enough time to complete assignments, resulting in poor work performance or late homework. These studies shed light on online learning issues and found that the in-person or face-to-face mode of learning could not be replaced by a sudden shift to remote or online learning mode without a thorough study of the learners' perspective. Students facing challenges during a pandemic require attention. These challenges need to be addressed by educational policymakers, school administrators, parents, and other stakeholders of the learning institution.

It is notable, however, that online learning provided some positive effects on the learners. It was found that learning through technology is beneficial to students in an online learning environment. The learners usually engage as a group formed on their own to facilitate the learning experiences and interactions online (Gillet-Swan 2017). The learners are willing to stay in the group to improve the academic sentiment interaction in the learning motivation at a high level (Wang & Zhang 2020). Further, positive notes about online learning include; online learning means time and location flexibility (Al-Maweeh et al, 2021; Van & Thi, 2021), convenience and accessibility to teachers and teaching materials (Mukhtar et al., 2020; Van & Thi, 2021), and, mental health becomes a priority, autonomy in learning, a better understanding of learner's needs, decreased bullying, and more opportunities for special needs of students (Abramson, 2021). These indicate that there is an increase in information retention, affordability, accessibility, developed important or other skills, and allowed customized learning experience. Butnaru, Nita, Anichiti & Brinza (2021), assert that students react differently to online education, and their reaction is based on their proficiency in using online tools (ability to technically access online courses), and the instructors' manner in conducting learning activities.

Online learning offers an alternative that is cost and time effective, safe, convenient, improved participation and potentially better as compared to traditional learning which is expensive and takes a long time, and the results can vary (Ahammad, 2021; Hussein, Daoud, & Alrabaiah, 2020; Nambiar, 2020). Since technology is a promising tool to engage in modern distance learning, online learning provides convenience in space and flexibility in time for the students (Valentine, 2002; Skordis-Worral, Batura, Haghparast-Bidgoli & Hughes, 2015). Students who live in a small town and away in a bigger city are of great advantage to attend regular school time and be educated. Also, it extends a positive perception of self-reliance and more control of learning experiences by being able to pause, rewind and revisit lectures, and access other online learning resources (Skordis-Worral et al., 2015). Consequently, students had learned 'slower but

better' since materials designed for online subjects or courses have allocated more time to understand and retain the learning. According to Nguyen et al. (2021), it follows the identity of independence and flexibility in social interaction and engagement among different methods of platforms of subjects discussed. Class participation indicates a more active interaction since it values social connection with classmates and instructors.

METHODOLOGY

PARTICIPANTS AND DATA COLLECTION

The study was conducted during the first semester of Academic Year 2021-2022. The student-respondents were conveniently chosen for they are available to answer the question *"What are your learning experiences during flexible modes of learning at CvSU-SC?"*. The question asked the students about their learning experiences from the time the university shifted from face-to-face to flexible modes of learning in March 2020 to the time the study was conducted. There were 94 answered forms retrieved from the Google form. A data privacy statement was observed in the form and the research was approved to be conducted on the Campus.

DATA CLEANING AND DATA PREPROCESSING

After the data was collected using Google Form. The next step was data preprocessing which involves noise removal of the collected data to have it ready for natural language processing (NLP). Data preprocessing involved five steps: data cleaning, tokenization, stopwords removal, parts-of-speech (POS) tagging, and lemmatization. In this study, the influence of biases, name mentions, numbers, parentheses, punctuation, conversion to lowercase, stopwords, perform lemmatization (Jabeen, 2018), and removal of other language nuisances using Boolean operators and keywords was performed. There were 8,278 words written in English that underwent data cleaning and data preprocessing. Unigram tokenization was utilized to obtain the result.

DATA ANALYSIS

After cleaning the data, the next step was performing sentiment analysis for text data combined with NLP and machine learning techniques to assign weighted sentiment scores to the topics within a document was applied (Kosaka, 2020). Then, data was refined using sentiment analysis to check the subjectivity, polarity, and sentiment, and to form visualizations from it. The TextBlob module was used to perform sentiment analysis in Jupyter Notebook. For visualization, a word cloud was created based on the frequency of word occurrence in the dataset. The more frequent a word, the larger its appearance in the word cloud. Figure 1 below shows the overview of the sentiment analysis approach performed in this study.

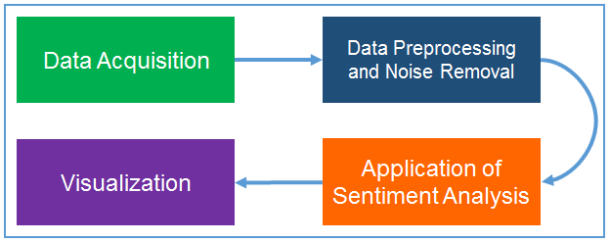

Figure 1. Overview of the Sentiment Analysis Approach

The sentiment analysis utilized in this study was anchored on a lexicon-based approach by Medhat et al. (2014). Students' opinions were employed in sentiment classifications tasks (positive, neutral, and negative) in online learning experiences. The standardized thresholds for classifying words and sentences as either positive, neutral, or negative was based on Yaqub et. al (2018) which states that it uses a scale from -1 to 1. A negative score means a negative sentiment, and a positive score means a positive sentiment. A polarity score of 0 suggests a neutral sentiment.

RESULTS AND DISCUSSION

The overall polarity of sentiment scores of students' learning experiences in online learning is shown as positive, negative, and neutral. As a result of the analysis, Figure 2 shows that students' experiences in online learning are dominated by positive learning experiences (47), compared to negative learning experiences (36), and with eleven (11) neutral learning experiences.

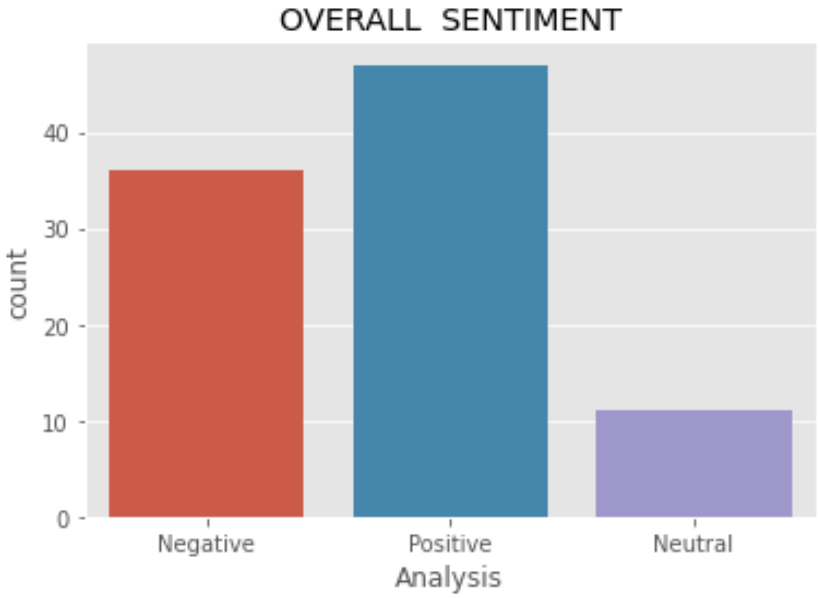

Figure 2. Overall Sentiment Analysis of Student's Experiences in Online Learning

Table 1. Sample positive, negative, and neutral words with sample feedback of the student-respondents as provided by the sentiment analysis randomly selected from its corresponding word cloud. The feedback may contain grammatical errors to show the authenticity of student-respondents' sentiments.

	Words	Sample statement
Positive Feedback	Activity	*"… when the teacher post their activity on Google classroom I do immediately to not have a delay of my work activity… "*
	Adapt	*" I adapt, with the use of my devices: computer and phone; I successfully crossed the bridge of challenges in online learning… "*
	Help	*"We also ask help from other classmates, we help one another… "*
	Kind	*"…some professors are kind enough to understand our situation… "*
	Study	*"I will study more to have a better understanding so it should not hard for me to do what i should I must always focus on my goal…"*
Negative Feedback	Affect	*"It affect me, thru stressed me out all the time. every time i think my activities…"*
	Difficult	*"…it's difficult to find a way to pass and be able to finish school…"*
	Hard	*"I've encounter from the time that the online learning started is hard to access a good internet connection because it's really hard for not having a stable network…"*
	Noise	*"I can't focus on my study because I cannot control other people to stop their pet on making noise, or to stop those other people from talking…"*
	Distractions	*"…it still was pretty hard due to the distractions and stress at home, as well as the pressure…"*
Neutral Feedback	Cope	*"Every struggle has a solution so I just need to find a way to cope with it…"*
	Learn	*"…after I graduate but I'm hoping that I can learn more in the remaining 2 years of college…"*
	Manage	*"I need to handle and adjust very well my time management, I need to manage the time better, I need to study in my own…"*
	Necessary	*"…to participate in the online class and do the necessary tasks such as projects and assignments that must be passed, one of which is also what is happening inside the house…"*
	Think	*"All of those happened, me and my parents did everything what we think it needs to be done…"*

POSITIVE SENTIMENTS TOWARD ONLINE LEARNING EXPERIENCES

The results indicate that majority of students' online learning experiences are produced in such a way that they were able to cope with the technical and mental requirements, were prepared to use e-learning resources and tools, and work with their academic coursework without or fewer challenges encountered. Coman et al. (2020) assert online teaching can improve student-centeredness and flexibility to enhance students learning processes by providing asynchronous and synchronous tools such as e-mail, forums, chats, and videoconferences. The result also suggests that students may have prior learning experiences where independence, resourcefulness, resiliency, and time management skills were instilled in them so they can stand with the learning experience situations alike. Moreover, students took online learning as an opportunity to further their skills with the use of online resources, devote their time to families and loved ones, and see it as an opportunity to help augment their financial needs by engaging themselves in mini entrepreneurial activities and part-time jobs in a work-from-home arrangement. These students' productivities during online learning helped them balance their academic coursework and their non-academic functions.

When it comes to course content, another indication of a positive experience during online learning is the learners' accessibility to their class recordings and learning materials using their handheld gadgets. They are also able to attend classes on the go and do their academic coursework at their convenient place and time. They stay and learn from home in the course of online learning which saves costs for transportation, and time for commuting. It also gives them the benefit of doing household tasks at the same time. Learners have control over their time which is an advantage of learning with autonomy. Safety in staying at home during online learning could be added as an important benefit. Learners have a lesser chance of contracting the Covid-19 virus. This indicates their high level of awareness of how fast the virus could spread to them, their family, and their community as the government emphasizes its campaign in curbing the pandemic. Another factor that can be attributed to the positive online learning experience of the learners is that they find online classes more effective as compared to face-to-face learning. The online learning systems provide features that are fun and interactive to use that connects them to other learners and their teachers. These positive online learning experiences are viewed by learners as satisfaction and quality to the curriculum offered amid the pandemic. Sharma (2020) listed efficiency, no boundaries, cost and time effectiveness, ease in learning, and meeting different needs among others as positive effects of online learning during Covid-19. It is opined that the curriculum, the facilitator, the technology, and the students must be carefully considered and balanced. Thus, productivity and mastery in learning competencies must be felt by the learners as indicators of a better online learning experience.

NEGATIVE SENTIMENTS TOWARD ONLINE LEARNING EXPERIENCES

The negative experiences of students in online learning can be associated with their struggles or challenges. They are unprepared (e.g. technically, mentally) and get overwhelmed by the academic coursework. Mailizar et al. (2020) identified that technical preparedness for online learning as one of the problems and suggested that it had the highest impact on e-learning use, while (Rotas & Cahapay, 2020; Santiago, et al. 2021) stated technical preparation and focus are one of the challenges to thrive in online learning. The fact that sudden switch from face-to-face to online learning requires ample time to adjust and a mindset to adapt and accept the changes in the ways of learning. Students have different experiences encountered; physical space that is comfortable and convenient to learn that they need in learning from home, noise distractions from the family and their neighbors, and other influences that can be attributed to negative learning experiences. In a virtual learning environment, students' learning is also affected by internet connectivity issues, technical issues with the e-learning resources and tools that they use, financial constraints due to the loss of jobs of their parents or somebody who is sending them to school, lack of equipment needed for subjects with laboratory related activities, among others. It is remarkable that poor internet connection contributed to the challenges of the students as they tried to adapt to online learning (Balahadia, 2020).

Adequate data connection for students in remote areas to access learning materials using their handheld gadgets is also a concern (Asio et al., 2021). Another attribute of negative learning experiences of students can be traced to the teachers and their pedagogy which resulted in difficulty in understanding the lesson, and inadequacy of learning resources available suited for the learners' needs. In face-to-face classes, teachers are easily understood and their methods of teaching do not play a big factor for students (at least for students taking technical courses) to learn. The learning modules and the learning resources provided may not suffice for students to understand the lessons. Valentine (2002) opined that the quality of instruction in distance learning is one of the challenges for it depends on the attitude of the administration and the instructor, while Bayyat, Muaili & Aldabbas (2021) suggested instructional materials in online learning had to be engaging, interactive and should complement to face-to-face classes. The students' needs should be understood which requires learning materials to be prepared, designed, and go through quality checking and monitoring to make effective distance learning.

The learners learning in the online modality may experience difficulties with the course content (Henderikx et al., 2019) which leads to low motivation in learning (Best, 2020). The heavy workload for students during online learning was considered a burden (Yates et al., 2020), and students who thought their studying went well had problems with learning management and motivation (Niemi & Kousa 2020). The need for educational institutions to strengthen the practices in the curriculum will affect the way

online learning is delivered even beyond the conventional learning modality. Bozkurt & Sharma (2020) asserts the need to teach the curriculum prioritizing the physical, mental and psychological well-being of the educators and the learners. It should go along with careful instruction design, long planning, and technology infrastructure. Further, Hussein et al. (2020) stated that it carries out a long-term effect on quality online learning and not just bridge the gaps of online learning during emergencies. Hence, online learning is a temporary and alternative mode during the Covid-19 pandemic which could not effectively substitute face-to-face learning.

NEUTRAL SENTIMENTS TOWARD ONLINE LEARNING EXPERIENCES

A few of the student-respondents viewed their online learning experiences as neither positive nor negative. This indicates that learning in a time of uncertainty does not affect their academic, personal, psychological, or mental well-being. They are confident and determined to achieve their goal and optimistic about what they had been experiencing will eventually pass. These demeanors and ways of thinking can be evident in how they handled and acted towards managing their time, their academic coursework, financial and health-related matters, and the necessity to cope with the situation. This showing of fortitude and behavioral neutrality with their online learning experiences sentiments indicated a strong self-motivation and concentration to dismiss the nuisances or pressures in their surroundings. Lischer, Safi & Dickson (2021) reported the mental health of some students during the lockdown as well, except for the stress created on them by the teachers who were challenged by distance teaching. Performing physical activity during lockdown reduced the likelihood to overthink the situation and be down emotionally. Doing so will help ease anxiety and to improve mental health and general well-being (Natalucci, Pellino, Barbieri & Vandoni, 2021).

The overall subjectivity and objectivity scores of the data are expressed below utilizing Sentiment Analysis. It shows in Table 2 that 56 (59.57%) of the students' sentiments are based on their own opinion while 38 (40.43%) of the sentiments during online learning are based on facts.

Table 2. The Subjectivity Score of the Students' Learning Experiences in Online Learning

Sentiments	Frequency	Percentage
Opinion-Based	56	59.57%
Fact-Based	38	40.43%
Total	**94**	**100%**

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SUBJECTIVITY AND OBJECTIVITY OF SENTIMENTS TOWARD ONLINE LEARNING EXPERIENCES

Table 2 exhibits the results of sentiment analysis, that generally are opinion-based (59.57%) and the remaining (40.44%) are fact-based on the learning experiences of the

students in online learning. This implied that the majority of the students struggle when flexible learning started since they had encountered situations that are beyond their control during their synchronous classes like noise pollution, environmental distractions, and unstable internet connection. They find it hard to understand and comprehend the lessons in online education. Bojovic et al. as cited in Chakraborty, Mittal, Gupta, Yadav & Arora (2020), mentioned that students feel that they learn better in physical rooms than in an online setup. It affects their academic performances like submission of activities and other related school assessments of each subject. There are instances when it is time for group activities, sharing of ideas is difficult to understand due to poor internet connection.

As mentioned by El-Seoud, Taj-Eddin, Seddiek, El-Kkhouly & Nosseir (2014), the improvement in internet technology will increase the delivery of online learning outcomes. Also, the academic resources they used like cell phones are outdated to access the applications needed for the online class. The low capacity of their laptop demands adjustment to update or buy a new unit for a faster and better set up to perform better. Likewise, other students (40.43%) accept the fact that online learning will be the way of their education during the pandemic. In relation to the study of Aguilera-Hermida (2020), mentioned that students' experience in online learning was an emergent response to a global crisis. Hence, they see to it they will have enough data for synchronous class, while others, apply and install an internet connection at home.

Also, students prepare a good setup and location for virtual class participation. Others go to a computer shop and to their friends' houses for the asynchronous class to submit requirements and activities on time. Despite their perseverance and resourcefulness, students' sentiments could imply that they did not learn from lessons as much as they do and would have learned in the face-to-face classes. This could be evident in their reports of grades and could be observed in their academic performance in the requisites or subjects have taken the subsequent semester. Such defects in educational institutions were reported in Pokhrel & Chhetri, (2021) during the emergency remote learning. As stated (Alshwiah, 2021; Al-Mawee, Kwayu, & Gharaibeh 2021; Toquero, 2020), these were attributed to the unpreparedness of educational institutions, including the availability of information and best practices on the sudden shift of face-to-face to online or distance learning.

The visualization result displays the students' learning experiences in online learning. Figure 3 shows that the most occurring sentiments of students in online learning are expressed further in Table 2.

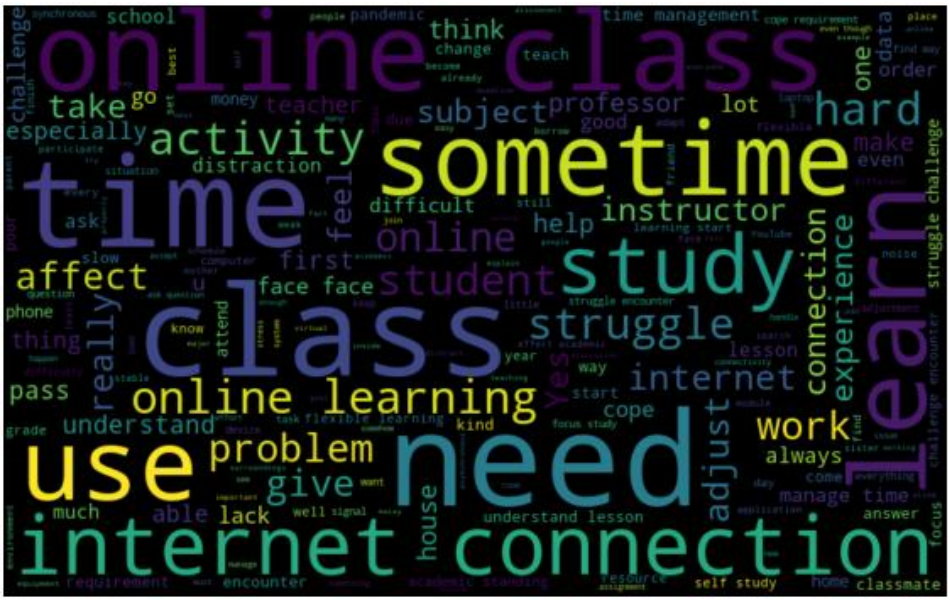

Figure 3. The Visualization Result of the Students' Experiences in Online Learning

Table 3 shows the 10 most occurring words, their frequency, and sample feedback from the student-respondents. The feedback may contain grammatical errors to show the authenticity of the student-respondents' sentiments.

Table 3. Most Occurring Words of the Student-respondents' Sentiments.

Rank	Words	Frequency	Sample Feedback
1	Online	110	*"I had a hard time understanding the lessons in the online class…"*
2	Class	109	*"…sometimes I couldn't attend class because there was no load…"*
3	Time	79	*"Time management was a lot harder to maintain due to distractions inside the house…"*
4	Need	66	*"I need to exert extra effort to understand and keep up with the class…"*
5	Also	61	*"Also I struggle on online learning classes because I have lack of resources…"*
6	Internet	59	*"The internet connection is weak so I cannot complete all the activities..."*
7	Connection	56	*"The internet connection is weak so I cannot complete all the activities…"*
8	Study	52	*"I will study more to have a better understanding so it should not hard for me to do…"*
9	Learning	51	*"I have realized that flexible learning is the most challenging moments in my learning journey…"*
10	Struggle	51	*I struggle on online learning classes because I have lack of resources…*

MOST OCCURRING SENTIMENTS TOWARD ONLINE LEARNING EXPERIENCES

Figure 3 shows the visualization result of the students' learning experiences in online learning. *Online, class, time, need, also, internet, connection, study, learning*, and *struggle* are some of the words the student-respondents usually expressed as sentiments. Results also show that one of the most occurring sentiments of students in online learning is the need for more or enough time to do their academic coursework. Also as a result of the lower bandwidth rate at home due to unexpected and unusual internet traffic, as well as internet providers' unpreparedness for the sudden massive needs for their services, some students mentioned the poor connectivity at home. Because of the pressures they were experiencing due to changes in instructional delivery modalities, many students who were accustomed to the face-to-face way of teaching found the online technique to be stressful. Some students are observed to be disrespectful and unpleasant to lecturers. In addition to that, according to some students' experiences, online classes have a lower level of student-teacher interaction.

Many students no longer participate in class discussions as they would in a typical face-to-face class. There is less or no feedback at all when questions are addressed. As a consequence, online classes become unpleasant for them. Moreover, students feel that reasonable virtual learning engagements may help them achieve better achievements. According to Woolley (2015), students who recognize this are more likely to participate in online learning and finish any prescribed activities than students who do not. In this regard, Lucas (2020), highlighted that the lack of clarity on suitable rules, combined with the limited resources available, has caused a significant issue; one that has to be addressed immediately by the whole school community. To meet the different needs of the students, effective virtual learning and teaching necessitate careful planning. Failure in this planning leads to ineffective learning, which results in the failure to meet learning objectives and outcomes. There is a need to develop high-quality online courses that enable an understanding of pedagogical approaches suitable for the online environment; apart from the demands for skills of the teachers and students, and the resources of learning institutions (Bhagat, Mishra, Dixit & Chang, 2021).

CONCLUSION AND RECOMMENDATIONS

Educators provide a learning environment for students that encourages higher levels of student performance and motivates students to practice higher-level of critical thinking skills. This paper focuses on the mining of students learning experiences in an online modality at CvSU-SC. Hence, the study investigated the polarity (positive, neutral, and negative), subjectivity, and objectivity (opinion or fact) of students' experiences during online learning. The most occurring sentiments were also revealed.

It was found that students learning sentiment experiences were more expressed in positive feedback. Despite some challenges encountered during online learning, the

students of CvSU-SC learned to adapt to the new methods of learning and took it as one of the life challenges to thrive in the time of difficulty just like the Covid-19 pandemic. On one hand, the subjectivity of sentiments was more expressed based on the student's opinion as compared to fact-based sentiments. These sentiments will guide educators to see the situation of learners from different perspectives that could lead to immediate attention and action beneficial to all. On the other hand, the overall students' experiences expressed positively or negatively will serve as a reference point for faculty and school administrators to look at how online teaching strategies can be improved. The result of this study could be the foundation for the learning institutions, educational policymakers, teachers, parents, and other stakeholders to come together and revisit, the existing policies regarding the delivery of online instruction. Students' experiences during online learning would serve as a lesson in reimagining education and accelerating changes in teaching and learning processes in cases such as emergency and remote learning.

Thus, the researchers suggest that educational policymakers, teachers, learners, parents, and other stakeholders should be involved in crafting policies and guidelines pertaining to migrating to online learning. Particularly, the school administrators may revisit the fitness of their curricula and technical accessibility (e.g. courseware, modules, internet connection, online learning systems) to the call of the new normal, provide a continuous retooling program for teachers teaching in online (e.g. teaching capability training, technical capability training), develop a teacher-learner feedback mechanism that will enable students and teachers to maintain a healthy virtual environment (e.g. peer teaching and learning apps, collaborative learning), and provide programs that will also prioritize mental health to avoid academic stress and poor emotional well-being while developing an equitable and resilient education during difficulties. This research can be further explored by performing sentiment analysis of students' experiences during online learning by utilizing other types of tokenization to obtain a diverse and meaningful result interpretation.

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