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Students' Engagement and its Prospects and Problems in the Virtual Learning Environment

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Abstract

Aim: This paper assessed the dynamism of student engagement within a virtual learning environment (VLE) following transitions from conventional learning spaces to online forums necessitated by the COVID-19 pandemic.

Methodology: This investigation adopts an embedded mixed methods approach, integrating quantitative and qualitative methodologies to comprehensively explore the dimensions of students' learning engagement, alongside its prospects and problems within a virtual learning context. The design is characterized as embedded, given that while quantitative and qualitative data were collected concurrently, the qualitative component is nested within the quantitative framework. Quantitatively, the study uses a descriptive research design, aiming to systematically quantify and characterize aspects of students' learning engagement through the administration of survey questionnaires. This facet of the research targeted Senior High School students from selected institutions within the Division of Naga City, with a specific focus on Grade 12 learners, identified as a crucial subset of the study population for their representative value. Qualitatively, the study employs a phenomenological methodology to delve deeper into the experiential reality of students' engagement in virtual learning environments, along with identifying the prospects and problems they encounter.

Results: The ANOVA table illustrates significant differences in student engagement across various educational parameters within a virtual classroom. The 'Between Groups' sum of squares (SS) of 1.274, with 5 degrees of freedom (DF), and mean square (MS) of .255, indicates variability in engagement among conditions or treatments studied. The F-ratio of 14.992, with a significance (Sig.) of .000, suggests non-homogeneity in engagement levels across groups. Conversely, the 'Within Groups' SS of .510, with 30 DF, and MS of .017, signifies minimal variance within groups. This discrepancy in variance, supported by a significant F-ratio, suggests substantial differences in engagement levels among groups, highlighting the impact of educational strategies in a virtual classroom. These insights can aid educational researchers and practitioners in optimizing instructional designs for enhanced student engagement.

Keywords: Students' engagement, virtual learning environment, prospects and problems

INTRODUCTION:

In recent years, the landscape of education has undergone a profound transformation with the advent of virtual learning environments especially during the pandemic. As traditional classrooms have increasingly shifted towards online platforms, the concept of student learning engagement has taken center stage (Amihan & Sanchez, 2023; Carvajal, Sanchez & Amihan, 2023; Salendab, Ocariza-Salendab & Sanchez, 2023; Sanchez, 2023a; Sanchez, Sanchez & Sanchez, 2023). Learning engagement refers to the active participation, enthusiasm, and commitment of students towards their learning journey. In the virtual learning environment, where interactions are mediated through various digital modular tools and technologies, understanding, and fostering student engagement has become both a priority and a challenge. The virtual learning environment offers promising opportunities for enhancing student learning engagement through flexibility, collaboration, and personalized learning experiences. It also presents prospects and problems related to digital distractions, social isolation, motivational barriers, and equity concerns. Addressing these challenges requires a multifaceted approach that combines technological innovations, pedagogical strategies, and supportive interventions to create inclusive, engaging, and effective virtual learning environments for all students during their engagement (Dizon & Sanchez, 2020; Muñoz & Sanchez, 2023; Salendab & Sanchez, 2023; Sanchez, 2022; Sanchez, 2023b). The universal education specifically world education is indeed in total perplexity in addressing the issue of education which is the result or impact of the advent of a pandemic. Mostly, the whole program claimed by

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different institutions to sustain and provide quality education has been delimited to the different hard-and-fast virtual learning platforms where educators must ascertain new knowledge in pedagogy, and teaching management skills in the so-called new normal so that learners could also advance and be effective in the new style of virtual learning environments despite of the crisis brought by the pandemic.

Objectives:

This study determined and explored the students' engagement, prospects, and problems in a virtual learning environment. Specifically, it answered the following questions:

1. What is the level of engagement of students in learning under a virtual classroom environment along the following parameters:
    a. psychological motivation
    b. peer collaboration
    c. cognitive problem-solving
    d. interactions with instructor
    e. community support
    f. learning management
2. Are there significant differences in the level of students' learning engagement in the virtual classroom environment among the given parameters?
3. What are the prospects and problems in virtual learning?
4. What recommendations may be proposed based on the result of the study?

Hypothesis

1. There are significant differences in the level of engagement of students' engagement in the virtual classroom environment among the given parameters.

Theoretical Framework

Figure 1:
Student Engagement Theory

To support the study on students' engagement in the learning virtual environment set-up Ackerman's concept of self-determination theory is used by the researcher to tailor the needs and the interests of the students. Ackerman (2018) creates an effective "self-determination" in the context of foundational government documents and speeches from people long dead. Traditionally, self-determination has been used in this diplomatic and political context to describe the process a country undergoes to assert its independence. However, self-determination also has a more personal and psychology-relevant meaning today: the ability or process of making one's own choices and controlling one's own life. Self-determination is a vital piece of psychological well-being; as you may expect, people like to feel in control of their own lives. In addition to this idea of controlling one's destiny, the theory of self-determination is relevant to anyone hoping to guide their life more. Self-determination theory, where the researcher would use the term (SDT) in the proceedings has a lot to say about goals and goal striving. The theory proposes that not only is the content of

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our goals and what we strive for important for our need satisfaction and well-being, but the process of our goals and why we strive for them is just as influential on our well-being. It's easy to see how (SDT) applies to education: students are more likely to learn and succeed in school when they are intrinsically motivated by their need for competence than when they are extrinsically motivated by teachers, parents, or the grading system. Self-Determination Theory (SDT) is doubly important for children in special education and those with disabilities. These students are often struggling with meeting their need for autonomy, as many decisions are made for them and they may not have the physical or intellectual ability to be truly autonomous. Their disability may interfere with their need for competence, as it can hamper their efforts to master tasks and develop their knowledge. Finally, those with disabilities physical, mental, or both often find it difficult to connect with their peers. All these extra struggles explain why it's vital for students with disabilities to have a sense of self-determination. Although they may not be able to satisfy their needs in the most straightforward or common ways, special education students can gain a sense of self-determination in other ways. The researcher understands that Self-Determination Theory (SDT) is a critical framework for understanding student engagement, particularly in virtual learning environments. SDT posits that students are more likely to learn and succeed when they are intrinsically motivated by their need for competence, autonomy, and relatedness, rather than being extrinsically motivated by external factors such as teachers, parents, or grading systems. In the context of virtual learning, SDT is particularly relevant for students with disabilities, who often face additional challenges in meeting their needs for autonomy, competence, and relatedness. Programs designed to improve self-awareness, decision-making, goal setting, goal-attainment, communication, and relationship skills, as well as the ability to celebrate success and learn from mistakes, can help boost their sense of self-determination. Research has shown that enhancing self-determination in students with disabilities can lead to positive outcomes, such as a greater likelihood of gainful employment and a higher chance of living independently in the community. SDT emphasizes the importance of addressing student engagement in online learning and highlights the importance of motivation and the fulfillment of three basic human needs: autonomy, competence, and relatedness5.In conclusion, SDT provides a valuable framework for understanding student engagement in virtual learning environments, particularly for students with disabilities. By focusing on intrinsic motivation and meeting students' needs for autonomy, competence, and relatedness, educators can create meaningful learning experiences that support deep and lasting learning outcomes for all students. While there are strong theoretical foundations and a very useful model for engagement, student engagement, as a term, is not well defined. His definition gave rise to the National Survey of Student Engagement (NSSE). The NSSE benchmarks five clusters of activities indicating student engagement, including the level of academic challenge, a supportive campus environment, enriching educational experiences, student–faculty interaction, and active and collaborative learning. The NSSE perspective on student engagement considers the entire collegiate experience, both inside and outside of the classroom. Other measures focus more on student engagement within the classroom. One of these is Handelsman, Briggs, Sullivan, and the measure of traditional classroom student engagement. They found four factors illustrating how students devote time and energy in the classroom: skills engagement (keeping up with readings, putting forth effort); emotional engagement (making the course interesting, applying it to their own lives); participation/interaction engagement (having fun, participating actively in small group discussions); and performance engagement (doing well on tests, getting a good grade) They see student engagement as containing both affective and behavioral components. (Dixon, 2015).

Conceptual Framework

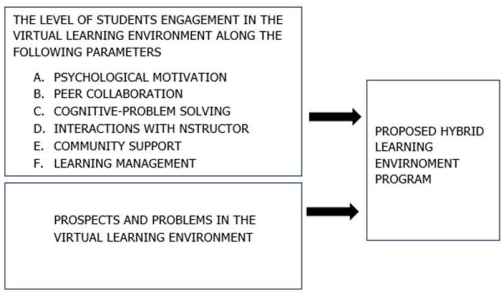

Figure 2:

CONCEPTUAL FRAMEWORK

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The researcher presents the paradigm as shown in figures constituting students' learning engagement and its prospects and problems in the virtual learning environment, the effectiveness of learning virtual environment, and the output of the study. The various concepts explain the behaviors of the learners during the virtual setups. First, psychological motivation represents students' feelings such as their interest during the online class, and their expectations relative to their online virtual classroom. Individual motivation plays an important role in the virtual classroom environment for it helps learners participate actively and mentally during the online classroom and is essential in the process of solving problems. Secondly, peer collaboration refers to every student's learning engagement in the virtual classroom setup. Every learner is collaboratively and participative engages and discusses to resolve problems met during their virtual classroom. It is believed that collaboration is one factor in creating and building knowledge among peers. Thirdly, the cognitive problem skill tells of how the process of acquisition, and conceptualization is attained. They are the main key factors in facilitating learners' achievement. Fourthly, the interactions with instructors portray learners' behavioral management and engagement during their virtual classroom setup. During this learner communicate with their instructors and often convey their questions and clarifications regarding the learning engagement and the attainment of knowledge as well. The more the learners communicate with the instructors the greater the chances they learn through clarifications. It is on this platform that learners find academic support from their instructors. The fifth is called community support where learners' bond of support is formed. This type of support enlivens the learner's spirit to study harder and lifts the sense of belongingness in the community. This support will also help prevent dropout rates will strengthen learners' interactions with their fellow learners and solidify their oneness among individuals. Lastly, the learning management of the learners is their consistency in upholding and balancing factors that affect students' learning engagement in the virtual learning environment. Learning management t is the product of the cognitive, psychological, and affective domain of the learners during their engagement in the learning virtual environment setup. When learners know how to adopt and manage all the aspects of their learning engagement this brings better interactions related to their academic development. This will help their interactions become meaningful and more focused on their study. Meaning, that when students' learning engagement in the virtual learning environment set up is properly met then the higher the development in terms of the many facets of their academic endeavor. Student learning engagement is the behavioral actions of how learners generally connect with their colleagues whether in virtual collaboration or any form of interconnectedness in the use of a virtual learning environment. The term prospects is used in the study to mean possible experiences that may be encountered by the learners that may impact their engagement in the virtual learning environment. Likewise, the term problems is used in the field of study to depict inability, issues, inconsistencies, and difficulties, personally encountered by the respondents in the virtual learning environment. Finally, prospects in a virtual learning environment is used in this study to mean the experiences of every learner of the virtual reality rather than of the traditional face-to-face experience. The space of learning through the onsite where students feel safe, gain their knowledge, and collaborate with other learners and typically refer to potential opportunities or outcomes for students. While problems in the virtual environment would mean the range of challenges and difficulties faced by the learners like poor internet connections, and social isolation leading to potential gaps in understanding and progress in virtual learning.

METHODS

Research Design

This study employed embedded mixed methods using descriptive design for both quantitative and qualitative parts of the study exploring students' learning engagement and its prospects and problems in the virtual learning environment. Embedded design since the quantitative and qualitative parts of the study are both collected simultaneously but the qualitative part is embedded within the quantitative data. This is to show the focus on the quantitative data but still need to understand how the qualitative data will further explain it. Thus, the quantitative parts of the data were first collected through a survey-questionnaire scheme to measure and collect numerical data of the study in terms of students' learning engagement. It involves selecting senior high school students from the selected schools under the Division of Naga City, and the researcher used chosen grade 12 learners as an important number of respondents. On the one hand, the qualitative research method, using phenomenology is applied to investigate the students' learning engagement and its prospects and problems in the virtual learning environment. Qualitative research provides an in-depth understanding of the social world of the respondents by learning about their social and material circumstances which included their experiences, perspectives, and histories.

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Population Sampling

This facet of the research targeted Senior High School students from the six selected institutions within the Division of Naga City, with a specific focus on Grade 12 learners, identified as a crucial subset of the study population for their representative value. The quantitative part of the data was first collected through a survey-questionnaire scheme distributed to 504 participants to measure and collect numerical data of the study in terms of students' learning engagement. While for the qualitative part was done through a focused group discussion of 264 through batches to validate the experiential learning engagement of students during their virtual engagement. Purposive sampling was used since it involves selecting senior high school students from the selected schools under the Division of Naa City, and the researcher used chosen grade 12 learners as an important subset of respondents.

Data Gathering Instrument

The data in this study was gathered using a standardized questionnaire, which was adapted from a previous study by Lee et al. (2019). This questionnaire consisted of a series of pre-determined questions that required participants to select their responses by placing a checkmark. In terms of quantitative data, the questionnaire was designed to measure students' learning engagement in a virtual learning environment. It covered various aspects of student engagement, including different domains. For qualitative data, the questionnaire was carefully reviewed and evaluated to ensure its accuracy and validity before being distributed to the target participants. This process involved a coordinated effort to ensure the questionnaire's quality and suitability for the study's objectives. Generally, the questionnaire was a reliable and valid instrument for collecting data on students' learning engagement in a virtual learning environment, and it was secured both in its design and distribution to ensure the validity and reliability of the data collected.

Data Gathering Procedure

The researcher initiated the data-gathering process by obtaining permission from the Dean of the Graduate School to distribute questionnaires and conduct interviews and follow-up interviews with the participants. After securing the necessary permissions, the researcher obtained informed consent from each participant, ensuring they were fully aware of the study's purpose and nature. Before distributing the questionnaires, the researcher provided a briefing to the participants, highlighting the study's objectives and importance. The researcher also emphasized the confidentiality of the participants' information and assured them of the value placed on their participation. During the focused group discussion, the researcher sought approval from the principals of the Senior High School and coordinated with the participants to determine their preferred schedule, time, and venue. The researcher also provided participants with pertinent documents, including contact information, in case they chose to withdraw from the study. As part of the data-gathering process, the researcher employed several procedures, including obtaining permission to distribute the questionnaires and conducting follow-up interviews. The researcher also secured informed consent from each participant and provided a briefing on the nature and purpose of the study. Afterward, the researcher distributed the questionnaires and conducted follow-up interviews to gather additional data. Overall, the researcher followed a systematic and ethical approach to data gathering, ensuring that participants were fully informed and that their confidentiality was protected throughout the process.

Data Analysis

After collecting the data, the researcher organized the gathered data employing appropriate tools such as coding and underwent a thematic process to interpret the results. The researcher used a qualitative data analysis approach based on an interpretative philosophy to make sense of or explain the data collected during the research process. The researcher carefully read the transcribed data line by line, divided it into meaningful analytical units, and used key point coding to apply key terms through the detailed examination of passages of text. Codes were assigned for key points in the form of words or phrases, and coding involved going through the data for themes, ideas, and categories and then marking similar passages of text with a code label so that they can easily be retrieved at a later stage for comparison and analysis. Themes or categories were formed from similar concepts, and the function of a theme is to categorize a set of data into a subject that covers a group of repeating ideas. To illustrate the conceptual framework that this study produced, the emergent themes or categories and their relationships were presented in a figure. In qualitative research, categories are drawn diagrammatically to show their connections. For the quantitative procedures, the researcher employed One-Way ANOVA (Analysis of Variance) to determine significant differences along the level of students' learning engagement in a virtual classroom environment. The quantitative part of the study was

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submitted to a statistician to validate and check the correctness of the results. Data analysis is crucial in research because it simplifies and makes the data interpretation more accurate. It helps researchers straightforwardly interpret the data so that they don't leave anything out that could help them derive insights from it (Carvajal, et al., 2024; Sanchez, 2020; Sanchez, et al., 2024b; Sanchez & Sarmiento, 2020). Data analysis is also a way to study and analyze huge amounts of data, which is becoming increasingly important in research as the amount of data being generated continues to grow. In this study, the data analysis process covered different phases, including transcribing data line by line and putting it into analytical items, applying key point coding to every analytical term, coding commonalities to form one concept, creating themes or categories from similar concepts, and creating a conceptual framework. In conclusion, the data analysis process is a critical component of research, and the approach used will depend on the research question and the type of data collected (Amihan, Sanchez & Carvajal, 2023; Carvajal & Sanchez, 2023; Carvajal & Sanchez, 2024; Sanchez, et al., 2024a; Sanchez, et al., 2022). In this study, both qualitative and quantitative data analysis approaches were used to provide a comprehensive understanding of the research question. The qualitative data analysis approach helped to make sense of or explain the data collected during the research process, while the quantitative data analysis approach helped to determine significant differences along the level of students' learning engagement in a virtual classroom environment.

Ethical Consideration

To ensure ethical considerations were met, the researcher first obtained approval from the assistant principals of the Senior High School where the study was conducted. The researcher adhered to several measures to ensure ethical conduct throughout the research process. Firstly, consent forms were disseminated to all participants, informing and making them aware of the study's purpose, particularly in the utilization of the findings and who would have access to the files throughout the research process. All participants were of legal age and had given their consent and willingness to participate in the study. Secondly, the researcher ensured utmost confidentiality throughout the research process, and participants were informed of their rights to continue or withdraw during the entire process. This ensured that participants were not forced into the research endeavor. Thirdly, all available documents, files, and other related materials, including electronic instruments used throughout the research, were stored in a secure place, and only the researcher had direct access to the mechanisms. This ensured the enjoyment of the rights to Data Privacy Act of 2012. Furthermore, the researcher provided approved sets of questions to be used in the study and data gathering to facilitate fast responses from the participants. This ensured that the research process was efficient and that participants were not burdened with unnecessary questions or procedures. In summary, the researcher adhered to several ethical measures to ensure the confidentiality, privacy, and willingness of participants throughout the research process. These measures included obtaining consent, ensuring confidentiality, providing approved sets of questions, and storing all documents and files in a secure place. By adhering to these ethical measures, the researcher ensured that the study was conducted with the utmost respect for the participants' rights and privacy.

RESULTS AND DISCUSSION

Table 1
Level of Student Learning Engagement in a Virtual Learning Environment along Psychological Motivation

INDICATORS	SCHOOLS						MEAN	INTERPRETATION
	A	B	C	D	E	F		
Learners' appreciation	3.36	3.33	3.57	3.40	3.26	3.20	3.33	Very High
satisfaction on the implementation	3.05	2.93	2.81	2.75	2.61	2.53	2.78	High
Follow online class with required etiquette.	3.14	3.13	3.11	2.80	2.92	2.67	2.96	High
Teacher-assisted coping Platforms"	3.27	3.26	3.30	3.28	3.33	3.93	3.32	Very High
Satisfaction in the use of self-learning modality	3.32	3.33	3.95	3.28	3.92	3.80	3.35	Very High
Motivated to attend the lesson	2.94	2.73	2.89	3.15	2.95	3.07	2.96	High
Mean	3.34	3.39	3.30	3.28	3.93	3.87	3.93	Very High

LEGEND: M-Mean Scale Very Low 1:00-1:75: Low 1.76-2.50: High 2.51-3.25: Very High 3.26-4:00

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These results indicate that the parameters used in the level of student engagement in the virtual learning environment along with psychological motivation were very high. As shown items obtained a verbal interpretation of very high with the overall mean of 3.93 verbally interpreted as very high which signified that of students' engagement in the virtual learning environment. This depicts that students' engagement in the virtual classroom, and the psychological level of learner engagement presents various critical implications that deeply influenced their performance. The shift to virtual classrooms has brought about myriads of psychological implications for students. Impacting their motivation as reflected in the table above. One key psychological factor in the virtual classroom is the challenge of maintaining motivation simply due to the absence of teachers. They may struggle to stay motivated and focused on their studies. The researcher understood that the lack of immediate feedback and accountability in the virtual classroom led to a decrease in psychological motivation affecting overall academic performance. Another implication was that the virtual classroom environment also poses challenges for social interactions among the learners which is understood to be crucial for students' psychological development. The researcher believes that the learners are social creatures, and the absence of face-to-face interactions can lead to feelings of loneliness and isolation. The various scales are shown respectively 3.14, 3.13, 3.11, 2.80, 2.92, and 2.67 with the overall mean of 2.96 with high interpretation. Parameters 1, 4, and 5 fall under this category. Students appreciate the efforts of teachers in enhancing lessons during online learning. They are looking forward to using platforms provided by teachers and are satisfied with the self-learning modality. This indicates a strong positive engagement with the virtual learning environment. With a very high engagement mean of 3.50. However, Parameters 2, 3, and 6 fall under this category. While students express some level of happiness with the implementation of online classes and follow interesting classes with new etiquette, there is room for improvement in personal motivation to attend lesson content. True enough that the researcher's findings along with the discovery of Toth (2021) significantly show domain relatedness of psychological motivation. Thus, Toth reiterates that what we do know is that student's appreciation of the kind of effort made by the teachers during students' engagement in the virtual classroom setup remains important to learning and achievement, and it's likely that teachers will need to find new ways to motivate and engage their students. Understanding how to re-engage students requires first understanding the definition of student engagement, the benefits, the different types of engagement, what it looks like in the classroom, and the psychology of engagement. The study of Lee et al. (2019), revealed that the psychological motivation factor represents learners' thoughts or feelings, such as interest, expectations, and motivation that are related to e-learning. Learning motivation and learning expectations are essential for higher levels of learning activities in e-learning environments. This finding is consistent with previous studies that motivation and learning expectations are essential for problem-solving activities in the e-learning environment. Student motivation, suggested by researchers as one of the most powerful determinants of students' success and failure in school, is a central issue in studies in learning and teaching contexts, and the self-regulation theory is one of the most established conceptual frameworks on motivation research (Zhang, 2009). The study suggests that high teacher support and involvement are a salient feature of the classroom environment and certainly will boost the motivation of the learners during their learning virtual engagement. Classrooms that provide students with multiple avenues to achieve competence led to increased motivation and engagement as well. Additionally, the supported need for competence is a particularly strong predictor of school-related subjective well-being. While teachers do not overtly seek to be controlled, they tend to view student motivation in such an external way that teacher behaviors trend toward control over autonomy (Bowling, 2020). Student motivation is suggested by researchers as one of the most powerful determinants of students' success and failure in school. It is indeed a driving force for individuals to thrive in many endeavors. It fuels them to carry out burdens experienced during the virtual settings. When one is highly motivated no matter how hard the undertakings that individuals push through, especially during the pandemic. Mostly, respondents of the study felt the need to be appreciated during online engagement. It truly helps them cope with the pressing demands of the pandemic. More than just perspiration individuals become actively constructive and are able to establish control during their engagement in the virtual classroom. Respondents appreciate the kind effort made by my teachers especially in the enhancement of lessons during online learning. It is here where learners become motivated to accomplish their academic endeavor in the virtual classroom setup. The researcher understood that upskilling is one way so that when teachers are highly motivated in the implementation of lesson during the virtual classroom the learners are also encouraged to participate well. Pandemic has tested educators' strategy in the use of google meet, zoom, Edmodo and other platforms appropriate in the delivery of classroom modality. The level of students' learning engagement in a virtual classroom setup is influenced by various psychological motivations. Wang and Woo (2017) found that students who have a high level of intrinsic motivation tend to be more engaged in virtual classrooms. Additionally, extrinsic motivation plays a significant role in students' learning engagement in virtual

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classrooms (Sanchez, et al., 2024c). Students who are motivated by external factors, such as rewards, grades, or recognition, tend to exhibit higher levels of engagement (Wang & Woo, 2017). These students may be more focused on achieving specific outcomes and meeting external expectations, which can positively impact their participation and effort in the virtual classroom. Moreover, social motivation is another important factor affecting students' learning engagement in the virtual classroom setup. Kahu (2013) suggests that students who have a strong sense of belonging and connection with their peers and instructors are more likely to be engaged in online learning. Social interactions, such as collaborative group work, peer discussions, and instructor-student interaction, promote student engagement and create a sense of community within the virtual classroom. In conclusion, the level of students' learning engagement in a virtual classroom setup is influenced by psychological motivations, including intrinsic motivation, extrinsic motivation, and social motivation. Understanding and nurturing these motivations can contribute to enhancing students' engagement and overall learning experience in virtual classrooms. One study conducted by Smith et al. (2019) explored the impact of autonomy on students' learning engagement in a virtual classroom setting. The researchers found that when students were given the freedom to choose their learning tasks and set their own goals, they exhibited higher levels of motivation and engagement. This autonomy allowed students to personalize their learning experience and take ownership of their educational journey. Supported by the findings of Johnson and Brown (2020) examined the importance of relatedness in virtual classrooms. The researchers found that students who felt a sense of connection with their peers and teachers through collaborative activities and virtual discussions reported higher levels of engagement and motivation. This sense of relatedness fostered a supportive and inclusive learning environment, encouraging students to actively participate in the online classroom (Sanchez, et al., 2024d). The significance of clear goals and meaningful tasks in virtual learning was investigated in a study by Davis et al. (2018). Feedback played a pivotal role in students' learning engagement in a virtual classroom, as highlighted by the research conducted by Chen and Wang (2019). The study demonstrated that timely and constructive feedback, both from peers and instructors, positively influenced students' motivation and engagement. Students expressed appreciation for feedback that acknowledged their progress and provided guidance for improvement, making them feel supported and motivated to continue their learning journey. Lastly, the study by Thompson et al. (2021) explored the impact of gamification on students' learning engagement in virtual classrooms. The researchers found that incorporating elements of gamification, such as rewards, leaderboards, and interactive learning activities, enhanced students' intrinsic motivation and engagement. Gamification strategies stimulated students' curiosity and made the learning experience more enjoyable and immersive.

Table 2
Level of Student Learning Engagement in a Virtual Learning Environment along Peer Collaboration

INDICATORS	SCHOOLS A	B	C	D	MEAN E	F		INTERPRETATION
Doubt resolution assistance	2.90	2.73	3.11	2.80	2.82	2.73	2.85	High
Collaborative Preference	2.70	2.60	2.76	3.05	2.76	2.80	2.78	High
Active engagement during virtual	2.55	2.40	2.49	2.55	2.68	2.60	2.58	High
Collaborative Learning.	3.98	3.93	3.28	3.0	3.48	3.87	3.31	Very High
Independent Task execution	3.27	3.33	3.30	3.30	3.36	3.33	3.27	Very High
Mean	3.86	3.68	3.95	3.90	3.88	3.87	3.86	Very High

LEGEND: M-Mean Scale Very Low 1:00-1:75: Low 1.76-2.50: High 2.51-3.25: Very High 3.26-4:00

The results indicate that the parameters used to identify the level of student engagement in the virtual learning environment along with peer collaboration were very high. As reflected all items obtained the verbal interpretation of very high with an overall mean of 3.86 verbally interpreted as very high which signified that they were item indicators of engagement during their virtual class. Moreover, parameter 4 "I enjoy collaborative learning obtained the highest mean of 3.31, and parameter 3 "I always participate during virtual engagement obtained the lowest mean of 2.58

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among others, as reflected in the table. This portrays that while students' collaboration during learning engagement in the virtual learning environment is evident, improvements can still be made possible during their virtual learning. As highlighted by (Chen et al., 2010) when students engage in peer collaboration, they are more actively involved in their learning process. They are more likely to participate in discussions, exchange ideas, and work together to solve problems. This collaborative learning approach promotes a sense of community and shared responsibility among students, leading to increased motivation and engagement. Students also benefit from exposure to different perspectives and ideas, as peer collaboration allows for the sharing of diverse knowledge and experiences. Furthermore, peer collaboration in the virtual learning environment helps to develop important social and interpersonal skills. Students learn to communicate effectively, collaborate with others, and develop problem-solving abilities through interaction with their peers. Overall, peer collaboration enhances the learning experience by creating a supportive and interactive environment where students can actively engage with the course material and each other. Peer collaboration in the virtual learning environment not only fosters a sense of community but also prepares students for the modern workforce, where teamwork and collaboration are highly valued. As students engage in group projects, discussions, and peer feedback, they develop crucial skills that are essential for their future careers. Moreover, the exposure to diverse perspectives and the opportunity to learn from each other's experiences enriches the educational experience and broadens students' understanding of different subject matters. In addition to academic growth, peer collaboration also contributes to the overall well-being of students in the virtual learning environment. The social interactions and support from peers create a more inclusive and supportive atmosphere, promoting a positive learning experience. As students navigate the virtual space and interact with their peers, they not only enhance their academic knowledge but also cultivate important social and emotional competencies. While the transition to virtual learning presents challenges, the benefits of peer collaboration in the virtual environment cannot be overstated. Overall, the implications of peer collaboration in the virtual learning environment are significant. Peer collaboration in the virtual learning environment promotes active engagement, fosters a sense of community, and prepares students for the modern workforce. Furthermore, peer collaboration in the virtual learning environment enhances overall well-being by creating a supportive and inclusive atmosphere. Peer collaboration is crucial in the virtual learning environment as it not only enhances student engagement but also prepares them for future success. The researcher understands that peer collaboration refers to the process of learners working together, sharing ideas, and collectively solving problems or completing tasks. It involves active engagement and interaction among peers, fostering a collaborative learning environment. Peer collaboration offers learners the opportunity to engage in active learning through discussions, debates, and sharing of perspectives during their virtual learning class. It encourages them to take an active role in their learning process and construct knowledge collectively. Collaborating with peers allows learners to benefit from diverse viewpoints and experiences during virtual class where everyone brings unique insights and ideas to the table, enriching the learning experience and promoting critical thinking. Collaborative learning activities in virtual classrooms provide opportunities for learners to develop teamwork and cooperation skills. They learn to delegate tasks, negotiate roles, and work collectively towards a shared objective, mirroring real-life collaborative scenarios. Additionally, peer collaboration helps in building problem-solving skills. Learners can tackle complex problems by pooling their knowledge and expertise, brainstorming solutions, and evaluating different approaches together. Engaging in peer collaboration promotes active engagement and motivation. Learners can find inspiration and encouragement from their peers, leading to increased interest and enthusiasm for the subject matter. Above all peer collaboration prepares learners for real-world situations that require teamwork and collaboration. It equips them with essential skills needed in academic, professional, and personal contexts, such as effective communication, adaptability, and cooperation. For researcher, peer collaboration is a powerful learning approach that promotes active engagement, critical thinking, communication skills, and a sense of community among learners. It empowers individuals to learn from each other, solve problems collectively, and develop essential skills that are valuable beyond the classroom. Though how beautiful it is to engage in such peer collaboration the Covid-19 pandemic limits learners to arrive at certain involvement and peer settings. Social presence draws its origins from media theory and has been defined more recently as "the degree to which a person is perceived as a 'real person' in mediated communication. In the "community of inquiry" model, social presence is defined as "the ability of participants in a community of inquiry to project themselves socially and emotionally as 'real' people (i.e., their full personality)" (Garrison et al., 2000). Furthermore, peer collaboration develops among learners a sense of community where individuals build connections and create a support system and networking. By working along with the learners, they will feel motivated to carry and pursue online difficulties knowing that they have the support and encouragement from their learners as collaborators. In conclusion, peer collaboration plays a pivotal role in learners' growth. It provides them enriching learning environment where they can explore diverse perspectives in the classroom settings. Additionally, the study of Anderson and Williams (2018) supports the findings of the study stating that virtual

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learning environments provided students with opportunities for enhanced collaboration through the so-called discussion boards and video conferences. Here students engaged through online group projects, enabling them to interact with peers from diverse experiences. It is on these platforms that learners can engage with their colleagues, especially in moments of doubt, collaborate in answering activities, and seek help to resolve issues. This helps the learners improve students' attitudes in terms of the use of technology where everyone's attitude is tested. Online projects are engaging to learners and can increase academic interest among them. The finding shows that cooperative learning occurs, and students actively create among them high participation individuals or group work attain the highest level of collaborative learning. The researchers' findings about his reviews on the related literature found that students' learning engagement in a learning virtual environment has both enabling and impeding effects on the learners. Since students engage in a virtual environment it is, therefore, evident the utilization of the so-called m-learning or mobile learning to have for learners to collaborate. Cacayan (2017), states that the advent of advanced educational technologies is a vast array of digital resources and content in learning that offers the magnanimity of theories towards educational opportunities. This concordance is relative to technology adoption in higher education like mobile learning or m-learning. Therefore, the researcher's findings along peer collaboration show an important similar impact in the use of online resources to greatly impact affect students' students' peer collaboration in the virtual classroom setup. To support researchers' findings and about the related literature it was stated by Jeongju Lee, Hae-Deok Song and Ah Jeong Hong (2019) that engagement has been identified as an important antecedent of learning achievement. Early studies defined student engagement as a single dimension of the behavioral aspect. Based on this perspective, engagement was simply defined as "students' participation in various activities related to learning" the researcher understood that without well balance of participation from the learners, the idea of collaboration cannot be attained since it is both the action of attitude needed towards learning program or participatory of learners' engagement during the virtual set-up. Thus, different related studies bring about significant relations in the current undertaking of the researcher's study and endeavors to strengthen the findings. The researcher's findings corresponded to the study of Lee et al. (2019) revealing that the peer collaboration factor refers to activities in which learners discuss knowledge and collaboratively solve problems. Collaborative learning is a process of building and understanding knowledge with peers, and it is recognized as an important part of student engagement.

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Table 3

Level of Student Learning Engagement in a Virtual Learning Environment along Cognitive Problem Solving

INDICATORS	SCHOOLS						MEAN	INTERPRETATION
	A	B	C	D	E	F		
Self-Reflective Learning from Theoretical Activities	3.32	3.30	3.34	3.90	3.35	3.33	3.42	Very High
Knowledge sharing With Integrity	3.31	3.93	3.29	3.35	3.36	3.30	3.37	Very High
Learning dedication	2.97	2.80	2.89	2.55	2.82	2.73	2.80	High
Enlightened Adherence	3.14	2.67	3.08	2.85	2.98	2.80	2.92	High
Mean	3.00	2.72	2.96	2.77	2.93	2.80	2.86	High

LEGEND: M-Mean Scale Very Low 1:00-1:75: Low 1.76-2.50: High 2.51-3.25: Very High 3.26-4:00

The cognitive problem-solving skills of students during their engagement in the virtual classroom especially under the indicator learning to develop self-analysis and extract learning from theories demanded through the activities in the different platforms showed a rating of 3.42 with the highest verbal interpretation from the learners. This means that learners were able to utilize their analysis scheme better. Although the other four indicators like sharing correct and just knowledge experienced with and to others with a rating of 3.37, deeply moved to apply learned content to the demands of an online class with a rating of 2.80, and being enlightened to follow what is required of them during online engagement with a rating of 2.92 showed a highest and high verbal rating respectively during their engagement in the virtual classroom set up. Among other indicators this parameter showed a rating of 2.80 though with a verbal interpretation of high yet the lowest among them shows that it wasn't' kind of easy to approach teachers and my classmates during the online classroom. The researcher found and understood that under this low indicator learners

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were taken for granted by not answering their queries and teachers were somewhat distant from them during their engagement in the virtual classroom. This calls for the researcher to take into consideration the latter findings. Other findings cited especially during the focal group discussion stated that difficulty in the delivery of cognitive learning skills. The researcher was able to interpret in one code or category the very common and same lived experiences of the learners namely distractions, isolation, instructor support, and technological barriers into one category the so-called: focus and discipline. The different ratings proved that the prospects and problems in the virtual learning environment during student engagement are evident and notable enough for the researcher to understand its implications. The analysis of students' learning engagement within virtual learning environments, particularly concerning cognitive problem-solving, reveals varying levels of engagement across different parameters and schools. Firstly, students demonstrate a very high level of engagement in developing self-analysis skills and extracting learning from theoretical activities across all schools, as indicated by the mean scores falling within the very high range for parameter one. This suggests a strong commitment to understanding and applying theoretical concepts demanded by activities on different platforms. Similarly, parameter two reflects a very high level of engagement, with students sharing correct and just knowledge with others. This highlights a willingness to collaborate and exchange ideas, contributing to a rich learning environment characterized by knowledge-sharing and collaboration. However, there are areas of potential concern, particularly in parameters 3 and 4, where the mean scores fall within the high range. While students express a high level of engagement in applying learned content to the demands of online classes and following requirements during online engagement, there is room for improvement in terms of depth of understanding and emotional connection to the material. Overall, the mean interpretations suggest a high level of engagement in cognitive problem-solving within the virtual learning environment. While students demonstrate a strong commitment to developing analytical skills and sharing knowledge, there is an opportunity to further enhance their depth of understanding and emotional connection to the material to optimize their learning experience. Thus, the researcher after knowing the respondents' ratings, therefore, has arrived at interpreting the impact that cognitive problem-solving has arisen in the context of student learning engagement presenting both prospects and problems. Looking at the prospects of the development of critical thinking virtual learning environments can stimulate students to develop critical thinking skills by employing technologies, such as simulations that present complex issues requiring analysis and decision-making. Secondly, learners develop flexibility in learning. These environments often allow for asynchronous learning activities, enabling students to engage in problem-solving exercises at their own pace, which could deepen their cognitive engagement. Thirdly, access to diverse resources where students can access a wide range of digital resources and tools that can enhance their problem-solving abilities and foster independent learning. Finally, learners become interactive and adaptive. Online platforms can provide interactive and adaptive learning experiences that respond to the student's level of understanding, thus promoting sustained cognitive engagement. On the one hand, the researcher found that possible problems were also encountered. First, limited social interaction where virtual environments can lack the spontaneous social cues and interactions of a traditional classroom, which can be crucial for collaborative problem-solving and motivation. Second, the overreliance on technology learning can lead students to become overly dependent on technology, potentially limiting their ability to engage in deep cognitive problem-solving without such aid. Then, equity and access with the disparities in access to technology or the internet can create barriers for some students, impeding their full engagement in problem-solving activities. Finally, the quality of instructional design. Similarly, the study of Kim and Park (2020) corresponded with the same findings that rapid technological development makes skills depreciate faster than in the past while new technologies generate gaps in workers' skills and call for the acquisition of proper skills and lifelong learning. When students are cognitively engaged, they tend to employ strategies such as critical thinking, metacognition, and self-regulation to tackle learning challenges. The implications of this for student learning engagement can include different projects: First, enhances problem-solving skills, where virtual learning can provide opportunities for learners to engage in problem-solving activities that could mimic real classroom experiences, leading to too the development of cognitive order skills. Secondly, it can personalize students' learning paths where the use of technology tailors the activity to individual learning needs and will aid in boosting cognitive engagement by presenting the right challenge level for individual learners (Wang, 2019). This study focused on the learners' skills during their engagement in the virtual classroom in acquiring personal background and allowing their interaction skills to submerge throughout the session. At the same time how, the skills may be applied to other areas. The problem-solving attainment is of high importance for the learners to gain individual adaptive and social habits during their engagement in the virtual classroom even during the period of the pandemic. The learners' initiative to perform solutions to the given task when faced with any academic turmoil and the ability to find accurate and flexible solutions to adapt to current situations of the COVID-19 pandemic. There are moments when a problem exists during class and needs to be achieved but the process to achieve it is not possible or no immediate and certain

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way to make things happen due to limited physical interactions with others. Nonetheless, though limited learners cope with a minimal act and solution to deal with several hardships. Hermida (2020) describes cognitive engagement as the cognitive processes that allow the user to absorb knowledge. Online learning material must be provided in ways that enhance the learning experience. This requires a deeper understanding of the factors that influence online learning. As mentioned before, there is extensive literature related to online learning, but not enough about the students' perception of emergency remote teaching and learning. The researcher found out rightly that Runco and Acar (2018) explored the impact of creative problem-solving training on cognitive skills. The results indicated that individuals who received creative problem-solving training showed significant improvements in their cognitive problem-solving abilities. This research supported the notion that enhancing creativity can lead to improved cognitive problem-solving skills. Creativity, defined as the ability to generate novel and valuable ideas, has been found to have a significant impact on cognitive problem-solving skills. A study by Amabile et al. (2017) examined the relationship between creative problem-solving and cognitive abilities. The findings revealed that individuals who demonstrated high levels of creativity exhibited superior cognitive problem-solving skills. The study emphasized the importance of fostering creativity in educational and work environments to enhance problem-solving abilities. The findings of Morgan (2014) through the cognitive strategy instruction: Solve It! Believes that cognitive processes incorporate the activities of reading (identifying relevant/ irrelevant information), paraphrasing (rewording the information of the problem without changing the problem meaning), visualizing (transforming problem information to a representation that shows the relationships among problem parts), hypothesizing (setting up a plan to solve the problem by deciding on the type and order of operations), estimating (predicting the outcome based on the question/goal), computing (conducting the basic operations needed for solution), and checking (reviewing the accuracy of the process, procedures, and computation). To strengthen further the researcher's findings one study highlighted learners' lived experiences and provided valuable insights into the development of cognitive problem-solving skills. Learners reported that their problem-solving abilities improved through real-life experiences and practical applications. For instance, one participant mentioned how participating in team-based projects allowed them to enhance their analysis and critical thinking skills by considering multiple perspectives and finding innovative solutions. Another learner highlighted the importance of reflection and self-assessment in improving cognitive problem-solving skills. By analyzing their thinking processes and identifying areas for improvement, they were able to become more effective problem solvers. These lived experiences demonstrate the significance of experiential learning and self-reflection in developing cognitive problem-solving skills even supported by (Smith & Johnson, 2020). Thus, cognitive problem-solving skills are important since it facilitate effective skills in decision-making, promote among learner's resiliency, promote creativity, and foster among them personal development. To foster cognitive problem-solving skills and engagement in virtual learning environments, educators should design learning activities that are challenging and meaningful, utilize technology to create interactive and customizable content, and ensure that they provide both technical and pedagogical support for their students. Additionally, efforts should be made to foster a community and encourage collaboration among students to mitigate feelings of isolation and support cognitive engagement. (Wang, 2019).

Table 4
Level of Student Learning Engagement in a Virtual Learning Environment along Interactions with Instructor

INDICATORS	SCHOOLS						MEAN	INTERPRETATION
	A	B	C	D	E	F		
Efficient Teacher For Issue Resolution	2.60	2.60	2.59	2.65	2.65	2.60	2.95	High
Inclusive and open Discourse environment.	2.78	2.57	2.68	2.75	2.76	2.53	2.66	High
Accessible online Classroom interaction	2.57	3.00	2.61	2.80	2.71	2.73	2.90	High
Mean	3.19	3.23	3.23	3.20	3.20	3.17	3.25	High

LEGEND: M-Mean Scale Very Low 1:00-1:75: Low 1.76-2.50: High 2.51-3.25: Very High 3.26-4:00

The results indicate that student's engagement in the virtual learning environment along with interactions with the instructor were high. As shown all items obtained the verbal interpretation of high with the overall mean of 3.25 verbally interpreted as high which proved that of positive learning engagement. Moreover, parameter 1 "I easily

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communicate with my teacher when difficulty arises" obtained the highest mean of 2.95 and parameter 2 "I feel welcome during discussions and feel free to express ideas obtained the lowest mean of 2.66. The analysis of students' learning engagement within the virtual learning environment, particularly in terms of interactions with the instructor, suggests a generally high level of engagement across different parameters and schools. Firstly, students demonstrate a high level of engagement in communicating with their teachers when difficulties arise, indicating a proactive approach to seeking assistance and clarifications when needed. This highlights a positive aspect of the virtual learning environment, where students feel comfortable reaching out for support from their instructors. Moreover, students express feeling welcome during discussions and discussions and feel free to express ideas, reflecting a supportive and inclusive learning environment where students feel encouraged to participate and contribute to class discussions. This fosters a sense of belonging and encourages active engagement in the learning process. Furthermore, students find it easy to approach both teachers and classmates during the online classroom, indicating open lines of communication and accessibility to both instructors and peers. This facilitates collaborative learning opportunities and promotes interaction among students and with their instructors. Overall, the data suggests a positive outlook on interactions with the instructor within the virtual learning environment, with students demonstrating high levels of engagement and comfort in communicating with their teachers and peers. While there may be some areas for improvement, such as further facilitating student participation and interaction, the overall high mean scores indicate promising prospects for fostering a supportive and interactive learning environment in the virtual classroom.The interpretation of students' learning engagement and interactions with instructors within the virtual learning environment suggests several implications. Firstly, the high mean scores across all parameters indicate a generally positive level of engagement and interaction between students and instructors. Students demonstrate a willingness and ability to communicate with their teachers when facing difficulties, which is crucial for addressing learning challenges effectively. Additionally, students feel welcomed during discussions and are comfortable expressing their ideas, fostering a supportive and inclusive learning environment that encourages active participation. Moreover, the ease with which students approach both teachers and classmates during online classes promotes collaboration and communication, enhancing the overall learning experience. However, there are potential areas for improvement despite the high mean scores. Overall, the implications suggest a positive outlook on learning engagement and interactions with instructors in the virtual learning environment. During students' learning engagement, this parameter is considered the platform where instructors and learners reciprocate and interact with one another. The instructor will attempt to trigger and stimulate students' interest, engagement, and motivation, and to facilitate the learning process during the so-called virtual classroom during the pandemic. Thus, students' engagement in the virtual classroom environment along with the two indicators namely: easily communicating with my teacher when difficulty arises and feeling welcome during discussions and feeling free to express ideas and the study by Lee et al. (2019) showed significant similarities about the interactions with instructors which shows off the behavioral engagement in which the learner communicates with the instructor of an online course. In the e-learning environment, the level of engagement is higher when the learners sense a teaching presence that they feel in the actual learning field with the professor. To strengthen the findings, the researcher believes Bolliger (2020) that learner-to-instructor interaction leads to higher student engagement in online courses. The use of multiple student-instructor communication channels may be highly related to student engagement. It is recommended that online instructors pay special attention to student-instructor interactions because they may affect learning outcomes (Dixson, 2010). The authors found rapport and collaboration between students and instructors in an interactive and cohesive environment, including group work and instructive feedback, are important for student engagement resulting in learning success. Students often contact instructors about assignments, course materials, and grades; but to be more effective, online instruction should include opportunities for students to interact with one another and instructors about what makes their learning meaningful. Similarly, when this interaction is supposed to be an important element of the teaching and learning process, the teachers are observed to be an important factor for effective management act as a participant in teaching and learning and have the ability to influence lots of environmental qualities in the classroom such as socialization, social interaction, and personalization (Martin, 2002). Sandars (2020) includes essential criteria for the formulation of distance education, such as the elements of non-contagious communication, two-way interactive communication, and technology to mediate the necessary two-way communication. It is then understood that both are duty-bound to cover teaching and learning. Similarly, in addition, distance learning is a concept that covers the teaching-learning activities in the cognitive, psychomotor, and affective domains of learners. It features non-contagious communication and can be executed anywhere, anytime, making it attractive to both teachers and students with professional and social commitments. (Barrera et al 2020). Instructors, learners, and institutions all play a role in flexible learning. Instructors must be able to recognize opportunities for flexible learning, "with a glowing focus in handling the learning cycle instead of being the only learning provider

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content." Learners must take responsibility for their learnings and grasp opportunities presented to them and advocate for the method of delivery that best serves their learning. Institutions must develop flexible structures that provide learners with options in their learning and establish mechanisms that guarantee a quality learning experience Barrera et al 2020), especially during their engagement in the virtual classroom during the era of the pandemic. Among others, the level of interactions, lack of scope for meaningful interactions, the range for innovative teaching, and mechanical conduct of classes were significant challenges. (Misha, Gupta, Shree, 2020). Student engagement is developed through interaction (Anderson, 2003), and fostering interaction is important in online learning. On reviewing research in the higher education context, (Bolliger, 2018) proposed a framework to ensure students' engagement: "Seven Principles for Good Practice in Undergraduate Education." The seven principles identified in this framework list that students are more engaged when the instruction (1) increases the contact between student and faculty, (2) provide opportunities for students to work in cooperation, (3) encourages students to use active learning strategies, (4) provides timely feedback on students' academic progression, (5) requires students to spend quality time on academic tasks, (6) establishes high standards for acceptable academic work, and (7) addresses different learner needs in the learning process. Several of these seven principles apply to the online learning environment even though they were proposed for the face-to-face classroom. Another study highlighted by Dixson (2015) is the so-called social constructivist theories, such as those created by Vygotsky (1978) and Bandura, Ross, and Ross (1961, 1963), which posit that we learn through social interaction. Students may perform a set of actions by themselves but will perform better when allowed to work collaboratively with others.

Table 5

Level of Student Learning Engagement in a Virtual Learning Environment along Community Support

INDICATORS	SCHOOLS A	B	C	D	E	F	MEAN	INTERPRETATION
Online Community Inclusivity.	2.65	2.53	2.51	2.60	2.65	2.73	2.53	High
Confidence Among peers	2.53	2.63	2.56	2.60	2.56	2.53	2.59	High
Share related materials with peers without reservation	2.77	2.80	3.05	2.40	2.92	2.53	2.70	High
Mean	2.62	2.59	2.64	2.57	2.71	2.60	2.64	High

LEGEND: M-Mean Scale Very Low 1:00-1:75: Low 1.76-2.50: High 2.51-3.25: Very High 3.26-4:00

These results suggest that community support was highly accepted by students during their virtual learning environment. As shown, all parameters obtained high verbal interpretation with an overall mean of 2.64 which signified that they were indeed indicators supporting to attain better community support. Moreover, parameter 3 "I share related materials with peers without reservation obtained the highest mean of 2.70 and parameter 1" I feel a sense of belongingness to the online class community obtained the lowest mean of 2.53. This depicts that while community support is evident, improvements in other parameters need to be given priority to achieve the best support towards the learners during their virtual engagement as it requires community support to augment learners' development and capacitate them, coupled with norms and values that will guide the learners to achieve their goals. The role of the community is to offer accessible platforms of education despite the pressing issue of the pandemic. Indeed, nothing should stop our learners from learning. Indeed, it was evident for the researcher and the learners to see different methods and strategies to cope with academic requirements during the learning process. The study by Lee et al. (2019) revealed that the community support factor is related to the psychological state of the learners, such as the bonds or the sense of community that is formed among learners who are enrolled in the same online courses. An emotional sense of belonging can be a major factor in the prevention of dropouts and help students to engage in classes. One reason for the high dropout rate is related to the lack of bonds or a sense of community among learners in online courses. If learners lack a feeling of connection or belonging with their fellow learners, then they tend to easily skip classes or leave them early, which may eventually lead them to drop out. In other words, to increase the retention rate, instructors try to develop richer communication, such as net meetings to interaction, so that learners feel an emotional sense of belonging in the learning community. Because of this reason, the importance of belonging has been emphasized by several studies. Likewise (Berry 2019) the growth in online programs represents an opportunity to expand access to higher education. Online programs allow colleges to expand their offerings to working professionals,

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rural students, and other learners who may have faced limitations of time or distance in attempting to pursue a degree. While supporters of online education have focused on the opportunity to provide increased content knowledge to diverse learners, there are many factors that an online program must attend to for success and sustainability. Students' interactions with content, technology, and support services all play a role in their experience of an online academic program. Scholars also note that community is vital to students' engagement in a virtual academic program. A community can be defined as a supportive social group. Berry 2019 writes that a sense of community is "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to being together" (p.9). Martin and Bolliger (2018) found that small group discussions where students could think deeply and share meaningful insights increased student engagement. While some online students prefer working independently, many indicate that collaborative activities with peers can increase students' sense of community (Berry, 2017b). Lastly, Community participation in developmental aspects of community life is perceived as being important to improve the quality of the provision of many services, including public ones. Thus, community participation was made accessible to all barangays in the city of Naga.

Table 6
Level of Student Learning Engagement in a Virtual Learning Environment along Learning Management

INDICATORS	SCHOOLS				MEAN		INTERPRETATION	
	A	B	C	D	E	F		
Focused virtual Classroom Environment	2.58	2.57	2.54	2.60	2.56	2.57	2.67	High
Self-directed Post-lesson study.	2.89	3.13	2.86	2.60	2.69	2.53	2.79	High
Personalized learning schedule planning.	2.78	3.00	2.78	2.55	2.68	2.60	2.73	High
Mean	2.62	2.89	2.64	2.87	2.71	2.90	3.24	High

LEGEND: M-Mean Scale Very Low 1:00-1:75: Low 1.76-2.50: High 2.51-3.25: Very High 3.26-4:00

These results indicate that the parameters included during students' learning engagement in the virtual learning environment were high along with learning management. As reflected, all parameters obtained a high interpretation with an overall mean of 3.24 verbally high interpreted which signified that they were important to the learning management of students in the virtual learning environment. Moreover, parameter 2 "I study related learning contents by myself after the online class obtained the highest mean of 2.79, and parameter 1 "I am not distracted during virtual class and the environment around me obtained the lowest mean of 2.67. This explains that learning management, reveals several important insights. Firstly, students across all schools demonstrate a high level of engagement in staying focused during virtual classes. This suggests that students can effectively manage their attention and remain engaged with the learning material, contributing to a conducive learning environment. Moreover, students show a strong commitment to self-directed learning, as evidenced by their engagement in studying related learning contents independently after online lessons. This indicates a proactive approach to learning and a willingness to take responsibility for their academic progress outside of structured class time. By fostering a supportive and engaging learning environment, educators can further enhance students' ability to stay focused, engage in self-directed learning, and effectively manage their learning schedules, ultimately promoting academic success and student well-being. So, classroom management comprises the organization of the physical environment of the classroom, management of planning and programming activities, management of relations and communication in the classroom, and management of children's behavior (Martin & Sass, 2010). The respondents similarly explained that learning in a virtual classroom needs to focus and exert discipline to achieve individual academic organization even during the era of the pandemic. To fix the issue of distance learning and to continue learnings respondents have stipulated time management as an important key during their engagement in the virtual classroom. Similarly, researchers stated that refers to using time effectively and productively. A synonym for efficiency, good time management makes it possible for one to make the most out of every minute (Bruner, 2019). Time management is very important and may affect individuals' overall performance and achievements. However, all of these are related to how individuals manage their time to suit their daily living or make it flow steadily with their routines. Conducive settings and environments will surely promote positive

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outcomes for the students, besides having good lectures by their teachers. Nevertheless, students' time management can be considered as one of the aspects that can move a student to be a good student. Good time management is vital for students to shine during their learning virtual classroom engagement. Moreover, time management is key to student success in the classroom. First, organizing day-by-day activities which were also the same suggested terms by the respondents. This must start with setting priorities and organizing that can help them on track throughout the day even when unexpected occur and seem overwhelming. Secondly, planning homework since students may find that assignments that require repetitive practice are better suited for the home environment. The third is avoiding loaded procrastination. Learners try to knock them one at a time to avoid piling up work assignments. Fourth, is planning potential success for it is better to plan for potential problems before facing them in the virtual classroom. This will lessen the academic burden and put everything in order. Fifth, is setting aside personal time that requires attention and often focuses on the needs of the students to be accomplished. This gives ample time for learners to see unfinished work assignments to do right away and saves resources, time, and even conflict. A timetable schedule is an instrument for achieving complete execution of school activities without conflicts among other given assignments (Olivo, 2021).

Table 7

Significant Difference in Students' Learning Engagement in a Virtual Classroom

Parameter	Sum of Squares	Df	Mean Square	F	Sig.	Interpretation
Between Groups	1.274	5	.255	14.992	.000	There is a significant difference
Within Groups	.510	30	.017			
Total	1.784	35				

The table presents an Analysis of Variance (ANOVA) which is a robust statistical technique employed to compare means across multiple groups. The table elucidates significant differences in student engagement within a virtual classroom by examining variances along various educational parameters. The 'Between Groups' sum of squares, amounting to 1.274 with 5 degrees of freedom, and a mean square of .255, indicates variability in student engagement across the different conditions or treatments studied. The F-ratio, a critical value of 14.992, substantially exceeds the typical threshold for statistical significance, denoted by the Sig. (p-value) of .000, which is far below the standard alpha level of .05. This strongly infers that the engagement levels are not homogenous across the groups. Conversely, the 'Within Groups' sum of squares, which is 0.510 with a much larger 30 degrees of freedom, results in a considerably smaller mean square of .017, signifying that the variance within individual groups is minimal. This suggests that the engagement levels are relatively stable within each group. The notable distinction in variance between and within groups, corroborated by a significant F-ratio, unequivocally indicates that at least one group's mean level of engagement is substantially different from the others. This is pivotal from a research standpoint as it implies that certain educational strategies or interventions have a definitive impact on learning engagement in a virtual classroom setting. The findings can be instrumental for educational researchers and practitioners in pinpointing effective pedagogical approaches and adapting their instructional design to foster a more engaging learning environment for students. The tabulated data depicts the results of an Analysis of Variance (ANOVA), a statistical method used to compare the means of three or more samples to understand if at least one sample mean is significantly different from the others. In this context, the analysis is deployed to assess the engagement of students in a virtual classroom setting across various parameters. The 'Between Groups' sum of squares, which measures the variance among the different groups, is 1.274, with an associated degree of freedom (Df) of 5, leading to a mean square of .255. The 'Within Groups' sum of squares, reflecting the variance within each group, is .510 with a Df of 30, and a mean square of .017. The resulting F-ratio a metric derived from dividing the between-groups mean square by the within-groups mean square—is 14.992, a value that is used to determine if the means of the various groups are significantly different. The significance (Sig.) value reported is .000, which is less than the conventional alpha level of .05, indicating that the null hypothesis (that there is no difference between the group means) can be rejected with a high degree of confidence. The interpretation of this result is that there is a significant difference in student engagement levels among the various groups being studied in the virtual classroom. These findings are robust and point towards the presence of distinct factors affecting student engagement within the virtual learning environment. Identifying these specific factors could enable educators and instructional designers to tailor virtual classroom experiences that cater to the diverse needs of students, thereby potentially enhancing the overall effectiveness of virtual learning. It is essential for subsequent

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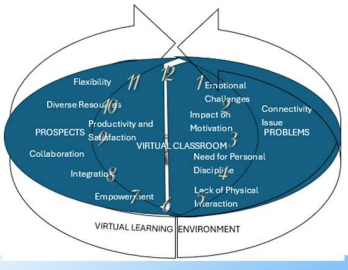
research to drill down into the variables contributing to these differences, facilitating a targeted approach to improving student engagement.

Table 8
Multiple Comparisons in the Level of Students' Learning Engagement in a Virtual Classroom

(I)Parameter	(J) Parameter	Sig.	Interpretation
Psychological Motivation	Peer Collaboration	.199	No Significant Difference
	Cognitive Problem Skills	.233	Significant Difference
	Interaction with Instructor	.000	Significant Difference
	Community Support	.000	Significant Difference
	Learning Management	.000	No Significant Difference
Peer Collaboration	Cognitive Problem Skills	.999	No Significant Difference
	Interactions with Instructor	.004	Significant Difference
	Community Support	.003	Significant Difference
	Learning Management	.018	Significant Difference
Cognitive Problem Solving	Interactions with Instructor	.003	Significant Difference
	Community Support	.002	Significant Difference
	Learning Management	014	Significant Difference
Interactions with Instructor	Community Support	.998	No Significant Difference
	Learning Management	.993	No Significant Difference
Community Support	Learning Management	.973	No Significant Difference

The table presents the results of multiple comparisons within a study on the level of students' learning engagement in a virtual learning environment. The study investigates various parameters of engagement and how they interrelate. When examining the significance levels (Sig.), the researcher noted that Psychological Motivation does not show significant differences when compared with Peer Collaboration (Sig. = .199) and Cognitive Problem Skills (Sig. = .233), suggesting that these domains of learning engagement operate independently of students' psychological motivation. However, there is a significant difference when Psychological Motivation is compared with Interaction with Instructor and Community Support (Sig. = .000 for both), indicating that these aspects of the virtual learning environment are strongly associated with students' psychological motivation. In terms of Peer Collaboration, no significant difference is found when compared to Cognitive Problem Skills (Sig. = .999), implying that these two engagement parameters may not influence each other. Nevertheless, significant differences are observed when Peer Collaboration is compared with Interaction with Instructor (Sig. = .004), Community Support (Sig. = .003), and Learning Management (Sig. = .018). These findings could indicate that peer collaboration is a distinct component of the learning environment that is influenced by how students interact with instructors and the support they receive from the learning community, as well as the overall management of the learning process. For Cognitive Problem Solving, significant differences are reported in relation to Interaction with the Instructor (Sig. = .003), Community Support (Sig. = .002), and Learning Management (Sig. = .014), reinforcing the idea that cognitive problem-solving is indeed affected by these aspects of the learning environment. Lastly, Interactions with Instructor and Community Support (Sig. = .998), as well as Community Support and Learning Management (Sig. = .973), demonstrate no significant differences. This suggests a high degree of interdependence between the quality of instructor interactions and the support of the learning community, as well as between community support and learning management practices. These data imply that within a virtual learning environment, certain factors are interrelated and can significantly influence student engagement. The interactions between students and their instructors, the support they receive from the learning community, and how their learning is managed are interwoven aspects that, according to the research findings, have a consequential impact on engagement levels. The lack of significant differences in some comparisons suggests that these elements of the virtual learning environment might be viewed as a cohesive whole rather than as isolated components. For educators and academic institutions, these insights are invaluable for developing a nuanced understanding of how to cultivate an engaging virtual learning space, one that acknowledges the interconnected nature of these fundamental parameters.

Prospects and Problems in the Virtual Learning Environment



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A divided circle format labeling the left side as "Prospects" and the other as "Problems". Prospects: Texts include a clock (Flexibility); the ability to learn at one's own pace and accommodating varied schedules. (Accessibility to Diverse Resources); the ability to collaborate virtually from any location (Productivity and Satisfaction); an enhanced engagement leading to better learning outcomes, (Technological Integration); the use of multimedia tools and digital platforms that make learning interactive (Empowerment); the opportunities for self-directed learning and innovation, fostering adaptability and resilience. On the one hand, under problems texts on the right-side feature (Emotional Challenges); denoting stress and lack of physical interaction affecting mental health, (Connectivity Issues); depict the inconsistent internet access hindering real-time learning and resource use. (Need for Personal Discipline); states greater self-management is required, occasionally impacting motivation and (Lack of Personal Interaction); leading to feelings of isolation. The virtual learning environment presented both prospects and problems in the virtual learning environment. The real-time interaction through audio and visual means enhanced the learning experience, but issues like connectivity and emotional challenges also arose. The researcher identified a wide range of themes affecting virtual learning including productivity, satisfaction, emotional challenges, resource diversity, collaboration, and technological integration. These themes encompass both the prospects and the problems faced by students. Under the Prospects, themes included the flexibility to learn at one's own pace, access to diverse resources, and the ability to collaborate virtually. These factors contributed to heightened engagement and satisfaction among students. Productivity and satisfaction. The findings suggest that when students are productive and satisfied, they are more likely to persist in their studies, engage deeply with course materials, and achieve better learning outcomes. Collaboration and flexibility. Effective collaboration was highlighted as a crucial skill, with technology playing a supportive role by enabling synchronous and asynchronous communication. Flexibility was also emphasized as a significant benefit of virtual learning, accommodating students' varied schedules and learning paces. Integration of technology. The integration of technology was seen as transformative, making learning more interactive and accessible. It included the use of multimedia tools, virtual simulations, and digital platforms that enriched the educational experience. Empowering students through Learning: The virtual learning environment empowered students by providing opportunities for self-directed learning and innovation. Students felt that despite the initial challenges, the skills they developed during this period such as adaptability and resilience were significant. Students from different schools reported varied experiences that reflect both the diversity of virtual learning impacts and the common challenges they faced. Despite the problems encountered students have developed specific strategies to enhance their focus, manage their time, and leverage technology effectively. These strategies included structured schedules, digital tools for organization, and engaging in collaborative work to mitigate the isolation of remote learning.

Conclusions

The research paper essentially conveys the level of students in the virtual learning environment along with psychological motivation, peer collaboration, cognitive problem-solving skills, interactions with instructors, community support, and learning management while the shift to virtual learning during the pandemic was fraught with challenges, it also highlighted significant differences along the said parameters, and it also offered significant prospects and opportunities for educational growth and development. Likewise, the study explored the problems encountered by the students during their engagement in the virtual learning environment. Students and educators alike navigated these new terrains with varying degrees of success, employing different strategies to maximize the benefits of virtual learning environments. The comprehensive analysis by the researcher provides detailed insight and intervention into these dynamics, offering a nuanced understanding of how virtual learning can be optimized to cater to diverse educational needs and enhance overall student engagement and productivity during their virtual learning engagement.

Recommendations

As revealed by the ratings, it can then be noted that despite the overall positive impact of students' engagement in the virtual learning setup during the pandemic, the researcher highly recommends significant points that need to be improved based on the findings.

1. Set and plan the online class more engaging and tackle one lesson at a time.
2. Teachers and instructors must use a real-world experience of teaching and utilize the learning-by-doing strategy.
3. Utilization of brain exercises or activities that will help learners boost their memory, cognition, and creativity during their engagement in the virtual learning environment.

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4. Build and create the spirit of motivation and respect first from the instructor so that this may radiate toward the learners and will promote and encourage learners' higher commitment to learning in the virtual platforms.
5. Develop consistent and persistent career values to fuel learners' sense of belongingness in the online class setup.
6. Simplify strategies in the virtual classroom and focus on the quality of lesson content to create among learners active and collaborative experience of learning.

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