DEVELOPING PROBLEM-SOLVING SKILLS AMIDST PANDEMIC

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Abstract

The world combatted a bizarre situation due to the pandemic caused by Covid-19. The situation was a serious one and with no apriori knowledge it became all the more agonizing. Humans as a race have the inherent capability of handling situations and solving problems. A survey was conducted wherein 100 undergraduate students were interviewed as to how they maintained positivity and practised problem solving approach to fight the stress caused due to pandemic. An open ended questionnaire was shared with students as a google form. The purpose was to explore the all activities/strategies the students engaged in to cope with the stress caused during the pandemic. The activities were categorised into three domains: cognitive, affective and psycho-motor. Data were collected by circulating questionnaires and analyzed qualitatively. As a whole this paper was intended to comprehend the ideas and different methods of problem solving approach used by students and further disseminating it for social well-being.

Key words: COVID-19, undergraduate students, problem solving, coping mechanism, stress

Introduction

The world saw its worst and the best during the COVID-19 impacted times. Worst in terms of the disease and deaths and best in terms of the resilience it developed among people. Some succumbed to the mental pressure while others gathered strength and just faced it bravely. While many lives were lost; people also came together if not physically but virtually. The virtual became the new normal as that was the only way it could be. The virus engulfed the whole world very unobtrusively and by March 2020 a very severe impact was seen. By May, people started getting infected in huge numbers and transmission of the virus was uncontrollable. Since the virus was a new one and little was known about its nature, the sure cure took time to come. Words like quarantine and lockdown were commonly heard. Educational Institutions closed with an action plan of shifting into the online mode. This makeshift was so sudden and robotic that schools, colleges and offices got transported into the four walls of homes. People were in touch via digital platforms like zoom, google meet, etc. Teachers were engaged in presentations, assessments and doing much more than usual academic work. People were more anxious than ill. Isolation of patients was spreading despair. Retrenchments were more than employment. Every day was passing with worry and hope that things would get back to normal. However online mode was there to be and in the new normal, keeping oneself motivated was an ordeal. After almost six months of the pandemic, a survey was conducted to know how our youngsters were coping up.

What is Corona Virus (COVID-19)

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. The disease is deadly and the mystery regarding its nature makes it all the more deadly.

As soon as the first cases of COVID-19 were reported in late December 2019, investigations were conducted to understand the epidemiology of COVID-19 and the original source of the outbreak. A large proportion of the initial cases in late December 2019 and early January 2020 had a direct link to the Huanan Wholesale Seafood Market in Wuhan City, where seafood, wild, and farmed animal species were sold. Many of the initial patients were either stall owners, market employees, or regular visitors to this market. Environmental samples taken from this market in December 2019 tested positive for SARS-CoV-2, further suggesting that the market in Wuhan City was the source of this outbreak or played a role in the initial amplification of the outbreak. The market was closed on 1 January 2020 and was cleaned and disinfected. **(WHO 2020)**

Any unchallengeable reason is still unknown as to how it infected humans and what its actual nature is as it mutates which is a typical quality of all viruses. The aftermath was deadly leaving lakhs of people dead all over the world. The impact on the physical level was identifiable but the impact on

the mind was very severe but not outwardly noticed. People had locked themselves in their houses with no interaction with the outside world. Many people who were without their families suffered the most. The isolation took a toll on their mental health.

In the present study data was collected from students to understand how they dealt with the situation and solved their problem. The investigation is delimited to the cognitive emotional (affective) of psychomotor domains only. The students are from undergraduate courses.

Problem Solving

The ability of problem solving has been defined in various ways as follows:

Spivack et al. (1976) defined problem solving as the ability to discover and create technologies and methods that can maximize new and diverse problems in everyday interpersonal relationships.

D'zurilla and Nezu (1990) said that problem solving is "A cognitive, emotional, and behavioral process that attempts to find the best effective response when an individual has a specific problem in their daily lives."

Warner (2002) defined problem solving as "the ability to create the best solutions to problems while working."

The term problem solving may simply be described as the means of reaching at the solution to a problem especially when solutions are not readily available. Cognitive Psychology provides steps involved in the process such as:

 i) Productive thinking

ii) Being sensitive and open to structural requirements

iii) Going beyond the knowledge learnt from previous problem solving tasks

 Wertheimier (1959)

Review

Chaturvedi, K., Vishwakarma, D.K., Singh, N. (2020) conducted a survey COVID-19 and its impact on education, social life and mental health of students: A survey (2021) Elsevier Ltd survey of a total of 1182 individuals of different age groups from various educational institutes in Delhi - National Capital Region (NCR), India. The article identified the following as the impact of COVID-19 on the students of different age groups: time spent on online classes and self-study, medium used for learning, sleeping habits, daily fitness routine, and the subsequent effects on weight, social life, and mental health. Moreover, our research found that in order to deal with stress and anxiety, participants adopted different coping mechanisms and also sought help from their near ones. Further, the research examined the student's engagement on social media platforms among different age categories. This study suggests that public authorities should take all the necessary measures to enhance the learning experience by mitigating the negative impacts caused due to the COVID-19 outbreak.

Tonner-Saunders S., Shimi J. (2021). This paper reports on the impact on student teachers' professional skills, knowledge and attitudes of engaging in the eTwinning international Hands of the World (HOTW) project which connects over 2000 students and their teachers in 50 schools across the world to undertake a wide range of educational collaborative work, supported by digital and online technologies. The University of Dundee's HOTW project won the eTwinning prize for the best project two years running. Data were analyzed thematically focusing on ICT competence, pedagogy and relevance. Our analysis enabled us to identify that the Covid-19 lockdown had a positive impact on the students' learning due to time, space, and relevance. This paper demonstrates that engagement in a contextualized project enabled student teachers to develop their ICT competences and that for many, lockdown provided a conducive learning environment.

Kapasia N. et al (2020) conducted a research to assess the impact of lockdown amidst COVID-19 on undergraduate and postgraduate learners of various colleges and universities of West Bengal. An online survey was conducted from 1 May to 8 May 2020 to collect the information. A structural questionnaire link using 'Google form' was sent to students' through WhatsApp and E-mail. A total of 232 students provided complete information regarding the survey. The simple percentage distribution was used to assess the learning status of the study participants. During the lockdown period, around 70% of learners were involved in e-learning. Most of the learners used android

mobile for e-learning. Students have been facing various problems related to depression anxiety, poor internet connectivity, and unfavourable study environment at home. Students from remote areas and marginalized sections mainly face enormous challenges for the study during this pandemic.

George G., Thomas M.R. (2020) Purpose of the study was to understand the effect of quarantine on the psychological health of college students and the coping strategies adopted by them. Design/methodology/approach: The study adopted the interview method and focused on two crucial open-ended questions: how quarantine has impacted and what are the strategies adopted to overcome the same. The response was recorded through email and phone from a sample of 30 students. Findings: Most of the students stated that they are going through issues like anxiety, depression, infection fear, ambiguity due to this pandemic and the lockdown related to it. However, they engage themselves with various activities that help them to combat this situation. Practical implications: Education institutions can focus on conducting online fest and other events to engage students more productively. They can also focus on developing a wellness application to support these students. They can provide solutions and tips to balance mental health and wellness during these times.

Khalil R., Mansour A.E., Fadda W.A., Almisnid K., Aldamegh M., Al-Nafeesah A., Alkhalifah A., Al-Wutayd O.(2020) conducted research on the following themes: (1) educational impact, (2) time management, (3) challenges encountered, and (4) preferences for the future. The online modality was well-received, and all participants agreed that online sessions were time saving and that their performance was improved due to enhanced utility of time; however, they indicated that they encountered some challenges, including methodological, content perception, technical, and behavioural challenges during sessions and online exams. Most of the preclinical students preferred online learning for the upcoming academic years. Conclusion: Synchronized online classes were well-accepted by the medical students. This represents significant and promising potential for the future of medical education. The principles of the online learning model and learning outcomes should be rigorously and regularly evaluated to monitor its effectiveness.

Impact of lockdown on learning status of undergraduate and postgraduate students during COVID-19 pandemic in West Bengal, India (2020).

Quinn P., McGilloway S., Burke J. (2020). The aim of the study carried out was to assess the extent to which COVID-19 had impacted the health and wellbeing of the 'class of 2020'. Some comparisons were also made with a 2015 health and wellbeing survey undertaken in Ireland. A total of 959 LC students completed an online survey. The findings demonstrated substantial negative impacts of COVID-19 on overall health and wellbeing. The comparison with the 'pre-COVID' (2015) sample of LC students also showed that the current cohort was faring statistically significantly worse across several domains. This is the only study to investigate the health and wellbeing of this cohort in the context of COVID-19. The findings provide important insights into impacts on student mental health and wellbeing; they also raise questions about how those who went on to Third Level, are faring, in light of continuing disruption to their studies and in the context of the already large numbers of Third Level students presenting with mental health problems in Ireland (and elsewhere)

Vanderhill R., Dorroll C. (2022). This article discusses the results of pedagogical research on the emotional impact of learning about atrocities, the challenges of studying during a global pandemic, and the benefits of self-care activities (e.g., meditation) for student well-being. Our research was based on two different courses and includes student self-reflections and our analysis of class discussions. It was concluded that students struggle with the emotional costs of studying difficult topics (especially during the pandemic) and are receptive to doing self-care activities and found them beneficial for their mental health.

Ahluwalia-Cameron A.(2022). COVID-19 has had a profound impact on our society. Research evidence has surfaced that there is a gender disparity in research productivity due to COVID-19. Notably, women in academia have been less productive in terms of academic publications since the beginning of the pandemic, likely due to the day-to-day responsibilities of childcare and domestic work; and according to pre-print literature, women of color may be more significantly impacted. Additionally, the impact of COVID-19 lockdowns on doctoral students has had detrimental impacts

on our ability to collect data we need to forge our paths through this academic journey. This in-brief paper is written in response to the numerous questions she has been asked by other doctoral students around how she collected 41 in-depth, semi-structured interviews while working from home during a global pandemic, with my toddler at home with me. She reflect on how she pivoted to recruit participants, scheduled interviews, and conducted interviews from home, and how she believe COVID-19 has created space for a more accessible qualitative data gathering experience.

Chamorro-Atalaya O., Olivares-Zegarra S., Alvarado-Bravo N., Trujillo-Perez S., Torres-Quiroz A., Aldana-Trejo F., Villanueva-Acosta V. (2022) describe the results of the evaluation regarding the self-perception of personal and social attitudes acquired by university students from an engineering faculty at a state university in Peru, in the context of virtual teaching and learning, declared by the health emergency by COVID-19. The following objectives were proposed, to determine the variation or impact that the self-perception of personal and social attitudes experienced, having as reference scenarios, the academic semester with face-to-face teaching (academic semester 2019B) and then the academic semester developed totally virtual (2020A). An exploratory-descriptive research level was used, with a longitudinal non-experimental design, whose population and sample is made up of 674 and 761 students, in the 2019B and 2020A semesters respectively. After the investigation, it was found that there is no negative impact, due to virtual teaching; On the contrary, on average, there was an increase in all levels of satisfaction, increasing the level very satisfied by 52.8% and the level satisfied by 3.25%.

Donovan S.J.(2021). The author examined how a senior college athlete from the Midwest communicated the impact of COVID-19 on his final season of competition while quarantined on his family farm through envisionment building. The poetry read and written during the final four weeks of the spring 2020 collegiate sports season shows the athlete moving across Judith Langer's envisionment stances with authors of sports-themed poetry as guides in revisiting memories, people, and themes of a college sports career. The findings highlight the potential benefits of reading and writing poetry as athletic identity exploration. The author encourages athletic directors, coaches, and athletes to consider using poetic inquiry as an arts-based method to support student-athletes negotiating critical events, relationships, and identity that include cognitive and affective dimensions of sport.

Research questions

The present study tries to reach answers through the following research questions :

1. What methods of problem solving were employed by students to counter the pandemic situation with respect to the cognitive domain?
2. What methods of problem solving were employed by students to counter the pandemic situation with respect to the affective domain?
3. What methods of problem solving were employed by students to counter the pandemic situation with respect to the psycho-motor domain?

Methodology

A self constructed open ended questionnaire was designed very carefully by the researchers to investigate different dimensions of cognitive, affective and psychomotor domain. The study would explore how students were dealing with the problem and solving it. The questionnaire had 14 items with 5 dealing with the cognitive domain. There were 5 questions dealing with affective domain ; while the psycho-motor domain had 4 items. All the questions were open ended so as to allow respondents to answer expressly. Respondents were informed about the study and verbal consent was taken from all. Thereafter, questionnaire was floated.

Data were collected from respondents spread across different levels of Teacher Education programs. The questionnaire in the mode of google form was circulated among students. The responses were then analyzed and compiled.

Qualitative Analysis of Data:

In order to analyze data it was segregated according to the questions and also arranged according to themes that evolved from the data itself. While compiling the data it was found that many responses

on an aspect were repeated many times and saturation of information was observed, so those responses were considered only once and a single statement for all similar responses was retained.

Since in the present study domains had been specified, structured codes were studied as per the different domains. Each response was given a code and placed as per the broad theme. The following table shows a summary of responses collected :

S No	Domain	Themes
1	Cognitive	1. Literature read (C1) 2. Technical skill acquired (C2) 3. Implementation of idea (C3) 4. Sustainability practice (C4) 5. Strategy for mental well-being (C5)
2	Affective	1. Thoughts : negative (A1) 2. Positive / happy thoughts (A2) 3. Relationship strengthening (A3) 4. Blessing in disguise (A4) 5. Hopeful thoughts (A5)
3	Psycho motor	1. Skill developed (P1) 2. Physical activity to improve fitness (P2) 3. Creative activity (P3) 4. Environmental activity (P4)

Table 1 : Major themes

The explanation of codes within the broad themes was done as follows:

Cognitive Domain:

Students were asked five questions related to the cognitive domain as to what they did in order to maintain a positive vibe during the gloomy time. They came up with various answers. These were put into codes based on verbal frequency and categorised into one theme as depicted in Table 1. The number of responses were put into different categories and one theme was arrived at. It was seen that during the lockdown period students engaged in constructive practices such as attending online classes, attended webinars to enhance knowledge, developed e-content, created videos of their own, and took care of their mental well being by regular yoga practice and exercise. This was supported by **Chaturvedi, K.,Vishwakarma, D.K.,Singh, N. (2020)** as well.

In response to question 1 where respondents were asked the kind of literature they read during the time, most of the students responded that they read motivational books. Few said fiction and fewer said religious texts. Newspapers were read by many.

In response to question 2 as to what technical skill they acquired, if any, the students responded that they learnt good technical skills during the time. These included attending webinars and doing online courses. They learnt to develop online content based on training sessions they attended online. Some recorded videos that were fun only while others recorded their lesson plans. Many learnt how to use software and got the time to practice them as well. **Kapasia N. et al (2020)** also reported the same that students relied on e-resources for learning.

In response to question 3, where respondents were asked if they implemented any idea that they could not earlier due to paucity of time, the students responded in the affirmative. Many said that they not only listened to music but also learnt it. Many learnt yoga and deep breathing practices. Many said that they could find the time to dance and many said that they learnt to dance. Some said that they could find the time to exercise which they could not do earlier.

Question 4 asked what sustainability practices they observed during the time, they said that fewer vehicles on roads had led to a cleaner and pollution free environment. Nature had got time to breathe so everything looked cleaner and better.

Question 5 dealt with the strategies they had used to maintain good mental health, many students said that their best remedy was Music. Others said that drawing and painting helped them keep calm. Some respondents said that meditation helped them a lot. Dance and exercise helped many students, while some took to gardening. Photography also was a strategy that students used to keep themselves calm and positive.

Affective Domain

It is a known fact that our emotions control our actions. Most of our problems can get resolved if we can regulate the latter part. It is very important that with what thought process one begins his/her day or retires to bed. Negative, scary thoughts can paralyse our actions. Amidst the pandemic situation, it was but natural to have had such non-assertive feelings. **George G., Thomas M.R. (2020)** showed similar results in their findings.

Question No 1 dealt with the fact that how they handled with their negative thought process every morning due to the pandemic situation. Most of them were very hopeful and believed everything would be fine by the day. Some of them thought planning their day during the early hours would bring peace. The feeling of satisfaction on having completed the decided tasks would be the reason for it. Some tried yoga and meditation to bring positivity. On the other hand expressing gratitude for that fact that they were alive was one of the sources of positivity.

Question 2 was concerned with ideas/thoughts that made them feel happy. This strange situation left everyone with limited options of interacting but the option (family) was a blessing in disguise by all participants and i.e. the idea of 'spending productive time with family and friends made them feel delighted'.

Question 3 asked about relationships they had strengthened during this time. Pandemic provided a good repair time. Those who are wise could strengthen their relations with loved ones, such as with parents, and siblings. In their words "I used to come late before covid even my Mom used to be late from work, so we spent quality time during lockdown. Now we are bridging that gap".

In response to question no 4 which asked about the brighter side if any they could visualise during this time . During this time people were losing hope and were going into the depth of despair due to several reasons. Therefore it was difficult to be optimistic, however still they held on to some hope, like most of them were grateful that they are safe with their families. Few looked at the recovery of covid patients as a positive sign. Where in some ensured that a sure solution for the problem would come and this time would surely pass. Some made their bucket list of wishes and were preparing themselves to fulfil as and when possible**.** Few were living each day as blessing and were in a thought process to turn that into an amazing day.

Question 5 was concerned about how they reflected on their day and remained hopeful. Many of them responded that at the end of the day they reflected on whole day activities and analysed were they aligned with what they set in the morning. Positive output of previous day enlightened them for another day. Most of them engaged themselves in day- dreaming about visiting different countries, partying with their friends and completing their higher studies. A major part of the sample retired to bed with optimistic thought that covid 19 will get over soon and everything will be alright.

Psychomotor Domain

Tough times pass by engaging oneself in productive skills and utilising one's psychomotor ability. Students were asked how they kept themselves busy in developing such skills. The following answers were collected :

In question 1, respondents were asked about the skill they had developed to keep themselves motivated. Almost 80% said they learnt cooking; 7% engaged themselves in art activities. **Donovan S.J. (2021)** also saw the same impact on an athlete where poetry transformed / motivated him during pandemic. 3% developed driving skills and 5% enhanced Information Communication Technology skills. The remaining 5% said that they developed gardening skills.

In response to question 2 which asked about any changes they made in their physical appearance to boost up self-image, many said that they lost weight by exercising and yoga. Some developed mindfulness; healthy food habits; many said that they paid attention to healthy hair growth by providing nutrition. More than 50% responded that they planned diet well to be healthy. Few said that they were interested in body care and did that. Some were satisfied with their bodies and did not want any change. Some gained weight deliberately.

In Question 3 they were asked suggestions related to creative activities which could help in coping with the situation. Writing poems was another activity that students engaged in. **Donovan S.J.(2021) reported the same in his paper titled** 'Pain that hides': poetic envisionment and the impact of COVID-19 on a runner's final college season . Some read stories while others engaged in art and craft work. Few suggested that they implemented home decoration ideas while for others trying out new recipes and innovative dishes were good ways to manage stress.

Question no 4 is related to ambience creation, participants had been asked about the changes they had made in their immediate environment that added positivity. Only few worked in this direction and did plantation and maintained the parks and surrounding areas as they felt plants spread positivity. Some added new paintings on their walls and few preferred cleanliness for the same. Rest wanted to create positive ambience by spreading laughter and positivity around.

Themes

A meticulous analysis of the codes led to the evolution of the following Themes :

1. Yoga

It was observed that healthy habits were practised by the students to fight the stress caused due to the pandemic.

2. Exercise

Many students took to exercise to improve health and be better equipped to battle the pandemic.

3. Meditation

Various forms of meditation were practised by students, where some became more regular with some already existing techniques that they knew, while others learnt new methods and techniques of meditation.

4. Reading

Students took to reading as a method of problem solving during the pandemic. Some read books related to literature or fiction, many read philosophical texts as well.

5. Using e-content

Students claimed that they had become more techno-savvy during the time as they had only a virtual connection with the rest of the world. They not only picked up online courses, but also attended webinars related to their own subjects and others too. They learnt how to use online platforms and apps that could enable them to create new content for online teaching.

6. Developing e content

Students used various tools and latest technology to create and develop e content in the form of teaching learning material. They learnt how to incorporate new software and technology into their lesson plans. This they said also enhanced their teaching competency.

7. Nurturing relationships

Many students said that the time was very precious for them as they could spend time with family and the bonding among all strengthened. They said that the time allowed them to understand each other better as they had the time to listen to each other.

8. Developing hobbies like gardening

Students said that they realized the importance of taking care of the environment by developing habits like gardening and growing plants in their vicinity. Having plants around sure is a sign of positivity.

9. Self-care

The time that students got with themselves gave them ample opportunity to them to take care of themselves with respect to body image and improvement. They took care of their hair and overall health by focussing on areas of development.

10. Dance and Music

Creative expression in any form is a very essential way of reaching solutions to problems. Students claimed that they engaged in dance and music, where new forms were learnt and practised by them.

Conclusions and suggestions for further research

The study clearly shows that students have the power of resilience and problem-solving. Though the pandemic has shown very negative aftermaths, some positive elements have evolved at the same time. This is the ways in which they self-helped to overcome the stress caused due to the pandemic. The same study may be replicated in other areas to identify other means of problem-solving being practised around the globe. The findings can then be used for further researches.

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