



Republic of the Philippines

Department of Education

Region VII

Division of Lapu-Lapu City

Science and Technology Education Center - Senior High School

**Basak, Lapu-Lapu City**

**The Butterfly Effect: Technological Interventions  
to prevent Psychosomatic Disorders  
from Extensive Gadget Use**

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## **Table of Contents**

<b>Cover Page</b>	<b>1</b>
<b>Table of Contents</b>	<b>2</b>
<b>INTRODUCTION</b>	<b>3</b>
<b>PROBLEM IDENTIFICATION</b>	<b>3</b>
<b>PROPOSED SOLUTION (Demo in appendices)</b>	<b>4</b>
<b>ACTION PLAN</b>	<b>4</b>
<b>CONCLUSION</b>	<b>5</b>
<b>References</b>	<b>6</b>
<b>Appendices</b>	<b>9</b>
The Butterfly Effect - Discord Chat Bot	9
The Butterfly Effect - FB Messenger Chat Bot	10
The Butterfly Effect - Lite   Browser Extension	11

## INTRODUCTION

The advent of technological advancements brings corresponding mental health issues among its users. Even during the pandemic, overworking is praised and resting is punished. This leaves little to no room for energy renewal. Unbeknownst to the public, our thoughts, emotions, and behaviors have an energy consequence. For this innovation, mental health is defined as having the will to work on tasks (Schwartz and Loehr, 2003).

COVID-19 had a significant impact on employees in the Philippines. As reported by the Philippine Business Coalition for Women Empowerment (PBCWE) in May 2020, 48% of women and 39% of men reported a negative impact on their mental well-being due to COVID-19, with 4 of 10 respondents with worse physical being. Consequently, 32% of male and 35% of female employees said they were less productive at work. The number of reported sickness raised by 38%.

The Department of Education (DepEd) counts 24.7 million enrolled learners for the school year 2020 - 2021. A multitude of students complain how studying while overcoming a host of distractions such as social media, gaming, and chores will not be as effective because the mind is overwhelmed and divided, commonly leading to multiple mental breakdowns.

## PROBLEM IDENTIFICATION

Prevalent early mental health problems experienced by professionals and students due to the prolonged exposure to screens are the following:

- **Brain Fog** a cloud-headed feeling with a lack of mental clarity.
- **Techno Stress** or psychophysiological stress reactions due to gadget use.
- **Screen Apnea** or lower oxygen because of more attention given to screens.
- **Problematic Internet Use (PIU)** negative emotions due to unregulated behavior in internet usage.
- **Dehydration** low mental and physical energy due to lack of water

### I. Define the Mental Health Issue

Sanchez (2021) found out how Filipinos of all social statuses from ages 16-64 years old spend an average of 10.6 hours on social media per day in an attempt to resume life with COVID-19. Shifting to the virtual world as caused by the pandemic is affecting the physical and mental health of students and professionals as they spend whole days sitting in front of a computer and using gadgets.

In the words of Jimenez (2019) D.C., C.C.S.T, brain fog is a cloud-headed feeling characterized by confusion, forgetfulness, and a lack of focus and mental clarity.

Doctors from Bangkok Hospital (2018) solve brain fogs by taking constant breaks, regular exercise, and, in the case of this pandemic, socializing and having a regular change of environment.

This is taken heed by Schwartz (2003) where he observed that humans tend to move from full focus to fatigue every 90 minutes. Breaks should be taken and the ideal lengths of breaks should be between 5 to 30 minutes depending on the activity.

As a senior highschool student in Science and Technology Education Center Senior High School (STEC-SHS) and an intern in a tech company in Cebu called Symph, the researcher and his peers spend an average of 7 hours per day working on tasks.

### **PROPOSED SOLUTION (Demo in appendices)**

**The Butterfly Effect (TBE)** theory is, in simple terms, an explanation of how little things can have significant impacts. TBE as our solution is a set of non-intrusive online health reminders in the form of an FB Messenger bot, a Discord bot, and a universal browser extension to prevent psychosomatic disorders at home..

### **General Objective**

To improve the quality of the life of students and professionals using gadgets for their daily tasks by alleviating the early signs of mental health problems, specifically: brain fog, technostress, screen apnea, PIU, and dehydration with tech interventions.

### **Specific Objectives**

To be aware of the need to take 5-minute short screen breaks or energy renewal every 30-90 minutes to so that students and professionals will able to:

1. To mitigate early signs of mental health being experienced by students, teachers and other professionals due to prolonged use of computers and other gadgets.
2. To build a habit of taking short screen breaks while using computers and other gadgets.
3. Sustain personal energy and momentum for longer periods of time without compromising productivity.

### **ACTION PLAN**

#### **General Objective**

To improve the quality of the life of students and professionals using gadgets for their daily tasks by alleviating the early signs of mental health problems, specifically: brain fog, technostress, screen apnea, PIU, and dehydration.

**Specific Objectives:**

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3. Sustain personal energy and momentum for longer periods of time without compromising productivity.

Strategies	Activities	Time Frame	Resources Needed	Persons Responsible
Promote installation of chat bots in FB Messenger and Discord for health reminders	<p>Message students, teachers, and working-on-computer professionals to remind them to eat meals on time, drink water, stretch, or take a screen break every 1.5 hours.</p> <p>Start the day with mini workout sessions.</p> <p>Remind users of personalized weekly activities.</p>	<p>One Month</p> <p>May - June 2021</p>	<p><b>Budget</b></p> <p><b>Browser Extension</b> 250 PHP one-time payment for Chrome Dev Store</p> <p><b>FB Messenger Chat Bot</b> ManyChat = 0 PHP / mo</p> <p>Discord Chat Bot Heroku = 0 php / mo</p> <p><b>Users</b> Internet access</p> <p>Internet browser of choice</p> <p>Desktop, laptop, or mobile devices</p> <p><b>Developers</b> Users' plus...</p> <p>A code editor or Integrated development environment (IDE)</p> <p>A digital design and prototyping tool</p>	Online Users
				Proponents for Impact measurement
				<b>Verifiable Indicator</b>
Integrate in-browser health reminders to improve overall health and productivity	<p>Prompt students, teachers, and working-on-computer professionals to drink water, stretch, or take an awe walk with GIFs every time they click "new tab".</p>	<p>One Month</p> <p>May - June 2021</p>	<p><b>Users</b> Internet access</p> <p>Internet browser of choice</p> <p>Desktop, laptop, or mobile devices</p> <p><b>Developers</b> Users' plus...</p> <p>A code editor or Integrated development environment (IDE)</p> <p>A digital design and prototyping tool</p>	Frequency of break-taking
				Recorded time online and the recorded amount of health breaks
				<b>Means of Verification</b>
				A quantitative, then qualitative survey form on the frequency and quality of breaks taken. As well as the felt effects of it.

**CONCLUSION**

TBE would immediately succeed in promoting students and professionals alike to regularly take health breaks. By interfering and mitigating the effects of brain fogs, technostress, screen apnea, PIU, and dehydration brought upon by sedentary lifestyles inside the very same technology causing them, an improvement in their overall quality of life and health during and after the COVID-19 pandemic is expected. As a lesson learned, the researchers realized how *minor* problems in our lifestyles can build up and lead to major complications later on in our lifetimes. And a way to mitigate or even solve it is by modifying the *little things* in our life too.

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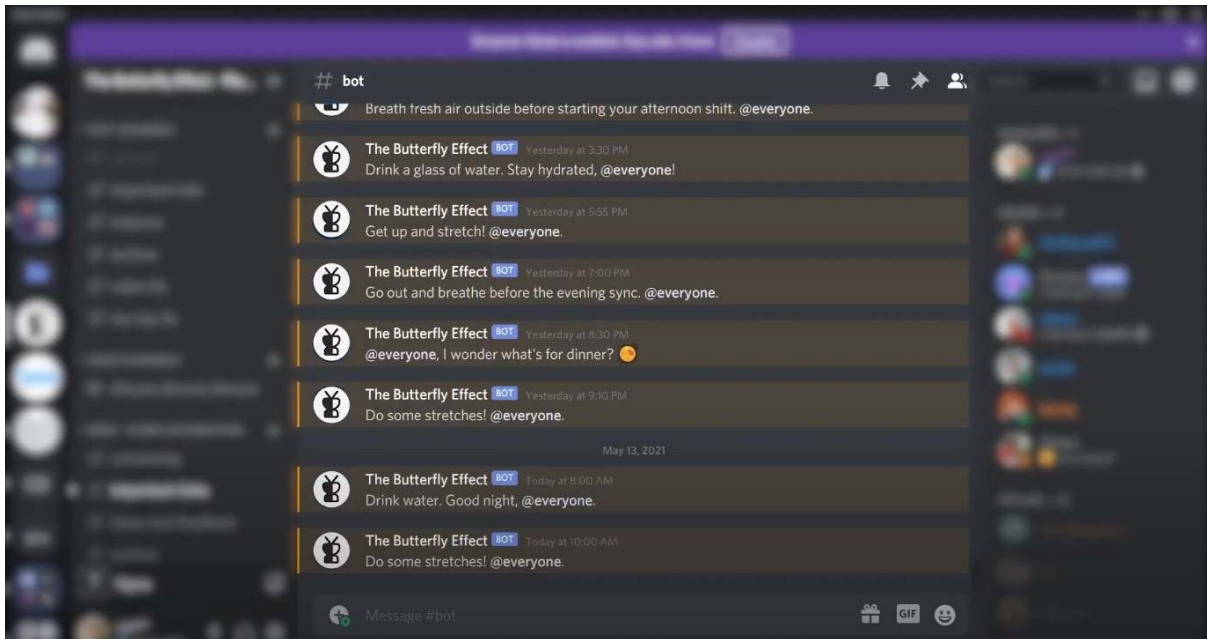


## Appendices

### Demo of Solutions

#### The Butterfly Effect - Discord Chat Bot (photo is link to video demo)

The bot prompts you via mentions when it is time to eat, drink water, stretch, or take an awe walk at a fixed interval. It also sends exercise routines every other day. This bot is currently live at the Discord server of a tech company in Cebu.



#### Made with (Github link given upon request)

- Coded in PyCharm
  - Python 3.0
    - Discord.py
    - DateTime
- Hosted on Heroku

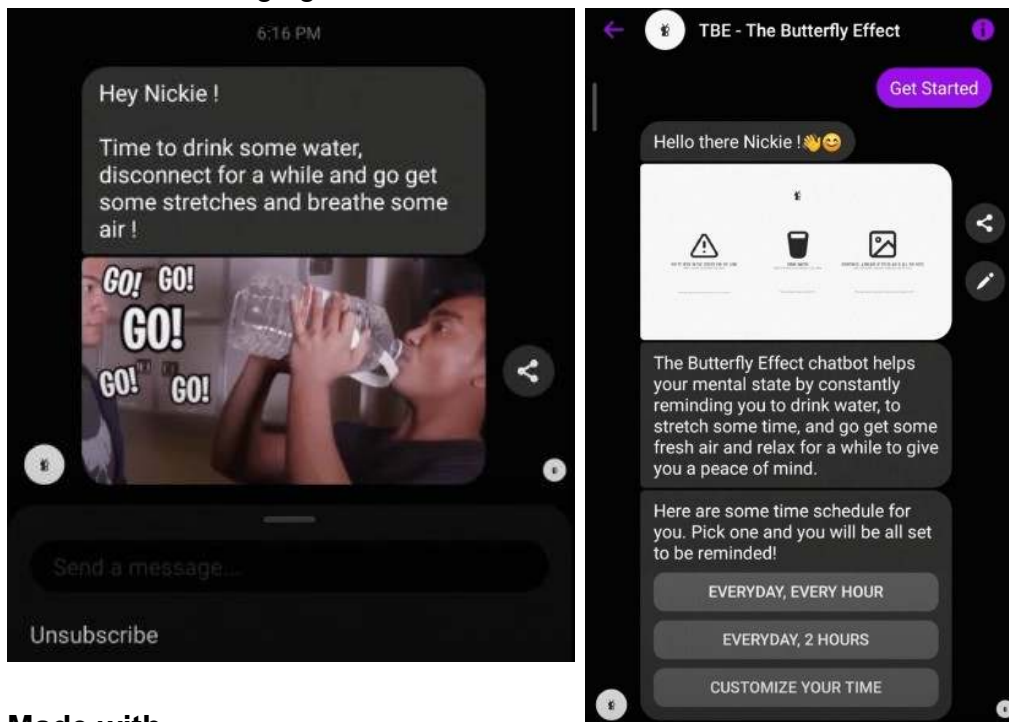
```
if current_week_day in date_announce:  
    if f'{morning_1}:00' == current_time:  
        await text_channel.send(morning_1_msg)  
  
    if f'{morning_2}:00' == current_time:  
        await text_channel.send(morning_2_msg)  
  
    if f'{afternoon_1}:00' == current_time:  
        await text_channel.send(afternoon_1_msg)
```

```
def at(self, time):  
    """  
    You can import two types in time String and List  
    String - '08:00' will only be announced once and  
    List - ['08:00', '10:00', '12:00'] for multiple alerts  
    """  
    self.time = time  
    return self  
  
async def do(self, do_task):  
    """  
    requires a function for running the task  
    """  
    self._get_date_time()  
    print(self.current_time)  
    if self.current_week_day in self.date_list:  
        if type(self.time) is list:  
            for selected_time in self.time:  
                if f'{selected_time}:00' == self.current_time:  
                    return await do_task()  
  
        if type(self.time) is str:  
            if f'{self.time}:00' == self.current_time:  
                return await do_task()
```

```
# fitness handy variables  
dt_time = "08:00"  
l_time = "12:00"  
d_time = "19:00"  
date_announce = [1, 2, 3, 4, 5]  
  
# Messages to be display for fitness handy  
dt_msg = "everyone, time for breakfast! ☀"  
l_msg = "everyone, what's that it's lunch time! ☺"  
d_msg = "everyone, I wonder what's for dinner? 🍴"  
  
# Handler for all task in fitness handy  
async def send_reminder(current_time, current_week_day, client, channel_id):  
    """  
    current_time - required  
    current_week_day - Monday-1 ... Sunday-7  
    client - discord client  
    channel_id - this is where the bot will set  
    discord bot will pollups an what to  
    send to the text channel  
    """  
    text_channel = client.get_channel(channel_id)  
  
    if current_week_day in date_announce:  
        if f'{dt_time}:00' == current_time:  
            print("Alert: Now")  
            await text_channel.send(dt_msg)  
        if f'{l_time}:00' == current_time:  
            await text_channel.send(l_msg)  
        if f'{d_time}:00' == current_time:  
            await text_channel.send(d_msg)
```

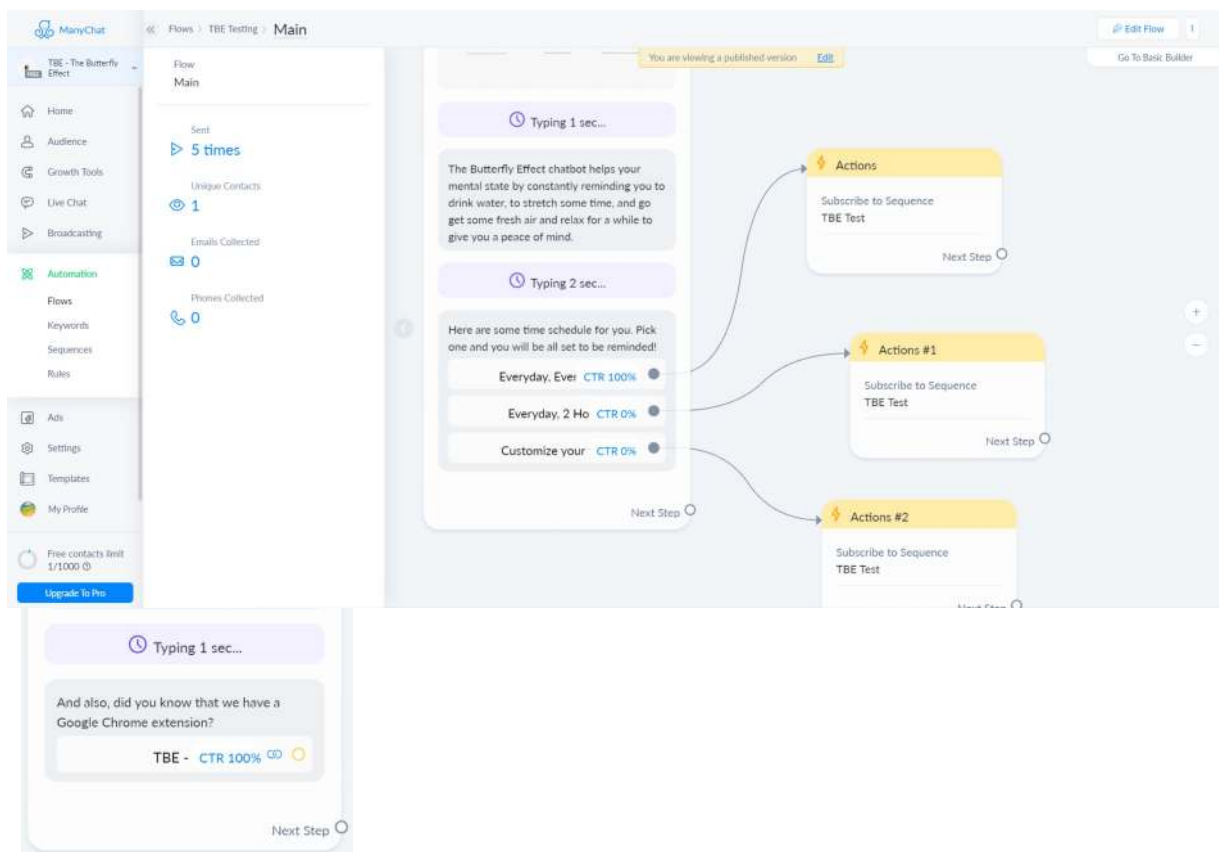
**The Butterfly Effect - FB Messenger Chat Bot**  
(left photo is link to video demo)  
With the option to opt-in or not,

TBE Messenger bot is in its alpha stage and also aims to remind users via scheduled messaging.

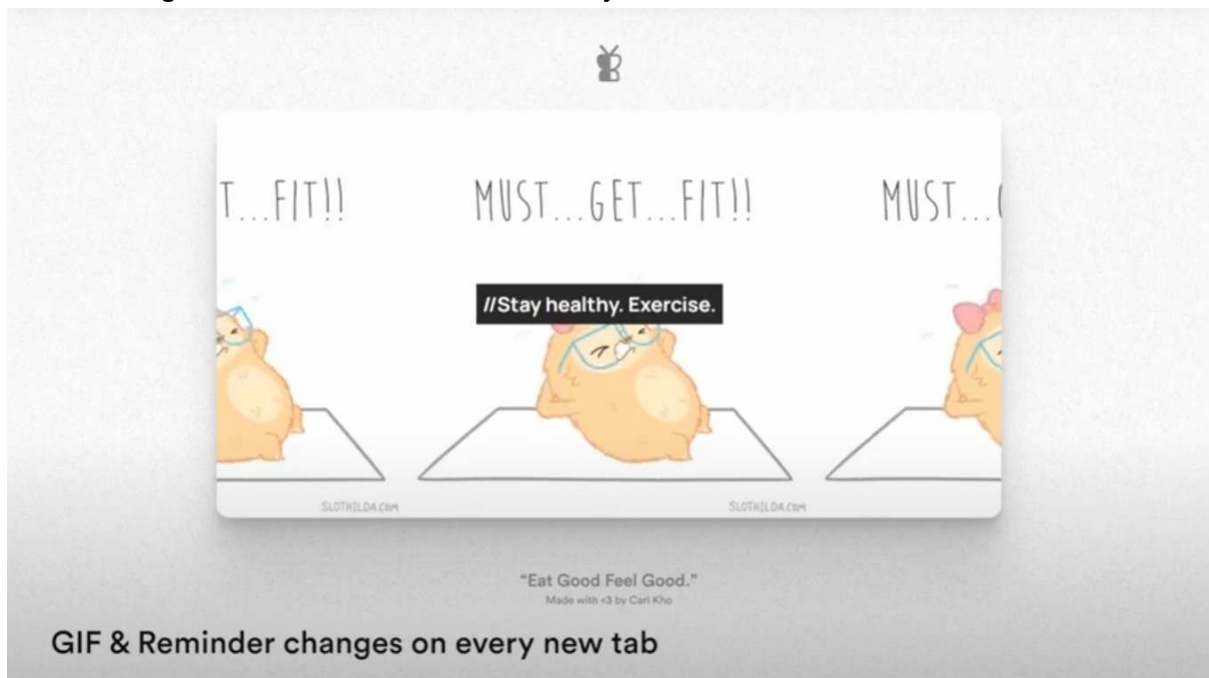


Made with

- Logic made in ManyChat
- Hosted on ManyChat



**The Butterfly Effect - Lite | Browser Extension** (photo is link to video demo)  
Entertaining GIF health reminders on every new tab. Works on all internet browsers.



**Made with (Github link given upon request)**

- Coded in VS Code
  - Hypertext Markup Language (HTML)
  - Cascading Style Sheets (CSS)
  - Javascript
    - JavaScript Object Notation (JSON)
    - GIPHY API
- Hosted on Chrome Web Store
  - [Download and Details here](#)

```
var randomReminder = reminderTags[Math.floor(Math.random() * reminderTags.length)];

// Show tag-Line
document.getElementById("tagLine").innerHTML = randomReminder;

// Duration count in seconds
const duration = 1000 * 10;
// Giphy API defaults
const giphy = {
  baseUrl: "https://api.giphy.com/v1/gifs/",
  apiKey: "GIPHY_API_KEY",
  tag: randomReminder,
  type: "random",
  rating: "G"
};

// Target gif-wrap container
const $gif_wrap = $("#gif-wrap");
// Giphy API URL
let giphyURL = encodeURI(
  giphy.baseUrl +
  giphy.type +
  "?api_key=" +
  giphy.apiKey +
  "&tag=" +
  giphy.tag +
  "&rating=" +
  giphy.rating
);
```

```
/* Minimal Image Reminder - Randomizer */

function setup() {
  const r = Math.floor(Math.random() * 6) + 1;
  const imgSrc = "reminders/" + r + ".png";
  const main = document.getElementById("main");

  main.innerHTML = `<img id="cover-image" src=${imgSrc} alt="reminder_${r}"/>`;
}

setup();
```

```
body {
  object-fit: contain;
  overflow: hidden;
  background-image: url("Background.png");
  padding: 2%;
  animation-name: fadeUp;
  animation-duration: 0.5s;
}
```