

Creative Use of Pop-Ups in a Post-COVID World



An Interactive Qualifying Project submitted to the Faculty of Worcester Polytechnic Institute in partial fulfillment of the requirements for the Degree of Bachelor of Science

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Abstract

COVID-19 and the ensuing necessary mitigation strategies have led to serious holistic health concerns around the world including in Hong Kong. The results of the archival research, interviews, and surveys we conducted strongly suggest that the residents of Hong Kong have holistically suffered because of the pandemic. We discovered that public spaces may have the ability to improve an individual's holistic health. As a result, we designed a set of 'pop-up' stations for possible use in Hong Kong focused specifically on encouraging people to leave their homes, engage in life, and move toward improving their holistic health.



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Executive Summary

In March 2020, the World Health Organization declared the COVID-19 outbreak as a pandemic (WHO, 2020). As cases of the disease rose around the globe, each country implemented preventative measures to mitigate the spread of disease. These included social distancing, lockdowns, wearing masks, and staying home whenever possible. Hong Kong has implemented these mitigation measures, which have had a negative impact on the population's holistic health (Pfefferbaum & North, 2020).

The holistic health of an individual is their overall general health, which includes their emotional, social, intellectual, and physical health (Walter, n.d.). Mental health is synonymous with a person's emotional and psychological health, as well as their social wellbeing (MentalHealth.Gov, 2020). While it is not always easy to observe, mental health has a direct impact on a person's wellbeing and the people around them. COVID-19 has had a substantial negative impact on the population's mental health, largely caused by social isolation and stress.

Studies have indicated that the creative utilization of public space positively influences the community's holistic health. Public space gives people opportunities to relieve stress and improve their holistic health through physical exercise, social contact, and experiencing natural environments (Thompson et al., 2012). Parks can allow the public to encounter other people, plants and animals, experience solitude in nature, rejuvenate, and understand a sense of peace and tranquility (Wolch et al., 2014). According to Berg et al. (2010), green public spaces have been proven to reduce stress on sight, even if the user does not spend time in the space.

Pop-up parks are small, temporary, and moveable sections of public space that have similar benefits to large green spaces, but are more common in cities. For this project we decided to design pop-ups to be utilized in Hong Kong.



Executive Summary

We decided to use the term pop-ups instead of pop-up parks because our designs have little green space incorporated in them. The pop-ups we designed are specifically meant to improve holistic health. We know people are more anxious, they socialize less, they move less, and they are less motivated. Based on this, we needed to create spaces that encouraged socialization and physical movement, as well as provided a tranquil environment.

We designed nine pop-ups that suit the needs of the community based on the research we have conducted. Each design has a different focus, but all are designed to improve one or more of the four aspects of holistic health: social, physical, intellectual, or emotional. Our designs are innovative, as we sought to use public space in a non-traditional way for healing. The designs include Chinese cultural symbols, colors, interactive games, and seating for relaxation. Users can enjoy social interaction, rest, or exercise that will positively affect their holistic health. Each design has a target age group, which allowed us to reach all members of the community. These designs are also meant for particular times of day, as they are meant to be temporary and can be set up for hours or much longer. The pop-ups are all designed to fit in a parking space, because a parking space is a small, standardized unit of space that can be applied to an urban setting. They can be scaled up for larger spaces to impact a greater number of people. The goal of all our designs is to provide a space for citizens of Hong Kong to heal holistically from the negative holistic effects caused by COVID mitigation practices.

The Event

Source: CDC, 2021

The first reported case of COVID-19 was in December 2019 in Wuhan, China (WHO, 2020). From there, it quickly developed into a pandemic and spread across the world. As of March 1st, 2021, there were 114 million cases and 2.5 million deaths globally due to COVID (WHO, 2021). Most countries responded with preventative measures such as lockdowns, mask mandates, and quarantines for possible infectious cases. The implications of these measures meant that people were isolated from friends and family, people were afraid to leave the house even for essentials, they had lost jobs and motivation, and had become extremely isolated (Kaadan, 2020).

In Hong Kong, the first reported case of COVID-19 was on January 22, 2020 (OT&P Healthcare, n.d.). Afterwards, the government took an aggressive mitigation approach by closing all schools and public buildings temporarily, as well as implementing a mandatory quarantine of fourteen days for any travelers entering the region. By September 2020, Hong Kong started to see a decrease in cases leading authorities to ease social distancing restrictions and business restrictions. This trend of easing restrictions continued until November 2020, when Hong Kong saw another wave of COVID-19 cases, and increased restrictions again including closing all schools, introducing travel bans, and the launch of a government contact tracing app (see figure 1).

Figure 1: Healthcare workers enforcing COVID testing



The Event

Until late January, 2021, Hong Kong had never implemented a lockdown for all citizens. Hong Kong had phased closures of schools, offices, bars, and gyms, but never a complete shutdown (Saiidi, 2020). Restaurants were never required to completely shut down, instead seating was modified inside to lower capacity and allow for social distancing (Lee, 2020). This was only made possible by the proactive nature of the citizens towards the virus.

However, this does not mean that Hong Kong residents escaped the isolation, anxiety, and other negative holistic effects of COVID-19. A new 4th wave of COVID-19 hit Hong Kong, along with the implementation of “ambush lockdowns” (see figure 2). Ambush lockdowns are Hong Kong's new approach to containing COVID-19, which involves locking down an area for mandatory testing, with no ability for citizens to leave their residences (Cheung, 2021). These lockdowns have no warning as to when they will happen, which can leave residents without important supplies such as groceries or medication. An example of this type of lockdown happened in the Yau Ma Tei district of Hong Kong.

Figure 2: Police and medical personnel enforce “ambush” lockdowns



(Orange News, 2021)

The Event

Starting on January 22nd, thousands of people living in areas of Jordan, Tau Ma Tei, and Mong Kok were put into an ambush lockdown (Low, 2021, Huang, 2021). The areas were walled off with metal barriers, as officers with loud speakers directed residents into their homes (see figure 3 and figure 4). According to Yau Tsim Mong councillor Lee Wait-Fung, many of these residents were elderly or had long term illnesses, potentially barring them from getting their needed medication. As the pandemic draws on, people's holistic health continues to decline due to the everchanging virus mitigation strategies.

Figure 3: Metal barriers during "ambush" lockdowns



(Hong Kong Free Press, 2021)

Figure 4: Healthcare workers inside a locked down area



(Low, 2021)

People Suffered Holistically

Holistic health refers to the general wellbeing of people, including physical, emotional, intellectual, and social health (see figure 5). The word 'holistic' refers to the whole being, meaning that one must be healthy in all aspects in order to be holistically healthy (Walter, n.d.). All aspects of holistic health depend upon one another. In other words, if an individual is suffering physically, most likely they are suffering emotionally and/or cognitively as well. Likewise, if they are socially isolated, they may begin to suffer cognitively, emotionally and surely physically as they gain weight or lose muscle due to lack of exercise (figure 6). In this paper, mental health and holistic health may sometimes be used interchangeably, depending upon the situation. Cultures have a tendency to lump holistic health under the rubric of mental health but we have come to understand there is more here than initially meets the eye.

Figure 5: Our Holistic Health Model

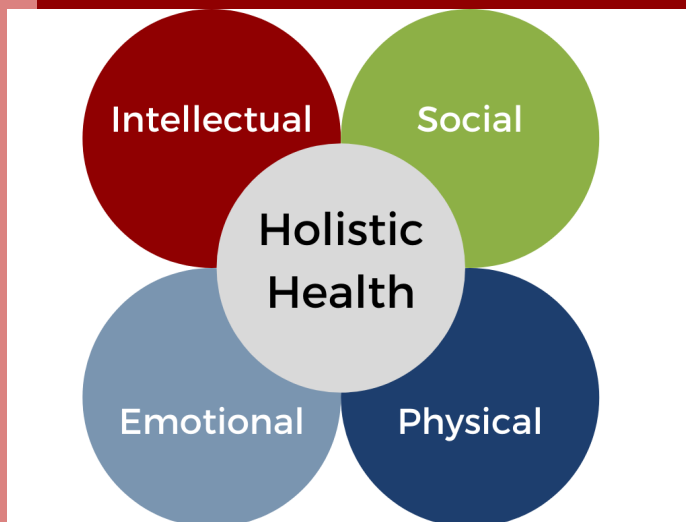


Figure 6: Images of people during COVID



(Bloomberg, 2020)

People Suffered Holistically

Mental health influences how people feel and act and is largely affected by what is happening in the world around people (Balistrieri Interview, 2021). Holistic health changes over time and circumstance. In other words, it is difficult to make a judgment about someone's behavior or holistic health if you don't know them. But over time and/or under stressful circumstances, a person's behavior and/or holistic health may change significantly, and then we may better determine their health. There are a multitude of mental health disorders that can control how a person functions each day. If a person has preexisting mental health disorders, they are likely to be exacerbated by the COVID-19 pandemic (Pfefferbaum & North, 2020). Some examples of these are substance abuse, anxiety, and depression.

Throughout the pandemic, experts have warned of another epidemic silently spreading amongst us- a mental health epidemic. Conditions of a pandemic are prime factors in starting a mental health epidemic. These conditions include but are not limited to, the fear of disease, isolation from loved ones, insecurity of resources, pandemic fatigue, and anxieties of everyday life. These stressors have become normal in people's day to day lives, causing people to become anxious, depressed, lonely, agitated, and irritable (Pfefferbaum & North, 2020). The stressors caused by the pandemic can affect all aspects of holistic health, including physical, emotional, intellectual, and social. It has been shown that holistic health in Hong Kong has been negatively effected by the pandemic (Choi et al., 2020). Citizens need an outlet to improve their holistic health, which can be difficult to find due to the perceptions of holistic health in the city (see Figure 7).

Figure 7: An elderly man looks lonely



(Brown, 2018)



People Suffered Holistically

In Hong Kong, mental health is not talked about as openly as in the United States (Ip, 2002). It has been stigmatized severely since the 1980s, meaning that people have prejudicial attitudes and negative emotional responses towards the idea of someone looking for treatment for mental health. Because of this, it is very difficult for those seeking treatment in Hong Kong to find it. We were only able to find reliable contact information for six therapists' offices in Hong Kong- a strikingly low number for a large city. Furthermore, the wait times to see a mental health professional make it impossible to receive treatment when it is needed. It has been shown that 60% of adults don't know where to locate mental health assistance or professionals (Yip, 2020). Due to the pandemic, efforts have been made to make mental health resources more accessible for citizens, but there is still more work to be done (see figure 8).

China has implemented mental health resources to combat the negative impacts of the pandemic. On February 3, 2020, President Xi Jinping called for the implementation of strategies to alleviate the psychological distress caused by COVID-19. Subsequently, the National Health Commission of China has required all local authorities to incorporate mental health into their responses (NHCC, 2020). The NHCC has created a four-tiered system for handling the mental health of the public. The first tier is for severe COVID-19 patients and frontline workers, the second is for close contacts in quarantine, the third is for family members of patients, and the last is for the rest of the community. All local governments, including Hong Kong, have implemented a psychological assistance hotline. The government has also dispatched crisis intervention experts to hospitals and quarantine stations to support patients and medical professionals. These interventions include cognitive and expressive therapies, dance-based activities, and Tai Chi (Yao et al., 2020). These changes have improved the access to mental health resources, but not fixed the problem.

Figure 8: Headline from the South China Morning Post

Paul Yip

There's no shame in asking for help as coronavirus takes its toll on Hongkongers' mental health

(Yip, 2020)

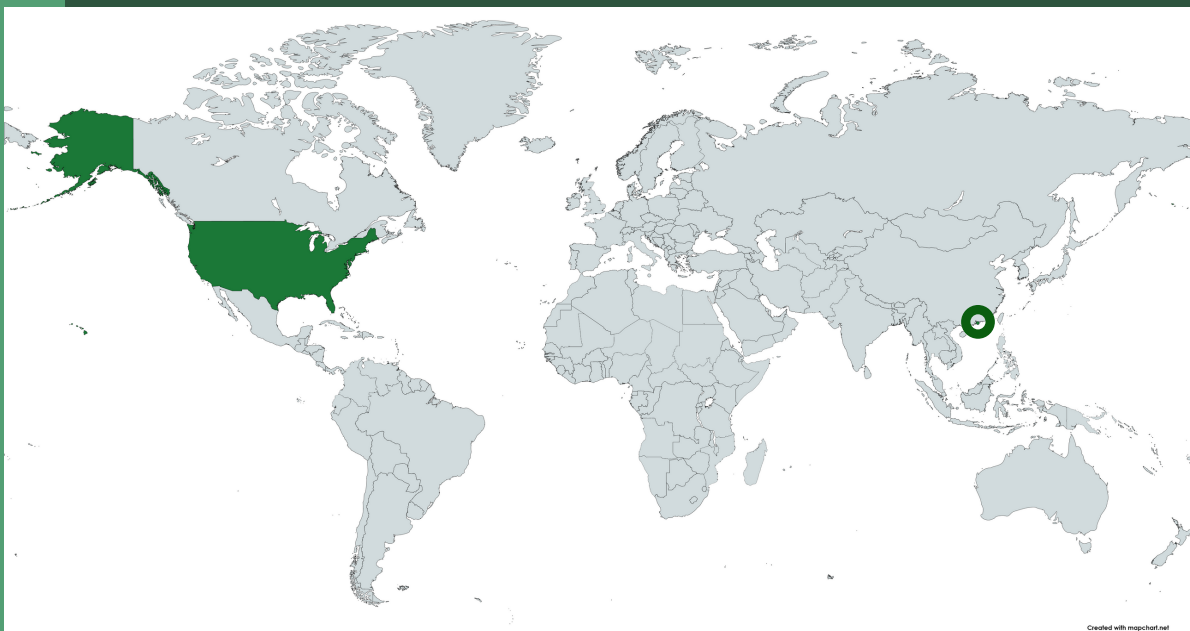
Results

(Urban Tranquility in City Parks, 2020)

An Aside

Our initial intent was to conduct surveys and interviews in Hong Kong. However, due to the COVID-19 pandemic, our team was unable to travel to Hong Kong and all of our work was undertaken via Zoom. All communications with those in Hong Kong were performed online from the United States. The large time difference between Massachusetts and Hong Kong created additional difficulty (see figure 9). No one on the team spoke Cantonese or Mandarin. Due to COVID mitigation measures in Hong Kong, many facilities were closed. This led to an inability to conduct interviews or distribute a survey. The survey results received were from 12 CUHK undergraduate and graduate students, and therefore were not randomized. We also conducted a survey with 34 nonrandomized WPI students. In both cases, the number of participants was too small to get significant results.

Figure 9: World map highlighting the United States and Hong Kong



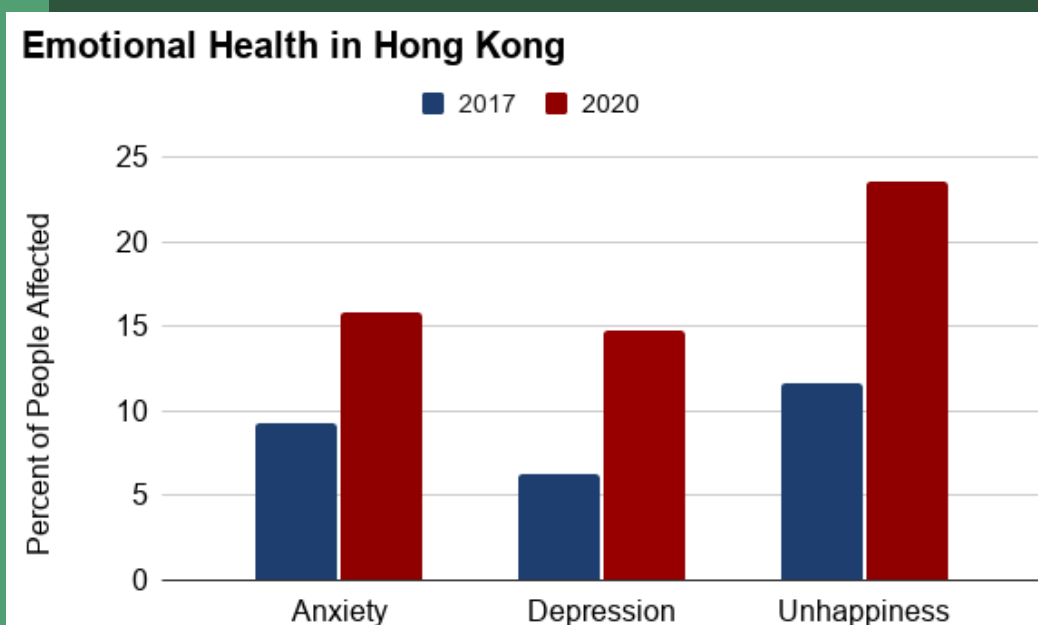
Results

Our archival research indicated that the number of people in Hong Kong who have reported anxiety, depression, and unhappiness has increased in the past three years (Zhao et al., 2020). Ren et al. and Choi et al. indicated similar results (see figure 10). The evidence suggests that the increase in mental health disorders is due to the mitigation strategies of COVID-19.

People have become anxious about everyday life. Actions as simple as going to work or the grocery store carry the risk of possibly contracting COVID, or worse, bringing it home to loved ones. People have become afraid to leave their homes, as the crowded streets of Hong Kong present the invisible risk of infection. The pandemic brings an aura of uncertainty with it. When will the next lockdown be? Will businesses be able to survive? When will it end? Who will get sick next?

These anxieties become the new normal as the pandemic draws on. Over time, anxiety leads one to become unhappy, and then depressed. Those who have lost their jobs, their businesses, their homes, or their loved ones will have their health affected more, with a greater chance to develop mental health disorders such as depression.

Figure 10: Emotional Health in Hong Kong



Results

Several studies have shown that green public space can positively affect one's holistic health. According to Thompson et al (2012), people can reduce stress in natural environments through several mechanisms. The first is exercise, which can decrease stress and improve mood. The second is the opportunity for social interaction, however intentional or not. Finally, seeking attractive spaces can allow one to relax and recover from fatigue. Wolch et al (2014) states that parks allow people to recuperate or experience solitude, contemplate, and instill a sense of peace or tranquility. Green spaces can create a buffer between the individual and stressful life events, like losing a loved one, a job or experiencing a pandemic (Berg et al, 2010). However, it is likely that the quality of the space, not quantity, yields these effects (Wood et. al, 2017).

Wood et al (2012) and Berg at al (2010) argue that one does not need to actually be in the green space to receive its benefits. They state that mere knowledge or sight of these spaces can yield these effects. Parks and green spaces could improve well being regardless of visitation.

We have created figure 11 below, which details the overall effects of green public spaces according to our research. Our team has decided to use this as our consulting logo as it describes the goals of our project and our intended effects on the public.

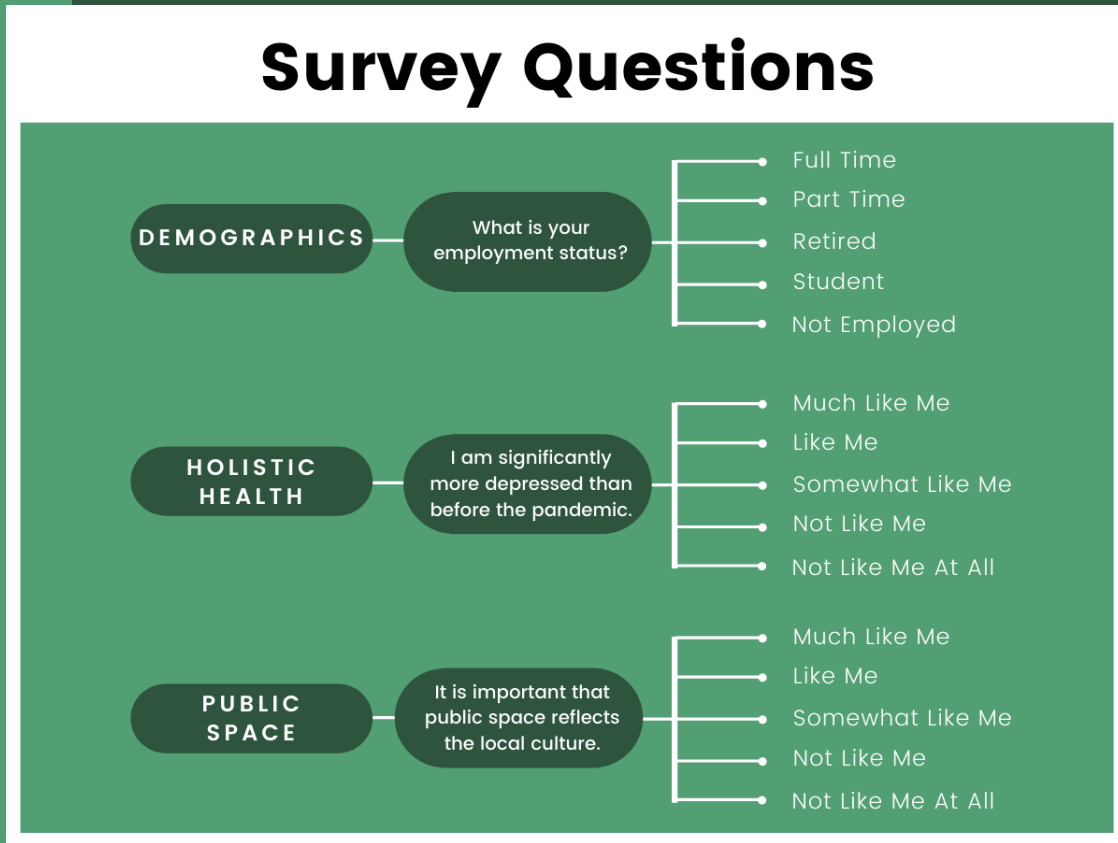
Figure 11: Green Space Benefits



Results

We created a survey with the intention of determining how Hong Kongers could benefit from the creative use of public space. Our survey queried respondents concerning their holistic health prior to the pandemic as well as the current state of their holistic health. Our survey also queried respondents as to their preferences for aspects of public space. Our survey utilized a Likert scale to gauge the preferences of the respondents (See figure 12). For the holistic health portion of the survey, we obtained two sets of survey results, one from Hong Kong and one from the United States (See figure 13). The N was small, nonrandomized, specific to the age group of 18-25, and therefore not extremely beneficial for use in our study. And, the data gathered in the United States cannot be utilized in our creation of space in Hong Kong. For the public space section of our survey, we only utilized the data collected from Hong Kong (See figure 14). For the full set of survey questions and answers, see Appendix A.

Figure 12: Sample Survey Questions



Results

The holistic health portion of our survey was intended to exemplify the changes in participants holistic health before and during the pandemic. Figure 13 shown below compares the results received from Hong Kong versus the United States. The differences show how different cultures perceive and report about their holistic health. We are not making any assumptions that the United States responses represent what is going on in Hong Kong or what would be beneficial for Hong Kong.

Figure 13: Holistic Health Survey Results

Holistic Health Survey

DEPRESSION

~40% of Americans and
~10% of Hongkongers
reported an increase in
depression

ANXIETY

~80% of Americans
and ~25% of
Hongkongers
reported an increase
in anxiety

MOTIVATION

~80% of Americans
and ~30% of
Hongkongers
reported a decrease
in motivation

LONELINESS

~70% of Americans
and ~25% of
Hongkongers
reported an increase
in loneliness

Results

The public space section of our survey was designed to gauge how strongly participants felt about certain attributes of public space. We took these results, then formulated a list ranked from most to least important. This list can be found in Figure 14 below. The results shown below are from Hong Kong responses only.

Figure 14: Public Space Survey Results

PREFERRED FEATURES IN PUBLIC SPACES

Most Important

1. Cleanliness
2. Local Culture
3. Food
4. Comfortability
5. Artwork
6. Scent/Smell
7. Physical Safety
8. Wifi
9. Games/Exercise
10. Color

Least Important

Results

In an effort to gather more information regarding public space, we interviewed Vicky Chan from Walk Des Voeux Road Central (See figure 15).

Figure 15: Important points from an interview with Vicky Chan

INTERVIEW WITH VICKY CHAN	
CHAIRMAN OF WALK DVRC	
Question:	Response:
What were the needs of the community that led to the Sheung Wan Fiesta?	Community needed more inclusive and livable spaces. This pop up was successful, planning to build more
What are the challenges associated with building a pop up park?	Expensive, but short lived. Expensive to move and store. Successful pop ups become permanent
Do you have any ideas of activities that Hong Kong residents would enjoy?	<ul style="list-style-type: none">• Families want more child friendly spaces• The elderly want more walkable areas• Office workers want places to sit for lunch• Shop owners want more places to do business• Tourists want more cultural activities

Results

We also interviewed Paul Zimmerman from Designing Hong Kong (See figure 16). For the complete set of interview questions for public space interviews, see Appendix C.

Figure 16: Important points from an interview with Paul Zimmerman

INTERVIEW WITH PAUL ZIMMERMAN

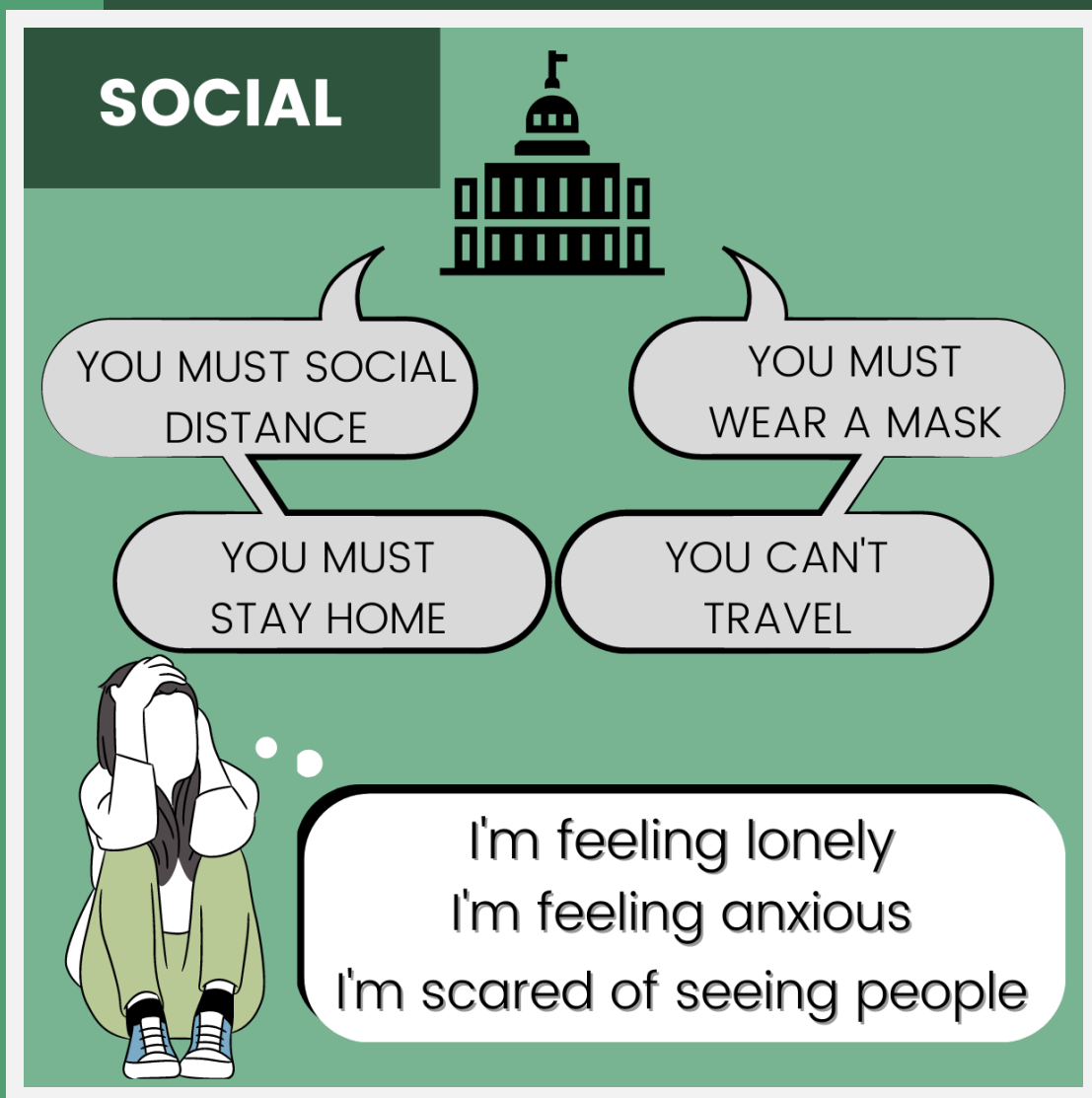
FOUNDER OF DESIGNING HONG KONG

Question:	Response:
In your experience, how has the role of public space changed during COVID?	More use of open space, less use of interactive spaces such as playgrounds.
In what ways do you think the role of public space will change post COVID?	Parks will be more appreciated after COVID for a short time. Parks gained community support after SARS, and will likely after COVID too.
What ideas regarding other activities that Hong Kongers would enjoy that are not as obvious to American students?	<ul style="list-style-type: none">• Seating is very important• Covered areas to get out of the sun• Tables and chairs for rest

Results

The following infographics represent a compilation of our archival research and our survey. You will see that the results are broken down by the holistic model that was presented earlier. The model includes social, emotional, physical, and intellectual health. Figure 17 below details the changes in social health we have found.

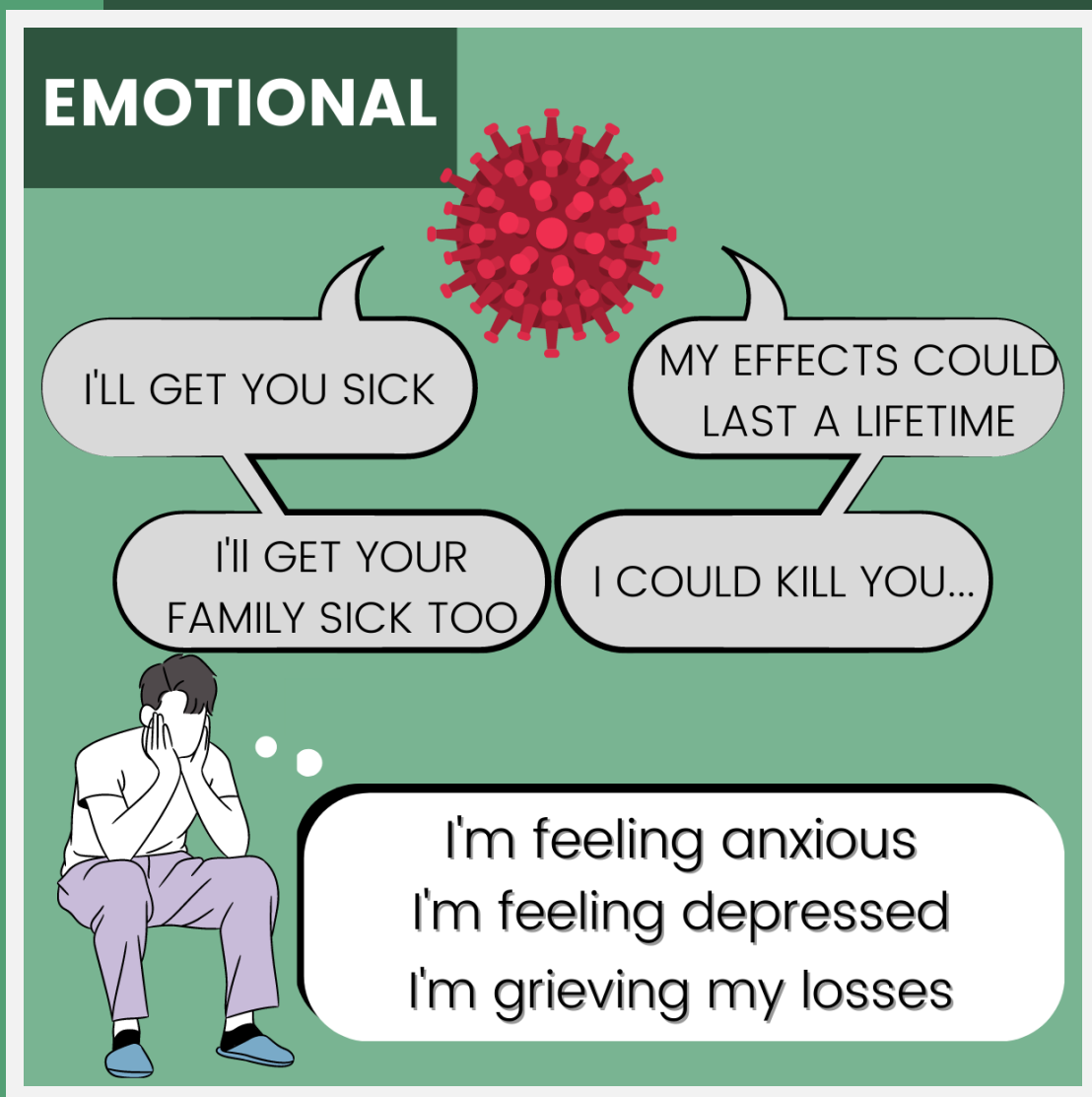
Figure 17: Changes in social health due to COVID



Results

Figure 18 below represents the emotional effects the pandemic has had on individuals based on our prior research.

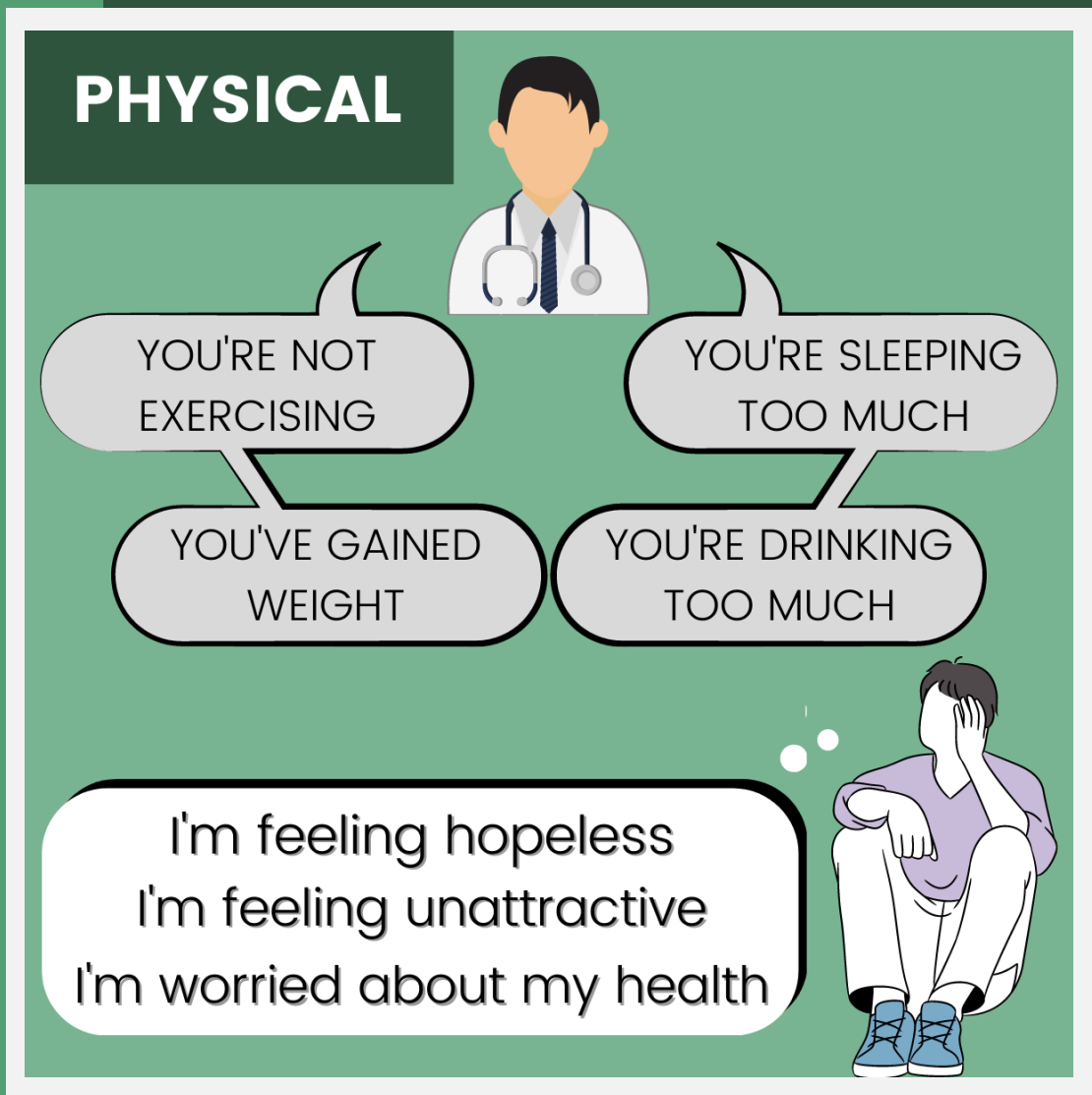
Figure 18: Changes in emotional health due to COVID



Results

Figure 19 below represents the physical effects the pandemic has had on individuals based on our prior research.

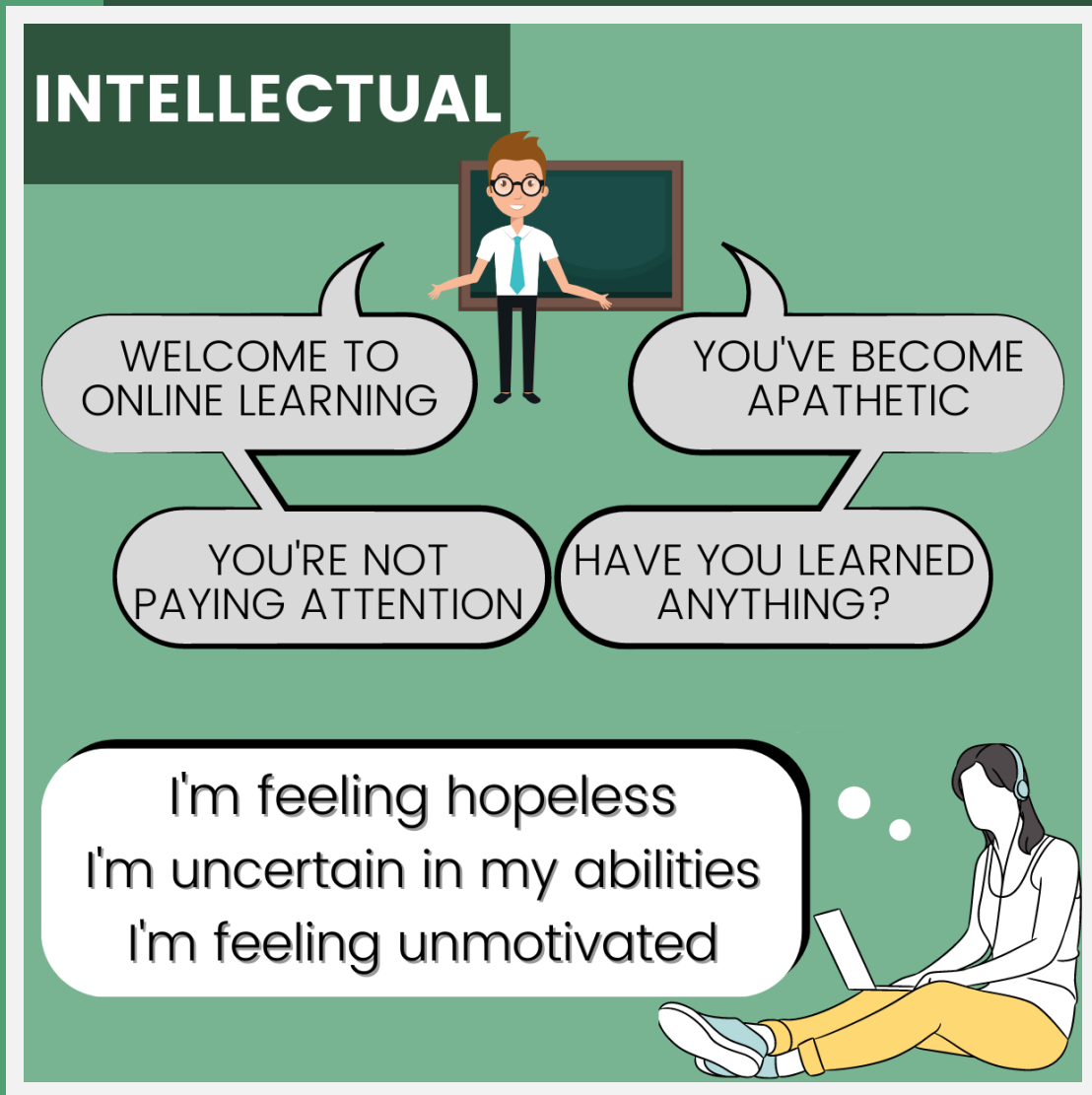
Figure 19: Changes in physical health due to COVID



Results

Figure 20 below represents the intellectual effects the pandemic has had on individuals based on our prior research.

Figure 20: Changes in intellectual health due to COVID



Conclusions

A global pandemic of this nature will have long term residual effects. In other words, people are going to holistically suffer for years to come. Our archival research and our survey indicated that people are suffering, and our archival research clearly indicated that people are going to need help in healing, and there is no single cure. In figure 21, you will see a list of our principal conclusions, but more importantly the outcomes of this disease, and the outcomes from the mitigation strategies that emanated from this disease.

Figure 21: Principle outcomes drawn from our research

Principle Outcomes

- Hong Kongers are suffering holistically
- They need a way to improve holistic health
- Different age groups have different holistic needs
- Hong Kongers are hesitant to go into public spaces
- Hong Kongers will have residual pandemic anxiety
- Pop-ups are one means of reintroducing people to normal life

Pop-Ups



(Antony Gromley, 2016)

Our archival research shows that public space can influence the mood and mindset of those who are around it. We wanted to use the approach of implementing more creative and attractive public spaces in Hong Kong to uplift the mood of those who use it. We initially focused on Sham Shui Po, a poor, extremely densely populated region of Hong Kong. It was immediately clear that we couldn't design a park in this region, due to its little useable space. After learning about Walk Des Voeux Road Central's initiative to pedestrianize streets, such as their Sheung Wan Fiesta (see figure 22), we were inspired as to the effect a pop-up could have on the public. We decided to focus on pop-ups, since they utilize space as small as a parking spot, and can be easily broken down and moved from location to location. We created pop-ups that are designed to impact at least one of the four aspects of holistic health that we are seeking to improve (see figure 23). Our pop-ups are also designed to be used by specific age groups at different times of day.

Figure 22: Walk DVRC's Sheung Wan Fiesta



(Walk DVRC, 2020)
© AVOID OBVIOUS ARCHITECTS



Pop-Ups

There are four key characteristics when it comes to creating a successful public space. These are accessibility, comfort, activities, and sociability (Project for Public Space, 2016). It is important to include all four aspects when designing public space, as a space may fail if these are not accounted for.

The most successful public spaces are accessible to all people. It is important to make sure public spaces are in locations that can be reached by multiple modes of transportation, including walking, driving, or public transportation. Our pop-ups are designed to be placed in parking spots in Hong Kong, allowing convenient access to those who live in dense urban areas.

Comfort is another important aspect in creating a successful public space. Safety, cleanliness, and physical comfort are all aspects to keeping a space comfortable. Our designs implement multiple safety features, such as walls for street protection and hand sanitizer stations for COVID safety. We also use cushioned seating for long stays in our pop-ups.

Public spaces also need to incorporate engaging activities. Often times, the activities a public space offers will dictate how popular it is, as a space with nothing to do is often unappealing. We have implemented unique activities into our designs, which we hope will attract people to participate.

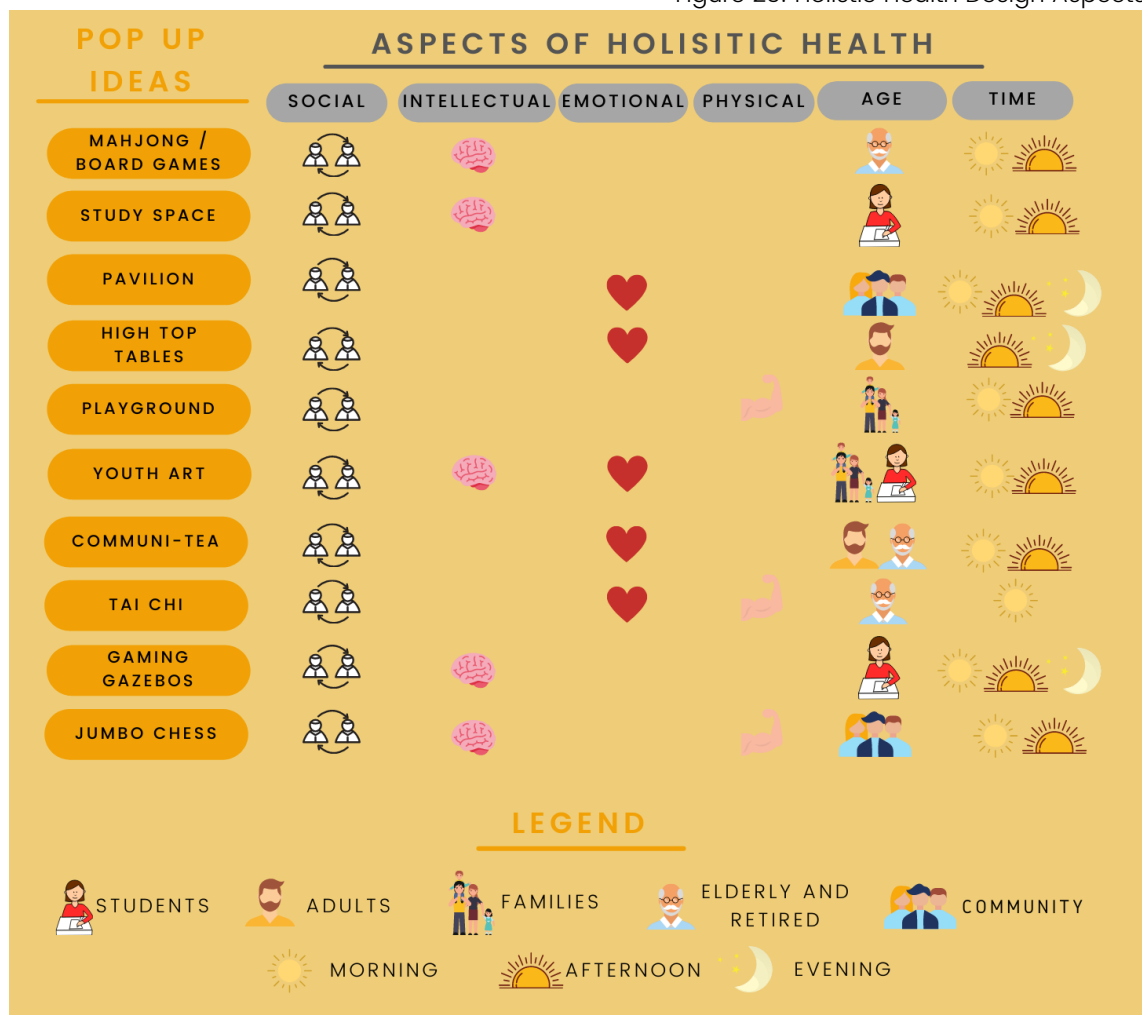
Lastly, public spaces must also be sociable. It is hard to draw people in to public spaces which are empty, as they often feel eerie and can alienate people from spending time there (Wulforst, 2016). Our pop-ups include multiple ways to socialize, while also following mitigation practices to ease discomfort from pandemic anxiety.

Pop-Ups

Each of our pop-ups focus on specific aspects of holistic health (see figure 23). The intention of our pop-ups is to improve social, intellectual, emotional or physical health of users. While many can improve social health simply by involving several people, others take a specific approach to improving aspects of holistic health.

Each design also focuses on a specific group of the community as well as time of use. These groups include families, students, adults, and the elderly and retired. The figure below lists the specific holistic health aspect, community group, and time of day for each design.

Figure 23: Holistic Health Design Aspects



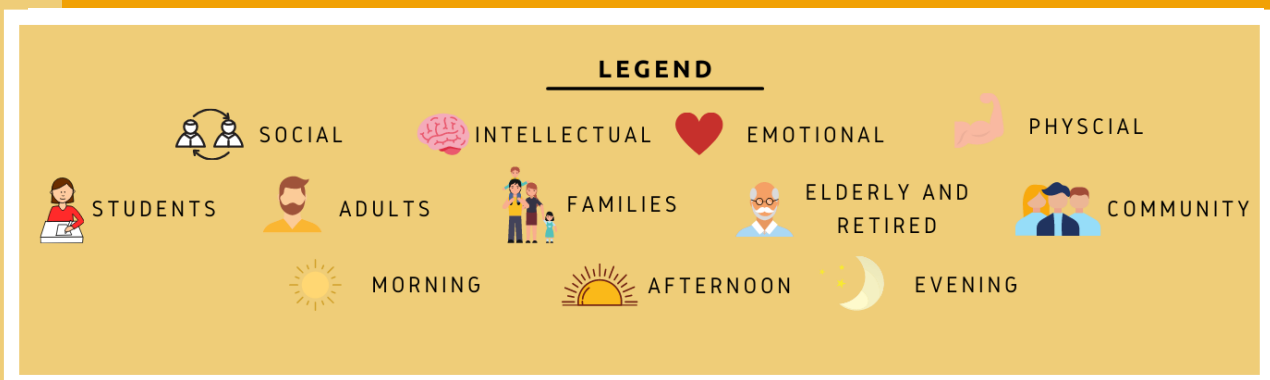
Pop-Up Designs

Each of our designs focused on an area as small as a parking space, since this was the smallest, standardized space within a dense urban area. The following designs fit within an 18 foot by 9 foot or 5.5 meter by 2.7 meter area. These can be expanded into larger areas like parks and pedestrianized streets. Additionally, multiple parking spaces can be combined to create a larger area. They are designed to be rapidly broken down, loaded, and moved by a small team and truck.

More information regarding implementation can be found at the end of this section.

Each of the following designs will include symbols representing the improved aspect of holistic health, intended members of the community, and time of use in the corner of the images (see figure 24).

Figure 24: Legend depicting symbols for design criteria



Pop-Up Designs

Figure 25: Board Game Pop-up



This design focuses on the elderly and retired since they are often seen playing mahjong or board games together outside of their homes (see figure 25). With that in mind, this design improves the social and intellectual health of its users.

Design 1: Board Games

Pop-Up Designs



Figure 26: Pork Bun Seat

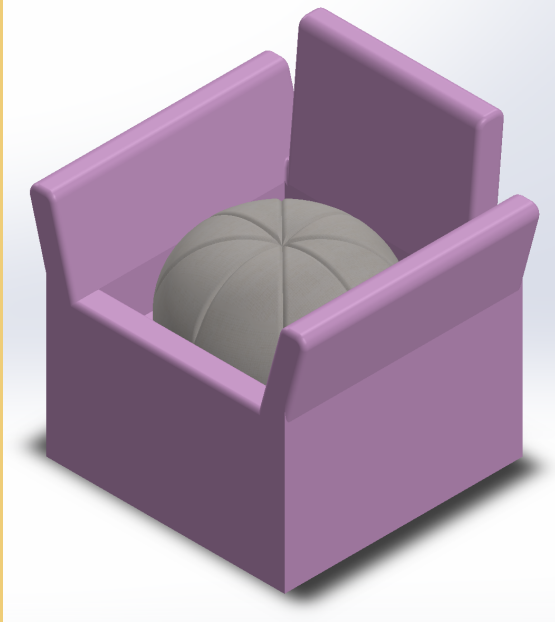
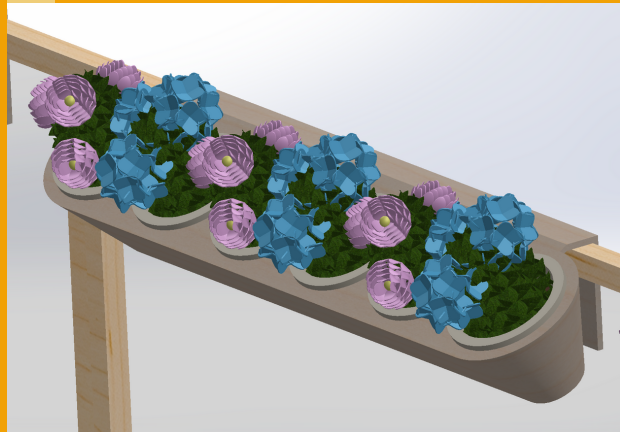


Figure 27: Rail Planter With Hydrangeas and Peonies



We implemented soft, comfortable seating using pork buns inside typical pink boxes (see figure 26). These boxes provide armrests, backrests, and a burst of color to the area.

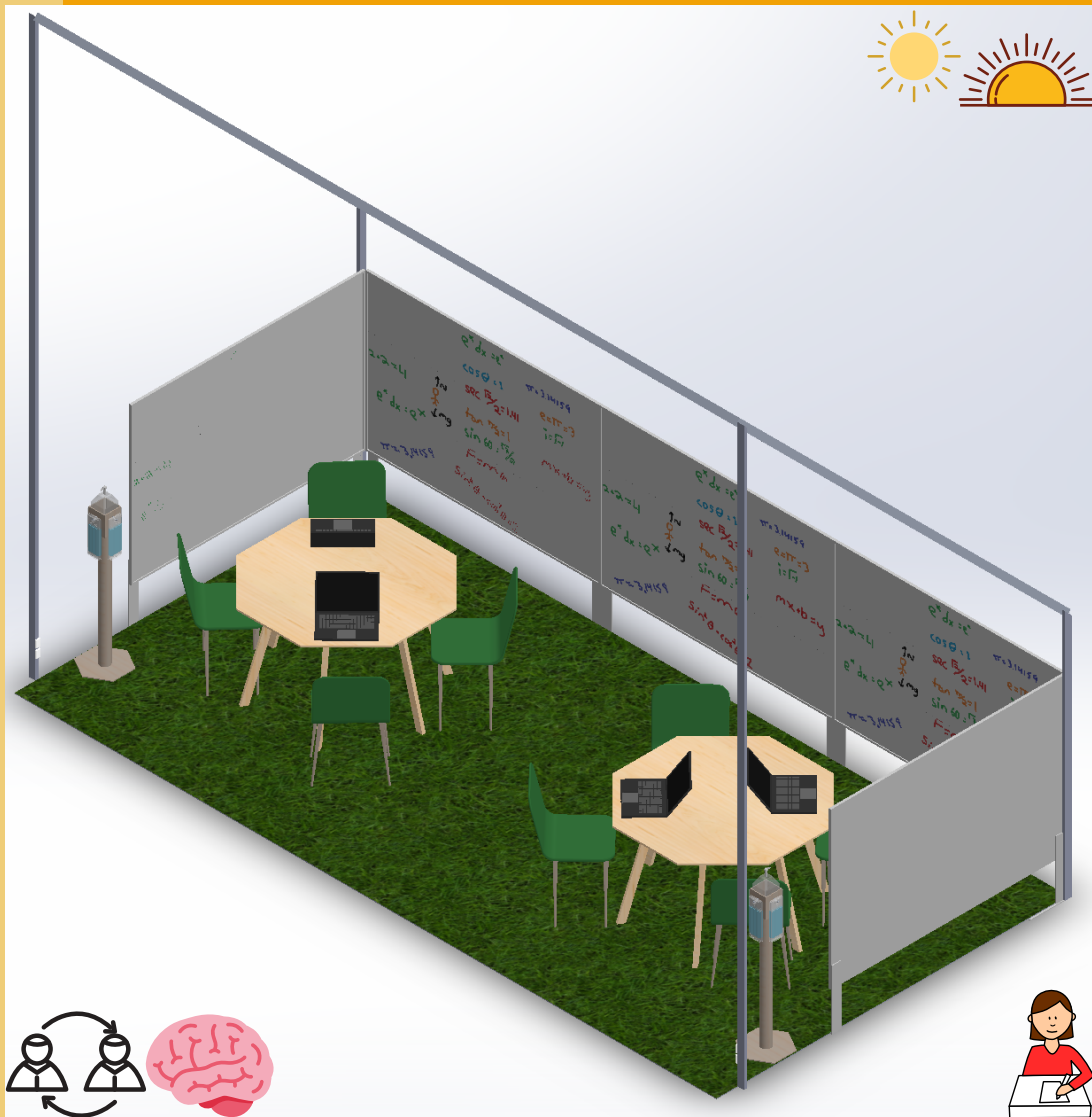
We have also included three foot tall barriers facing the street for safety. On top of these barriers are planters holding peonies, representing luck and fortune, and hydrangeas, representing love, gratitude and enlightenment (see figure 27). Removable six foot tall barriers have been added as a COVID-19 safety measure and to reduce users' anxiety regarding infection.

Design 1: Board Games

Pop-Up Designs



Figure 28: An isometric view of the study space pop-up



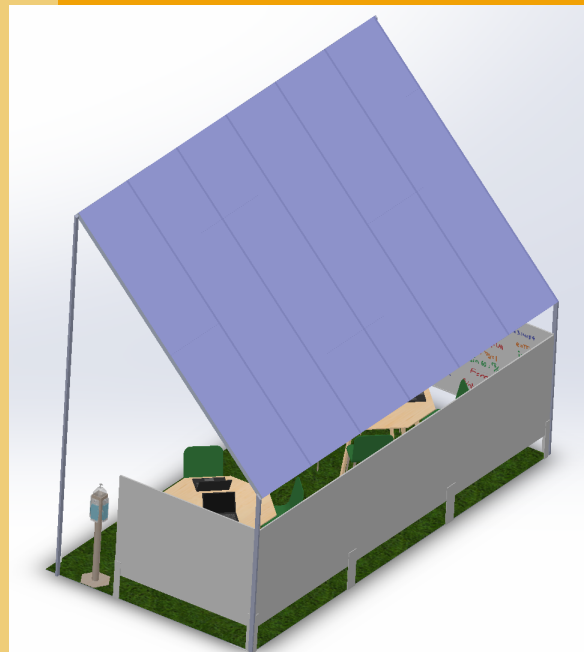
Design 2: Study Space

Pop-Up Designs

This design focuses on the needs of students in Hong Kong by stimulating them intellectually and concurrently providing an opportunity for social interaction. As schools have closed and used remote learning during the pandemic, students have been forced to work from home. This can be problematic for several reasons. The student may learn best in an academic environment, may become distracted easily at home, or in the cases of those in subdivided units, may not have the space needed to study. Therefore, this design is focused on giving students an academic area to study, outside of their home. This area is made up of two large tables designed to seat twelve (see figure 28). The whiteboards along the perimeter allow for collaboration amongst students, while also providing an important safety barrier between the students and the street. We have also added a hand sanitizer station with masks to help prevent transmission and anxiety of COVID-19.

We implemented a solar panel roof at an angle above the students workplace (see figure 29). This allows us to include four electrical outlets in our design so that students have a place to charge their devices while they work. Solar panels were chosen in order to reduce pollution and noise in the area. In times of cloudy or inclement weather, a generator can be used instead. The angle of the solar panel roof provides a welcoming shade in contrast from the typically hot sunlight in Hong Kong.

Figure 29: Solar Panel Awning



Design 2: Study Space

Pop-Up Designs

This design is focused on adult social and emotional health. This was done by appealing to one's visual and olfactory sensory inputs. To create appealing scenery, we utilized traditional Chinese architecture and the color red, which symbolizes good fortune, happiness, and beauty (see figure 30).

Figure 30: A dimetric view of the pavilion pop-up



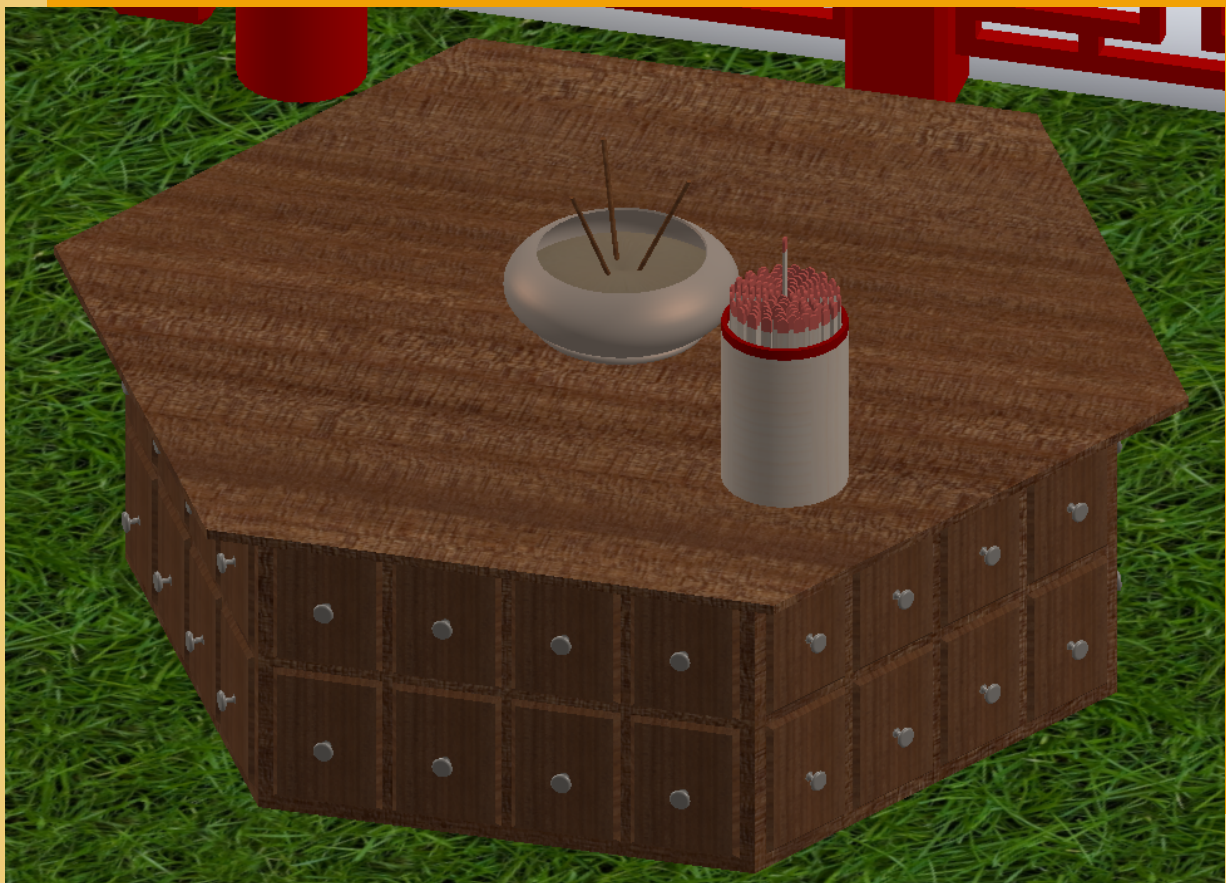
Design 3: Pavilion

Pop-Up Designs

The hexagonal pavilion houses a small table with incense and Kau Cim sticks, also known as fortune sticks (see figure 31). Participants would draw a numbered stick from the container and receive a fortune from the corresponding numbered drawer in the table.

After over a year of misfortune in the form of a pandemic, drawing a good fortune would signal better times to come, and therefore improve one's emotional health.

Figure 31: Close up view of low table with incense and Kau Chim sticks



Design 3: Pavilion

Pop-Up Designs

The seating on the sides of the pop-up allow users to rest and relax. The use of lanterns around the pop-up creates a celebratory and light mood while providing illumination for evening use. Finally, stone lions stand guard to ward off bad spirits, and provide hand sanitizer for the peace of mind of the user (see figure 32).

Figure 32: Traditional Chinese guardian lions outfitted with hand sanitizer dispensers. (original lion designs by Thingiverse user: HeyVye posted Feb 11, 2018)

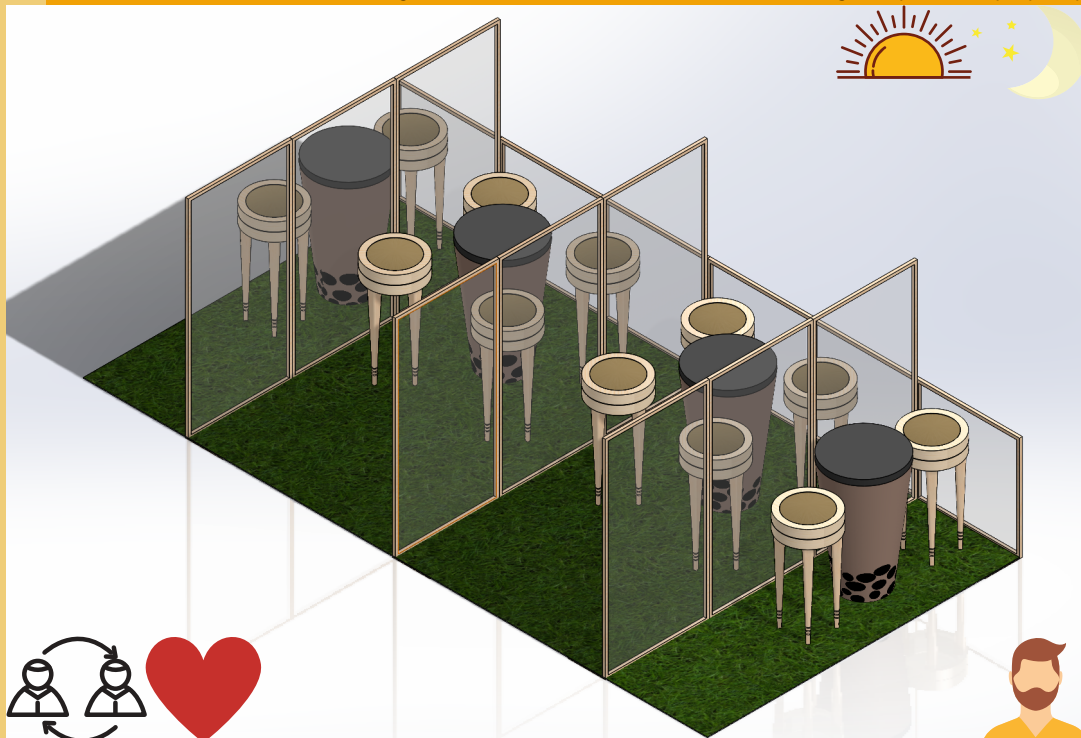


Design 3: Pavilion

Pop-Up Designs

As Hong Kong has continually closed or restricted bars and restaurants from operating normally throughout the pandemic, people can feel anxious about socializing at those establishments. This design provides seating compliant with COVID mitigation measures to reduce user anxiety. The six-foot barriers in between tables are mobile, and can be removed post-pandemic. This reduction in anxiety will serve to improve one's emotional health. The target user of these tables are young adults that use them after purchasing food or drink at a nearby shop, or just stopping for a moment to rest and recuperate. As guests are able to converse, relate, and laugh together, their social and emotional health will improve. We utilized high tables modeled after bubble tea and high top seats incorporating steamer cushions and chopstick legs (see figure 33). These elements were used to capture modern cultural elements of Hong Kong.

Figure 33: An Isometric view of the high top table pop-up

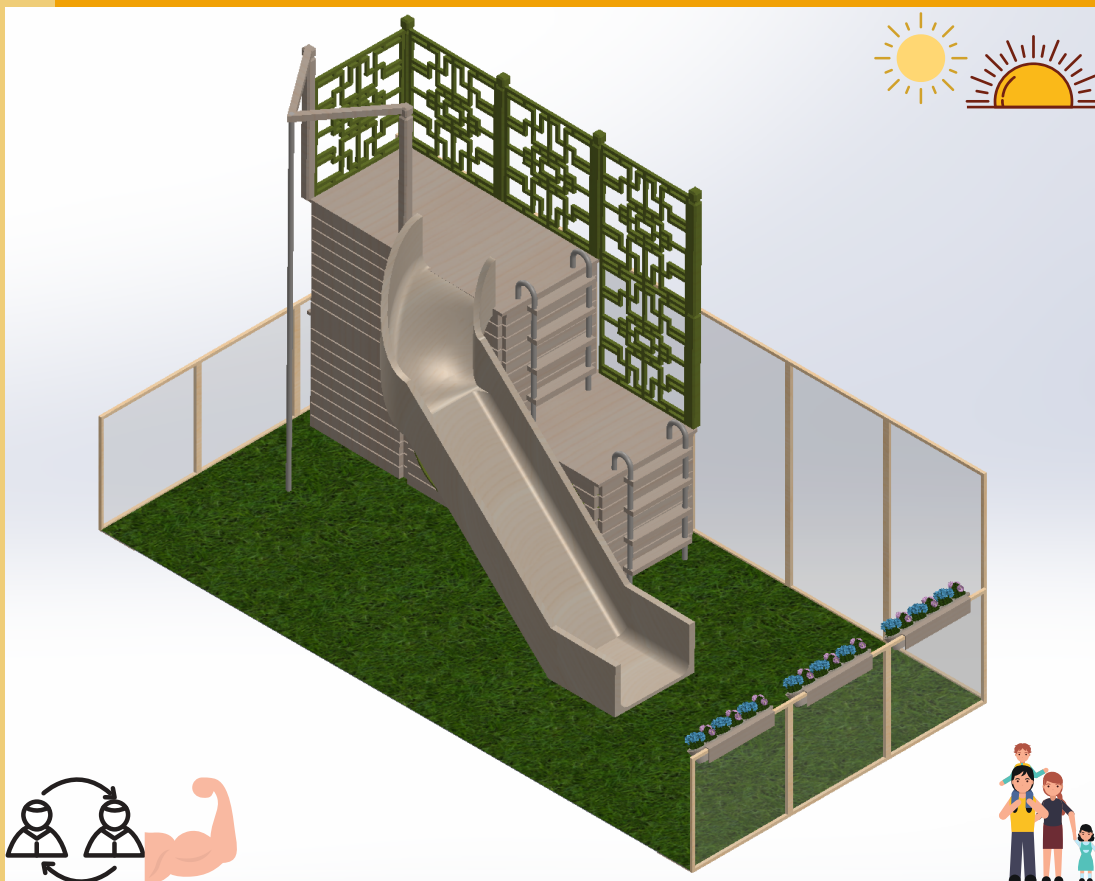


Design 4: High Tops

Pop-Up Designs

This pop-up focuses on families with children, and is designed to improve social and physical health. This area can be utilized as a gathering place for families that live nearby. The playground allows for children who live in cramped urban conditions to be able to play outside (see figure 34).

Figure 34: An isometric view of the playground pop-up



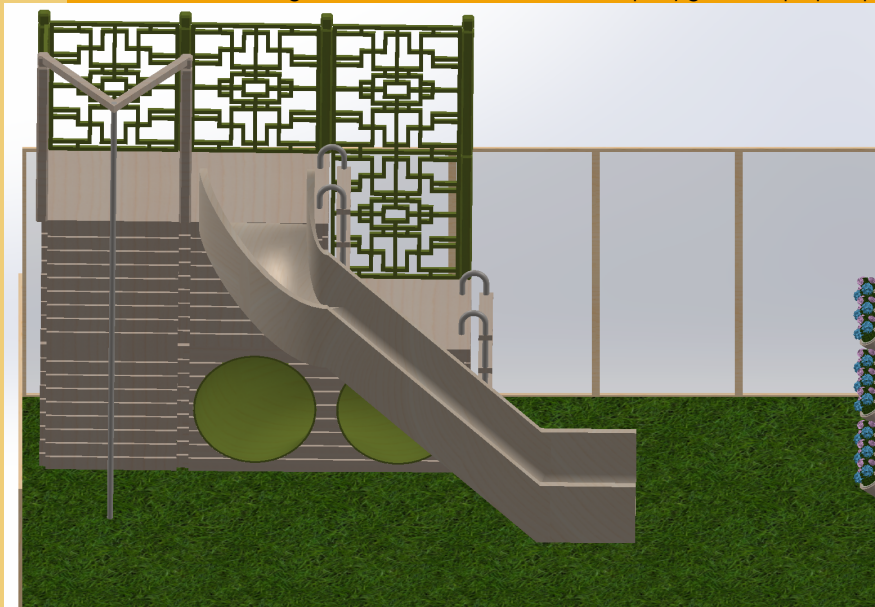
Design 5: Playground

Pop-Up Designs

Children can climb ladders, crawl through a tunnel, and use the fire pole or slide (see figure 35). The combination of lighter woods and green accents invokes a sense of nature, which is shown to improve mental health (Thompson et al., 2012). Six foot tall barriers and three foot tall fences have been added for children's safety. We have also added planters with hydrangeas and peonies for a natural element in an otherwise urban landscape.

The main structure is a combination of modular three foot cubes with removable side paneling. The ladders, slide, and fire pole are all able to be easily disassembled into increments of three foot sections. The green fences can be disassembled into fence lengths and posts. This modular design allows for the playground to be reconfigured at different locations and times as well as the possibility to create and add more elements. Perhaps to create more community involvement, a local design competition could be implemented for additional elements or configurations.

Figure 35: A front view of the playground pop-up



Design 5: Playground

Pop-Up Designs

This pop-up focuses on families with children, and is designed to improve social and intellectual health. The ability to draw and express oneself is intellectually stimulating, and improves one's emotional health. When several children or families gather to create art, their social health will improve as well. The red easels and wooden benches reflect local Chinese culture while allowing children to paint, draw or practice calligraphy (see figure 36). The easels utilize paper so children can take their creations home.

Figure 36: An isometric view of the youth art pop-up



Design 6: Art Space

Pop-Up Designs

A large area has been kept open for children to use chalk to draw on the asphalt (Figure 37).

Figure 37: Alternate view of the youth art pop up



Design 6: Art Space

Pop-Up Designs

This pop-up focuses on social and emotional healing for adults and the elderly (see figure 38). The purpose of this design is to bring members of the community together post-pandemic to relax and socialize with one another. This area is tranquil, and serves as an oasis from the city. We have incorporated a low table with comfortable seating that provides a backrest and armrests for comfort (see figure 39). The table has a heating element to keep the red teapots warm as tea is served.

Figure 38: An Isometric view of the communi-tea pop-up



Design 7: Communi-Tea

Pop-Up Designs

Disposable cups are used as reusable cups could be easily stolen or make users anxious from residual COVID anxiety. A trash can has also been added for cleanliness. A water dispenser is placed in the middle of the area to refill either cold or hot water in teapots. Small planters of peonies and hydrangeas have been added to instill a touch of natural beauty to the area. We have also added the previously mentioned hand sanitizer guardian lions to ward off bad spirits and viruses (see figure 32).

Figure 39: A low tea table with teapot and heater

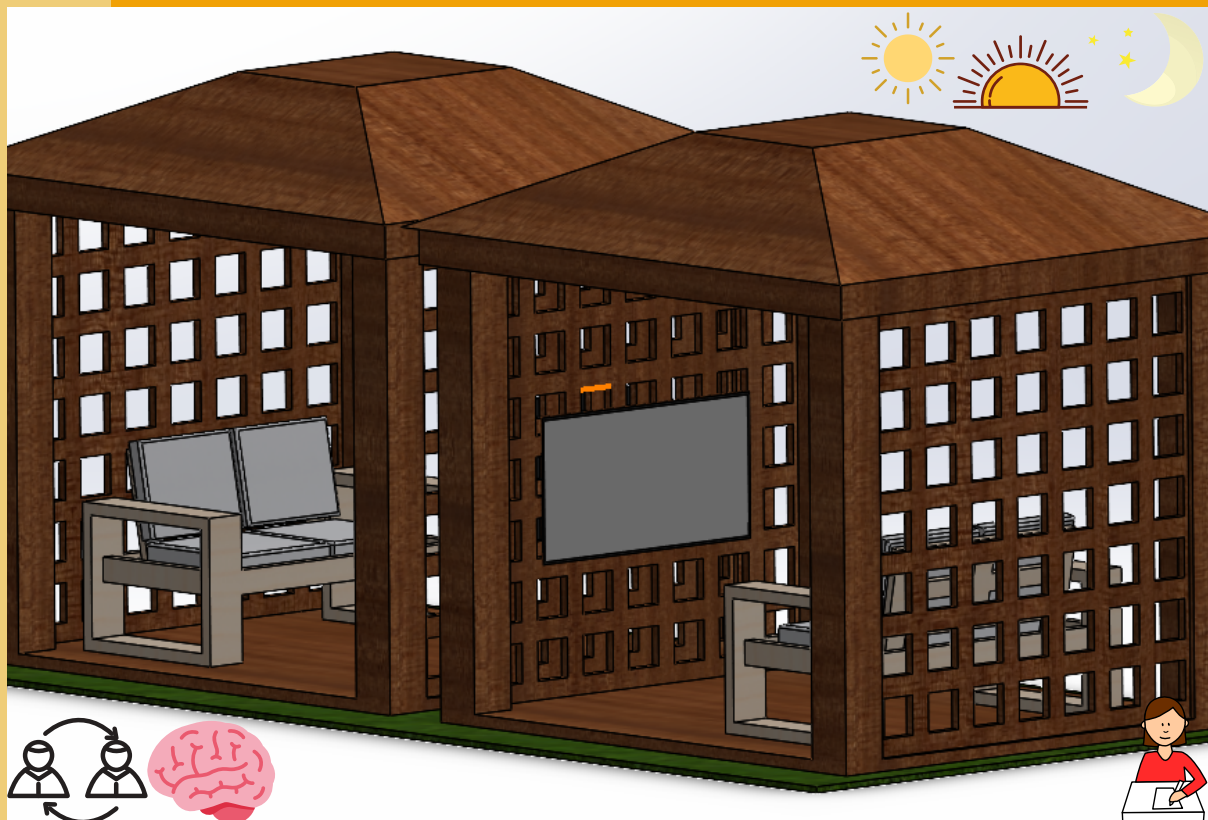


Design 7: Communi-Tea

Pop-Up Designs

This design is focused on improving the social and intellectual aspects of holistic health, targeting children and young adults. This pop-up brings children and young adults together in areas where citizens may not be able to afford their own consoles. This also allows members of the local community to become a part of the larger gaming community (see figure 40).

Figure 40: An isometric view of the gaming gazebos



Design 8: Game-Zebos

Pop-Up Designs

Hong Kong has a large audience and player base for Esports, a form of competitive video games. Before the COVID-19 pandemic in 2019, Hong Kong hosted the Esports Music Festival. With eighty thousand visitors and twelve million viewers, this was the largest Esports event the city has hosted.

Due to the COVID-19 pandemic, events like these are not possible. This design is focused on giving Hong Kong residents a way to play games or view Esports events in a comfortable and safe environment. The design consists of two wooden gazebos, which allow ample air flow to reduce anxiety around COVID transmission (see figure 41). The gazebos provide shade to the players/viewers, as well as cushioned benches for comfort during long playing sessions (see figure 42).

Figure 41: Close up of gazebo

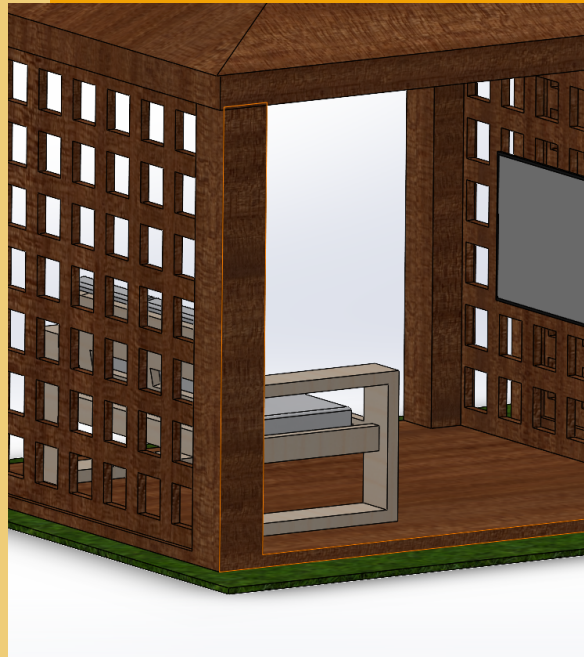
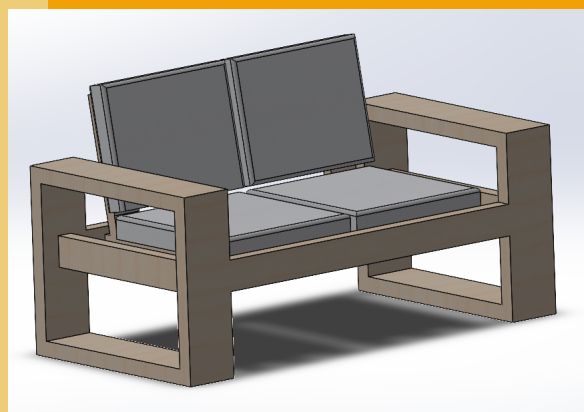


Figure 42: Cushioned bench



Design 8: Game-Zebos



Pop-Up Designs

These designs are intended to be easily disassembled, loaded and moved by a small team and a single box truck. While these pop-ups may stay in place for days or a few hours, they can be easily transported to another area within an hour or two. They would be moved around communities as needed and on a regular schedule that is easy for community members to learn. This could be performed by a government entity or a nongovernmental organization. We prefer the non governmental organization as it would be more easily separated from any political discourse and could work very closely with the community. Likewise, the local government could also use this as an opportunity to improve their relationship with citizens. We also propose a subscription based service for some pop-ups that could attract customers for businesses, restaurants and bars. This would generate revenue to cover costs of labor, transportation and storage.

This proposed organization would also perform other duties related to each pop-ups, such as providing supplies for the youth art space or communi-tea, repairing any incidental damage, and updating designs as community needs change. They would also station one or more members to deter theft, monitor usage and users, and work closely with the community.

Additionally, furniture and installations would be secured to metal plates underneath the green carpet to prevent theft and increase stability and safety.

Implementation

A Special Design

The Hong Kong Shell is a mobile installation with the focus on addressing the social, emotional, and intellectual health of the local community. Additionally, the Shell is to be a place for the community to come together after the long term separation from the pandemic (see figure 43). In order to address different needs and interests, it is designed to have a variety of uses. These include a digital aquarium, astronomy presentation, light show, digital art and marble racing.

Figure 43: The Shell viewed from the outside



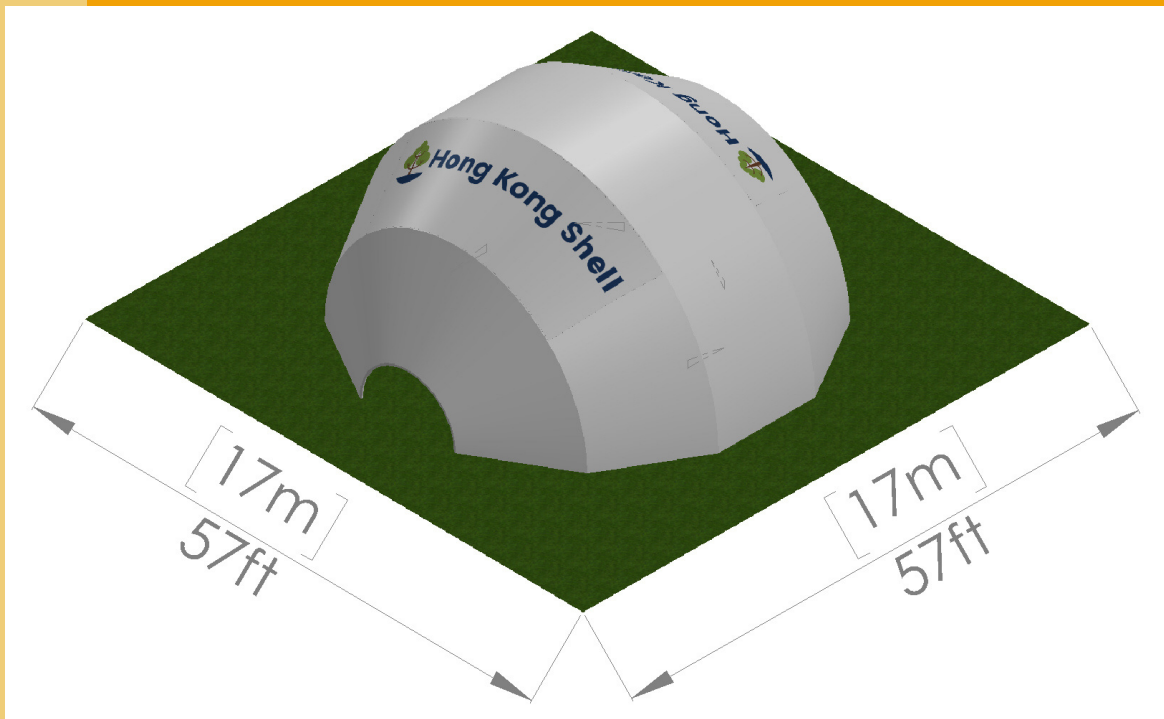
The Hong Kong Shell

A Special Design

This design is on a larger scale than the previous ones, with a total footprint of a nearly fifty seven foot (17 meter) square with additional space around the structure (see figure 44). It would be built using a steel structure, canvas skin and a central projector hub, allowing it to be easily deconstructed and moved within a few hours. But unlike other designs, it must be used in larger areas like parks, parking lots or closed streets.

While maintenance, transportation, uses, and permits would fall under the implementation mentioned above, we propose that the admission is free to allow all residents to enjoy the Shell and its holistic effects. Funding would be in the form of grants, sponsorships, or donations.

Figure 44: The Shell with dimensions



The Hong Kong Shell

The Hong Kong Shell

This configuration is a digital aquarium with a focus on families and their intellectual, emotional and social health. Inside the Shell, aquatic wildlife are projected from the center dome onto the walls (see figure 45). In order to encourage interaction, shallow pools have been added to provide a hands on experience with wildlife (see Figure 46). This wildlife would be provided by the Grand Aquarium in Hong Kong or other educational organizations. The digital format also allows children to draw a design of a fish, scan it and it could appear in the aquarium. The interior walls would also be equipped with sensors to detect touch and create interactive visuals. Comfortable seating is also provided with circular planters. The floor has been colored similar to water to enhance immersion.

Figure 45: A section view of the digital aquarium configuration. Images: (Georgia Aquarium, 2019)

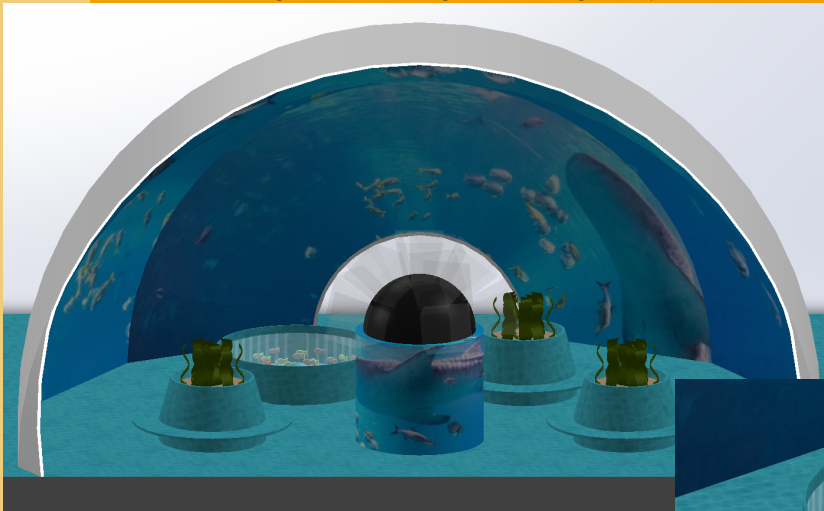


Figure 46: Close up of seating and pools

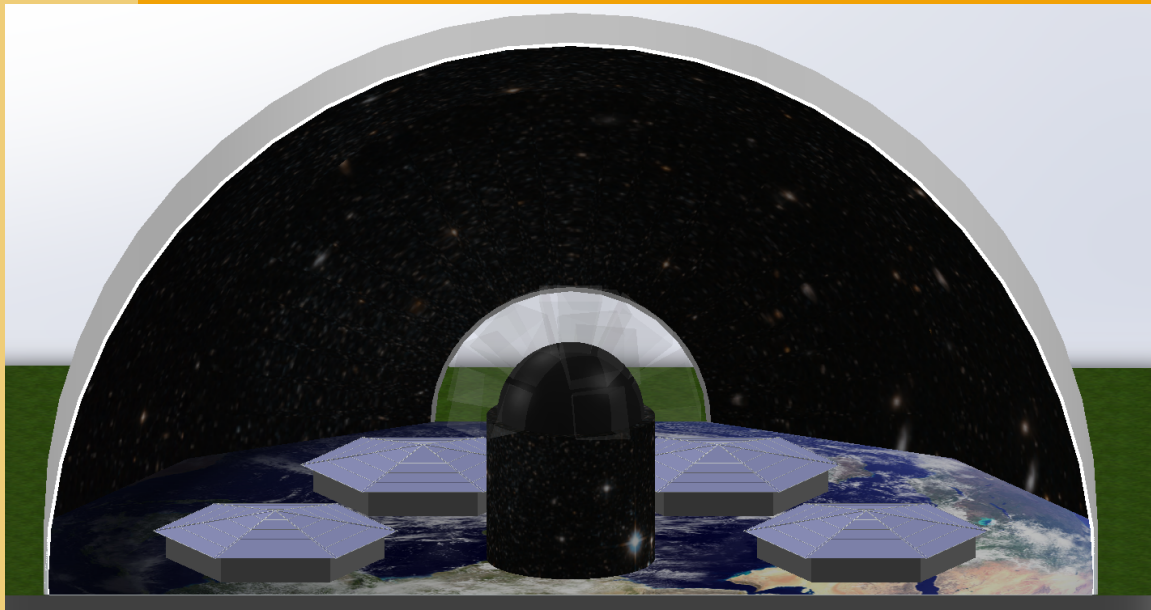


Digital Aquarium

The Hong Kong Shell

This configuration is a digital observatory with a focus on families and their intellectual, emotional and social health. With the level of Hong Kong's light pollution, residents may not be able to see the stars at night. But inside the Shell, we can project the night sky onto the walls (see figure 47). Here, residents can relax and contemplate while looking into the depths of space. This serves as intellectual stimulation and an opportunity for emotional healing as well as a social event. In order to reduce strain on guests' necks, horizontal seating has been added in the style of solar panels.

Figure 47: A section view of the observatory shell configuration. Images: NASA

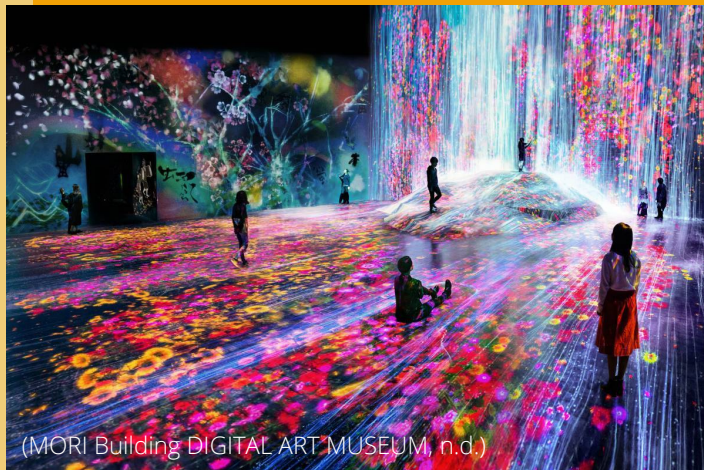


Observatory

The Hong Kong Shell

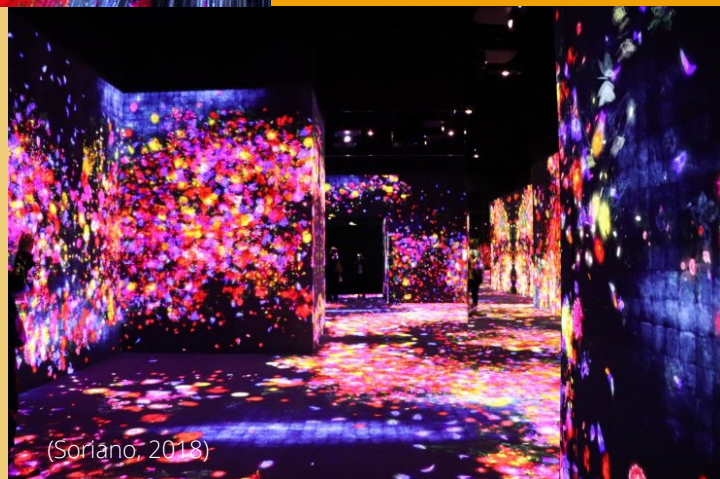
It has been much harder for people to enrich themselves in the culture of Hong Kong. Art has been a great medium to incorporate culture and impact holistic health. We took inspiration from the teamLabs Borderless digital museum in Tokyo, Japan. This museum displays vibrant and often interactive imagery across its walls with the use of projectors and touch sensors in the screens (see Figure 48 and 49).

Figure 48: A digital waterfall flows across the floor



(MORI Building DIGITAL ART MUSEUM, n.d.)

Figure 49: Digital flower petals scatter across walls



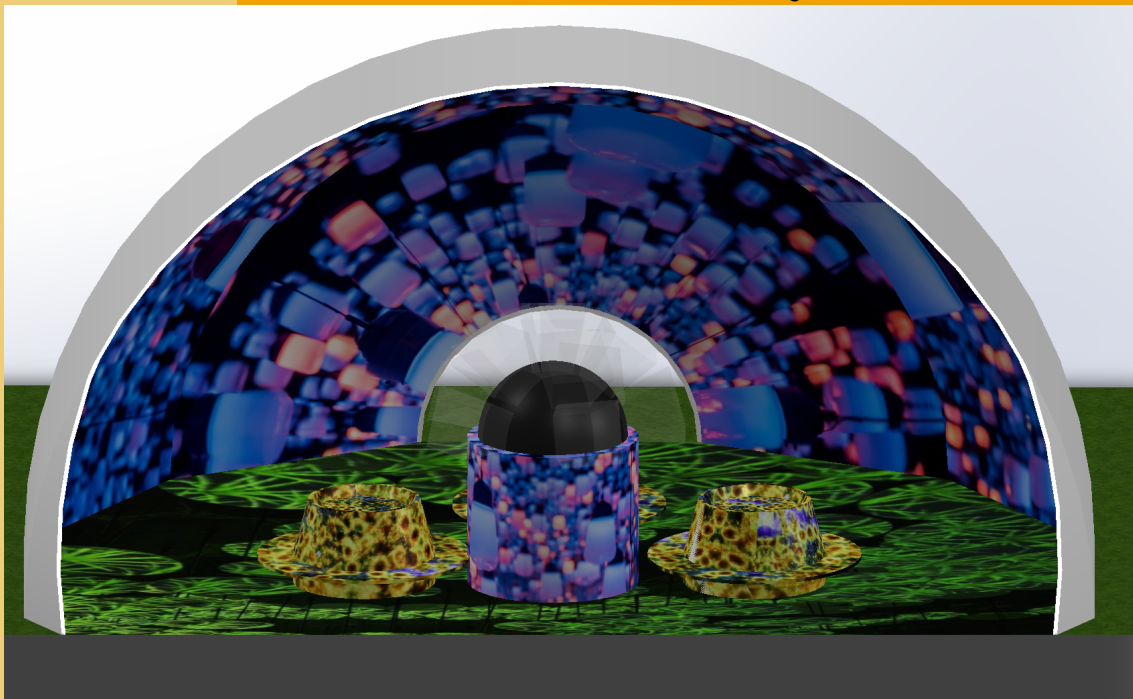
(Soriano, 2018)

Digital Art

The Hong Kong Shell

The next two configurations are similar to exhibits at teamLabs and are designed for the community to improve their social, intellectual, and emotional health. Art can be emotionally healing and intellectually stimulating while this attraction could be a social event. The first is a simple digital art projection across the shell (see figure 50). Here, colorful lanterns float across the walls, seats become flowers, and visitors can wander through lily pads. These projections would be dynamic and interactive as visitors touch the walls or even move around the space. Digital art also allows incredible possibilities that can focus on specific responses from visitors and target specific holistic aspects to heal.

Figure 50: A section view of the digital art shell configuration. Images: (Soriano, 2018), (MORI Building DIGITAL ART MUSEUM, n.d.)



Digital Art

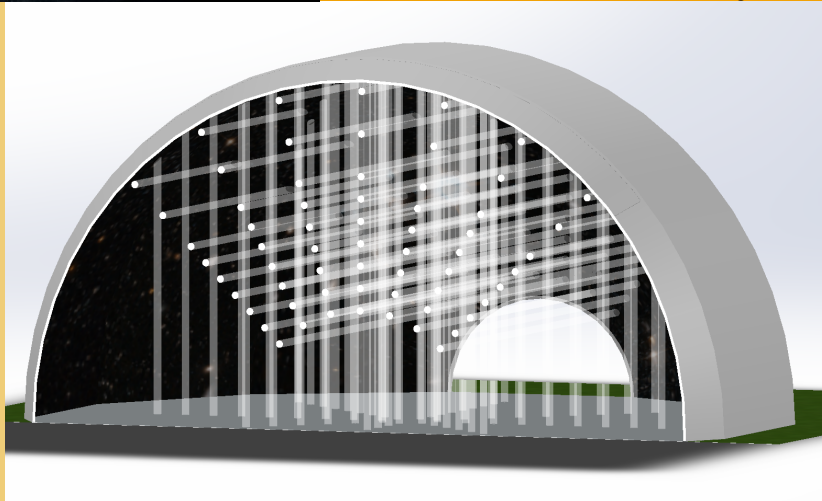
The Hong Kong Shell

Our other teamLabs inspired (see figure 51) configuration is a light show within the shell. With a reflective floor and several dozen articulating lights, visitors can experience a light show up close. They can walk through the beams and listen to the music in harmony with the light (see figure 52). As the lights can change colors, diameters, and intensity, this configuration offers endless creative possibilities.

Figure 51: teamLabs Light Show as our inspiration. Image (MORI Building DIGITAL ART MUSEUM, n.d.)



Figure 52: A section view of the light show shell configuration



Light Show

The Hong Kong Shell

This implementation of the Shell is for Marbula One or Marbula E racing, designed for social and intellectual healing. We sought to take the excitement of racing into the Shell by bringing marble racing to Hong Kong. Due to the cancellation of many sports, marble racing has exploded in popularity as fans need something new to watch. Marbula One and Marbula E are a series on Jelle's Marble Runs Youtube channel. Marbula One is based off fictional marble teams, while Marbula E is sponsored by the Formula E racing series. Here, visitors can bring or purchase their marbles to race, as a vending machine is located at the center of the Shell under the projector hub.

Figure 53: A section view of the Marbula One configuration. Images: (Reddit User u/_TheWingman, 2020), (Jelle's Marble Runs, 2021).



Marbula One

The Hong Kong Shell

The tracks seen here are representative of the Hong Kong ePrix, which was held along the central harbor front as recently as 2019. These tracks are also designed to be modular to allow visitors to build and customize their own tracks. This configuration is an example of potential sponsorships for the Shell, where companies are able to rent it out to host events.

Figure 54: Marble track modeled off of Hong Kong ePrix

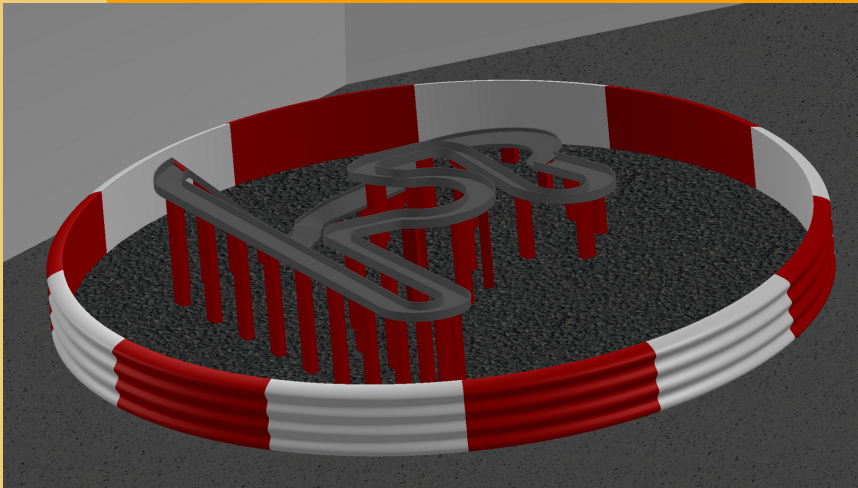
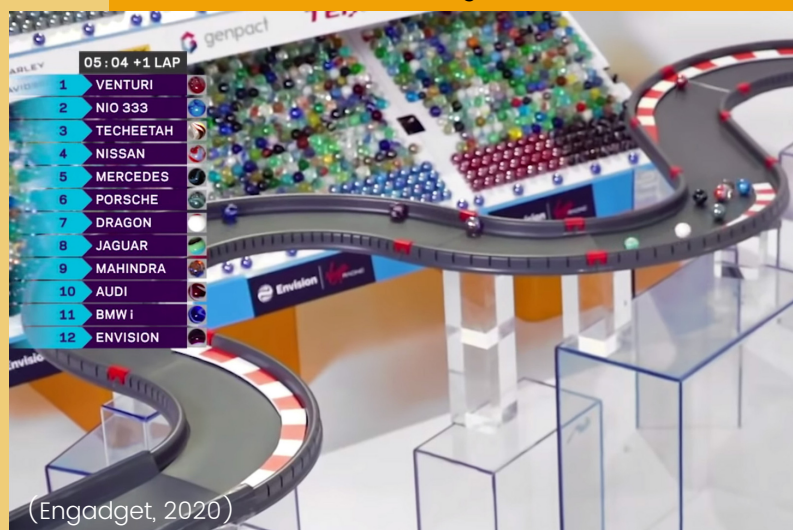


Figure 55: A Marbula E race



Marbula One

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Appendix A



Informed Consent Agreement for Participation in a Research Study

Non-Videotaping Survey Questions

Investigators: Nigel Kobayashi (nkobayashi@wpi.edu), Miranda Pitta (mspitta@wpi.edu), Benjamin Robinson (brobinson@wpi.edu)
Primary Contact Information: gr-HKCOVID-C21@wpi.edu
Project Title: Creative Use of Pop-Ups in a Post-COVID World
Sponsor: Hendrik Tieben (hktieben@yahoo.com), Dr. Sujata Govada (sujata@udpcltd.com)

SCRIPT

Hello. You have been invited to participate in this survey for research project at Worcester Polytechnic Institute (WPI). The purpose of our project is to determine the negative holistic impacts of the mitigation strategies of COVID-19 on the population of Hong Kong. Then we will create a set of recommendations about how to redesign public space to help heal some of the negative holistic effects caused by the mitigation strategies of COVID-19. This survey asks about your demographic information, your perception of your holistic health during the COVID-19 pandemic, and your ideas about public space. In our final Interactive Qualifying Project (IQP) document, which includes the results of this survey (your answers), will be stored on the WPI library website or may appear in a published paper. Individual answers will not be published. Anonymity is guaranteed. Records of your participation in this study will be held confidential so far as permitted by law. Any publication or presentation of the data will not identify you. This survey is intended to take 5-8 minutes. You may decide to stop participating in the research at any time, and your participation is voluntary. You may skip any question you do not wish to answer. You may ask any questions you wish before you begin the survey. For more information contact the project team members at gr-HKCOVID-C21@wpi.edu, the IRB Manager (Ruth McKeogh, Tel. 508 831- 6699, Email: irb@wpi.edu) or the Human Protection Administrator (Gabriel Johnson, Tel. 508-831-4989, Email: gjohnson@wpi.edu).

Appendix A

Hong Kong Survey Results

1 - Please answer the following questions with the choice that best fits you. Do you identify as:

#	Answer	%	Count
1	Male	23.08%	3
2	Female	76.92%	10
	Total	100%	13

2 - What is your age?

#	Answer	%	Count
1	18 - 22	15.38%	2
2	30 - 39	15.38%	2
3	40 - 49	7.69%	1
4	50 - 59	23.08%	3
5	60 - 69	0.00%	0
6	70+	0.00%	0
8	23 - 29	38.46%	5
	Total	100%	13

3 - What is your employment status?

#	Answer	%	Count
2	Full Time	46.15%	6
3	Part Time	0.00%	0
4	Retired	0.00%	0
5	Student	53.85%	7
6	Not currently employed	0.00%	0
	Total	100%	13

4 - Where do you live? Choose one.

#	Answer	%	Count
1	Hong Kong	100.00%	13
	Total	100%	13

5 - I am significantly less physically healthy than before the pandemic began.

#	Answer	%	Count
1	Much like me	7.69%	1
2	Like me	30.77%	4
3	Somewhat like me	30.77%	4
4	Not like me	0.00%	0
5	Not like me at all	30.77%	4
	Total	100%	13

6 - I am significantly more depressed than before the pandemic began.

#	Answer	%	Count
1	Much like me	15.38%	2
2	Not like me	15.38%	2
4	Like me	30.77%	4
5	Somewhat like me	15.38%	2
6	Not like me at all	23.08%	3
	Total	100%	13

Appendix A

Hong Kong Survey Results

7 - I am significantly more isolated than before the pandemic began.

#	Answer	%	Count
1	Much like me	7.69%	1
4	Like me	7.69%	1
5	Somewhat like me	38.46%	5
6	Not like me	38.46%	5
7	Not like me at all	7.69%	1
	Total	100%	13

10 - I am significantly less motivated than I was before the pandemic began.

#	Answer	%	Count
1	Much like me	0.00%	0
2	Like me	30.77%	4
3	Somewhat like me	23.08%	3
4	Not like me	38.46%	5
5	Not like me at all	7.69%	1
	Total	100%	13

8 - I am significantly lonelier than before the pandemic began.

#	Answer	%	Count
1	Much like me	7.69%	1
2	Like me	15.38%	2
3	Somewhat like me	23.08%	3
4	Not like me	38.46%	5
5	Not like me at all	15.38%	2
	Total	100%	13

11 - I am significantly more agitated than before the pandemic began.

#	Answer	%	Count
1	Much like me	7.69%	1
2	Like me	7.69%	1
3	Somewhat like me	69.23%	9
4	Not like me	15.38%	2
5	Not like me at all	0.00%	0
	Total	100%	13

9 - I am significantly more anxious than before the pandemic began.

#	Answer	%	Count
1	Much like me	15.38%	2
2	Like me	7.69%	1
3	Somewhat like me	38.46%	5
4	Not like me	23.08%	3
5	Not like me at all	15.38%	2
	Total	100%	13

12 - I am significantly less intellectually stimulated than before the pandemic began.

#	Answer	%	Count
1	Much like me	0.00%	0
2	Like me	7.69%	1
3	Somewhat like me	38.46%	5
4	Not like me	53.85%	7
5	Not like me at all	0.00%	0
	Total	100%	13

Appendix A

Hong Kong Survey Results

13 - I utilize public spaces significantly more than before the pandemic began.

#	Answer	%	Count
1	Much like me	0.00%	0
2	Like me	16.67%	2
3	Somewhat like me	16.67%	2
4	Not like me	58.33%	7
5	Not like me at all	8.33%	1
	Total	100%	12

14 - My physical safety in a public space is important.

#	Answer	%	Count
2	Much like me	25.00%	3
4	Like me	58.33%	7
5	Somewhat like me	8.33%	1
6	Not like me	8.33%	1
7	Not like me at all	0.00%	0
	Total	100%	12

15 - Social distancing in a public space is important post pandemic.

#	Answer	%	Count
1	Much like me	41.67%	5
2	Like me	41.67%	5
3	Somewhat like me	16.67%	2
4	Not like me	0.00%	0
5	Not like me at all	0.00%	0
	Total	100%	12

16 - The cleanliness of a public space is important.

#	Answer	%	Count
1	Much like me	66.67%	8
2	Not like me at all	0.00%	0
4	Like me	33.33%	4
5	Somewhat like me	0.00%	0
6	Not like me	0.00%	0
	Total	100%	12

17 - A public space that utilizes color is important.

#	Answer	%	Count
1	Much like me	0.00%	0
2	Like me	75.00%	9
3	Somewhat like me	16.67%	2
4	Not like me	8.33%	1
5	Not like me at all	0.00%	0
	Total	100%	12

18 - The scent and smell of a public space is important.

#	Answer	%	Count
1	Much like me	50.00%	6
2	Like me	33.33%	4
3	Somewhat like me	8.33%	1
4	Not like me	0.00%	0
5	Not like me at all	8.33%	1
	Total	100%	12

Appendix A

Hong Kong Survey Results

19 - It is important that public space reflects the local culture.

#	Answer	%	Count
1	Much like me	50.00%	6
2	Like me	16.67%	2
3	Somewhat like me	25.00%	3
4	Not like me	8.33%	1
5	Not like me at all	0.00%	0
	Total	100%	12

22 - Access to food in a public space is important.

#	Answer	%	Count
1	Much like me	25.00%	3
2	Like me	75.00%	9
3	Somewhat like me	0.00%	0
4	Not like me	0.00%	0
5	Not like me at all	0.00%	0
	Total	100%	12

20 - Having comfortable seating in a public space is important.

#	Answer	%	Count
1	Much like me	41.67%	5
2	Like me	50.00%	6
3	Somewhat like me	8.33%	1
4	Not like me	0.00%	0
5	Not like me at all	0.00%	0
	Total	100%	12

23 - Access to games, exercise equipment, and playground equipment in a public space is important.

#	Answer	%	Count
1	Much like me	33.33%	4
2	Somewhat like me	33.33%	4
3	Not like me at all	0.00%	0
4	Like me	16.67%	2
5	Not like me	16.67%	2
	Total	100%	12

21 - The artwork in a public space is important.

#	Answer	%	Count
1	Much like me	33.33%	4
2	Like me	41.67%	5
3	Somewhat like me	25.00%	3
4	Not like me	0.00%	0
5	Not like me at all	0.00%	0
	Total	100%	12

24 - Access to Wi-Fi in a public space is important.

#	Answer	%	Count
1	Much like me	33.33%	4
2	Like me	25.00%	3
3	Somewhat like me	25.00%	3
4	Not like me	16.67%	2
5	Not like me at all	0.00%	0
	Total	100%	12

Appendix A

Hong Kong Survey Results

25 - I will feel anxious going into public spaces after the pandemic.

#	Answer	%	Count
1	Much like me	16.67%	2
4	Like me	25.00%	3
5	Somewhat like me	50.00%	6
6	Not like me	0.00%	0
7	Not like me at all	8.33%	1
	Total	100%	12

26 - When in public spaces, what would you do?

#	Answer	%	Count
2	Relaxing	10.00%	3
3	Chatting with friends	13.33%	4
4	Playing chess, checkers or mahjong	0.00%	0
5	Playing sports (basketball, football, etc)	0.00%	0
6	Playing games like pong, horseshoe, and cornhole	0.00%	0
7	Low-Intensity Exercise (walking, yoga, tai chi)	13.33%	4
8	High-Intensity Exercise (running, weights, cross fit)	3.33%	1
9	Studying	0.00%	0
10	Social Interactions (hanging out, dates, etc)	36.67%	11
11	Eating food	23.33%	7
	Total	100%	30

27 - What times would you go to public space?

#	Answer	%	Count
1	5am - 8am	0.00%	0
2	8am - 11am	17.65%	3
3	11am - 2pm	5.88%	1
4	2pm - 5pm	35.29%	6
5	5pm - 8pm	23.53%	4
6	after 8pm	17.65%	3
7	before 5am	0.00%	0
	Total	100%	17

Appendix A

American Survey Results

1 - Please answer the following questions with the choice that best fits you. Do you identify as:

#	Answer	%	Count
1	Male	11.11%	4
2	Female	88.89%	32
	Total	100%	36

2 - What is your age?

#	Answer	%	Count
1	18 - 22	100.00%	36
2	30 - 39	0.00%	0
3	40 - 49	0.00%	0
4	50 - 59	0.00%	0
5	60 - 69	0.00%	0
6	70+	0.00%	0
8	23 - 29	0.00%	0
	Total	100%	36

3 - What is your employment status?

#	Answer	%	Count
2	Full Time	0.00%	0
3	Part Time	16.67%	6
4	Retired	0.00%	0
5	Student	83.33%	30
6	Not currently employed	0.00%	0
	Total	100%	36

4 - Where do you live? Choose one.

#	Answer	%	Count
1	United States	100.00%	36
	Total	100%	36

5 - I am significantly less physically healthy than before the pandemic began.

#	Answer	%	Count
1	Much like me	17.65%	6
2	Like me	17.65%	6
3	Somewhat like me	23.53%	8
4	Not like me	32.35%	11
5	Not like me at all	8.82%	3
	Total	100%	34

6 - I am significantly more depressed than before the pandemic began.

#	Answer	%	Count
1	Much like me	14.71%	5
2	Not like me	8.82%	3
4	Like me	35.29%	12
5	Somewhat like me	38.24%	13
6	Not like me at all	2.94%	1
	Total	100%	34

Appendix A

American Survey Results

7 - I am significantly more isolated than before the pandemic began.

#	Answer	%	Count
1	Much like me	47.06%	16
4	Like me	44.12%	15
5	Somewhat like me	5.88%	2
6	Not like me	2.94%	1
7	Not like me at all	0.00%	0
	Total	100%	34

10 - I am significantly less motivated than I was before the pandemic began.

#	Answer	%	Count
1	Much like me	41.18%	14
2	Like me	41.18%	14
3	Somewhat like me	8.82%	3
4	Not like me	5.88%	2
5	Not like me at all	2.94%	1
	Total	100%	34

8 - I am significantly lonelier than before the pandemic began.

#	Answer	%	Count
1	Much like me	41.18%	14
2	Like me	32.35%	11
3	Somewhat like me	11.76%	4
4	Not like me	14.71%	5
5	Not like me at all	0.00%	0
	Total	100%	34

11 - I am significantly more agitated than before the pandemic began.

#	Answer	%	Count
1	Much like me	29.41%	10
2	Like me	23.53%	8
3	Somewhat like me	29.41%	10
4	Not like me	17.65%	6
5	Not like me at all	0.00%	0
	Total	100%	34

9 - I am significantly more anxious than before the pandemic began.

#	Answer	%	Count
1	Much like me	41.18%	14
2	Like me	41.18%	14
3	Somewhat like me	11.76%	4
4	Not like me	2.94%	1
5	Not like me at all	2.94%	1

12 - I am significantly less intellectually stimulated than before the pandemic began.

#	Answer	%	Count
1	Much like me	35.29%	12
2	Like me	20.59%	7
3	Somewhat like me	29.41%	10
4	Not like me	11.76%	4
5	Not like me at all	2.94%	1
	Total	100%	34

Appendix A

American Survey Results

13 - I utilize public spaces significantly more than before the pandemic began.

#	Answer	%	Count
1	Much like me	5.88%	2
2	Like me	2.94%	1
3	Somewhat like me	5.88%	2
4	Not like me	44.12%	15
5	Not like me at all	41.18%	14
	Total	100%	34

16 - The cleanliness of a public space is important.

#	Answer	%	Count
1	Much like me	70.59%	24
2	Not like me at all	0.00%	0
4	Like me	23.53%	8
5	Somewhat like me	5.88%	2
6	Not like me	0.00%	0
	Total	100%	34

14 - My physical safety in a public space is important.

#	Answer	%	Count
2	Much like me	73.53%	25
4	Like me	26.47%	9
5	Somewhat like me	0.00%	0
6	Not like me	0.00%	0
7	Not like me at all	0.00%	0
	Total	100%	34

17 - A public space that utilizes color is important.

#	Answer	%	Count
1	Much like me	17.65%	6
2	Like me	35.29%	12
3	Somewhat like me	32.35%	11
4	Not like me	11.76%	4
5	Not like me at all	2.94%	1
	Total	100%	34

15 - Social distancing in a public space is important post pandemic.

#	Answer	%	Count
1	Much like me	32.35%	11
2	Like me	35.29%	12
3	Somewhat like me	29.41%	10
4	Not like me	2.94%	1
5	Not like me at all	0.00%	0
	Total	100%	34

18 - The scent and smell of a public space is important.

#	Answer	%	Count
1	Much like me	44.12%	15
2	Like me	35.29%	12
3	Somewhat like me	17.65%	6
4	Not like me	2.94%	1
5	Not like me at all	0.00%	0
	Total	100%	34

Appendix A

American Survey Results

19 - It is important that public space reflects the local culture.

#	Answer	%	Count
1	Much like me	17.65%	6
2	Like me	41.18%	14
3	Somewhat like me	32.35%	11
4	Not like me	8.82%	3
5	Not like me at all	0.00%	0
	Total	100%	34

20 - Having comfortable seating in a public space is important.

#	Answer	%	Count
1	Much like me	35.29%	12
2	Like me	41.18%	14
3	Somewhat like me	20.59%	7
4	Not like me	2.94%	1
5	Not like me at all	0.00%	0
	Total	100%	34

21 - The artwork in a public space is important.

#	Answer	%	Count
1	Much like me	14.71%	5
2	Like me	35.29%	12
3	Somewhat like me	38.24%	13
4	Not like me	11.76%	4
5	Not like me at all	0.00%	0
	Total	100%	34

22 - Access to food in a public space is important.

#	Answer	%	Count
1	Much like me	35.29%	12
2	Like me	32.35%	11
3	Somewhat like me	20.59%	7
4	Not like me	11.76%	4
5	Not like me at all	0.00%	0
	Total	100%	34

23 - Access to games, exercise equipment, and playground equipment in a public space is important.

#	Answer	%	Count
1	Much like me	5.88%	2
2	Somewhat like me	29.41%	10
3	Not like me at all	0.00%	0
4	Like me	41.18%	14
5	Not like me	23.53%	8
	Total	100%	34

24 - Access to Wi-Fi in a public space is important.

#	Answer	%	Count
1	Much like me	35.29%	12
2	Like me	26.47%	9
3	Somewhat like me	20.59%	7
4	Not like me	11.76%	4
5	Not like me at all	5.88%	2
	Total	100%	34

Appendix A

American Survey Results

25 - I will feel anxious going into public spaces after the pandemic.

#	Answer	%	Count
1	Much like me	32.35%	11
4	Like me	35.29%	12
5	Somewhat like me	26.47%	9
6	Not like me	5.88%	2
7	Not like me at all	0.00%	0
	Total	100%	34

26 - When in public spaces, what would you do?

#	Answer	%	Count
2	Relaxing	12.32%	26
3	Chatting with friends	15.64%	33
4	Playing chess, checkers or mahjong	1.42%	3
5	Playing sports (basketball, football, etc)	4.27%	9
6	Playing games like pong, horseshoe, and cornhole	4.74%	10
7	Low-Intensity Exercise (walking, yoga, tai chi)	12.80%	27
8	High-Intensity Exercise (running, weights, cross fit)	6.64%	14
9	Studying	12.80%	27
10	Social Interactions (hanging out, dates, etc)	15.17%	32
11	Eating food	14.22%	30
	Total	100%	211

27 - What times would you go to public space?

#	Answer	%	Count
1	5am - 8am	2.56%	3
2	8am - 11am	12.82%	15
3	11am - 2pm	23.08%	27
4	2pm - 5pm	28.21%	33
5	5pm - 8pm	23.08%	27
6	after 8pm	10.26%	12
7	before 5am	0.00%	0
	Total	100%	117

Appendix B



Informed Consent Agreement for Participation in a Research Study

Non-Videotaping-Semi-Structured Interviews

Semi-Structured Interview Questions with Mental Health Experts

Investigators: Nigel Kobayashi (nkobayashi@wpi.edu), Miranda Pitta (mspitta@wpi.edu), Benjamin Robinson (brobinson@wpi.edu)

Primary Contact Information: gr-HKCOVID-C21@wpi.edu

Project Title: Creative Use of Public Space in a Post-COVID World

Sponsor: Hendrik Tieben (hktieben@yahoo.com), Dr. Sujata Govada (sujata@udpcLtd.com)

SCRIPT

Introductions Hello. Thank you for taking the time to meet with us today. How would you like to be addressed? Now we would like to introduce our team members.

Introduction to format of this meeting: You are being asked to participate in a research project. Before you agree, however, we wish to inform you about the purpose of the project and the procedures and protocols we follow. Our goal here is to ensure that you are making a fully informed decision regarding your participation and feel comfortable in participating.

Purpose of our project: The purpose of our project is to determine the negative holistic impacts of the mitigation strategies of COVID-19 on the population of Hong Kong. Then we will create a set of recommendations about how to redesign public space to help heal some of the negative holistic effects caused by the mitigation strategies of COVID-19.

Procedures and Protocols: It is important that we take a moment to explain our responsibilities and your rights regarding this one hour in duration semi-structured interview. Eventually our final IQP document, which includes the results of our interaction with you (your answers), will be stored on the WPI library website or may appear in a published paper.

Appendix B



Record keeping and confidentiality: We would like to receive your verbal permission to publish your responses as well as the names, titles, and any affiliations that you may have with individuals or groups that we may discuss during this interview. Anonymity is guaranteed unless your permission is received. You have the option to remain anonymous and continue to participate in the interview/study. If we wish to use a quote that identifies you, we will ask for your permission and you have the right to review any quotes or information before publication. The answers to your questions, today, will be maintained in our pass-coded computer to only be reviewed by this team. No one else will have access to the answers. Raw data not published will be deleted upon completion of the project. Interviews will be recorded over Zoom, with the participants video off. The voice recording will be saved as an mp4, that is kept on a passcode protected computer that only the team members have access to. After the project is completed, the mp4 file will be deleted. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or it's designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you.

Risks to participants: There are no anticipated, perceived or known risks to you that we are aware of as a result of your participation in this semi-structured interview.

Benefits to research participants and others: There are no monetary or other benefits to you or others who participate in this semi-structured interview.

For more information about this research or about the rights of research participants, or in case of research-related injury, contact: See investigators listed above. For more information, contact the IRB Manager (Ruth McKeogh, Tel. 508 831- 6699, Email: irb@wpi.edu) or the Human Protection Administrator (Gabriel Johnson, Tel. 508-831-4989, Email: gjohnson@wpi.edu).

Appendix B



Your participation in this research is voluntary. Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. You may also decide to skip or not answer a question for any reason. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

Final Comments before undertaking Interview Do you have any questions about our project, any of our responsibilities, or your rights? If not, then may I have your permission to record this session or conversation? (If they agree, ask their permission once recording, so that their consent is recorded.)

Appendix B



Mental Health Interview Questions

Contextual statement for the subject: We are using the holistic model as the foundation for our questions and research. In particular, we are focusing on the physical, emotional, intellectual, and social aspects of the holistic model. Secondly, we are focusing on the negative impacts of the mitigation protocols that are in place relative to COVID-19, namely social distancing, wearing a mask, quarantine, and increased isolation. Keeping that in mind, please answer the following questions.

1. We understand that eastern countries have a different perspective on mental health than their western counterparts. What are the perceptions about mental health in Hong Kong?
2. Our research has indicated that the pandemic has negatively impacted people's holistic health. What kind of negative holistic impacts that your clients have reported?
3. Our research has indicated anxiety has increased significantly. Please tell us about the anxiety your clients have reported, and particularly how this anxiety has manifested in their life.
4. Our research has indicated that isolation is a problem. Please tell us about the sense of isolation that your clients have reported and how that isolation has manifested in their life.
5. Our research is also focused on what will ultimately help people heal from the negative holistic impacts of the COVID mitigation strategies. In particular, our project team is working on the role of "pop-ups" and public places and how they might be used to help heal communities. Please share with us any ideas or suggestions that you have regarding what could be utilized in these parks to do just that, to help people heal.

Appendix C



Informed Consent Agreement for Participation in a Research Study

Non-Videotaping-Semi-Structured Interviews

Semi-Structured Interview Questions with Public Space Experts

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Project Title: Creative Use of Public Space in a Post-COVID World

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SCRIPT

Introductions Hello. Thank you for taking the time to meet with us today. How would you like to be addressed? Now we would like to introduce our team members.

Introduction to format of this meeting: You are being asked to participate in a research project. Before you agree, however, we wish to inform you about the purpose of the project and the procedures and protocols we follow. Our goal here is to ensure that you are making a fully informed decision regarding your participation and feel comfortable in participating.

Purpose of our project: The purpose of our project is to determine the negative holistic impacts of the mitigation strategies of COVID-19 on the population of Hong Kong. Then we will create a set of recommendations about how to redesign public space to help heal some of the negative holistic effects caused by the mitigation strategies of COVID-19.

Procedures and Protocols: It is important that we take a moment to explain our responsibilities and your rights regarding this one hour in duration semi-structured interview. Eventually our final IQP document, which includes the results of our interaction with you (your answers), will be stored on the WPI library website or may appear in a published paper.

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Record keeping and confidentiality: We would like to receive your verbal permission to publish your responses as well as the names, titles, and any affiliations that you may have with individuals or groups that we may discuss during this interview. Anonymity is guaranteed unless your permission is received. You have the option to remain anonymous and continue to participate in the interview/study. If we wish to use a quote that identifies you, we will ask for your permission and you have the right to review any quotes or information before publication. The answers to your questions, today, will be maintained in our pass-coded computer to only be reviewed by this team. No one else will have access to the answers. Raw data not published will be deleted upon completion of the project. Interviews will be recorded over Zoom, with the participants video off. The voice recording will be saved as an mp4, that is kept on a passcode protected computer that only the team members have access to. After the project is completed, the mp4 file will be deleted. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or it's designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you.

Risks to participants: There are no anticipated, perceived or known risks to you that we are aware of as a result of your participation in this semi-structured interview.

Benefits to research participants and others: There are no monetary or other benefits to you or others who participate in this semi-structured interview.

For more information about this research or about the rights of research participants, or in case of research-related injury, contact: See investigators listed above. For more information, contact the IRB Manager (Ruth McKeogh, Tel. 508 831- 6699, Email: irb@wpi.edu) or the Human Protection Administrator (Gabriel Johnson, Tel. 508-831-4989, Email: gjohnson@wpi.edu).

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Your participation in this research is voluntary. Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. You may also decide to skip or not answer a question for any reason. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

Final Comments before undertaking Interview Do you have any questions about our project, any of our responsibilities, or your rights? If not, then may I have your permission to record this session or conversation? (If they agree, ask their permission once recording, so that their consent is recorded.)

Appendix C



Public Space Interview Questions

Contextual statement for the subject: We are using the holistic model as the foundation for our questions and research. In particular, we are focusing on the physical, emotional, intellectual, and social aspects of the holistic model. Secondly, we are focusing on the negative impacts of the mitigation protocols that are in place relative to COVID-19, namely social distancing, wearing a mask, quarantine, and increased isolation. And finally, we are researching how public space and place can be modified to assist in the holistic healing of people. Keeping that in mind, please answer the following questions.

1. In your experience, how has the role of public space changed during COVID? In what ways do you think the role of public space will change post COVID?
2. Our project is focusing on the use of pop-ups in order to tackle the negative holistic effects of COVID. Part of this idea is to target the activities that Hongkongers will want to do in public space. What type of activities do Hongkongers enjoy in public spaces? In particular, what type of seating or activities have you implemented in your previous public space projects? How did the public respond to them?
3. We want to design different pop-ups based on the age of participants, what aspects of public space do certain age groups respond to? What aspects lean towards intergenerational interactions?
4. Do you have any advice on the locations for our pop-ups? What do young adults typically do for fun in Hong Kong when they go out? What about the elderly and retired? What ideas regarding other activities that Hongkongers would enjoy that are not as obvious to American students?

Appendix D



Personal Statements

Nigel Kobayashi

An interesting aspect of this project was the research into the holistic effects of the pandemic. As college students, many of us are facing these effects directly, whether we recognize them or not. As we dug deeper into epidemiological studies and received more survey responses, it was both comforting and distressing to realize that I was not alone and the scope of these issues.

Miranda Pitta

When we first saw our project descriptions, I was nervous but excited. How were we supposed to design public space in a country we had never been to? Towards the end the project became fun, as we took a more realistic approach regarding the limitations of being online. I'm proud to say that we created a set of pop-ups intended to improve holistic health, even if we could not travel to Hong Kong ourselves.

Benjamin Robinson

In light of the pandemic, I was able to relate to this project due to the impact it has had on my own holistic health. I'm proud to have created a project with the goal of helping people heal from this pandemic, as I know so many are suffering. I've also learned how hard it is to work on something entirely remote, but I know it may be a valuable in the future.