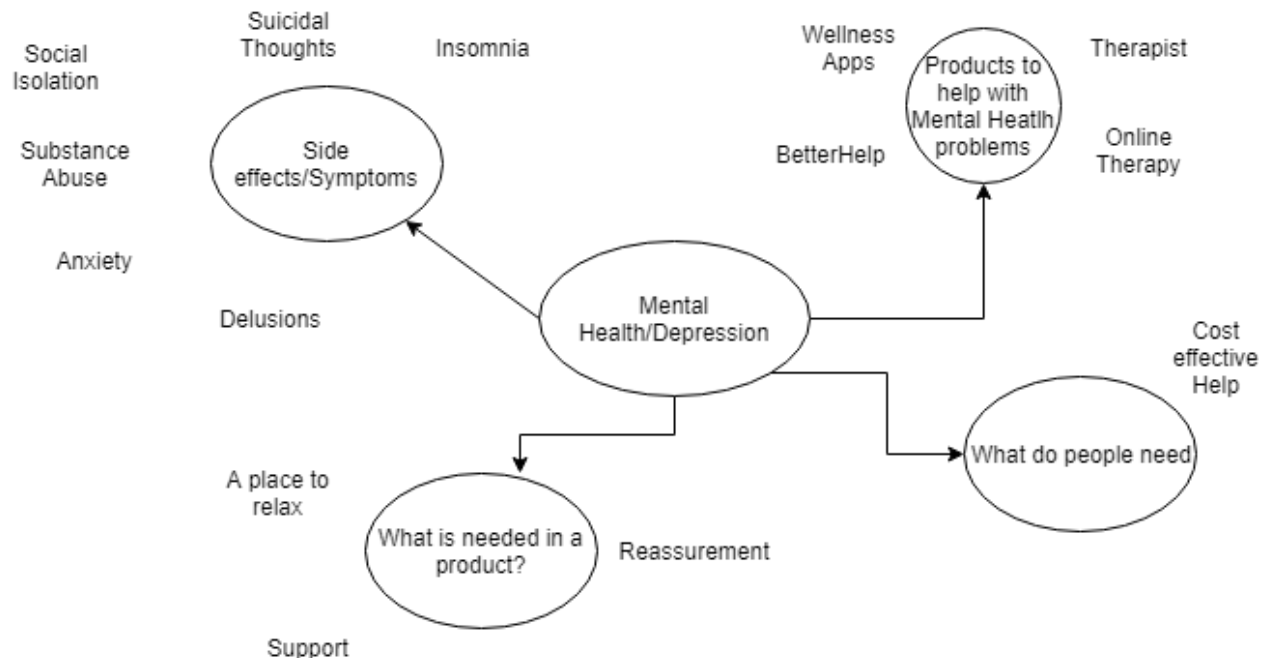


Design Technology IA

Describes an appropriate problem, which leads to a design opportunity:

Mental health is one of the biggest problems in modern society. According to the World Health Organization, 300 million people worldwide have experienced some form of depression in their lives. More importantly, 800 thousand people die from suicide every year. ("Depression") This is a massive problem in the current world, yet suicide and depression remain a taboo. There seems to be a stigma around helping people with mental health, and this is reflected in the products that are created for people dealing with this. Depression and mental health seem to be treated as a "phase" rather than a disease like it really is. Other conditions, such as diabetes, to high blood pressure, to heart problems, all have specialized products to help them cope with their condition and make their lives more bearable. One of the main groups that are being affected by depression are teenagers, and in the recent years the rate of teenage depression has shot up by 47 percent since 2013, which is a massive figure (Monroe). Likewise, a product needs to be made that would help people with depression and make a difference in their lives. With a target group such as teenagers in mind, a designer must also be aware what type of products would be effective in such an age group.

To understand how a designer can help this problem, he must first assess what is the real problem at hand. To do this, I created a mind map of my thinking process with the associated symptoms and side effects of mental health problems ("Mental Illness and the Family: Recognizing Warning Signs and How to Cope.").



As seen above, a key need for people is support, reassurance and a place to relax. A designer must identify how he or she could possibly help or alleviate these problems using a product. I wanted to target a place to relax and vent and find support and possible reassurance through the problem itself. The product must be cost effective, so it can help the biggest possible population.

A big group of people being affected by mental health issues are Teenagers, which is brewing pot and culmination of hormones, and insecurities starting to creep out. This is a great group to target because there is a true lack of help in this sector.

Next, we must identify evidence of the problem:

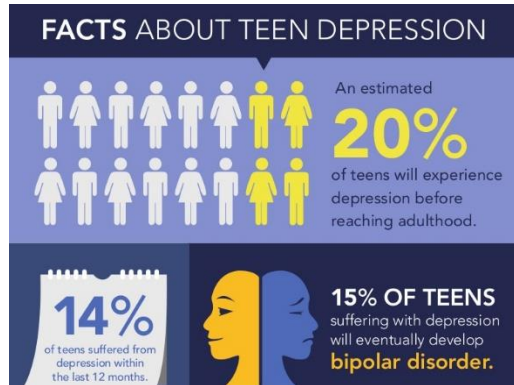


Figure 1: (Wolpert)

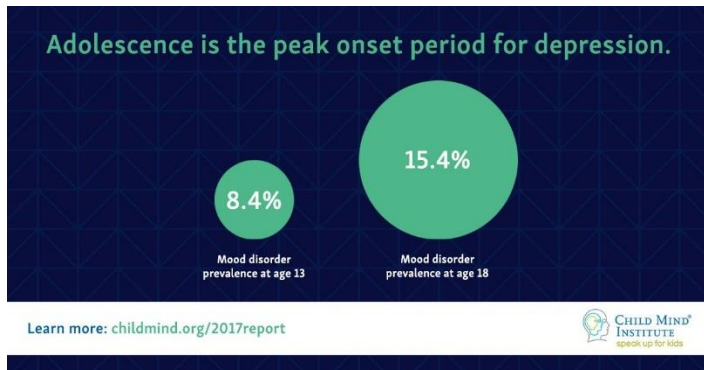


Figure 3: ("Anxiety and...")

An academic Journal titled, "Depression, suicide, and deliberate self-harm in adolescence" by Richard Harrington further propagates this issue and talks about the growing problem in the modern world of mental health. More so, a published article by Maureen and Kayla Kroning in the Academic Journal, *Journal of Christian Nursing* established that depression affects 10.7% of all teens and 30% of teens in high school, which is a large amount of the population.

From my own personal experience, mental health is heavily influenced by your situation and the amount of stress in one's life. Mental health issues manifest and bring stress, but stress also brings mental health issues, so something must be done to alleviate the stress factor. The crux of this problem is the stigmatization towards mental health, and the need for additional support from problem solvers around the world to make a push towards helping these people get better. As there is 300 million people as referenced earlier that have suffered from this issue, there is a clear need for a design to be made. A design must target the key symptoms identified in the flow chart and attempt to alleviate them in any ways it can. As this problem occurs all around the world, and can affect anyone, it becomes clear that something needs to be done to help these people, using design, and creating a product to fit their needs.

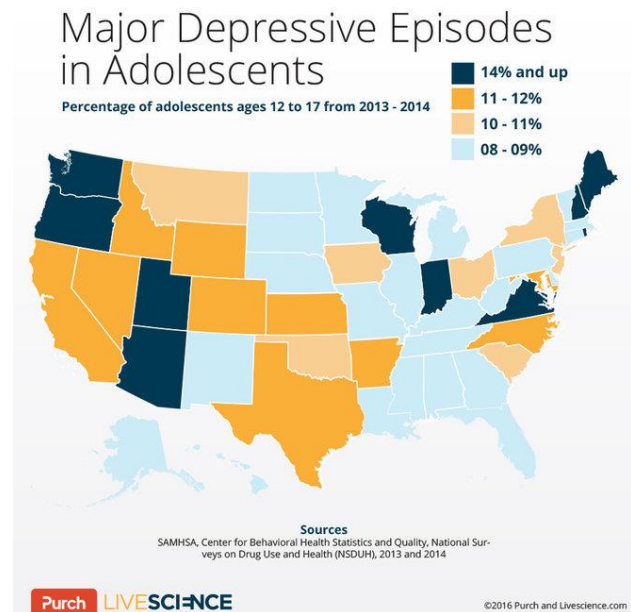


Figure 2: (Miller)

According to the University of Rochester Medical Center, journaling can help alleviate mental health problems, as it allows those suffering to calm down, reduce stress, and manage anxiety, which can allow those to relax, and not focus on the burdens of depression (“Journaling for Mental Health”). This can be a possible solution to this problem, as it would allow those with depression or mental illness to calm down, alleviating some of the main symptoms that they face, such as stress. and anxiety. By creating a personalized journal that will allow the consumer to vent their feelings and frustrations onto an organized page, which is tailored to those who need help.

Summary of problem: Depression and mental illness is a problem that heavily affects society and the people around us. As depression is a multivariate problem that can be affected by various factors, it is important to unpack the problem and identify potential places where things can change, and help can be given. In this case, the appropriate thing to target is giving people somewhere they can write their thoughts and relax in times of stress and anxiety. There is a lack of products to help with depression which further shows that there is a great market pull for a designer to look to, as people need a way to help with depression but do not have it.

Explains the key findings from relevant market and user research

To understand the market, I must first see what kind of competing products there are out there, and to see what they excel at to create the best possible solution for a common problem. I will be focusing on a variety of different ways to aid mental illness, and mental health in form the basis of what people want and need.

To accomplish this I created a small plan to follow in my research:

Type of research	How will I collect it	Function
Primary	Survey and Client Interview	I will be able to know what people look for in products like this, and why it is being bought. It also will establish the design and marketing specifications, because I will learn firsthand what people are trying to get in a product that I want to make.
Secondary	Researching Competitors	This well help me set possible price points and see what other competitors are creating so that I create a product that can penetrate the market place.

Product 1: Calm

Price: \$60/Year

Function: A mindfulness app that alleviates stress and helps attain better sleep through meditation activities and stories catered to make people calmer, as the name indicates. Now has music as well, which paired with the meditation exercises, calms down the user, and relieves stress.

Market: Over 26 Million downloads of the app, 225,000 5-star Reviews, and rated as the world’s happiest app by over 200,00 apple users. 4.8/5 Star on Apple app store, and the number 1 health and fitness app in the world.



Figure 4: ("Experience Calm")

Pros: Rated Apple's favorite app of 2017. It is one of the most downloaded apps in the world. A very clean user interface, graphics, and easy to run on any phone.

Cons: \$60/year is a lot to pay as a subscription fee for an app, also has a lifetime subscription of \$300 which is a tremendous price. It has pushed more and more towards a commercial market, which some users do not like. Especially for something as serious as depression, to make it so only the can get help makes it no better than a Therapist. Most things that are necessary for people to achieve a better mind state are locked until full purchase.

Product 2: 2019 Resilience Diary

Price: \$35 Sold Online

Function: A journal where people can write about their mental health, and log what they are feeling for the day. It also has different colors to create a livelier feel.

Market: Only sold in Australia

Materials Used: Vinyl Cover, Ribbon for bookmark

Pros: Includes a calendar, making it multifunctional, available in multiple colors, many types of color for different customization options. This is a very aesthetically pleasing color.

Cons: This is a good idea, but it is not expanded enough.

The pages could be more unique as every page is simply the same, instead, the pages should feature different things to keep a variety of different approaches to changing the problem. This can be expanded on and made better into a potential product. This is also quite pricey for a journal.

Product 3: Mental Health Book Sold Online

Price: \$10

Function: Another mental health journal that allows people to log what they are feeling using colorful pages, and multiple areas to color in, adding customization.

Market: Not a professional store, making the exposure minimal.

Materials used: Cardboard cover, aluminum bindings on the rings

Pros: There are 4 different cover types with different encouraging messages, and the pages can come in different colors too. The colors provide a happy aesthetic that can help cheer people up.

Cons: This book looks unprofessional and is not very aesthetically appealing. The cover looks to be flimsy and raises concerns on whether it could withstand being used for a long period of time. Furthermore, the pages are repetitive and seem tedious rather than engaging. The cover can also look a little gaudy and does not focus on minimalistic elements that are in style.



Figure 5: ("The 2019 Resilience Agenda Mental Fitness & Wellness Diary.")

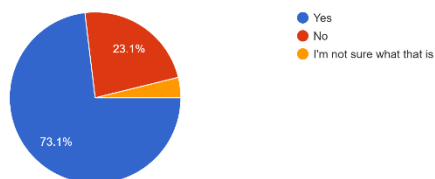


Figure 6: (Sarah)

Now that other products have been analyzed, we must gain primary research through surveying a population. To conduct this, I created a survey that asked various questions on the specifications of the product and what they would want in a product and journal, and what aesthetic qualities do they look for. I distributed this over a large population of 500 people, expecting a 5% yield based on the intrusive nature of surveys, and the willingness to complete them. I received 27 responses with the following results:

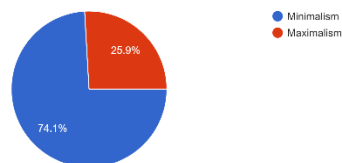
Would you benefit from a mental health journal?

26 responses



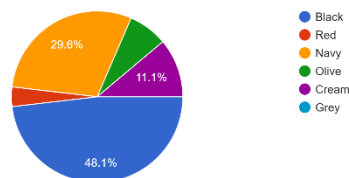
What style do you prefer

27 responses



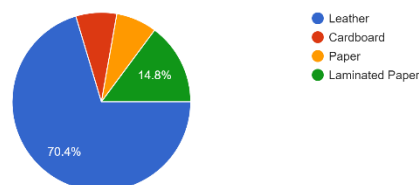
What color do you like your notebook to be?

27 responses



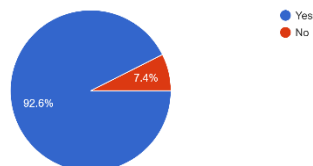
What material should the cover be made of?

27 responses



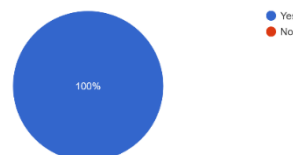
Do you prefer eco-friendly materials?

27 responses



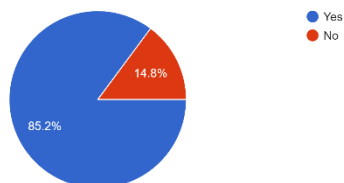
Would you like encouraging messages in your journal?

27 responses



Would you include a calendar in your journal?

27 responses



The second way I will collect primary research is through a possible client interview, I interviewed Tim, a former student at the ISE and logged the results. I chose Tim to be interviewed because he fits my target audience a 18-25-year-old Student pursuing higher education who needs help with managing their mental health and staying organized. The bolded is the questions that I asked, and the italics are Tim's answers.

Profile of Tim:

Occupation: Industrial Design Student

Age: 19

Nationality: Dutch

Living in: Den Haag

Do you keep a mental health diary?

No, I do not, but I am interested in keeping one, especially now in college where organization is key.

What stops you from buying a mental health diary?

I do not see the big difference between a mental health diary and a normal diary to be honest, and I did not even know that was a real thing.

What would you want in your mental health diary if you could build one?

I would want it to have a nice hardbound cover, and something that is aesthetically pleasing, so that I can carry around and make it a part of my outfit or daily bag.

What color would you prefer on your journal?

Preferably black or navy.

What would the contents have to include for you to buy a mental health journal?

Definitely the pages inside have to be different so it seems more than just simply having to log in tedious entries like homework, I want it to make me feel better.

If I were to create a personalized mental health diary, would you buy it?

Yes, I would consider it, if the notebook looked good, was high quality, and preferably was made out of eco-friendly materials.

Dimensions Data:

The official Pocket Notebook size is 9 x 14 cm, while the standard size is 13 x 21 cm, and the large size is 19 x 25 cm. This can influence a person's decision to buy, as they might not want something either too big or too small, that is why I will target the standard size as it can apply to everyone and create a product that is just right in terms of size.

Summary of Primary research: The feedback from the survey was quite overwhelmingly positive, 73% of people stated that they would like to keep a mental health journal which establishes clear need for this product. That can be used to establish the market pull. Furthermore, people tended to concentrate on one type of journal, a leather bound, black, mental health journal made from eco-friendly materials and including a calendar and encouraging messages. This can help us define our design specification, and further develop our product.

The interview led me to some new conclusions and also confirmed my previous hypotheses. What most people look for in these mental health journals is something that is aesthetically pleasing, both in the cover and in the pages inside, leading to a product that is not only helpful, but also something fashionable, which would lead it to be more marketable. One more big thing is the eco-friendly emphasis, people want to be ethical consumers and therefore want to not harm the environment. It also led me to finalize on a color that everyone can agree on – black.

Summary of secondary research: From what I can see of competing products, the key things people look for are a variety of colors in the pages and on the cover – this adds a personal feel to the journal and promotes happiness and wellbeing using bright colors to stimulate the brains dopamine receptors. It is important to include warm colors that evoke happiness and calmness which is crucial to helping people out that have mental health issues.

The size of the notebook should be 13x21 cm, so that it fulfills the criteria for standard size of notebook.

Develops a detailed brief which identifies the relevant parameters of the problem

Design Goal:

The goal of this project is to design and create a mental health journal that will be fully hard bound and usable. The goal of creating a mental health journal is to find an alternative solution to a bigger sociological problem – mental health issues. The journal will target those that are in need of staying organized and will find solace in a product that will keep them organized and help them without intruding too much on their normal life. This will be the first prototype of a bigger series of journals and diaries that will cater to a variety of different mental health problems. This is still the first version, so it is necessary to understand the possible complications that come with creating this journal, and that this version might not be as functional as necessary. Later iterations of this product could be mass-produced and feature better materials in the cover and paper.

Target Audience: This will be mostly targeted towards College and High School students such as Tim from the client interview. I chose this age group as they are most proactive with keeping journals and books and are already in need of planning due to being in school. Another reason why this is a good target audience is due to the high level of adolescent depression (Harrington). This group needs the help the most, and this journal could help stressed out students to vent and provide room to relax.

Target Market:

This product has a wide age range as it is a journal and not limited to anyone. It is more targeted towards students experiencing stress and mental health problems, but it can be used by any age group. The only drawbacks are that the person must be able to read and write, which eliminates very young consumers, and potentially old consumers. Other than that, it must be cheap enough to compete with competitors like the ones found in my secondary research that are as cheap as \$10. Therefore, the pricing has to be competitive to penetrate the market and be as easily accessible to everyone as possible. The competing products are either too pricey or not a good enough product to convince people to pay the price.

Constraints:

This product must follow these constraints that cannot be changed in production to be made, this was collected with secondary research:

- This product must be made inside the school workshop
- The materials must be purchasable in the Netherlands
- Must be a normal notebook size
- Must be cheap enough for people to purchase feasibly.
- Be colorful, but not harmful to the environment through the use of toxic chemical dyes that could potentially harm.

Criteria:

As requested by the client and formed through primary research, the product must achieve these things to be considered a success:

- Must feature a hardbound cover
- Must contain eco-friendly materials
- Must include a calendar
- Must include encouraging messages

- Black minimalistic look

Feasibility:

The product will be fairly easy to create, as it features a hardbound cover being bound together through adhesive techniques, and then bound to the group of pre-printed pages containing the various calendars, and messages needed to help those with mental illness.

Scale:

This is a one-off production at the moment, but it can be easily mass produced and globalized due to the relative ease of creation. The product will be assembled in a way that it is easy to disassemble and assemble, making it easy to produce in any part of the world. This will let it be replicated easily.

Develops a marketing specification, which justifies the requirements

Target Audience:

Like stated before, the audience is a younger crowd that needs to manage their stress and mental health through the diary. I chose this group as a focus group, as adolescents experience mental illness at a high rate. Therefore, a sample user would be a 20-year-old college student who is trying to balance working a job and going to college, and it is impacting his mental health. He/she is trying to make amends towards it and is purchasing this book to try to create a better mental state. The sample user is highly organized and would like something like an agenda that would help them cope with their mental illness, but also be a product they can use in their everyday life. Characteristics of this user include: a small disposable income – the product must be cheap, a need for something ecofriendly – younger and more liberal demographics want the planet to not be affected, and something that is easy to carry around – portable enough to be taken to class.

Target Market and Market Analysis:

The target market is towards college towns and cities that have a high population of students who need help. This can also be supplied in big departmental stores such as Target, Walmart and Safeway in the school supply section, as it could be essential to a student's life. The price point must be quite low so that anyone can buy this product, as help for mental illness should not be only for the people with money, as that is what therapy is doing. By targeting a market of mainly adolescents, it can also be promoted by high schools and Universities and be sold in the offices or in libraries to those that need it, effectively marketing itself.

Market Sector: The problem at hand, mental health, is something that is largely a psychological problem, and therefore is something that can be classified as health care. This can lead to the possibility of a product like this being subsidized by governments with universal health care and being recommended by doctors to those that need help tracking their own mental health. It can also fit into the educational market sector, as it is targeted to those pursuing higher education, and is a journal/agenda, which can be construed as something helping those manage their studies.

Market Segment: The clear market segment being targeted is young adults, with the age being 18-24, another big sector is college students, as the user characteristics that come with that include having less spending money, and also a need for products that are worth the cost.

User Need:

There is a clear user need with millions of people every year suffering from depression and mental illness, often stress related. This product would attempt to cater to them through an affordable way to manage stress and mental illness.

Competition:

The clearest competition is other one-off mental health diary makers, however my product must both be superior in the aesthetic appeal, but also in the price point, as the two other products with similar aspirations as me either was aesthetically appealing or pricy. Therefore, my product must blend form and function into a competitively priced avenue, creating a product that anyone will be able to get.

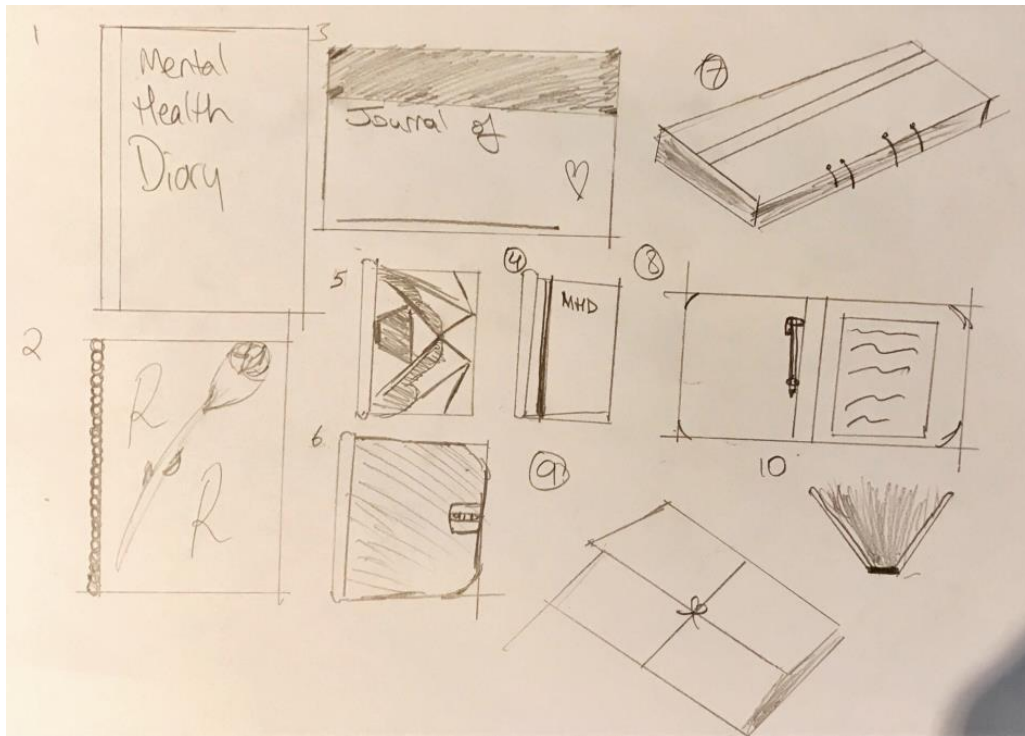
Develops a design specification, which justifies the requirements

<i>Specification</i>	<i>The product must:</i>	<i>Justification</i>
<i>Aesthetics</i>	1.1 Be aesthetically pleasing with a minimalistic design 1.2 Be fashionable 1.3 Not have gaudy colors	This product is not meant to be something pretty, but rather serve its function. It should have a design that looks nice but does not distract from the function, hence the minimalism. It should be smooth, and look appealing to hold, and have dark colors like black or navy.
<i>Size</i>	2.1 Same size as other notebooks 2.2 Small enough to fit into a bag	This is simple, as the product is meant to help you at any time of the day, so it is necessary to be portable, and not too intrusive that the user will have to make space for it.
<i>Cost</i>	3.1 Cheap enough for anyone to afford. 3.2 No recurring charges. 3.3 Alternative option to wellfullness apps and therapy.	The main problem with competitor apps is that it has recurring charges and it is too costly in the first place for anyone to afford. The point of this social solution is to provide a cheap alternative that anyone can have without having to take out loans or change their lifestyle.
<i>Materials</i>	4.1 Environmentally friendly materials. 4.2 Durable enough to withstand environment and user error.	All materials used should easily be recycled and not further pollute our Earth. Furthermore, the product must be able to withstand various toughness tests so that it does not break when being used.

<i>Performance</i>	5.1 The book must be joined together well 5.2 Easy to open	The book must be well bound, as requested in the consumer interview, and easy to open taking it consideration ergonomic factors.
<i>Environment</i>	6.1 Renewable materials used to build products. 6.2 Does not feature unethical materials like animal skins. 6.3 Can be recycled easily.	The materials must not hurt the environment or infringe on animal or human rights in the collection of it. More so, it must be able to be recycled and thrown away with ease, and not pollute.
<i>Safety Requirements</i>	7.1 The paper cannot be too sharp to cut the user	The user must be able to use the product without the fear of being hurt, and therefore the product must be tested that it does not cut the user when using it.
<i>Manufacturing Requirements</i>	8.1 Proper worker environments that does not infringe on human rights. 8.2 The techniques used to join the materials must be able to be done in a school Design Lab	There are always ethical dilemmas when it comes to rights with workers, and proper conditions should be adhered. Furthermore, I am limited by tools in the design lab, so I cannot use intensive techniques to manufacture my product.
<i>Customer requirements</i> <i>Customer Requirements (Continued)</i>	9.1 The product must provide a space for consumers to vent their frustrations and manage anxiety. 9.2 Product must be fashionable	Consumers want a fashionable product that will both fulfill the need for a mental health diary while also creating a statement that mental health help does not have to be ugly.

Of course, one of the main assumptions in creating a product like this, is that a mental health journal will actually help people with their mental illness problems. Although I cannot suggest that using a journal will fully cure a person who is going through problems with depression, anxiety, or something greater than that, I can say that there is several scientific articles such as the one referenced above from the University of Rochester, that do identify the link between decreasing anxiety, depression, and alleviating certain symptoms of mental health through consistent journaling, which can establish the need for a product like this. If a journal like the one I am attempting to create, can have any positive effect on someone going through something as tough as mental illness, then a designer can say that the product is a success, especially considering the sociological context of such a product.

Develops ideas to meet appropriate specifications which explore solutions to the problem



The picture above shows the rough sketches of what a possible product could look like. I kept the user's needs and desires in mind and tried to create something aesthetically pleasing while also being easy to create, so that the cost stays down. I did a rough consultation with a possible client at my school, and asked them to rate each product on a scale of 1-10, in the following categories: Aesthetics, cost, customer specifications, and environment, and then totaled the points each got –

Design #	Aesthetics	Materials	Customer Specifications	Environmental Implications of the Materials	Total / 40
1	5	4	6	6	21
2	7	2	3	4	16
3	3	3	4	9	19
4	8	9	10	8	35
5	7	5	3	6	21
6	4	5	6	4	19
7	9	8	7	7	34
8	6	5	4	4	19
9	8	10	7	6	31
10	3	2	3	2	10

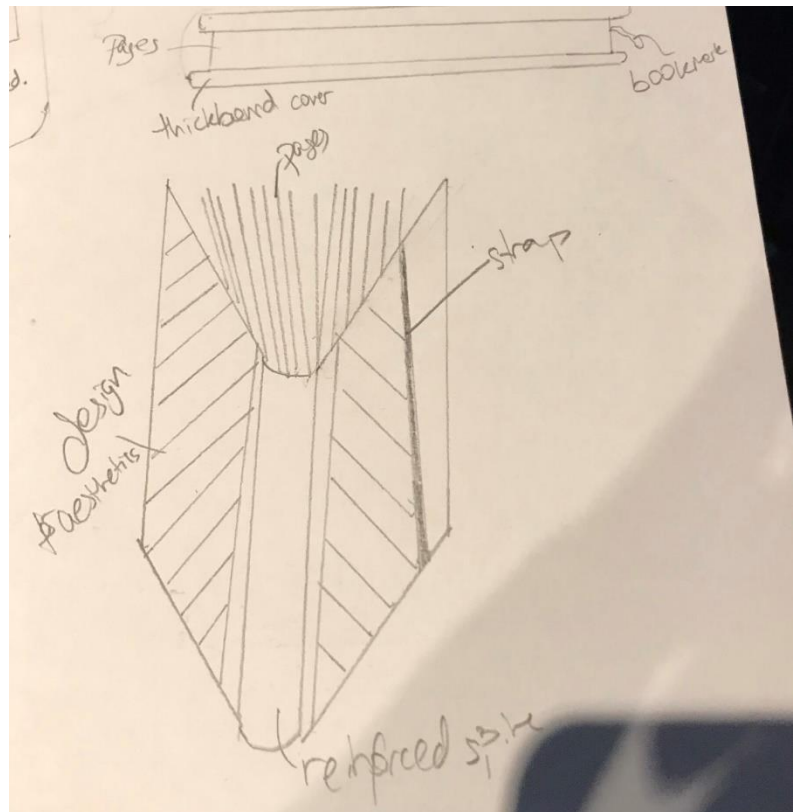
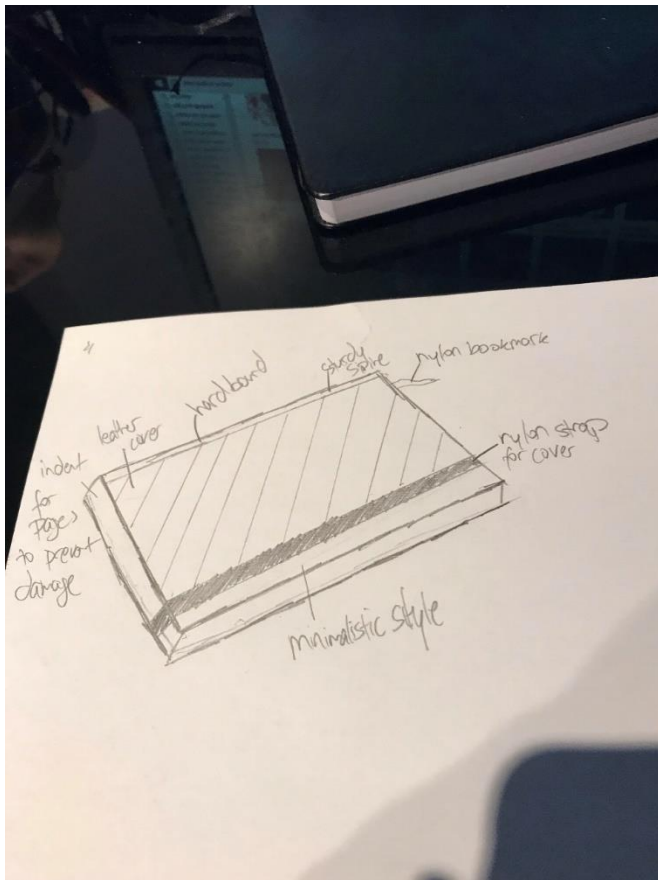
Based on these 10 sketches, I identified sketch 4, 7, and 9 as the 3 designs I would like to further expand on.

Design 4:

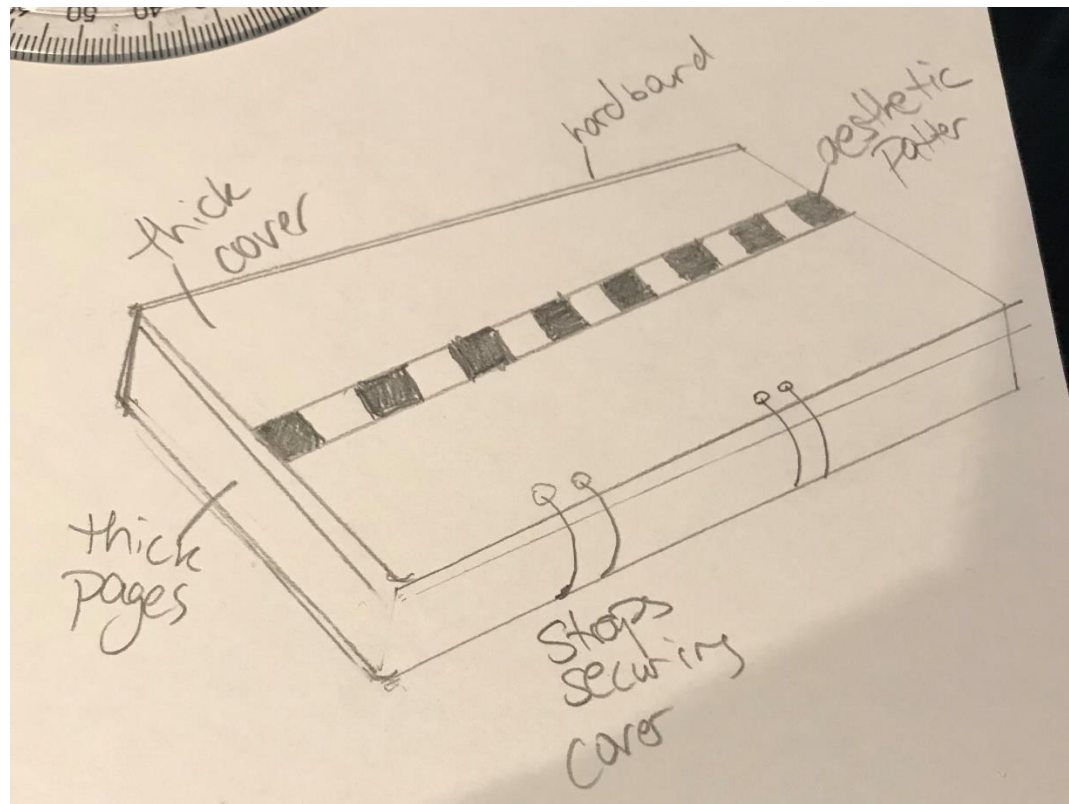
This design features a leather cover, and an on obtrusive book mark. The crux of this design is that it is purely minimalistic.

The journal is minimalistic and doesn't distract from its function, which is something that the clients requested, minimalism was heavily emphasized in the survey, and an important part of criterion. The design features a leather cover, as requested by many in the survey and interview, and has a nylon cover strap securing the cover to the pages. There is a small nylon bookmark hanging out of the page as well to ensure that the user does not lose their page. This design is most importantly aesthetically pleasing and will feature in black or navy.

I think this idea is solid, however it can be interpreted that the leather cover could add unnecessary cost, or that this is too plain, and simply does not attract enough attention to buy, therefore additional colors should be added on top when being marketed.



Design 7: This design is based on a vintage journal featuring small straps that connect the two ends of the covers, providing security over the pages. I took inspiration from older journals and used the idea to create a retro-styled journal. Using retro styling can invoke a sense of nostalgia in consumers, possibly prompting them to purchase the product. The design also features a checkered design down the middle adding a unique twist to another wise boring design. The journal again uses minimalistic elements and adds a subtle touch in the straps and checkered stripe. Like the last design, this cover would also be a vinyl or leather touch to add a sense of luxury.



This also leaves a lot of room for customization, as the design on the front could be changed to something different. This design would come in black or navy as requested by the primary and secondary research, I do not want to stray from their expectations, as they are the basis of who is buying the product.

Conversely, the straps leave room for error, and it must be executed well, or it will be too obtrusive, and bring down the overall design. The design has some inspiration from the type of journal on the right which features the strings and straps functioning as a safety mechanism to that the cover does not open easily, but also as an aesthetic value to provide some flair to another wise boring design.



Figure 7: (Aliexpress)

Design 9:

This is again an ode to the classics with the vintage strap journal. This is very aesthetically pleasing, and a very fashionable thing to bring around. The strap ties down the front flap over the journal, which creates a small bag of sorts. The look is secure and stylist, two things that the original interviewee and market research wanted. The outside cover would be brown leather and create a hipster chic aesthetic that is heavily in style right now and could easily be paired with many outfits or bags. By using retro styling, there is once again room for nostalgia to be invoked which can prompt people to buy the product because it reminds them of their childhood or a different time period.

However, the feasibility of this design is in question, the strap must be done right, or it will break with ease, leaving more room for error. It will also be harder to open than a normal journal, which is something identified in the design specification in the performance factor. This reduces the overall factor of the product, as it makes it something that is too complicated, and can also be an ergonomic nightmare, as it takes more effort for someone than others to use the strap.

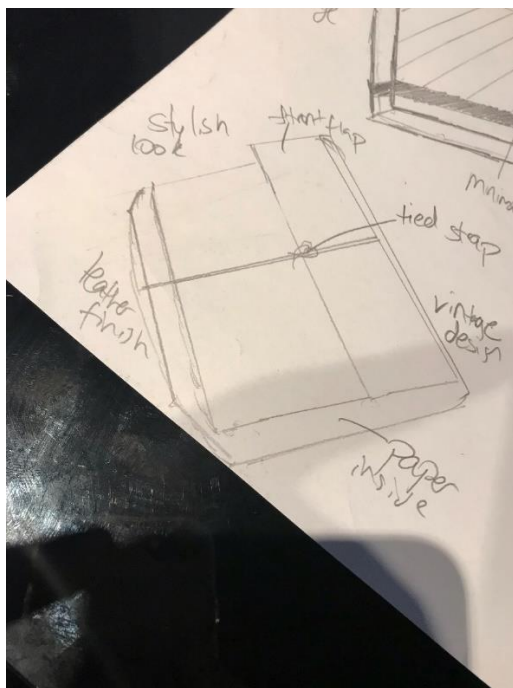
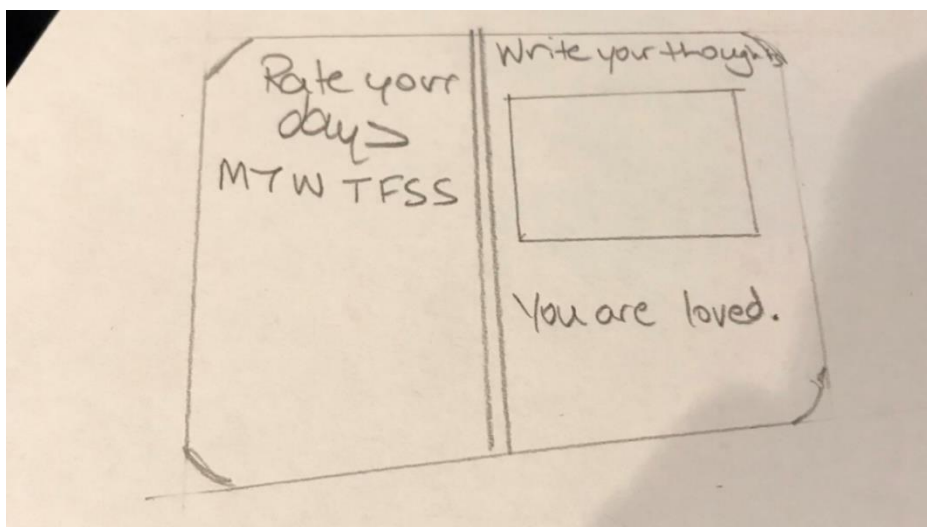
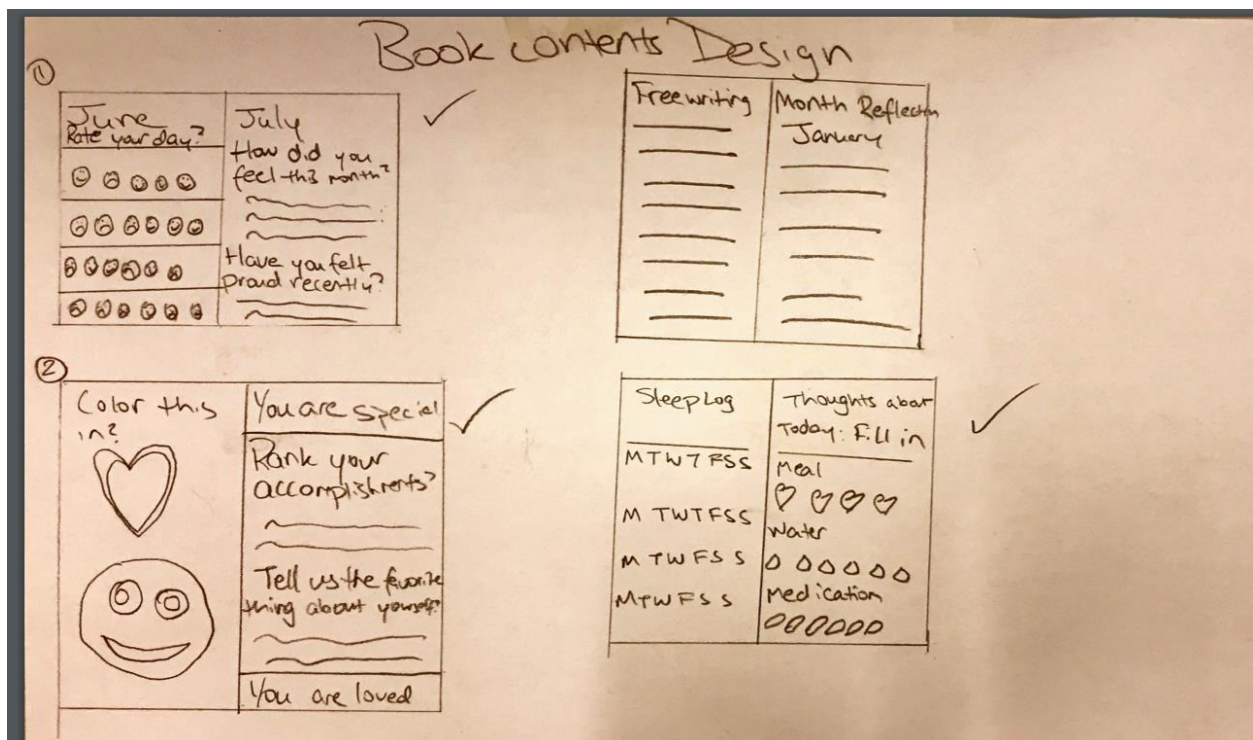


Figure 8: ("LEATHER JOURNAL GIFT SET...")

One of the main things that was explicitly stated in 5.2 of the "Performance" section of the design specifications was that the product was easy to open, and the straps might get in the way of this, by making it harder to unwrap the product every time the user wants to use it. This is an unnecessary action, and one of the big design principles as suggested by Don Norman, was to make a product as easy to use as possible in order to achieve a higher level of customer success.

Uses concept modelling to guide design development

This is an additional graphic model of what the inside of Design 4 will look like, as you can see, it has the planner inside with various pages depending on the day. On the bottom has encouraging messages as indicated from the market research. The inside is simple and has the spine in the middle providing the backbone to the paper. A possible strap can be added to add some more flair to an otherwise normal design. The design above shows the same design from a side wards view, show casing a possible bookmark/ribbon being used. The bookmark is an essential part of the modern journal and can help add a classy feel to the journal.



No Matter what design I choose in terms of outside, the inside is just as important, especially as it contains the main function of the product. I decided to create some small possibilities of graphical designs in which I would emulate inside the book.

Above are 4 possible page designs. They drew inspiration from my market research, especially with competing products having calendars, sleep logs, and reflective questions. I wanted to include these features in order to compete with other existing products, and also to create a holistic solution to a larger problem, mental health.

It is important to note that from my user and market research I have deduced that the following are essential to creating a mental health diary:

- A lot of use of color to brighten the user's mood
- Varied Page designs so that the user is not bored of the journal and stops using it
- A Calendar, as requested from client interview
- Sleep log to track health
- Pages for users to do small activities such as coloring or reflecting can help mental health quite a lot and allows a user to relax and gather their thoughts and belongings.

To actually design the pages, I used the bookwright software by Blurb, and graphically designed unique pages which I would then print out and make my journal with. Below are 4-page designs that I created, with a total of 46 unique pages being contained in the book.

Page 1

Mental Health
Diary

This is your journey to better
mental health.
This is your first step.

Make this yours, what is your
name?

You will never be alone.

1

Page 8

February

Rate the days of your
month using :) or :(

DATE	MOOD	THOUGHTS
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
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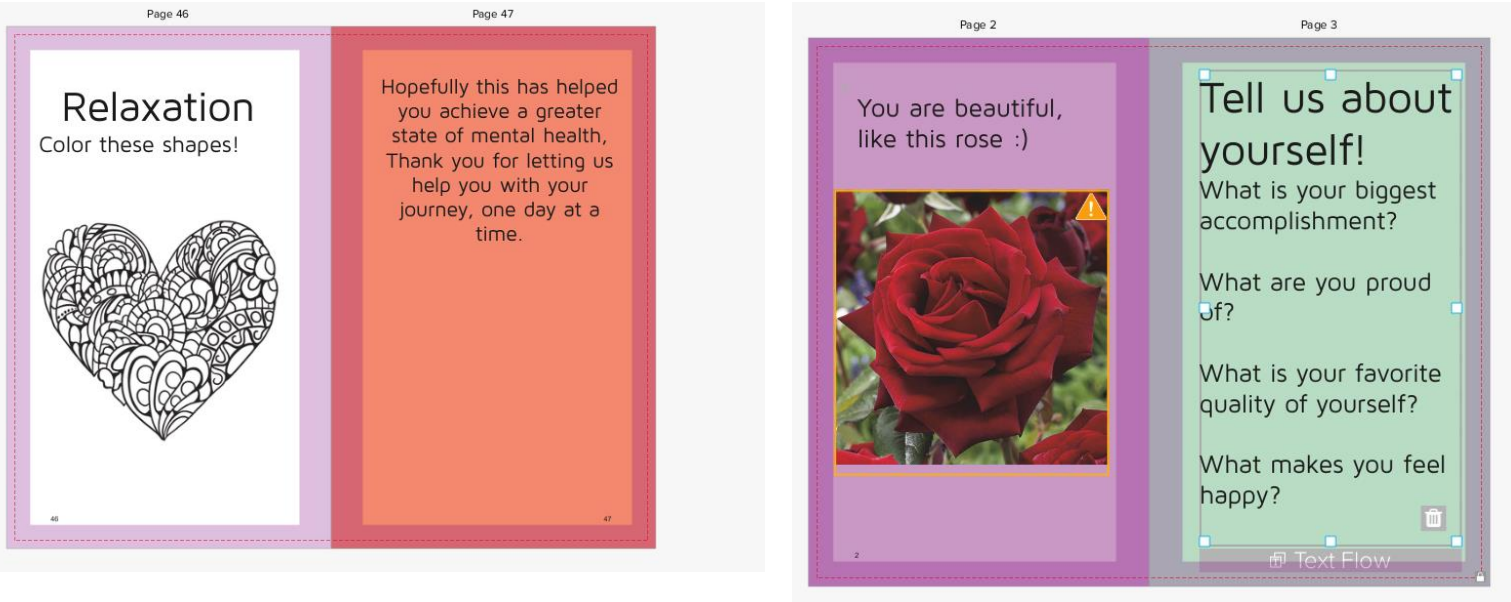
Page 9

What is your biggest fear
in life?

How have you tried to
overcome it?

What steps can you take
in the upcoming month
to help overcome your
fear?

9



The 3 pages above are some sample looks on what a potential page was, I tried to focus on having soft yet easy and aesthetic pastel colors that are appealing to the eye and evoke emotions of nostalgia and peacefulness inside the user.

Each page design was unique and featured different things which as established my previous research, was thought to help those with mental Health problems. Pages like these above will help guide someone struggling through mental health problems reflect of the crux of their issues and target the areas of possible growth. It is important to also give room for people to feel better about themselves through the use of pages such as the coloring one above. The pages also aim to serve many purposes, from directing their minds to something more peaceful, such as planning a vacation, or to critically reflect on what they are feeling. By having a variety of pages with different goals, every mood that a user is feeling can be reflected by the book, which can help them empathize and further connect.

Justifies the most appropriate idea for detailed development

Design #	Aesthetics	Cost	Customer Specifications	Environment	Total
Design 4	5	4	5	4	18
Design 7	5	3	4	5	17
Design 9	4	3	5	4	16

Going forward, I will choose design number 4 as the design I will concentrate on, I will break this down by each way in which I analyzed it:

Simplicity: Simplicity and minimalism was one of the main things that the client asked for in a journal, and something that the competing products do not do well, their product comes out gaudy, and unnecessary, which can lead to disdain towards the product. Therefore, I chose the most minimalistic concept on my list of 3, as it leaves out the unnecessary such as straps or over the top aesthetics to create a timeless look of a journal. More so, the leather provides the texture and the look of the product, which can be changed to customer specifications.

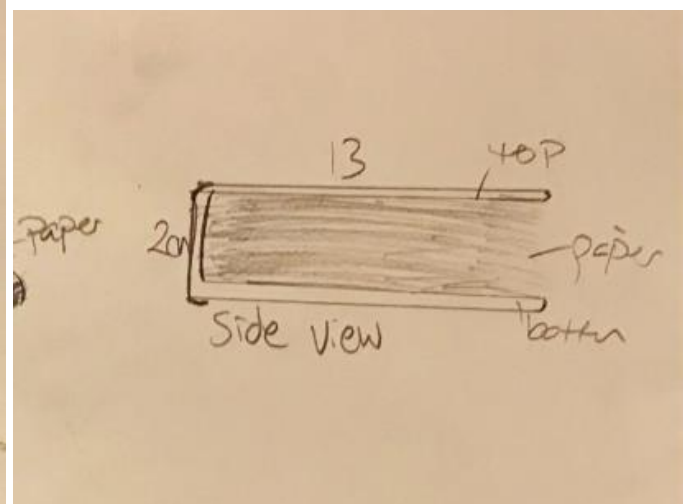
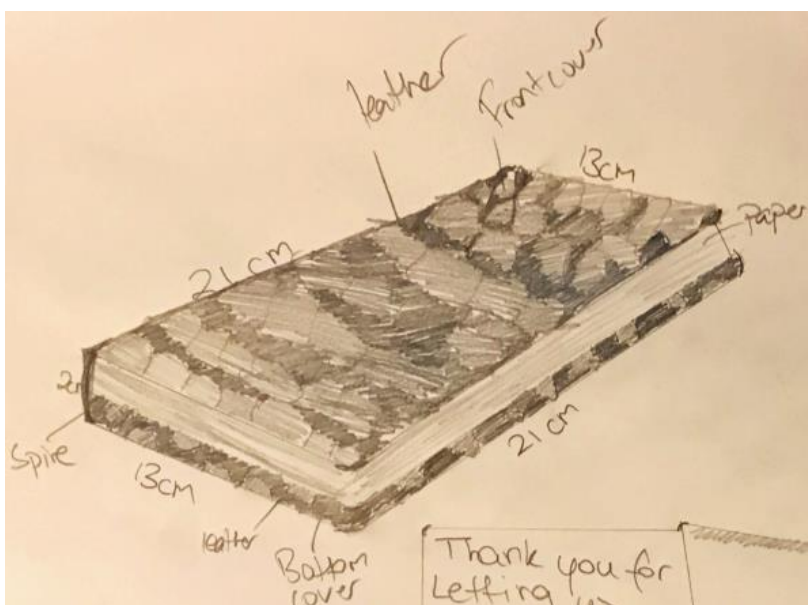
Cost: After all, this mental health diary is targeting a demographic such as students that need help without a high cost. Given that mental health is a sociological and psychological issue, the price of the product must be low enough that everyone can afford it. This design uses the least moving parts and is fairly minimalistic

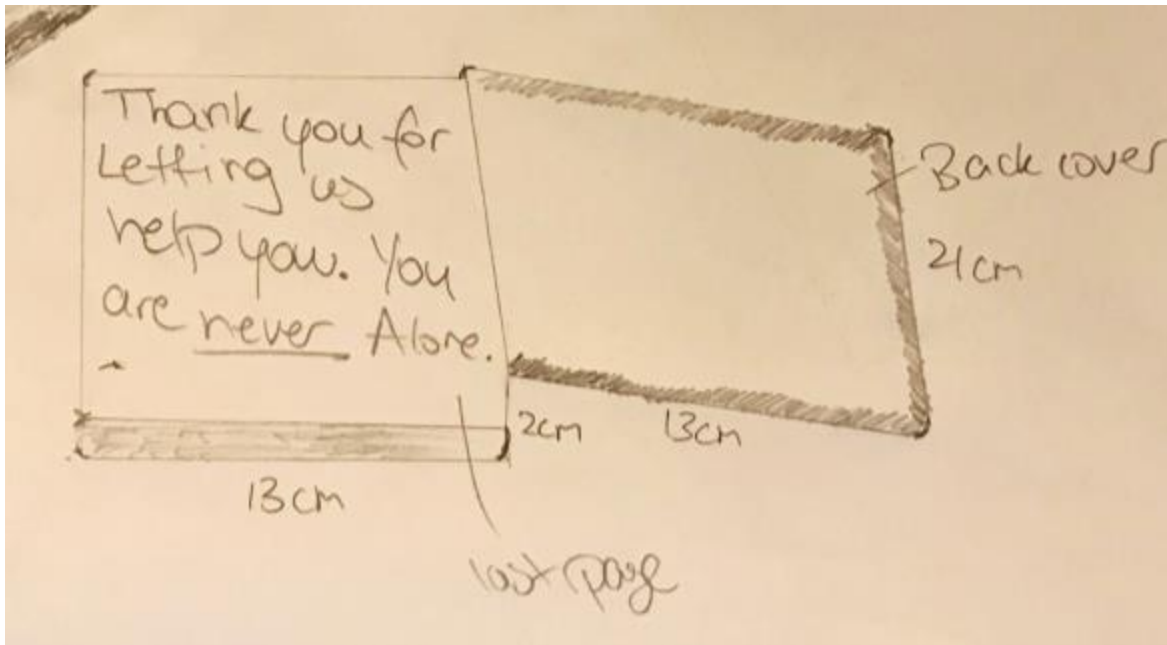
Aesthetics: This look is quite aesthetically appealing, especially the leather that covers the books cover. It provides a striking contrast to an otherwise minimalistic design and adds room for user customization. More so, nothing on this diary stands out as extra, and it simply has all it needs without compromising on form and function.

Client Consultation: I followed up with Tim and asked him his opinion of the product design, he made the following points:

- He liked the minimalistic approach to the notebook
- He appreciated the leather, and thought it was a good addition to a simple product
- Emphasized need for eco-friendly materials and questioned the use of leather. He suggested possibly finding an eco-friendly alternative.
- He stated that the other 2 designs have a higher degree of difficulty to produce, which both raises the price, the cost to manufacture, and the ease of production, which factors into how quickly the design can diffuse.
- He also gave a parting advice to stay away from overly difficult straps, as they will wear down and leave the structural integrity of the product compromised.

Final Design Choice:





Final Graphical Models with Color

Justifies the choice of appropriate materials and components for a prototype

I wanted to focus on three things: Sustainability, price, and aesthetic properties while performing its function. I found these three things to be the most important when creating a journal, as people are drawn in through the price point and aesthetic appeal of the book and then further stay because of the actual usefulness. Sustainability was a big point as the world focuses on a greener ecological footprint and focusing on a better way to make products that do not hurt the environment. The research that I performed in criterion A also showed me that a big emphasis was on Ecologically friendly materials as most people indicated that it was a big factor in their decision. Additionally, everything on this list must be bought locally, as I wanted ease in manufacturing. I wanted to also compare different types of paper, and leather, two major materials that do not have clear cut answers available as there are a plethora of types.

Paper

Types of Paper	Properties
Bond Paper	Strong and durable, good for Envelopes
Gloss Coated Paper	High shine, shows color well, and is suitable for flyers
Matte Coated Paper	Opposite of Gloss, prevents shine from occurring, and is good for Reports, and Leaflets
Recycled Paper	Made from pre-existing paper, most ecologically friendly option. Suitable for Forms
Silk Coated Paper	Between Gloss and Matte, relatively good shine without excess. used for magazines, books and catalogues
Uncoated Paper	"Normal" paper that is often referred to as printer paper because it can easily hold ink and makes it suitable to write on, suitable for worksheets and forms.

Watermarked Paper	High quality, luxury feel, thick, often used in official and government forms.
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("A guide to Paper...")

With the function of my journal in mind, it is clear that I will need a lot of shine, but also a classy and thick feel. The most suitable paper for my kind of product would be the silk coated paper which I will purchase for my book. It is most suitable for books, and contains both shine, while also not being too gaudy.

Leather

Types of Leather	Properties
Apple Based	<i>Relatively new alternative to Leather that takes apple fibers and weaves it into a rich material that emulates leather. However, its relatively new introduction makes it unfeasible as a cheap alternative because it would be pricey to produce and purchase.</i>
PinaTex	<i>Derived from the tough leaves of a Pineapple and weaved into a leather. Is slowly being introduced as a vegan alternative to Leather, however availability and Supply of it renders it expensive, and it is hard to find in a common market.</i>
Cork	<i>Accepted vegan alternative to Leather but lacks the aesthetic and touch qualities that is desired in this product. Also, usually more expensive than leather, and the price of this product wants to be kept as low as possible.</i>
Faux (Synthetic Leather)	<i>Widely accepted alternative to leather – same look and feel without physically killing a cow, but it is not 100% biodegradable and does pollute the environment in big batches.</i>
MuSkin	<i>Made 100% from mushrooms and synthesized in a lab. 100% Biodegradable and Recyclable, but hard to find, and expensive to purchase. Can possibly price a consumer out of a product.</i>

(Di Boscio)

Going forward I will choose synthetic leather, as it is the most feasible in terms of availability, not harming animals and price point. While the other options are theoretically eco-friendlier and biodegradable, they do not offer the flexibility and colors that synthetic leather does. More so, they are expensive in their own right, and I am trying to keep the cost of the journal itself as low as possible.

Final list of materials:

<i>Material</i>	<i>Function</i>	<i>Aesthetic</i>	<i>Physical Properties</i>	<i>Sustainability</i>	<i>Price</i>	<i>Rationale</i>
Cardboard	Provides support behind the synthetic leather and the spine.	Will be unseen, so the color and look is not applicable.	Reinforced, so it is thick and sturdy enough to hold the book together	The card is recyclable and can be grouped with cardboard when being recycled.	\$100/ton	The cardboard is ecofriendly and very available to buy in anyplace in the world.

<i>Silk Coated Paper</i>	Where all the information is being written on, provides the main function of the product.	The paper will have pre-printed messages and activities on it depending on the month and the page	The paper will be thicker than a normal A4 paper, so it can be written on effectively without tearing.	Will be recyclable, so when the user is done with the product the whole product can be thrown away without polluting	\$5.29/100 sheets	Cardstock paper will be used so that it can be written on effectively and is cheap in bulk. Off-white color to provide a classier feel.
<i>Synthetic Leather</i>	Is used as the cover of the book and binds the paper to the spine. Also Makes the Strap	This will come in either black or Navy, try to include high grain size. Subtle matte finish.	Thick, tensile, does not rip easily, and is water resistant.	Not made from real cows, which makes it ecofriendly and synthetic leather is biodegradable	\$6/yard	Synthetic leather is aesthetically pleasing, achieves the look that clients want, and does not harm the environment in the process.

The components of this are easy as there are no outwardly components such as electrical wirings or nails and bolts. The only thing needed to take in mind was again the price, as I am trying to keep the price point of this product as low as possible, so it can be as wide spread and available for everyone as it is targeting a problem that should not be limited to only those that can afford it. The choice was also based on physical properties so that the product has good structural integrity. Like the materials, I kept everything local.

Component	Function	Aesthetic	Physical Properties	Sustainability	Price	Rationale
<i>Staplers</i>	Binds papers together, so that the user can flip through	Is unable to be seen from the outside or inside.	Strong, metal, ductile, and elastic, but durable.	Can be recycled as it is made from zinc-plated aluminums	\$6.00/1000 staples	Easily available, cheap, and useful to bind together paper

The materials listed above are all inspired from a blog post by Karen Lewis that showed the steps needed to book bind effectively (Lewis). I wanted to emulate the same basic process of creating a book, but with a different content inside and a different feel on the outside.

Justifies the choice of appropriate manufacturing techniques for prototype production

How will the product be created?

The product will be created mostly through basic techniques using adhesion and cutting to create the journal, and the main pages will be pre-printed with different designs. The emphasis on this design is design for disassembly, and eco-friendliness, so that it can be recycled.

Manufacturing Technique #1: Adhering

Product: LineCo Neutral Liquid pH Adhesive

Price: \$4.83/8-ounce bottle

Physical Properties: This glue is strong and made specifically for book binding and paper related projects, therefore it has been specifically made for this kind of work and is durable in holding the paper to the cardboard. It has high cohesive strength, withstands temperatures, and is not easily breakable by hand, creating tight bonds through its PVA structure causing secondary bonds.

Tools needed: A glue brush, particularly a synthetic bristle glue brush to apply the glue between the spine and the pages. A mat under the product is needed so that the glue does not stick to the desks or the surface in which I am working on.

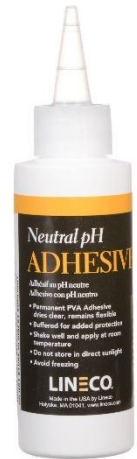


Figure 9: ("Lineco 901-1008...")

Aesthetics: White, but it will be concealed under the spine and between the pages and cover, making it invisible to the naked eye, and only visible through disassembling the book.

Environmental and Safety Concerns: This glue can get stuck onto the hands of the user, and get other materials stuck onto the now sticky hands which can be a nuisance. This glue is environmentally friendly as it is a neutral pH, which means that if water is applied to this, it would break down into a compound with a neutral pH, which means that it doesn't lead to acid or base deposition in sinks or soil.

Why it was appropriate against other manufacturing techniques: Other manufacturing techniques did not match up with the product in hand, as the light paper does not need permanent manufacturing techniques or welding as it would harm the structural integrity and is more suited for metals. This manufacturing technique also allows room for disassembly and has relative ease, so that this design plan will not take too much time or effort and could be replicated by anyone.

Rationale: This adhesive is easily found, affordable, and environmentally friendly which fits into the core values as developed from my secondary and primary research. This type of adhesive was made specifically for book binding and is highly rated among the book binding community. It would work more effectively than other types of adhesives, notably normal Craft Glue, as this is more viscous yet stronger when the bonds cure.

Manufacturing Technique #2: Cutting

Tool: Guillotine Cutter

Function: This cutting tool is used to cut the pieces of paper and cardboard that make up the main pages, spine and cover. I will purchase large pieces of cardboard and then cut them into the shapes that I need as buying a large piece of cardboard is cheaper, and allows room for error, while not breaking the budget I have set for myself.

Price: At School Work Shop, \$47.99 for a new cutter



Figure 10: ("Paper 724 Guillotine..")



Figure 11: ("X-ACTO #1 Knife, Z Series With Safety Cap.")

Tools needed: A cutting board to make sure that the surface below does not get damaged while cutting the cardboard. I will also use a craft knife and an X-Acto knife to make sure that the sides are smooth and do not leave other residue that could detract from the aesthetic value and the feel.

Aesthetics: Creates sharp, precise cuts that leaves a perfect rectangle for the foundation of the book, the cover. This also creates a perfect cut so that the book has even sides and will feel balanced in the hands of the user.

Environmental and Safety Concerns: This tool is dangerous to use without proper supervision and can harm the user if he/she is not careful. When I will use this tool, I will be supervised by my teacher, and also make sure to not have flowing hair or clothing in front of the cutter which could possibly get stuck and cause a hazard. It is important to note that the cutter can severely harm the user if the blade breaks the skin and causes bleeding. I will use gloves to minimize the risk and to also not damage the cardboard and paper while cutting it.

Why it was appropriate against other manufacturing techniques: Other methods of cutting are not appropriate for paper as it either too big, or uses heat, and would burn the paper.

Rationale: This manufacturing technique is easy to use, and readily available, making it a desirable option to use. It also does not require much training, and is made for cutting paper, which is important as that is what I will be primarily using it for. More than anything, it creates precise cuts and does not involve heat or any other type of sintering which can damage the paper or materials at hand.

Manufacturing Technique #3: Printing:

Tools needed: Standard Color Printer

Aesthetics: The printer would print the colored pages, which would then be written on by the user. It is important to use a printer that is modern, and therefore would have a variety of colors, providing a more aesthetically pleasing product.

Why it was appropriate against other manufacturing techniques: Other methods of printing are usually too big scale for a one-off prototype that I am creating, this is why I am using a printer

that is readily available to me, which reduces costs as well. All I need to provide in this is the paper itself, which is a one-time cost for a large amount.

Environmental and Safety Concerns: The main environmental concern here is that paper is a resource that is derived from wood, and therefore trees are being cut down in order to provide this paper. With deforestation being a big problem in modern society, I as a designer must be aware of the ethical implications of wasting paper unnecessarily. To combat this, I made sure I only printed the pages when everything was finalized so that I did not waste paper.

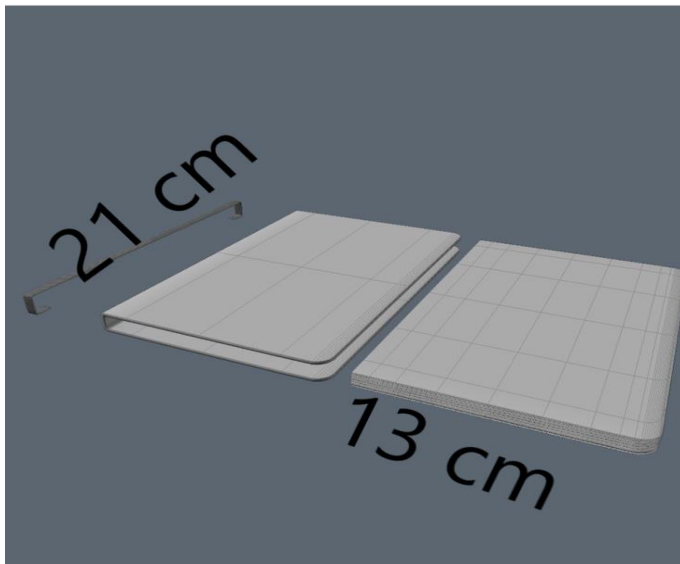
Rationale: Printing is the most accepted method around to get my information onto paper that is also writable for the user. However, the only point of contention is the type of printing being done, but a regular commercial printer should be enough, and a massive big scale printer is not needed.

Summary of Manufacturing Techniques: I tried to use techniques that both consisted of ease, and something that is durable enough to last the trials and tribulations of book. I also did not want to use techniques that could not be replicated easily or use tools that are outwardly hard to find, so that anyone could create their own product if necessary.

Develops an accurate and detailed design proposal

Cutting List

Material	Part	Length	Price
Synthetic Leather	Wrap for Cover	1 Meter	\$2.67/Meter on Alibaba
Cardboard	Cover Material	1 Meter	\$1/m



This shows the dimensions of the notebook, (13 x 21 x 2 cm). The notebooks thin cover and reinforced spine are clearly in view here which makes it easy to see, and easy to produce.

Exploded Isometric drawing of cover with dimensions of outside, it shows the separation between pages and the cover, and the nylon band. Below is the Exploded isometric CAD Model of Inside

Sideways CAD Model that shows the function of the product when being used

Tools needed to create this:
Guillotine Cutter and X-Acto Knife

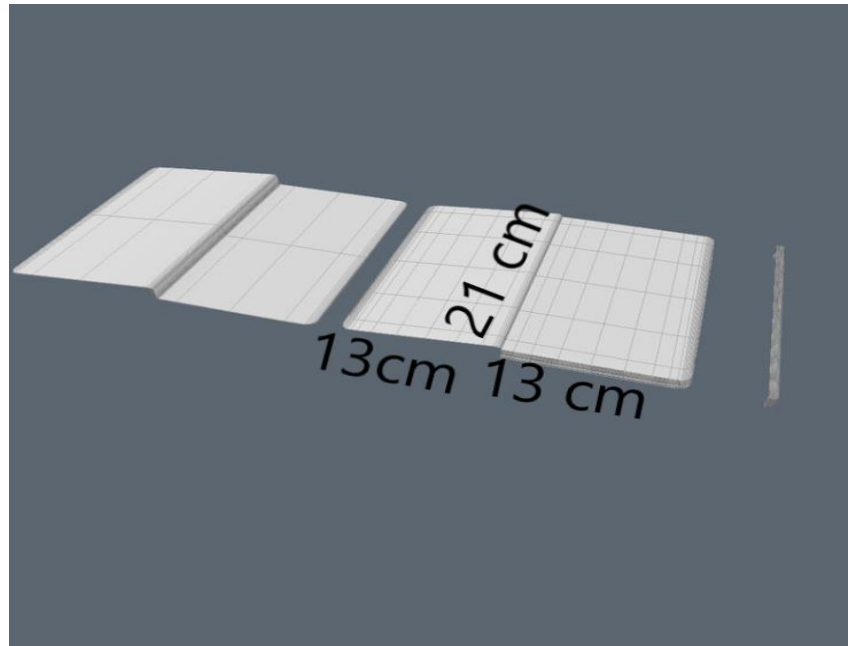
Materials needed:

Synthetic Leather, Cardboard

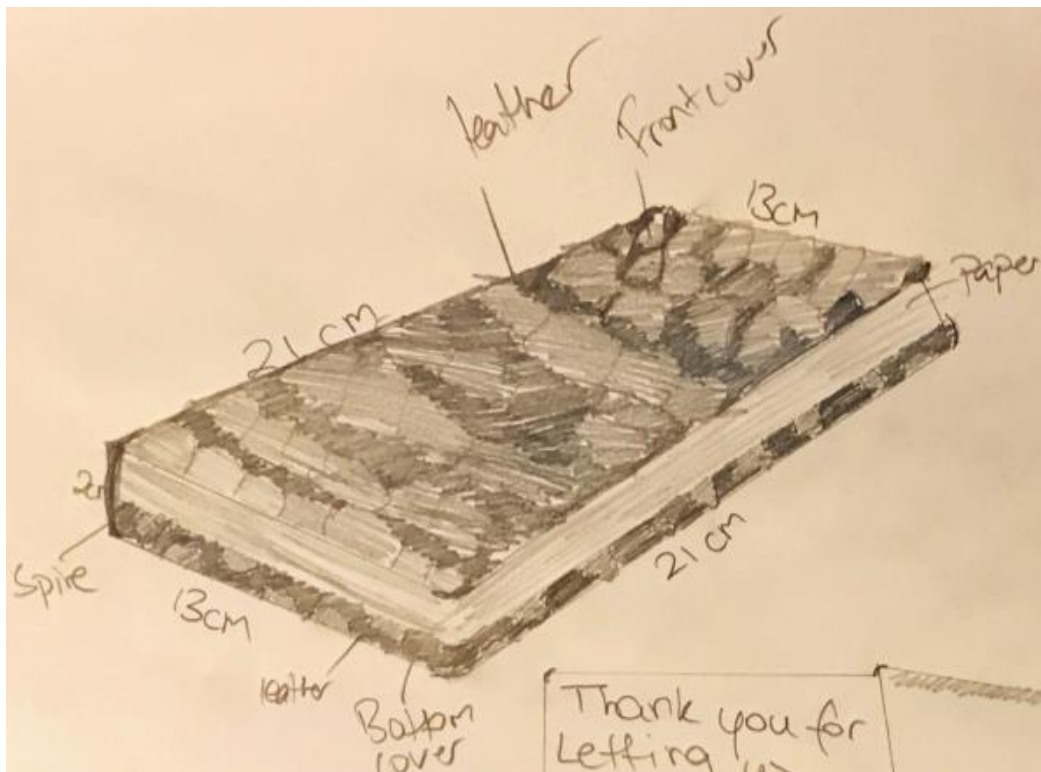
Adhesives:

LineCo Book binding Glue

Staples



Final Colored Graphical Model



Produces a detailed plan for the manufacture of the prototype

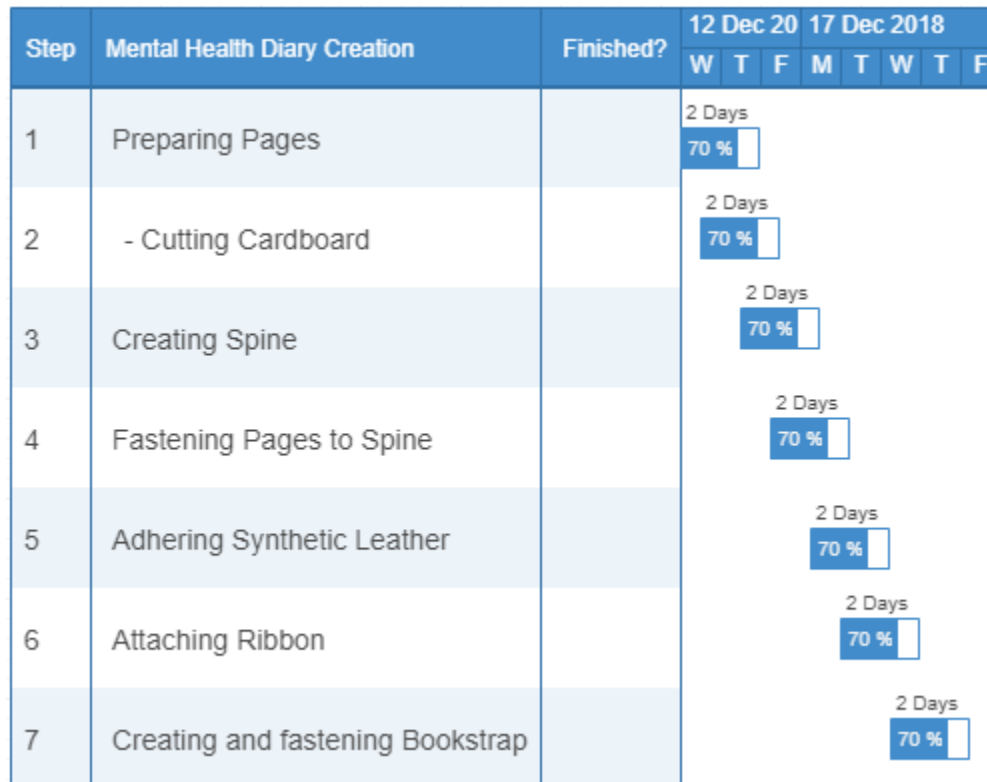
Description of Tasks:

The design plan will follow a clear process in order to be manufactured with high structural durability and to not fall apart after use. The following steps will be taken while manufacturing:

1. Print pre-designed pages of the mental health Diary, in size less than 13x21. This will be the foundation of the book. Print in landscape, using book-fold margins so that it can be folded in half, creating the thickness and durability desired.
2. Cut corrugated cardboard into the size of 13x21, this will function as the hard cover, and provide the base for the actual book. It is essential that the cuts are precise and that the cover is strong. The cover must have straight ends and cuts so that it remains visually appealing.
3. Create the spine using corrugated cardboard. This is the main component holding up the book, and therefore needs to be strong and reinforced. To do this I will compress the cardboard and then press another cardboard into it, creating a thicker two-layer spine. This will then be adhered to the cover using the neutral pH book binding glue from LineCo as indicated previously before, creating the cover.
4. Next, I will staple the pages that I printed before to the cover and the spine, using staples and a stapler. This will effectively create my book and bind it into place. The book glue would be used on the first and last pages which have intentionally left blank, and then adhered to the cover so that the pages are fixed in place and supported from two directions.
5. To complete the outside of the book, I will glue the synthetic leather to the cover and spine using the book-binding adhesive. It is important to note that the synthetic leather must be tightly fastened to the book to preserve the aesthetic quality that is desired. The glue must be evenly distributed over the cover so that there are no clumps of glue accumulating on the surface which would create an uneven cover, which makes it look and feel worse to use. A little bit of synthetic leather should be stretched over the cover, and then cut off, to finish the book.
6. A small ribbon can be added into the middle of pages to function as a book mark and will be fastened using the same book-binding glue. The manufacturer will need to open the book to approximately the middle page and fasten the ribbon there.
7. Finally, to accentuate the book and make it classier, a small leather cover strap will be fastened to the top of the book, using the book binding glue, and adhering it to the back cover. This will complete the product.
8. Leave the book to dry so that the glue is completely adhered to the leather and the cardboard. To ensure structural integrity, and to make sure that the leather stays in place, the glue must be completely dry so that the Polyvinyl acetate will adhere.

If the steps are followed carefully, then the product should be easy to replicate and does not take any previous level of experience.

Estimated Time of Completion:



Above is a Gantt chart with the time needed to create the product itself as sorted by the steps, and the relative difficulty.

Manufacturing Techniques:

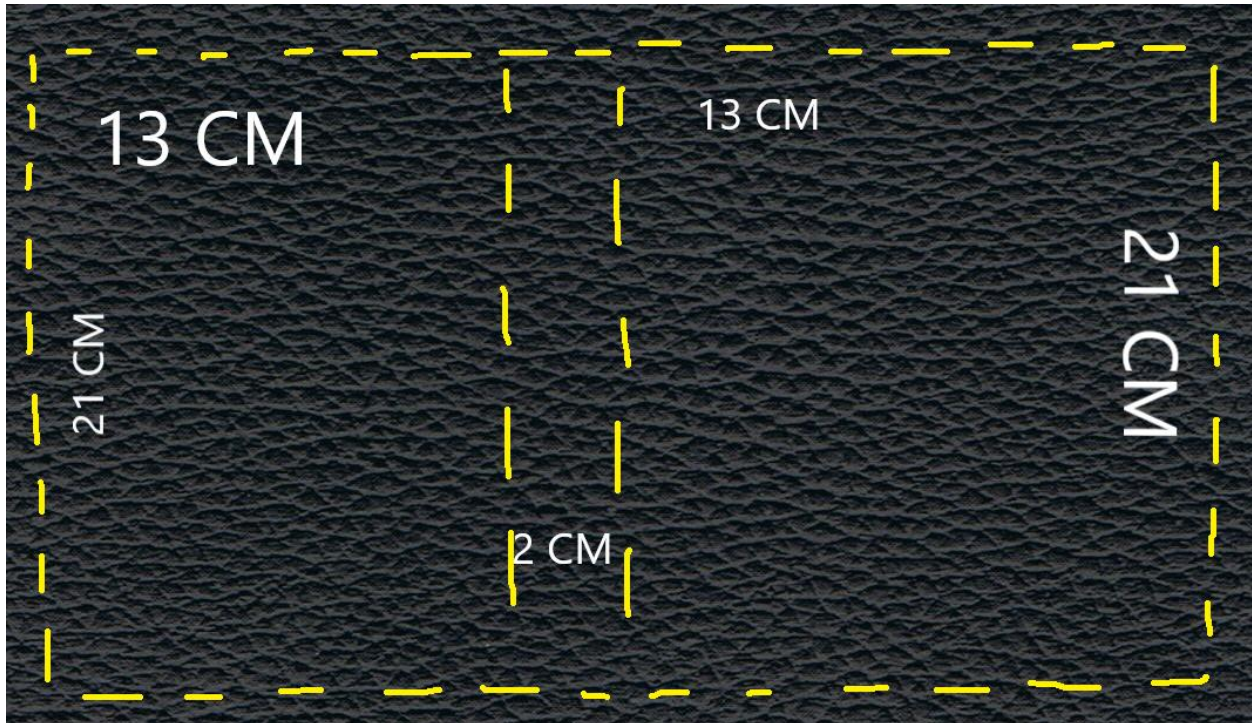
The main manufacturing techniques are going to be adhering and cutting, as mentioned before. The adhering is essential to this product as it is inobtrusive, made for disassembly, yet durable and will withstand the wear and tear that a journal will face through use. The adhering must be uniform throughout to ensure the aesthetic quality. The cutting will be done to ensure a sharp finish that will provide the cardboard cover with the shape needed for the book. More so, the cutting must be done using a rule to ensure it is straight and then crosschecked using a level, so that the line is not crooked. The book should be cut at the 13x21 size that was determined before. The 1 Meter of leather will need to be cut in a way to allow additional leather to hang over the side so that the leather itself can be pulled tautly on the book and so that there is enough in case of defect.

Risk Assessment:

While handling the equipment needed to create the product, it is important to be cognizant of the risks associated with the process. The following need to be considered:

- Making sure not to cut oneself while operating the devices needed to cut the cardboard and paper. This is very important when using sharp devices that can possibly hurt people if not operated with caution.

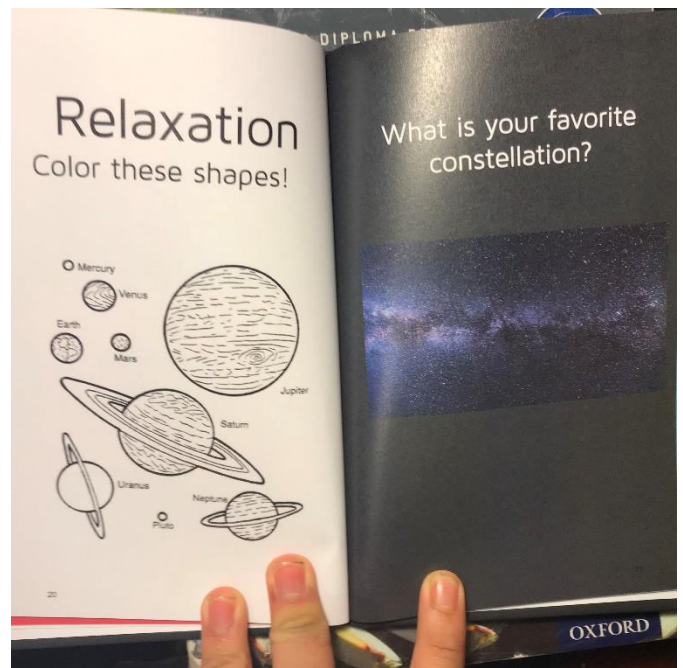
- Watching out for glue not getting on the hands of the user. This can be mildly unpleasant to most but can also become an issue of hygiene and discomfort if the glue sticks onto the skin for too long.
- When using the X-Acto knife for the leather, be sure not to leave the guiding hand in the path of the knife, which could lead to bodily harm and loss of blood if not careful.

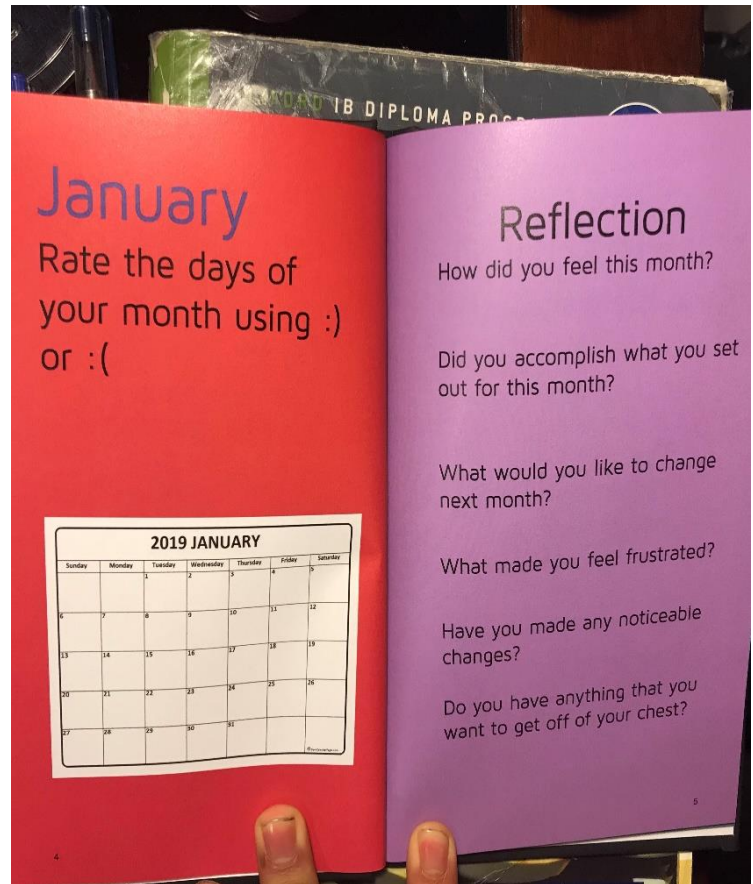
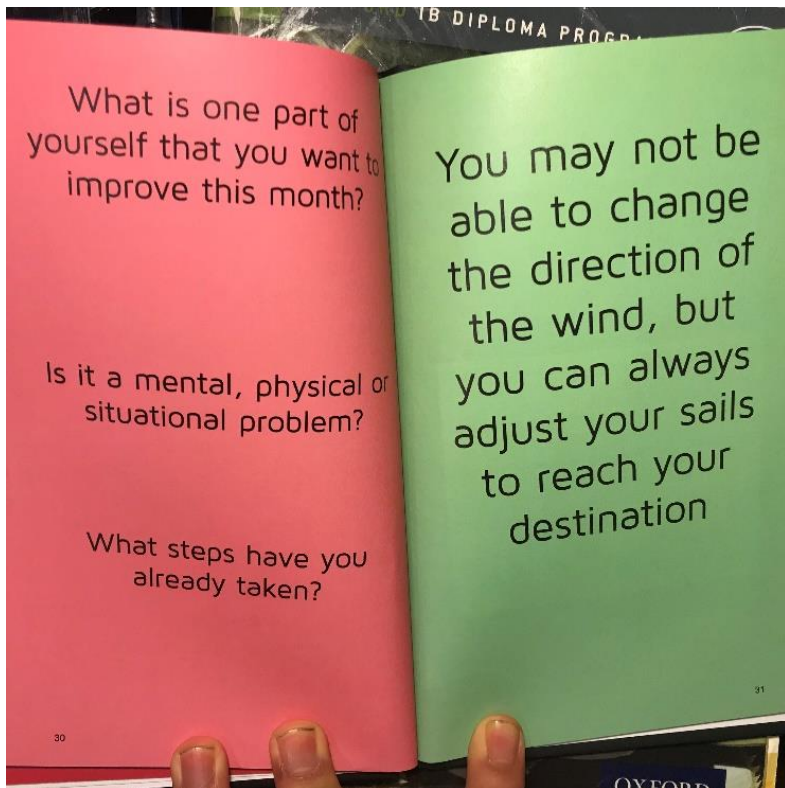


Above is the method on how to cut the leather, with dimensions shown, the book itself is 13cm x 21cm, and the spine is 2cm wide, and 21 cm tall

Resources: Refer to industry standard sizes for journals for a scale of the size. A look into the final product, with the side view, top view and back view. Also pictured is some of the pages inside, showcasing the color and variety.

Below are some pictures of the end product, with the front, back and side shown respectively. Also pictured are some examples of what the inside looks like.





Evaluates the success of the solution against the marketing specification

To evaluate this, I considered a performance test by giving my product to 10 anonymous potential users, and then showed the competing products and asked how they would rate my product versus the others and how I could possibly improve my product to make it more competitive in the market.

Target Audience:

All 10 of the potential users I asked to rate my product were students in the age group of 16-24 in high school to university. I chose this age group as I felt that they were the most affected by stress and mental illness and wanted to target them with this mental health diary product. All 5 of them stated that this product would be something that they want, and that the finished product was both aesthetically pleasing, and functional, highlighting the equilibrium between the form and function argument. All 10 said that this kind of product would fit perfectly into their day to day life, as they already make use of agenda's and such to sort their student life, and this would accomplish both helping them plan their weeks and student life while also helping them track their mental health, and vent about important issues that they are facing while attending university or high school.

Target Market and Market Analysis:

With the target market identified, students and teenagers going through school, I wanted to find out first hand on the price point they were looking at. Due to the fact that students are usually do not have a lot of money to waste on non-essentials, I wanted to make sure that the price would be as low as possible while still making profit. The competing products were 10\$ and 30\$ respectively, and I told the potential users to keep this in mind while trying to agree on a price that they would pay. 4 of the users said they would pay up to 20\$, while 2 focused on 10-15\$, with the last 4 wanting to pay only 10\$. I decided to propose the idea of the journal being sold at \$12.99 and asked if they would buy it at this price. 9 of the 10 said they would consider purchasing the journal at this price, with only one objecting and saying that it would need to be about \$10 or lower for him to consider purchasing one. This allowed me to create a possible final price to market it at.

User Need:

The user need of this product is quite clear as there currently aren't many commercially sold mental health diaries out there. Two of the competing products that I identified in Criterion A were not being sold anymore, creating a market pull for this type of product. Out of the 10 students I surveyed for this product, 6 of them said they would truly benefit from this kind of product, citing the tension and stress from University being quite high. This product is directed towards students and teenagers in particular and getting those in my target audience to validate my hypothesis was crucial. The main remark that I took from the user feedback was that there are not many products out there dealing with mental health and illness out there, and only 2 of the potential users out of the 10 knew about products that helped mental health. The users all agreed that a mental health diary would be something beneficial not only for them, but for the general student population, as it allowed them to track their mental health as part of a daily journey to becoming a stronger person.

Competition:

To gauge this, I put the 2 competing mental health diaries that were identified in Criterion A, and then mine side by side, and asked them to assess the 3. I did this first before I informed them that the 3rd was my product in order to create the most unbiased view possible. 7 of the 10 ranked my mental health diary the most aesthetically pleasing of the 3, and the one that they wanted to purchase the most, while the other 3 opted for the "Resilience Journal" shown in Criterion A. When comparing price points, the other journal was \$20 more, which did sway the remaining three to my side. When considering price and the relative ease of purchasing, all of them were in agreement that my product would be able to penetrate the market easily, as it has competitive pricing, and more use inside of the book.

Weaknesses:

The main weaknesses identified was that because of the synthetic leather touch, the price might not be as competitive as possible, which is needed in order to penetrate the market effectively and convince people to buy. A solution for this, is to buy all the materials in large amounts, so that the price of the individual amount needed is as low as possible, and also to limit the amount of manufacturing techniques needed so that labor is also as low as possible. Another weakness identified and corroborated by the client interview against the design specifications is that in order to truly capture the market and become a dominant design, the aesthetics of the products must captivate the audience by being a little bit more interesting. They said not to err on the side of

making to too excessive and therefore gaudy, but to create an exterior look that would create a strong impression in a potential user's mind and attract their attention.

I also considered the following strength tests to test the product against possible wear and tear:

Strength Test	Notes
Dropping the Book on the Floor Multiple Times	The journal faced no changes to the outside other than picking up the dust and dirt from the floor. This is something to consider when creating the commercial product is to eliminate the amount of cleaning needed to keep this product at its highest quality.
Bending the Book	The book retained its structural integrity and did not bend until I exerted a lot of force onto it. Once it did bend however, it held that shape, a sign of the strength of the spine. The cardboard inside did break, and the tightly weaved paper changed causing the overall shape to change. However, once I bent it back into a straight line, it once again maintained that shape.
Dragging a Pen Across the surface	There was not a huge change to the surface, but there was evidence of some scratching. The figure below shows some evidence of tearing starting to occur, but it is important to note that this only happened after significant force was applied that would most likely not be within the realm of an accidental occurrence by the user.



*Picture is Zoomed in

Evaluates the success of the solution against the design specification

To evaluate the product, I gave it to the client I interviewed, Tim, and asked him to give an honest assessment of the product, in comparison to its intended purposes. By giving the product back to the same person, I get direct feedback from the person who helped influence my design specifications in the first place. I asked him to rate the categories that were

established before on a scale of 1-10 and then comment on what could be improved or what he appreciated in each category. Additionally, I took the basic design specifications as established in Criterion A and asked the client to grade the product on whether it accomplished each individual specification, green meaning it did, red meaning it did not, and orange meaning it is approaching completing the specification or somewhat completing the specification.

Aesthetics:

1.1 Be aesthetically pleasing with a minimalistic design

1.2 Be fashionable

1.3 Not have gaudy colors

7/10: The client liked the minimalistic style of the book, and noted that the classy approach was appreciated, however he did note that the black outside of the book made it look a little too “plain”, and although it was requested earlier, the client would prefer that later iterations would have some accents added to make it stand out a little. A suggestion that he gave was to make the spine a different color, or to add a design onto the cover to make it more unique, but still keep the minimalistic quality that was desired. The client liked the abundance of color used inside, and said that it was a major success, and liked the contrast between the classy, monotonous cover and the colorful, bright pages. All he would add is more room for personalization on the cover, and perhaps some accent to make it not seem boring, but he does like the basic idea and look.

Size:

2.1 Same size as other notebooks

2.2 Small enough to fit into a bag

9/10: The client said that the size of the journal was perfect, as in it was not too big or too small. He stated, “It feels nice to hold in my hand, and was easy to store in my bag and take everywhere I went, but at the same time had big enough pages to fill in the inside pages effectively.” He was not aware there were industry standards for notebooks but did comment that anything bigger than the current size would be cumbersome to bring around, and also would not fit well into the smaller pockets of his backpack, where he stored the product.

Cost:

3.1 Cheap enough for anyone to afford.

3.2 No recurring charges.

3.3 Alternative option to wellfullness apps and therapy.

6/10: The cost of this product was 6\$ for a yard of synthetic leather, and then cardboard bought at a price of 1\$ for a meter. The paper and manufacturing processes were provided through the workshop at school. Assuming I was starting from scratch however, the max price of production of the first ever journal would be 16\$ factoring paper, and the price of the bookbinding glue. However, the price of the leather, cardboard, paper, and bookbinding glue is not a reoccurring cost as I would only need to buy it once and it would supply dozens of notebooks. I asked my client, Tim, how he would feel paying 10\$ for this product, a rough 5\$ profit, and he said that he felt that was an appropriate price, and he would not mind paying that much especially with the synthetic leather finish.

Materials:

4.1 Environmentally friendly materials.

4.2 Durable enough to withstand environment and user error.

7/10: The client appreciated the synthetic leather feel, and also noted that it added a much-needed signature feel to the product. However, he remarked that the paper used was glossy,

and therefore was harder to write on than a normal paper, but is thicker, and therefore has more structural integrity, making the overall book stronger. Conversely, he did like that the paper was a little thicker than normal notebook paper, which made it more appealing to flip through and easier to turn the pages. He suggests that the paper type be changed, also to better alleviate environmental issues.

Performance:

5.1 The book must be joined together well

5.2 Easy to open

6/10: The client said that the product performed the base requirements that were desired, however the journal left something lacking. In a future iteration he would add more variation to the types of pages and graphic design included inside the book, as well as more space for free writing about the user's thoughts. He included that while having a structured flow to the journal is nice, it also limits the user's creativity and also does not allow them to talk about how they feel to the same extent if their problems are not being covered in the reflection guiding questions that were included in the book. What he did identify was a strength of my product was the plethora of color and differentiation between pages that was included, it made it seem professional and also brightened the mood of the user considerably. Most of all, he said that future iterations have to include more pages, as this journal only had 50, but he would like to request over 100 pages, for the sake of time, I did not design 100+ unique pages.

Environment:

6.1 Renewable materials used to build products.

6.2 Does not feature unethical materials like animal skins.

6.3 Can be recycled easily.

5/10: While the client noted that using synthetic leather was a nice touch to avoid using materials such as normal leather which violates animal rights, and contributes to a large portion of pollution due to cow farming, he did note that the paper being used was not as eco-friendly as possible due to the thin plastic coat being applied to the paper to give it a more glossy vibrant finish. The plastic leads to slower decomposition when thrown away, which is something to consider when creating the product. A possible weakness is that paper also is a commodity and cuts down trees to create, by being made from wood pulp. A possible alternative suggested was to use paper that does not derive from trees but rather from other fibrous plants, such as hemp or flax – similar to the Egyptians with papyrus. However, it raises the ethical consideration that one plant is supposedly more important to conserve than another, which can be debated.

Safety Requirements:

7.1 The paper cannot be too sharp to cut the user

10/10: There are no outstanding qualities in terms of safety that a journal is supposed to have, though he did note that the leather is fastened tightly, and that the pages are glossy, and therefore leave less room for paper cuts. He also noted that there was the journal itself could hold up to the trials and tribulations that it is expected to face, and that it held up well and did not deteriorate.

Manufacturing Requirements:

8.1 Proper worker environments that does not infringe on human rights.

8.2 The techniques used to join the materials must be able to be done in a school Design Lab

8/10: I sent the client my design plan, and he noted my process, saying that the relative ease and clarity in the instructions made it easy to follow and replicate. He did find that the manufacturing techniques used were chosen so that the largest amount of people could create

this product themselves, and not need extensive training or knowledge of manufacturing techniques. He did note that I should include more information on how to make the manufacturing possibly automated, to both conserve time and money, and also for future production. He did note that the time needed to make the product by hand is quite large, and thus automation must be considered in order to make the production the most effective and efficient. It was noted however, that one step of the manufacturing process, the binding was done at home, and not under the realm of the design lab.

Customer requirements:

9.1 The product must provide a space for consumers to vent their frustrations and manage anxiety.

9.2 Product must be fashionable

8/10: The main requirement was that it has to fulfill its function of allowing the user to vent their feelings and what is irking them in a concise, fashionable diary. This was accomplished by the product, and my client said that the look and feel of the diary, in addition to the practical purpose made it a very desirable product, and something that he hopes to be able to purchase.

Total from hands on trial run: 76/90 – 84% (B)

Notable Remarks:

From the client's remarks, I have established that many of the design specifications I had previously sought to achieve have already been achieved, but there are some that can be expanded upon, most notably the look of the book being a little more fashionable. If that is improved on, then the product will be more effective in being marketed and also more desirable.

Explains how the solution could be improved

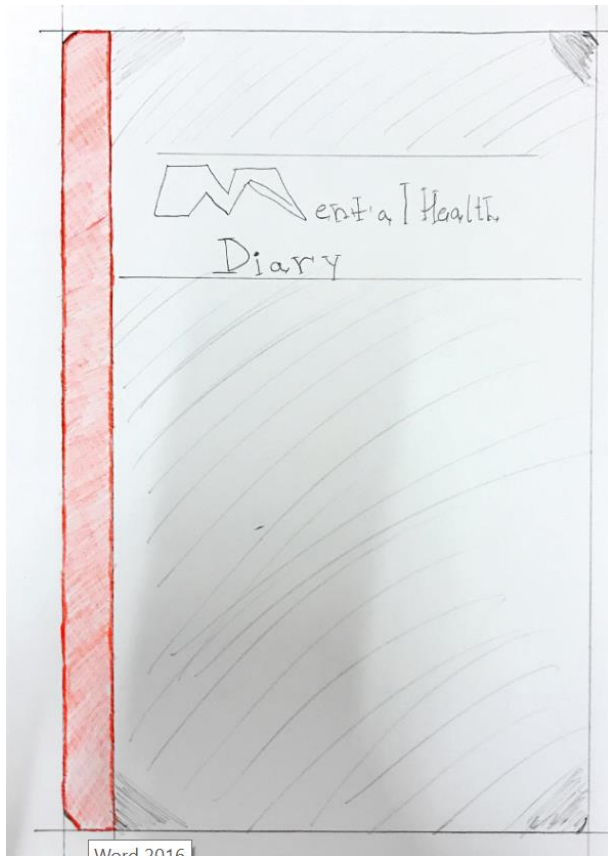
Using the feedback from the marketing and design specifications I decided to focus on 3 main categories to improve on: Aesthetics, Function, and Materials. This was the most reoccurring theme in the feedback that I got from both my clients and the 10 people I interviewed.

Aesthetics:

One of the main components of the feedback that I had gotten was to make the cover, and therefore the first thing that people see, more aesthetically appealing. Most people said that they appreciated the minimalistic nature of the Mental Health Diary I created but would like it to stand out more, in order to captivate their attention and push them to buy the product. I agree with this sentiment and want to make the following changes to make the product seem more aesthetically pleasing:

- Add more color to the outside of the book by coloring the spine of the book a different color through the use of a different synthetic leather.
- Possibly adding a suede accent to the cover to make it seem more appealing to hold, and also more visually stimulating to the eye.
- Adding a design to the cover to make it less dull and to also create a unique, signature look that the mental health diary would be known for.

To model this, I created a small graphical design to show a potential future iteration of my product



As seen above, the red accented spine adds a little flair to the book and makes it more unique, as well as the small design on the front with a lattice spread, adding further accent.

Function:

To make the product more functional, I will add a few changes, as received from the user feedback of my product.

- Add more pages, this will create a more complete notebook, and also allow people to feel like they have received more worth for the money.
- Add more reflection pages that will allow the user to vent their frustration and create more room for growth.
- Use a greater variety of colors to make the product seem more bright and “happy”

Materials:

In the future iterations of my product, I would use paper with a higher degree of biodiversity, such as tree-free paper, or something made from more synthetic fibrous materials. Additionally, I would add more luxurious materials, such as suede or velour to add a complete feel that is both aesthetic to touch and aesthetic to the naked eye. This would ensue possible versioning possibilities, to allow a customizable feel for a consumer, so that they feel like their product is more personalized, and thus one-off. This would encourage a customer to purchase and also boost customer satisfaction.

Justifies the choice of materials and components appropriate for commercial production

While producing on a much larger scale, it is important to streamline the production process by choosing materials that are both cheap, and durable while keeping the cost and difficulty of the

manufacturing process low. That is why I will rethink my 3 main materials, and components to see if I can find a way to eliminate wasteful processes.

Synthetic Leather: While synthetic leather still is an appropriate term for the type of material I would like to use in a commercially produced iteration of my product, it is not specific enough to the plethora of options available on the materials market. The two main choices available for synthetic leather are Polyvinylchloride and Polyurethane Faux leather, both made from plastic based production processes. To choose the best of the two, I decided to compare them side by side on many criteria, and then select the best.

Criteria	Polyurethane	Polyvinylchloride
Aesthetics	Polyurethane has a clean, soft yet rich feel in the hand, with large but uniform grainsize throughout. Feels the closest to Leather, without harming animals.	Little bit of a rougher look and feel, not as supple as PU leather. Not as many options on the grain size perpetuate the vinyl or synthetic look of the leather.
Physical Properties	Porous surface allows the material to breathe, creating a light, yet very durable leather. Keeps moisture out effectively. Lighter than PVC leather, which is good for small objects like a journal. Easy to clean with most soaps.	Highly durable due it's 57% chlorine composition in the thermoplastic. Blocks moisture well, but is a heavier feel than PU, making it more suitable for larger scale applications. Long life expectancy
Color and Customization Options	Plethora of color options out there including Black, brown, light blue, beige, navy, and white. Also, different grainsizes available to create a different finish and touch on the hand.	Less color options than PU leather which is easier to dye and make different colors, but still has good options of Black, Brown and Grey,
Price	\$1.5 Meter for 500 Meters Generally, more expensive than PVC Leather ("Home")	\$1.1/Meter Usually cheaper than PU leather due to production process ("Home")
Environmental Rating	Far less toxic to produce than PVC, however the level of impact on the environment is determined by the city in which the PU is being produced in. EU requires it to have low emissions. More biodegradable if amount of chemicals added is managed	Extremely harmful for the environment, by producing toxic chlorine and dioxins. People protest the use of PVC in appliances ("Are Vegan shoes..."). Is also not biodegradable

After comparing the two synthetic leathers extensively, I have concluded that I will choose PU leather, for the following reasons:

- Better for the environment, which is one of the main criteria that was set aside for me from the market and user research previously. PVC is extremely harmful for the environment, and therefore not something I want to spend my money on. PU is not totally eco-friendly, as no plastic is truly clean, but it has by far the least ecological footprint of the two.
- While it is a little bit more expensive, the cost is negligible for the improvement in aesthetic appeal which will be the first thing to attract a potential customer. The greater

variety of colors and grain finishes will allow the customer room for customization, and also add a one-off feel to each journal.

- The physical properties of PU leather, most importantly the lightness, is extremely important, as nobody wants to be carrying around a heavy journal and making it lightweight would make it more portable. More so, the supple, rich feel of the PU leather will be more appealing to hold and convince people to purchase the product.

It is important to note that there are other alternative leather types, especially ones that are more biodegradable, such as Vegan Leathers derived from Mushrooms, Pineapples or Cork. However, the aesthetic appeal and the feel of each product was lacking compared to the PVC and the PU leathers, which are the more traditional vegan leathers due to their similarities in form and feel to the original cowhide leather.

Paper: Previously I had used a glossy coated type of paper to print onto my page, the justification for this being I wanted the pages to feel better in the hands of the user by providing a thick finish. However, from the feedback I had gotten from the client while testing it against the specifications, I learnt that the glossy coated paper was not all suitable for this kind of job. In a product where it is essential to be able to write inside, the users noted that this kind of paper was not all that useful for people writing with pencils, and only really worked well for sharpies and markers, while pens did show up on the paper, it was also ineffective. For this reason, I will switch to a different type of paper – Book Paper.

While the name is quite self-explanatory, the pages will allow the user to write more effectively on the inside of my product, effectively increasing the functionality. Furthermore, the price of standard book paper is less because there is no outside gloss coating which adds unnecessary price, on a product attempting to be as cost effective as possible. Perhaps the most important however, is the ecological footprint left behind from glossed paper. In order to coat a paper, a small layer of Low-density Polyethylene, which is harmful to the environment in big amounts, and stops the journal from being totally biodegradable. Conversely, normal book paper is 100% plant based, as it is a pure derivative of wood, and therefore is fully biodegradable. It is important to be aware of the environmental and ethical considerations of the product.

Cardboard & Staples: Cardboard is cheap, readily available and easy to buy in big amounts, with a ton costing \$100. For this reason, I chose to continue to use cardboard as there are no alternatives for the cover of the book that is as cost effective and available.

As for the staples, it is an effective method to join together papers, cheap, available all around the world, and is also able to be administered using a machine.

Justifies the choice of manufacturing techniques appropriate for commercial production

Adhering: In the one-off model that I created, I adhered using Line Co's pH 7 Natural Adhesive bookbinding glue, to glue the cover to the book, and the faux leather to the cover by hand. In a commercial setting I would choose a method that keeps the need of user involvement as low as possible in order to maximize efficiency and increase the number of journals produced per day to meet the demand.

To do this I would use a cold-glue dispensing system that would apply the adhesive to the inside of the cover in the designated lines automatically, and would minimize the user involvement.

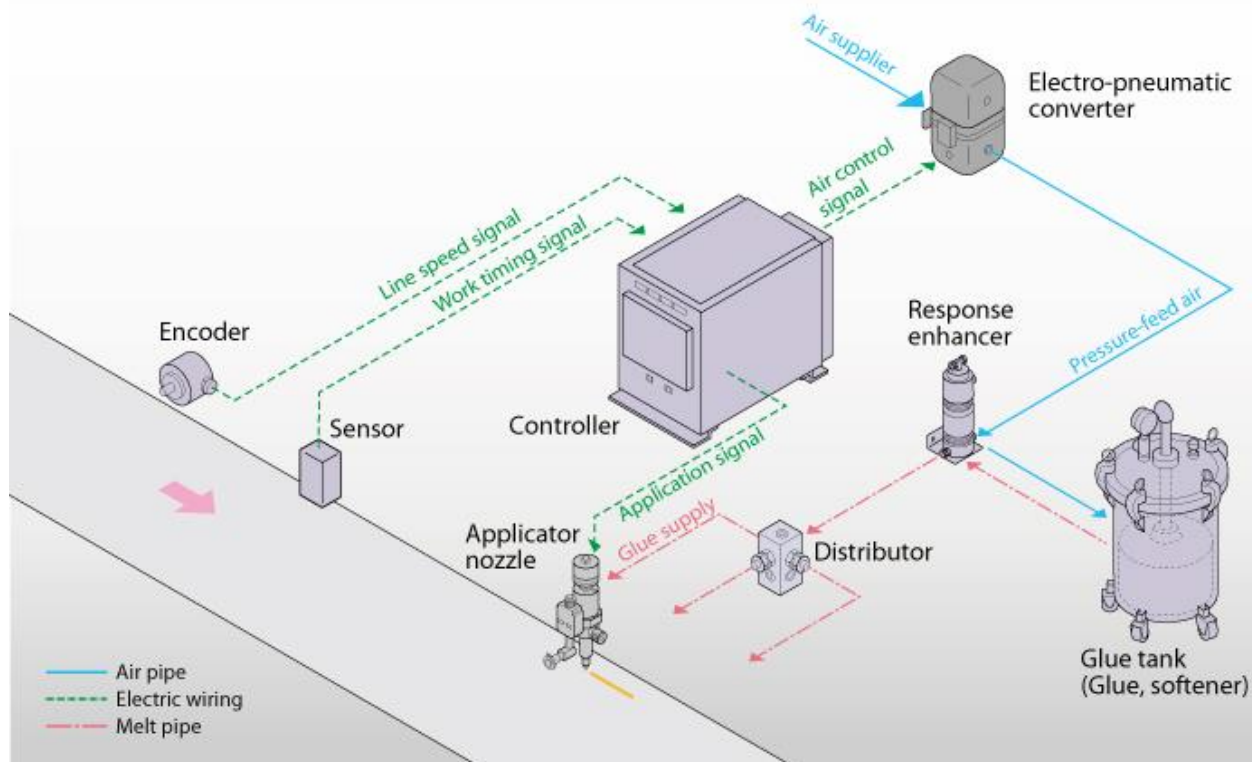


Figure 12: (NireCo)

The figure above shows a NireCo cold gluing system, it features a controller that has been coded to direct each individual machine to do a specific job. This enables the production of the journals to become massively efficient, as I found that gluing the synthetic leather to the book and gluing in general was by far the most time costly step of the production. More so, in a commercial sense, time is money, and time wasted on the production line that could have been used for other products or to get the product out to the customer as quick as possible to ensure customer satisfaction is crucial. Therefore, steps such as the system above must be implemented in order to make the overall manufacturing process more efficient when applied to a larger scale.

To the right shows the glue would be coded to be administered, the methodology is simple, the least amount of glue needed to create the best and most structurally integral connection between the leather and the cover of the book. In an automated process like this at the commercial level, the fine margins can turn into profit if

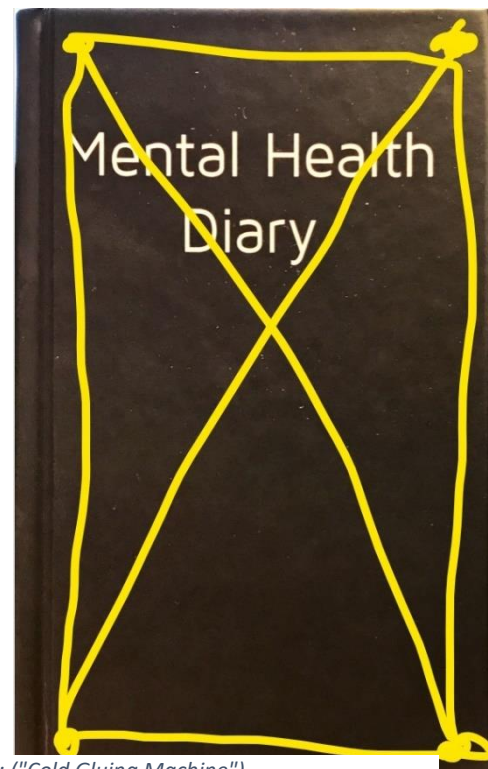


Figure 13: ("Cold Gluing Machine")

managed well, which is why I tried to cover the most surface area of the book and hit the cardinal point corners in order to create a lasting hold without compromising on the minimal amount of glue being used. The yellow represents where the glue will be, forming a simple x, with more glue accumulating at each corner to hold down the leather. It is important to note that the layer of glue must be fine, so that the book itself does not feel uneven or bumpy.

The small machine to the right is another cold glue applier that is suitable for book binders and costs 3,677 pounds, or \$4740.

Cutting: For my original product, I cut the papers and faux leather pieces into the appropriate size by hand using a guillotine cutter and a ruler to measure. However, likewise to the adhesive technique before, its feasibility goes down as the amount of cutting goes up. The solution to this is using a commercial cutter that is automated and can do the task at hand faster, because as proven before, efficiency equals more production, which equals more money, which ultimately is the end game in every commercial manufacturing process.



The machine that I would use is the Cricut Maker, a cutting machine that is suitable for both synthetic leather and paper and will do both with great ease and efficiency. The price of this is \$350, which is a one-time cost, which will quickly get its return on investment with the speed in which it completes its job, and its ability to create more of the product in question which can then be sold to pay for the initial investment of this machine. The leather would have to be cut at the dimensions of the book 13x21 cm, which a little room over to fold into the cover, but not too much that it would stop being taut. The 2 sides to the 13x21 cm cover plus the 2x21 cm spine mean that there is a surface area of 588 cm that needs to be covered. So logically about 600 cm of leather should be used for each book, and that will allow some room for error, and also to fold into the book.



Figure 14: (Cricut)

Stapling: In my original manufacturing process I used a “regular” hand stapler to fasten my pages together before it was joined to the cover, however one of the main improvements I took from my Criterion D feedback was that I needed to make the journal itself longer, as it was 50 pages in the model, and would need to be closer to 150-200 pages to be more substantial and ensure a longer product life cycle and customer satisfaction. To fasten a larger number of pages I would need a more efficient method of stapling, and one that could do with a greater amount of pages. My solution for this would be to use a bigger swingline heavy duty stapler, such as the one to the right. This type of stapler is \$19, as opposed to a regular stapler being \$5-10 (“Swingline Heavy, Duty Stapler,”). However, it can staple 200 pages at once, making it largely more efficient than the regular manual stapler, this is crucial to saving time and ensuring product quality, as a regular stapler would have to staple smaller groups



Figure 15: (“Swingline Heavy, Duty Stapler,”)

of pages and then join the individual groups together, making it harder to flip through the pages itself.



Figure 16: (Xerox)

Printing: One more aspect of commercial production that needs to be considered is mass printing. When producing my prototype, I simply used the color printing ability of the printer at my school, however, the color of the pages and the dimensions of the pages had to be selected individually, which slows down the printing and production process. Therefore, I would need to streamline this by implementing a more efficient printing solution. The printer on the left is an option that can be considered, as it can print 125 papers a minute, and over 700k pages a month, a massively efficient printer that would be able to churn out multiple books and also bind them together with ease. However, a system like this also costs a lot of money, and this printer costs \$53,400 (Xerox), a very hefty initial cost that would take a lot of journal sales to break-even

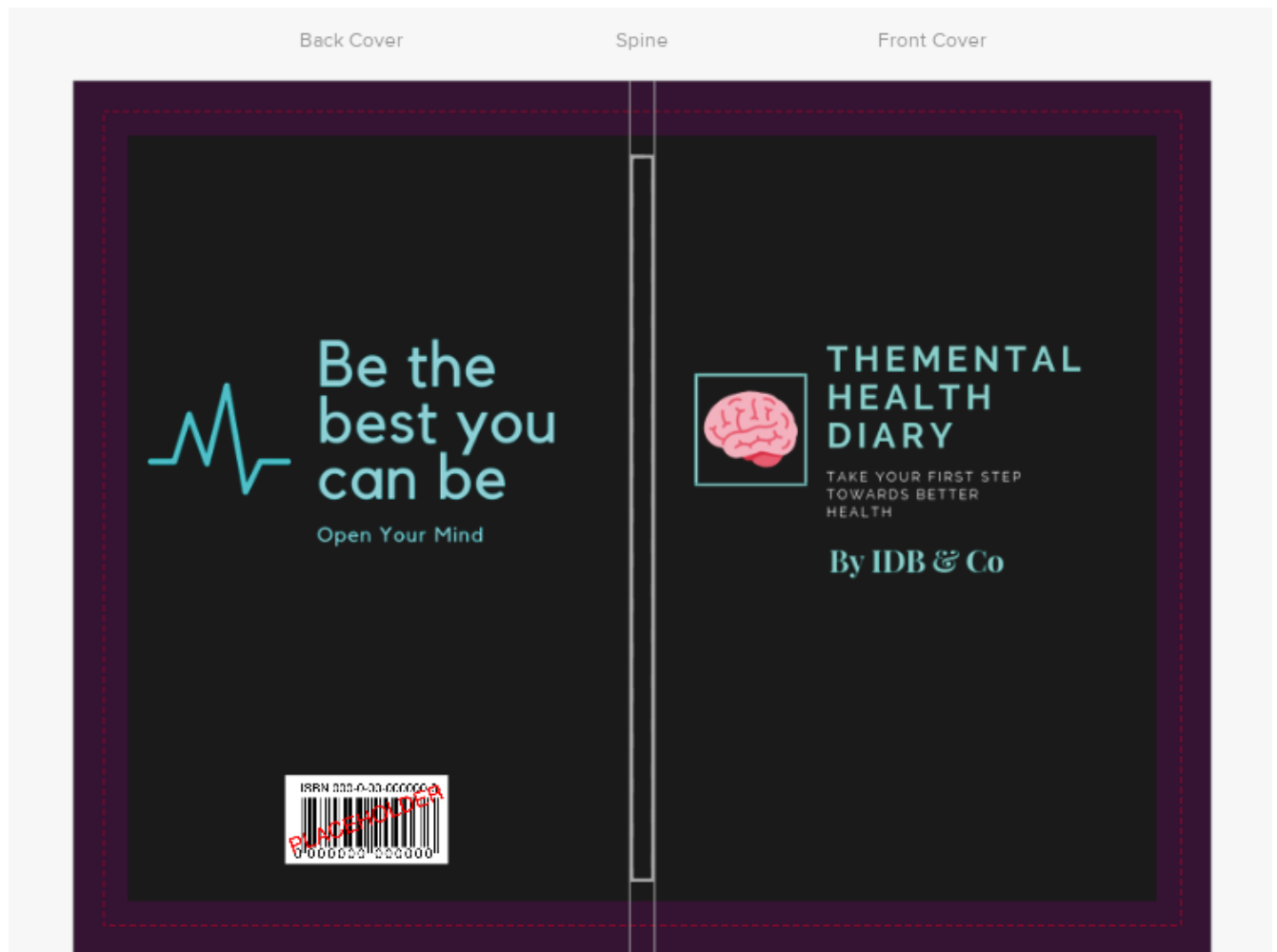
and make it profitable, but it can be argued that the speed in which it prints can also make it “pay for itself”.

Explains design modifications to the solution required for commercial manufacture

Like discussed before, I would want to change the product in 3 main ways:

- Change the cover of the product to include some more branding, and more individuality.
- Change the manufacturing processes to make it more efficient to produce.
- Change the number of pages that will be in the book itself.

The second and the third have been detailed in the previous pages, but the main thing I would like to focus on is the outside of the book and changing it to garner commercial appeal. In a commercial setting, it is important to note that individuality will yield more sales, because people are more likely to notice this product, and therefore buy it if it catches their eye. Therefore, I would like to design a completely new cover, before I simply used the synthetic leather to provide the accent for the cover, but from client feedback I concluded that this approach was flawed, because although it conveyed the one off, and home made craft look that I wanted, it did not stand out enough, and therefore would be harder to market. To fix this issue, I used the bookwright application from Blurb, and put my branding on the front of the journal’s cover, and a small inspirational message on the back, that is both aesthetically pleasing and minimalistic per customer requests and requirements.



Above shows what a possible cover could look like, with a more individualized look, due to the branding being shown on the front. It also adds some more flair to an other wise dull book, and attracts customers with an aesthetically appealing outside design.

This type of branding would have to be stamped on using a custom branding iron, that would have to be purchased at the start, and then used for each journal to provide a unique, high quality finishing touch.

The parts itself of the product would remain relatively the same, as a book keeps its structural integrity and its basic form and function when produced in masse, however, it is important to note that due to the streamlining of the production process, the “hand-made” and one off aesthetic appeal of the journal itself is lost, and a uniformity which would be reached which can be less appealing to some users. To combat this, I would implement a rough look, and subject the synthetic leather to some weathering to make it seem more used, and thus create a unique form.

Justifies an appropriate target sales price

To find an appropriate sales price I must first see the net price of how much the product costs to produce, and then find a price that matches the profit margin that I want to attain. The

underlying assumption is that I would like to sell 2000 pieces of this journal, and that is what I will be calculating the price with. The numbers below are for one journal cost to produce.

Material/Component	Price	Notes
Cardboard	\$0.10/Sheet, 2 sheets needed = \$0.20	6"x9" Cardboard Pieces, when bought in bulk is cheap
Polyurethane Leather	\$1.5 a meter, 3 6 Meters needed = \$9	Bought in bulk of 500 Meters
Book Paper	\$1370 at bulk for 200,000 individual papers, so \$0.00685/paper, and then multiplied by 150 for one book = \$1.03 per book	Each book will have 150 pages in the Newer iteration, and therefore we would need to buy 2000 (Target Products Sold) x 150 which is 300,000 papers.
Staples	\$8.09 for 25,000 staples = \$0.0003236/staple x 4 per book for binding = \$0.01 per book	Very cheap when bought in bulk, practically a nominal cost that is a one time investment of \$8.09 to cover all the books I would produce

Total cost of all Materials = **\$ 10.24**

This is the cost of simply the raw materials per book, now adding on the cost of the manufacturing processes, to find the price the manufacturing processes will add to the cost of individual production, I will take the total price and divide by 2000, the number of projected books being sold.

Manufacturing Process	Price	Notes
Adhering (Gluing System)	\$4740 for New Cold glue Applier/2000 = \$2.37/book	
Cutting (Cricut Machine)	\$350/2000 = \$0.18/book	Good investment, as it is cheap per book and does not drastically change the price.
Stapling (Swingline Stapler)	\$19 to purchase/2000 = \$0.01	Nominal investment to speed up the production time
Workers	\$7.25 USD/Hour, estimate around \$0.25/book	Federal Minimum wage for America

Total price of manufacturing = **\$2.81**

Total price of manufacturing plus materials and workers = **\$13.05**

Now that we have established how much it costs to produce one of our products, we must look at the competing products to gauge the market and how much the price would be for an appropriate product to penetrate the market.

Refer to Criterion A for the Images and more expanded write up about the product.

Resilience Diary 2019: 35 AUD = \$25.22

Purposeful Planning Diary: 10 Pounds = \$12.90

These are the two main competing products and the corresponding prices, it is important to note that both have troubles shipping it overseas, which raises the price significantly for those in a

commercial sense. The Purposeful Planning Diary is significantly cheaper than the resilience diary, but compromises in form with a gaudy cover that looks unprofessional. The Resilience diary is significantly more aesthetically pleasing but is also almost doubles the price. I would like to target the market in between both diaries – I combine the form of the Resilience Diary's luxurious looks, and the affordability of the Purposeful Planning Diary.

For this product I want to keep a gross profit margin of at least 25%, which for this product is \$3.26 so an approximate price of \$16.5 for the entire product. I need the price to be under \$20 to be less than the competing product such as the Resilience Diary, and also to meet customer requirements, as established in the market research in Criterion A. There was a lot of tentativeness to pay over \$20 for this product, and to ensure corporate success, I would have to keep it under that line.

Target market & Audience: The target audience and market for this is primarily students, most of which in University and High school, and therefore do not have a large disposable income. Therefore to cater to my target audience, I would have to keep it as cheap as possible, while still keeping a profit.

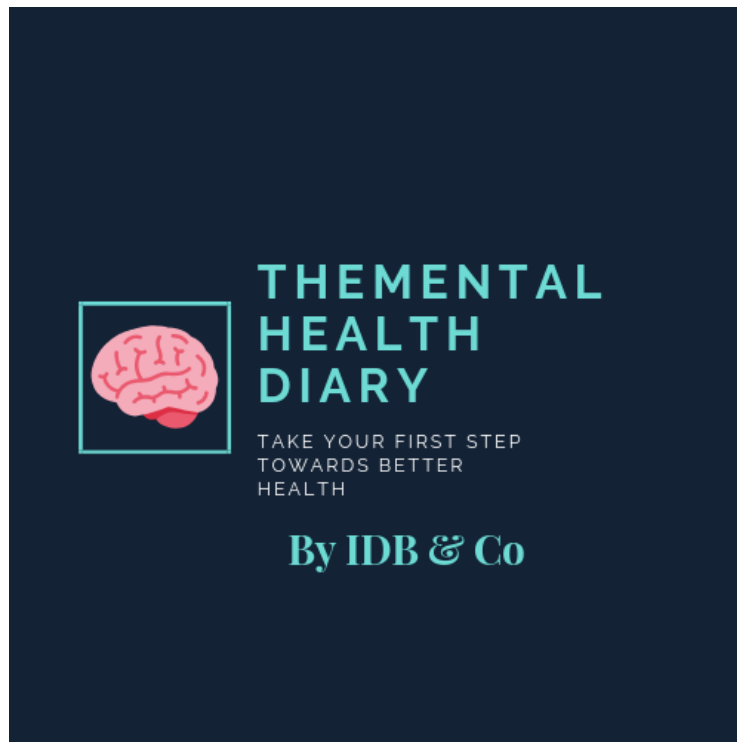
With all the factors above in mind, I would like to make the 25% gross profit margin and price my product at **\$16.50**, this pricing is competitive with the competing products, at \$25 and \$13, and delivers on quality and requirements set by the customers and users in my target audience.

Discusses appropriate promotional strategies for the solution

Keeping the target audience in mind, a younger demographic, I would like to advertise by broadcasting my product in places where younger people spend a lot of time – social media. To do this I would create 2 ads, for 2 different popular social medias among teens, Instagram and Twitter. This would reach a large group of people and be able to diffuse over my target audience with ease.

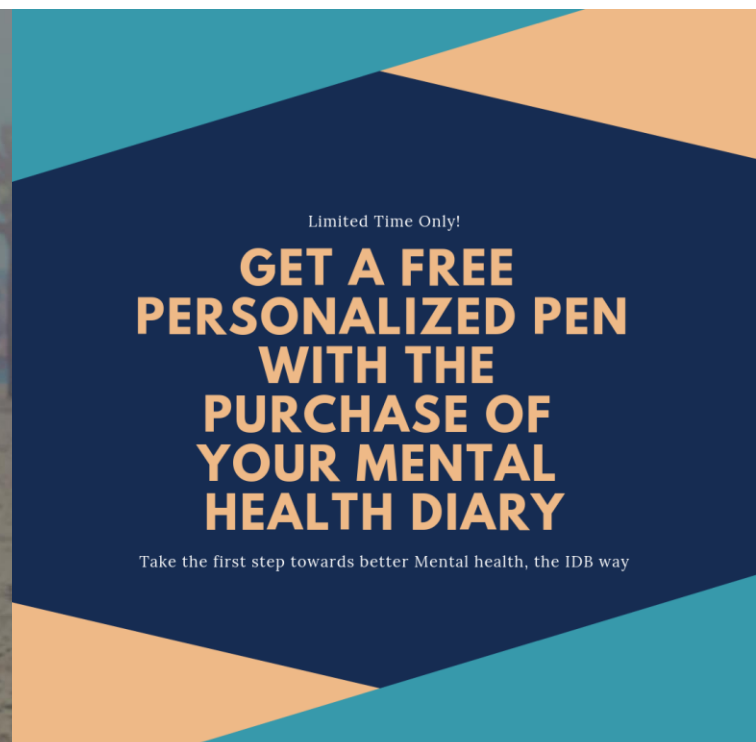
First, I would create my branding, something minimalistic, yet memorable. The result is pictured below. This sleek branding could be added onto the cover to make it have a little bit more “pop” and also be recognizable as a part of this brand.

Below the logo is a potential Advertisement, featuring an incentive to the buyer if they were to buy my product at the time, and get a personalized pen. This appeals to a younger buyer who wants instant gratification for their purchases. More so, it allows the buyer to feel like they got their money's worth which increases customer satisfaction, and creates a loyal brand following. The advertising would be strategically placed on pages that college students frequent such as humor pages, sports pages, beauty pages, and college social media pages themselves.



This logo is clean, visually appealing and informs the reader of what they can expect out of the product in a short memorable phrase – “Take your first step towards better health”, which is a sentiment repeated at the start of the journal.

Below are the two Advertisement types, as stated before, they appeal to a younger generation that would want to feel like they are getting their money’s worth and thus would want sales and rewards.



I would also distribute my product to social media influencers, such as Models, Rappers and Athletes, who would endorse my product, and create more buzz about the release of this product, creating a small userbase, and creating the initial market penetration. The power of suggestion is massive among younger crowds, and seeing famous people that they respect and aspire to be like using this product will convince many people to purchase the product.

Gaining Money:

I would put my money on a crowd funding website such as go-fund me, and would be able to garner support to fund the initial take off of the product, and also to gauge the initial market of the product and get a rough estimate on how many people would actually buy the product. Because this product is attempting to solve a larger sociological problem, people who share experiences with depression or mental health problems and want to help make a change would be willing to donate, and this has been shown by the plethora of movements and products that have been crowd funded through sites like gofundme.com.

Break Even Point

The initial costs of the products is:

System	Price
Adhering System	\$4740
Cutting Machine	\$350
Stapler	\$19
Final Initial Cost	\$5109

Each Journal yields \$3.25 of profit, so by dividing 5109 by 3.25, I find that I will need to sell **1572** Journals to break even on the initial costs, and everything after that point would be pure profit.

Cost of Prototype against Commercial Product:

The final cost to make the commercial product as shown above is **\$13.06**, however, it was a drastically different cost when I was making the prototype by myself, the cost breakdown was the following:

Material/Component	Price	Notes
Cardboard	\$1.99	A Meter
Synthetic Leather	\$6	A Yard
Staples	\$6	1000
Bookbinding Glue	\$4.83	A Bottle
Paper	\$5.29	100 Sheets
Total Cost	\$24.11	

Also worth noting that I used the guillotine cutter, x-Acto knife, and stapler that was located in my school workshop, which also would have been a variable cost if I was to be manufacturing this product independently with no tools. With those considered for the individual prototype, there would be an additional cost of **~\$62.98** to manufacture, plus the \$24.11 bringing the cost to make the initial prototype at **\$87.09**. As seen with the price to make the commercial product, which is \$13.06, the prototype was roughly a 184% increase from the commercial product to prototype, highlighting the necessity of optimizing a manufacturing process for commercial use.

Research strategies of competing products:

The Resilience Diary from Criterion A markets their products primarily through Social media, with Twitter, Facebook, Instagram and Reddit Accounts. They publish ads, similarly to the ones I have created in order to market their product. However, their marketing is more directed towards Women, and especially those of a middle age 25-40. I am attempting to market my product to a different market segment, and therefore would need to broaden the way I would market it, one possible way to do this would be by advertising my product on University Portals, this is a location where a lot of students and consumers that fall in the market I am targeting

would frequent. By doing this, it directly raises exposure to those that I am targeting, it would look like the following:

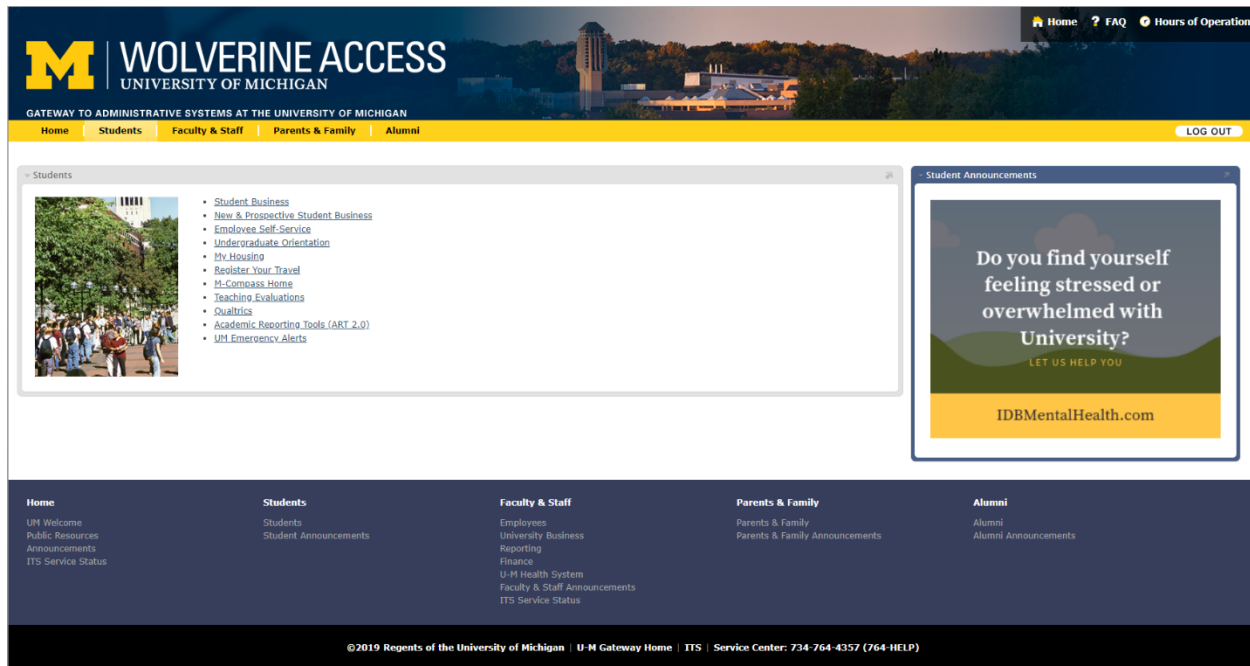


Figure 17: (Made by me)

Note the ad on the right of the screen, simple, yet effective.

Due to the product being aimed at a young demographic, I would sell it exclusively over the internet, as younger buyers are less likely to go to a brick and mortar store and buy a book, as shown by the closing down of Barnes and Nobles and massive book stores all across America. The physical book could be advertised in University Portals like the one above and also prescribed by Doctors if subsidized.

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