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General Plan + Schedule

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Dec 21, 2024

- This is my general plan for my project and timetable. ~~and~~
- Basically I want to write about some things I want to keep in mind and do during the project here.
- After reading all the rubrics and the ~~whole~~ whole booklet we got in ~~the~~ school, this is ~~how~~ I would like ~~it~~ to do: ^{what}

1. Make sure I write everything down in ~~in~~ this notebook to capture all details, references, data, ideas, and much more.

- I believe that the journey is more important than the destination. In the context of my project, this means I'll value the process, ~~the~~ and ideas throughout.

2. I ~~don't~~ haven't decided a topic yet but what I do know is that I want my topic to have a purpose, and ~~be the~~ ~~me~~ a meaningful and impactful ~~sub~~

impactful 6
and a meaningful, and impactful message. I want my topic to be something that is something that connects to me deeply.

3. I'll ensure that all my information information ~~is~~ has been credited, comes from reliable sources, ~~has~~ has been cross-checked, and full understood by me.

- This is highly important as there is a ton of misinformation and even disinformation out there.

4. I want to work on my project consistently. What I mean by this is that I ~~was~~ want to work on my project in small small chunks frequently, not like doing a lot one day and not doing anything for a week.

- This will keep me organized and on track.

5. I want to be really thorough with my research and scientific method, not leaving anything behind.

Dec 22, 2024 — Seedat's Schedule —

- I want to be adding something to my project and developing it as ~~much as~~ frequently and consistently as possible.
- ⇒ • My Plan is to work on my project Saturday and Sunday as I have the most time on the weekends as I don't have school.
- Plus, ~~everyday~~ ^{every weekday} I don't have any homework. I usually don't have a lot of homework so this should work out pretty good for me.
- I want to be recording my research and procedures as I am doing them to increase accuracy and efficiency.

• ~~I~~

Brainstorming Topic Ideas:

9

Dec 24, 2024

1. About water. Testing it to see what nutrients, chemicals, density, Ph level it has and filtration techniques. All of this will come to a conclusion of which source of water is the best. For example (boiled water, normal tap water, ~~bottle~~ bottled water, or water from melted ice prepared at home

~~I like this because~~ I came up with this topic because I was inspired by a guest speaker who came to our school and taught us some really interesting facts about water.

2. Study on stem cells. stem cell make cells of various types, like the can make muscle cells or blood cells.

• They are believed to be able to treat many diseases.

• These could be a big break through for medical science.



From "<https://my.clevelandclinic.org/health/body/24892-stem-cells>"

3. How temperature of the water affects plant growth. I have wondered often that what the water temperature should be when watering plants and could ~~do~~ test this for my project.

Dec 26, 2024 4. Aeroponics.

- process of growing plants where no soil and minimal water.
- I could do this as an experimental on study project
- As the plant is more exposed to air it gets more oxygen.
- I found this really unique.



From "<http://en.m.wikipedia.org/wiki/Aeroponics>."

→ If I am going to this topic as my final topic I'll make sure to use ~~or~~ more sources and fact-check all the information from wikipedia as anybody can edit it.

5. Ayurveda.

- a type of medicine, practices, and remedies that originated in India, using yoga and herbal medicine.
- an ancient form of healing the body internally
- I could do a study project on the main principles behind Ayurveda and how it is similar to, or differs from modern medicine

From: "<https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/ayurveda>."

6. Myopia

- what ~~myopia~~ factors can cause myopia
- what exactly happens in the eyes that people ^{will} me and help see far away things but ^{and so this} me understand blurry. ^{is relevant for} this condition
- Can screens cause myopia any better, and if so, then why, what is the science behind it and
- what technologies can help with myopia.

7. Physics and Psychology behind music

- why does the music we listen to sounds and felt feels the way it does?
- how ~~were~~^{do} notes, chords, scales, melodies, and full ~~piece~~ pieces fit together and sound harmonious?
- how does the physics of sound relate to music theory
- How does music convey emotions?
- I am a musician who loves music theory and, science, so and the physics that lies behind music, so this topic is perfect for me.
- Also, the math behind ~~mus~~ music

Dec 28, 2024 → So, far my favourite ideas were about myopia and the math and science behind music!

→ I think ~~are the ones~~ these ideas are what I am going to narrow down to

→ The ~~division~~ division the topic about Myopia will come under "Life and Health Sciences" and the topic will be "vision/ophthalmology" and "Technology"

→ I am not 100% sure about music though. I believe it will come under "Maths Mathematical Science" and "Phs Psychology," but I am not sure about the division it'll come under.

→ I will ask my school Science Fair coordinators & after school opens.

→ ~~If I can't do music~~ If music doesn't fit in the divisions, then I'll do vision.

→ Why I decided these topics and ← how I came up with them.

- I have noticed how screens are ~~ca~~ causing and worsening myopia more than ever and we need to do something about it.
- I know that having myopia can be really tough and want to help those with it especially those with chronic nearsightedness.
- I came up with ~~this topic~~ the music topic as learning about the harmonic series while reading the book...

"The Guitar Handbook" by Ralph Denyer, opened my eyes to the ~~wonders~~ wonderful astonishing physics behind sound and how it applies ~~this~~ to music.

- I decided to do this topic as I am ~~passona~~ passionate about music and want to share the concepts results I find with others.



Harmonic series ^{is} the ~~f~~ series series of frequencies that are present in a single note. For example if you play a C note on a piano it will vibrate twice its frequency, thrice, four times and so on & simultaneously. The volume of these 'overtones' "harmonics" can vary which is the reason why different instruments sound different.

From "The Guitar Handbook" by Ralph Denyer.

I decided I came up with the topic of myopia as I want to spread awareness and find practical implementations we can make collectively to ~~sto~~ reduce myopia rates as myopia is becoming increasingly common.

- When I got glasses, I started to notice how many people have glasses.

I wanted to learn more about it and be able to understand this condition, my personal experience and ~~others~~ others' experiences much better.

Jan 14, 2025

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• Today, I decided to switch my topic from the "physics & maths behind music" to myopia (focusing on an environmental factor of myopia because I read in a article about science fair and it said that ~~it~~ our topic needs to include a ~~testable~~ testable question, not a scientific idea.

• So, then I tried to brainstorm some testable ~~questo~~ questions about music based on the background research I did.

• I couldn't find many resources or any good info on any of the questions I had brainstormed so that is why I am gonna start my background research on myopia tomorrow!!

Background Research

21

Jan 15, 2025

- Today I research & learned about the anatomy of the eye from:

- I took notes

- The way I found the article is by the following step

1. Searching "Eye anatomy" on google

2. Clicked on this website as I have referred to BYJU'S before and know from previous research on them, & that they are known to be a reliable sight

3. Fact-checked from other sources

4. I did ~~this~~ this to ensure that the info is credible and to gain knowledge on the eye so when

learn about myopia; I can understand that better

Sources: ~~St~~ Structure and

① Functions

of Human eye
with labelled

diagram - byjus.com

← Jun 24, 2021

Link: ~~byjus.com/phys~~

Link: byjus.com/physics/structure -
human-eye - functioning/

Citations included

← ② Eye Anatomy: Parts of
the human eye

- Updated on Oct 23, 2024

~~Link: visioncenter.org/~~

Platform - vision center
center

- Written by Vince
Ayaga

Link: visioncenter.org/eye-anatomy/

Medically Reviewed
by Dr. Melody Huang
O.D.

Jan 18, 2025

- Today I did research on myopia and vision (how an image in the eye is formed, different types of lenses from the Science Textbook:

"Science in Focus 8"

- Unit 2 - Light & Optics

→ I read primarily the parts concerning vision. (Mostly Topic 4 starting from Pg. 209 today)

- ~~This web~~ This ~~expands~~ builds on my knowledge of the eye anatomy and gives me a smooth transition between ~~the~~ eye anatomy and myopia

- This is the textbook we use in school, so that's how I know about it.

Science Focus 8, Authors: Lois Edwards, Jacqueline Martin, Richard Silier
Published: April 6, 2001 by
McGraw-Hill Ryerson

Jan 20, 2025 • The process of finding the site is in "Method."

- Today I did research on about myopia, what myopia exactly is and what causes it

- The source I used is ~~the~~:
Link: opto.ca/eye-health-library/myopia-nearsightedness
~~ness~~ nearsightedness

Platform - Canadian Association of optometrists

Name of ~~webst~~ website:
Myopia CNearsightedness

Last Updated: Sept 16, 2024

Citations included

- I did this research because to build my foundational knowledge on myopia.
- ~~I found this site by the same process I found the~~
• ~~the process of finding this site is in metho~~

Jan 22, 2025

Today I researched from these sources:

1. Youtube channel name: Vox
Title of video: "Why so many people need glasses now."

Posted: March 7, 2023

2. Platform name: BC Doctors of Optometry
Optometry "

Video name: "Can myopia be cured"

By - Dr. Pianna Leong

3. ~~Yd~~ Youtube channel name:
Micheal Chua, MD

Video Title - Why ~~everyone~~ is Everyone
Going Blind? The UGLY TRUTH
~~behind~~ behind the myopia epidemic.

From a doctor licensed in the US

I learned a lot about "The
myopia epidemic" and ~~its cured~~
way we can prevent it.

Jan 24, 2025

Today I researched
about the eye anatomy
again

TV show name

Source: Bill Nye The Science
Guy

Episode about the eyeball

Released - 2009

- I ~~so~~ wanted to have another resource about the structure of the eyeball, so I used this source.
- I know that this source is ~~a bit~~ 14 years old, but I know that it is a reliable source as we watch Bill Nye's videos in school as well, and have more recent sources about the eye's anatomy too.

Jan 25, 2025

Today I researched
about ~~me~~ from the
source

Myopia focus

- Myopia focus . org

I read the sub sections :

1. Childhood Myopia
(all the sections within
it)

2. Myopia Management
(all the sections
within it)

- This gave me a more rounded
perspective on myopia.

Jan 26, 2025

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Today I researched
from:

Podcast name: The myopia podcast

Published: Jan 25, 2022

By: Dr. Eef van den Worp

Episode: #18

Name of episode - #18 Dr. Eef van
den Worp: Preventing Myopia Before
it starts

Runtime - 27 mins

And the podcast from Health 911 -
The Myopia epidemic and you,

Posted: Apr 23, 2022

28
Jan ~~27~~ 2025

Forming Testable Question

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Today I Brainstormed
some testable question
I can research on
further:

1. How do screens affect myopia?
2. How does near work affect myopia?
3. How does geography affect myopia?
4. How does ethnicity affect myopia?
5. How does sunlight affect myopia?
6. How does light exposure affect myopia? (LED, Incandescent, Fluorescent, Sunlight)

My favourite one so far is
"How does near work affect myopia?" as it is specific enough
so my research stays focused
and broad enough so I
find plenty of resources
on it. ✖

Jan 28, 2025

Main Research

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Today I research
this site

Link: [Jphysiolanthropol.biomedcentral.com/article/10.1186/1540101-024-00354-7](https://jphysiolanthropol.biomedcentral.com/article/10.1186/1540101-024-00354-7)

Journal of physiological anthropology

Study: ↳ Article name: The influence of the environment and lifestyle on myopia

Jan 29, 2025

Today, I wanted more resources and information on the topics about what is myopia (to ensure even more reliability by more fact-checking), factors affecting myopia and such.

2. Sites: cbc.ca/news/canada/excessive-screen-use-eyes-myopia-1.681587



Excessive screen time is changing our eyes

faster than we can blink

By: Yvette Brend

Posted: Apr 2023

Last updated: Jun 23, ~~2023~~ 2023

Oh, Also to delve deeper in the controversy of if screen time affects ~~the~~ myopia more than just other ~~non-screen~~ non no screen related near work.

↗ (changed routes, doing screen time instead)

Site: ~~screen~~

2. Link: youtube.com/watch?v=JZKK70583sw

News video name: Screen time increasing risk of myopia

News Channel name: ABC 15 Arizona

Posted on youtube: Jun 5, 2023

3/

Notes:

- 65% of Americans will be near-sighted by 2050!



3. Debunking Myths: Can Screens (really) Damage Your Eyes

Youtube channel: Doctor Eye Health

Notes:

- near work affects myopia
- being indoors also ^{conclusion}
- there is no specific ~~research~~ about if screen time affecting eyes rather than let's say a book
- the younger a person is the more near work would affect them
- the sun has a lot of blue light
- looking at the sun can cause macular degeneration
- studies conducted on blue light were done on retinal cells on a ~~pen~~ petri dishes

- which is different than living cells in our retina
 - computer vision syndrome (eye strain)
 - blinking rates reduce by 2 to 3 times when staring at a screen and the eyelid doesn't fully close
 - there isn't good research on this topic
 - our ability accommodate reduces with screen time especially with smart phones
4. Screens are NOT the reason kids need glasses

Youtube channel: Minute Earth

Posted: Mar 1, 2022

Notes:

- our eyeballs are short till age six (they grow until then) and then they should stop with growing to have eyeballs ~~the~~

axial length just right
for clear vision.

- with more near work
the eyes have to accomodate
and the eyes grow longer
to be able to accomodate
less

Jan 31, 2025

Today, I wanted
to carry my research
on about screen
time and myopia.

Sites:

1. Do BLUE LIGHT GLASSES
work? Fact or Fiction

Youtube channel name:
Doctor Eye Health

Posted: Feb 18, 2020

Notes:

- blue light affects our sleep

- blue light affect retinal cells ~~with~~ which communicates with the pineal gland in the brain.
- Pineal gland produces melatonin (sleeping hormone)
- blue light helps with night-time screen time
- turning on a night mode on the device
- solar retinopathy (~~when~~ occurs if someone stares at the sun for too long)

2. Blue Light Glasses -- A Waste of Money? Explained by an MD

Youtube channel name # Micheal Chua, MD

By - Micheal Chua, MD -
Ophthalmologist, Parente
Hills Eye Care

Posted: May 31, 2022

Notes:

- seems a bit biased, but facts are fact & checked
- studies that were conducted on human eyes showed no clear evidence on blue light affects eyes
- blue light affects the circadian ~~hythm~~ rhythm
- UV light blocking sunglasses help protect eyes
- Reminding yourself to blink
- ~~tear-drop~~ artificial tear-drop eye drop
- turning on night mode on devices

Feb 2, 2025

Today I wanted to do a little more research on blue light as I found it interesting and has a lot of debate around it.

1. Here's What Blue Light Actually Does To Your Body

Youtube Channel - Doctor Mike

posted: Sep 13, 2020

Notes:

- blue light disturbs sleep
- 20/20/20 rule
- macular degeneration - (the centre part of retina) if this part gets damage you loose your central vision
- high blood pressure affects vision

2. Computer Glasses VS Blue Light Glasses (Which Do You Need?)

Youtube channel name: Doctor Eye Health

Posted: Jun 2, 2020

Notes:

- Computer glasses with a magnification power to relieve eye strain
- or a low power reading glass
- magnification ~~is~~ glasses for computers
- reading glasses are more for closer ~~dev~~ devices - like smart phones
- computer lenses with blue light glasses are available.
- Usually
- It is optimal to see a local professional to find the best glasses
- the older someone gets the less they can accommodate
- Usually, (someone who doesn't have hyperopia) $+0.25$ D or $+0.50$ D computer glasses are used.

Feb 3, 2025.

I want to research more about the science and current scientific knowledge on near work and myopia for some time now.

- I do have some existing knowledge on this topic from ~~the~~ all of the research I have done so far.

- eyes have to accomadate
- ciliary muscles get tired from prolonged near work.

- Also something about the research that I am doing is that a lot of the times I aim learn about one thing and also learn about another simultaneously, so it's hard to have a clear "this is what I am researching" sometimes."

1. The myopia myth by Donald S. Rahm.

Chapter 1. What is myopia

Chapter 2. How myopia develops

Notes -

- Interocular pressure (IOP) is the pressure of the fluid inside the eye
- when the accommodating the ciliary muscle pushes on the choroid
- this causes the eye to ~~stretch~~ stretch
- children are born far-sighted (with short eyeballs)
- the first 3 years ^{of life} or so of the eyeball growing is rapid and gains almost to the proper size (called the infantile period)

- from age 3-13 the eye goes through a slow slow growth called the definitive or juvenile period - final changes in vision

- eyes grow longer so they can handle more close work

- young children have to accommodate for far away?

2. My kids Vision - All about screen time and close work

- screen time recommended for kids under 2 - 0 hours

- 2-4 - 1 hour

- 5-17 - 2 hours of screen time for fun

- 20/20/20 rule

- ~~that~~ "children exposed to before age 3 are more likely to have developed myopia by pre-school age."

- bad posture could lead to neck pain

3. Visual symptoms Treatment centre

Feb 5, 2025

Today I read the website:

- The science behind myopia

- Nov 7, 2017

- Britlany J.

~~link~~ Platform - National Library of medicine

- sections - Intense outdoor light protects against myopia
(was a bit difficult to understand)

Feb 6, 2025

Today I found another interesting site on Myopia

- Is myopia more genetic or environmental.

- I got some nice stats from this site
- Also submitted the Ethics & Due Care ZA.

Method

43

42

Jan 15, 2025 - My method for background research is:

- Find ~~re~~ reliable resources for eye ~~and~~ anatomy, myopia (general) causes of myopia, why myopia rates are increasing, and how light enters the eye.

- To ensure that the resources are reliable, I search

- I search the platform ^{of the source} if it is on ~~googot~~ google to see what other sources say about it

- Fact-check

- if ≥ 2 other sources say the same thing.

- state the same thing

- ~~Keep in mind who~~

- Find out who the writer(s) of the source are and

- if ~~it~~ what biases / opinions might they have and

- ~~include~~ contain in the source

keep in mind:

- the amount of bias

keep in mind:

- whether or not citations are included.

- the source is recent (~~within~~ (not longer than (not older than 5 years ago, ~~preferred~~) - up-to-date info.

- I carefully note down the source and below that, make notes about what I found important, relevant, interesting, etc. Making sure my understanding is accurate and thorough by reading or listening/watching the source a few times and ask my parents or teachers if I have questions about it.

Mar 5, 2025

I want to write about
~~was~~ write about my
method for my main
research a little bit
here.

My main research's method was similar to my background research except some tiny details. For my main research, I focused on going a little bit more in depth rather than going more depth broad. I focused more on (for researching near work's affect on myopia and myopia control) the different theories or facts (if they support each other or contradict) to be able to formulate a well-rounded conclusion later on.

• More info for my method for the data section for my project on Pg. 65-67 of logbook.

Feb 8, 2025

Hello, Today
I found this really
cool ~~webst~~ website (klog)
on the types of myopia
which I found
really interesting and
meaningful.

Platform - Optography

Link: optography.com/types-of-myopia/

Notes:

1. Axial myopia - Most common

- due to the increase in anteroposterior length (front to back) length of the eye

2. Curvatural myopia - • due to increased curve of the lens or cornea or both

3. Index myopia - increased power of the lens

- accor

- associated with old age and cataracts

- Pseudomyopia -
 - caused by ciliary muscle spasm
 - temporary

Feb 9, 2025

Today, I wanted to research about Myopia control and management.

Treatment options + technology

myopiafocus.org/what-is-myopia-management under myopia management

I also got fact-checked the information on types of myopia from this site as well.

Notes:

- Hyperopic defocus blur
- with peripheral defocus lenses it creates a ~~blur~~ blurred image in ~~the~~ retina and

Peripheral retina, and creates a clear image in the central retina (slows down axial elongation)

- this ~~to~~ is what happens in special soft contact lenses too.

- Red light therapy
 - the exposure to specific wavelengths of red light helps thicken the blood vessels underneath the retina (the choroid) which slows down axial elongation
 - there still needs to be more research done.

2. Role of Atropine in the control of Myopia progression - National Library of Medicine

- read the conclusion just to get an overview

Notes:

- higher concentration of atropine was most effective

3. My Kids Vision

- How do control soft contact lenses work

Notes:

- makes the light rays in the peripheral retina to be in front of it.

Feb 11, 2025

Today I want to continue my research on myopia control options.

1. How to Control Myopia Progression in Children | Myth Debunk & Methods explained [video]

~~Yout~~ Youtube channel: Mommy Dear

~~posted~~ Posted: Apr 22, 2020

Notes

- standard lenses causes hyperopic defocus

- bifocal lenses
- ~~half top~~ top half (distance vision)
- bottom half creates peripheral blur (reading prescription as well)
- atropine was traditionally used as dilation drops
 - ↓
 - could slow down myopia up to -0.98 D over 2 years
- one drop ~~in~~ ⁱⁿ each eye every night
- orthokeratology
 - lenses ~~for~~ flattens the ~~blue~~ cornea and creates peripheral
 - could lead to a sight-threatening disease
 - helps ~~see~~ to see nicely in the morning

Soft contact lenses

- FDA approved
- peripheral defocus

2. Myopia MYOPIA ATROPINE :
ATOM2 Myopia control
with Atropine

Youtube channel: Good Optometry
Manning: EYECARE MADE simple

Posted: Dec 6, 2020

Notes:

atropine 1% ~~can~~ makes
eyes light sensitive and
freezes the accommodative
system (so one might have
to use bifocal lenses for
near work)

Feb 13, 2025

Today I watched these
videos to build on
my understanding of
the peripheral hyperopic
defocus and make the
connections of myopia
has the basic definition
of myopia and the human
eye stronger.

Also, I did some overall

Research for myopia control

1. Video Name: Peripheral hyperopic defocus and the cause of myopia progression explained

Yer Youtube channel - Clear Sight Corner

Posted: Jan 12, 2023

2. 4 Best Ways To Treat Your Child's Myopia

Youtube channel name: Insight Vision Center Optometry

Posted: Jul 15, 2022

3. How Atropine Eye Drops Are Revolutionizing Myopia Treatment: Guide From A Myopia Control Specialist

Youtube channel: Insight Vision Center Optometry

4. Defects of vision and their connection - How do spectacles work?

Youtube channel name: BVJU'S

Posted: Mar 7, 2019

5. How the Eye Works Animation - How do we see video - Nearsighted & Farsighted Human Eye Anatomy

Youtube Channel: AniMed

Posted: Apr 3, 2016

6. What is Myopia (Short sightedness)

Youtube Channel: Free Med Education

~~Post~~ Posted - May 3, 2018

7. Human Eye - The Dr. Binocs Show / Best Learning Videos For Kids / Peekaboo Kidz

Youtube channel: Peekaboo Kidz

Posted: May 4, 2018

Feb 15, 2025

Today I wanted to build on my research on various things

- I wanted to further cross-verify my the information I currently have on Myopia and learn a little more on how single vision glasses work

1. Is Your Computer Destroying Your Vision? - Dr. Berg on Computer Vision Syndrome

Youtube Channel : Dr. Eric Berg, DC

2. How Glasses Make Your Eyesight Worse | End myopia | Take Steiner

Youtube Channel: Take Steiner

3. Myopia, Signs and Symptoms, Causes, Diagnosis and Treatment

Youtube Channel: Medical Centric

4. What REALLY Causes Nearsightedness and How It Gets Worse

Youtube Channel Name:
Doctor Eye Health

Feb 16, 2025

Today, I want to briefly explain my thought process with my project, as I haven't ~~done~~ explained that much.

- For my main research - I want to go over some studies that were conducted on "how near work affects myopia, to get some data that I can analyze and use to form a conclusion."
- So far, I have learned a lot about many aspects of myopia and learned some valuable information that has deepened my understanding.
- I learned things that helped me understand what optometrists

do or say and why, like why they ~~put~~ put dilation drops in the eyes to freeze the accomodating system to check if the myopia is real or just a ciliary muscle spasm.

From my research these are some applications I have thought of so far:

- ~~kids~~ little kids (under 6) should be taught with big letters or number blocks or something rather than little writing on a paper as little kid's eyes are not fully developed ~~and~~ (still a little short) and ~~do~~ studies have shown that the more time one spends on near work ~~at~~ before the age of 4, the higher ~~is~~ risk of myopia they have later on.

I also found all the facts around screen time really insightful.

• I want to research on vision therapy (another form of myopia control) and how convergence affects myopia.

Feb 17, 2025

• Today I skimmed over these sources (listed below) to get an overview on them.

↓ Studies on myopia and near work

1. pubmed.ncbi.nlm.nih.gov/31943280/
- The association between screen time and myopia: A systematic review
2. science-direct.com/science/article/pii/S0042698901001353
- The effect of reading and near work on the development of myopia in emmetropic boys: a prospective, controlled, three year follow-up study
3. bjo.bmj.com/content/104/11/1542
- Objectively measured near work, outdoor exposure and myopia in children.

sites
these are quickly listed, more info in
citations

61

3. A systematic review of near work and myopia: measurements, relationships mechanism and clinical collories - Gajjan - 2022 - Acta Ophthalmologica - Wiley Online Library

And ~~many~~ ^{some} other studies related to this topic

I also saved some more links of studies that I found relevant to review later.

Feb 20, 2025

Today I did some extra research from this sites:

1. Childhood Myopia : Epidemiology, Risk Factors, and Prevention
2. ~~MYOPIA~~

And other sites about the "myopia epidemic as a whole."

plus started outlining my research into sections.

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Feb 22, 2025

Finalization + Interviewing an Expert) 62

Today I wrote my first draft of my research so far (kind of blurted out roughly all I could remember.

Feb 23, 2025

• Today I continued where I left off (research yesterday, while writing ^{draft}) I referred to more sources about the topics as well

Feb 24, 2025

Today I made a list of things I wanted to learn more about and scheduled my interview with Dr. Jessica Yang (optometrist) which is on this Friday.

Feb 25, 2025

Today, I brainstormed questions I can ask Dr. Jessica and tried to collect data charts from some studies which I somewhat valuable. Those data charts, graphs, and

tables are actually really hard to understand and interpret, but I'll try my best.

~~Feb 20~~, 2025

Feb 27, 2025

Today, I asked my school science ~~to~~ join coordinator about a tips for interviewing an expert, and she told me that I should send her my research so far, so she can give me feedback on it.

So that's what I did today. Plus, I refined my draft Ibit as well.

Feb 28, 2025

Today was the interview! It ~~was~~ went really well. I learned a lot about ~~at~~ ortho-K, peripheral defocus

lenses, how screens affect myopia, atropine, and got amazing feedback!!

Mar 2, 2025

- Today I copy-pasted all the links I used, some[↙] and saved (I'd see if I do use them or take them away) into the citations section today.

Mar 3, 2025

- I continued making my citations page today.

~~Mar 5, 2025~~

Mar 4, 2025

Today I spent some time going over some studies that I saved previously and found that the charts, graphs and the really specific ~~data~~ details were hard to understand

at first. ~~II~~

- I think that it will take me some time to fully understand and interpret those studies, but I'll see about it a little more tomorrow.

Mar 5, 2025

- Today, I tried going in the studies I had collected and the ~~char~~ charts, tables, and graphs, I had put put on the platform and realized that I will need to take a slightly different approach.
- So I thought about it a bit and I came with a plan and how to execute it,

So here it is:

- go over the studies that I find relevant and pick up the main idea (key word: main idea)
- determine key findings / aspects of the study and how they relate to other information / studies
- see if there are any details charts, tables, or graphs that I can understand & interpret and can add in the data section of my project
- Final analysis and forming conclusions

Some points I want to keep in mind is that:

- Don't get too lost in the details (focus on the main idea)
- Don't ~~get~~ ^{spend} a ton of time on this as it is already March but enough so I can make a good

conclusion.

Mar 7, 2025

- Today in power-up (option course in school that in which we get time to work on stuff. I was writing more about screen time and myopia.

~~At home, today.~~

- At home today, I added more information on near work and myopia on the platform and stumbled upon another aspect (condition) that can make the effect of near work on affect myopia (convergence excess esophoria) and researched about it and added that to my research.

Mar 8, 2025

- Today, I added a TON of information on the platform, on myopia control, myopia & near work, cycloplegic refraction, types of myopia, etc.
- The only parts that are left for me to write are: Age & myopia ~~and~~ and Eye ~~str~~ structure & function.
- I also added some images in.

Mar 9, 2025

For ~~a lot of my~~ ^{some} information that I wrote in my platform, I used additional sources especially for eye anatomy to enhance my understanding throughout the way. Also for myopia control &

- For example: clonidine, sympathonics, etc.

Mar 10, 2025

• also I got my digital format of my school ID photo for science fair.

• Today in school I finished the research writing, and organized my links, and made citations for them from a citation generator which I also double-checked if the info about the site is right or not.

Mar 11, 2025

- Science Fair Meet Meeting
 • in science meeting, today we talked about the ~~judging~~ judging day, the fact that we need to be done the declarations, and the project, header, and participant image ~~we~~ need to be done before we can be checked off ~~for our~~ our project to be confirmed.

• Also, I found out that ~~o~~ the research

section it was for background research and we were supposed to analyse data deeply for the main research.

- I did research as my main research as well though

Mar 12, 2025

- Today I wrote the "problem" section of my project & made some points of what I can write in my conclusion.

~~Mar 13, 2025~~

~~Mar 13, 2025~~

- Today, we had a science fair meeting in school and I found out from the coordinator that my main research could go into data (as qualitative data).

- I thought that it was for statistical

data.

- The reason I couldn't get around getting statistical data, is that I ~~at~~ had some trouble understanding and interpreting the data at first.
- I will try to write a ~~brief~~ brief overview of the studies conducted if I have time after completing everything else I have to complete.

Mar 13, 2025

- Today, I sorted my citations ~~out~~ out more and, oh yeah yesterday I continued writing my method (Mar 14, 2025)

~~• In the~~ There were other sources I used ~~it~~ in the course of

~~my~~ ~~to~~ project, and found
~~other things which~~

- I made a google doc, of all the sources I used as it was easier to copy paste in ~~gog~~ google doc. I wrote the main sites in my logbook as well.

Mar 16, 2025

- Today I wrote about my method in the platform
- I also ~~listened~~ listened to a TEDx Talk on the myopia epidemic.

Mar 17, 2025

Today, I ~~sorted~~ sorted, organized and numbered my citations, and sectioned my logbook.

I also briefly came up with what I should write in my method and conclusion. ^{more ideas}

Mar 18, 2025

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Here's everything
I need to get done
before March 21:

1. Take pictures
of logbook
2. Finish writing logbook
3. Finish writing method, problem,
and conclusion
4. Citations
6. Paste all the things writing
in google doc
7. Proof reading
8. Fix header image
9. Statistical data
(if I have the time)

Method (the rest that I have not finalized yet)

For my main research, I did a couple of extra things than my background research.

- I made sure I was covering covering various perspectives, and was being really careful with details. I focused on gathering facts and how they come together.
- I went into depth
- I used a variety of resources (articles, books, professionals, youtube videos, news, podcasts, studies)
- I went backwards in a topic I didn't know to get a deeper understanding (like axial length, cycloplegic refraction, etc.)
- I gathered factual information really precisely (making sure I kept in mind any inconsistencies in the information) and thought

about what information will apply where.

For example, clouclips ~~are~~ track behaviours associated with vision, and orthokeratology helps eliminate the need for corrective lenses during the day time and creates peripheral defocus which helps slow down axial elongation.

Thus, clouclips are better for preventing myopia and fixing behaviours that might be cause, whereas ortho-k is better for more genetic myopia, or myopia that doesn't have an apparent direct cause.

For reviewing studies, I focused ~~more~~ on the results found and greatly the main idea of the studies to examine experimental data, rather than only theoretical data.

For forming my conclusion,
I focused on these aspects:

- ~~self~~ self-reflection (what I did
~~what~~ well and how, what
I can improve on, and what
steps I can take to
improve in that area.
- Real-World Applications -
 - what changes can
we make in our
daily lives?
- ~~Is~~ Technological advancements
 - what are treatments
+ technologies we can
advance and how.
- ~~Over~~ Overall thesis
~~what does this~~
mean
 - information is collected,
organized in a
comprehensive and
concluding manner.

- If I were to design and execute an experiment related to my project, how would it be?

All of these things would help me take my understanding to the next level, ~~is apt~~ apply it effectively, and provide way to take my research further.

Actual conclusion

Near work, in fact ~~do~~ can ~~pre prone or as result~~ result in the onset of myopia ~~one~~ or pre prone it, and could speed up axial elongation.

If frequent breaks are taken, proper distance & posture are maintained, and outdoor time is prioritized, this should

Near work
in general
is ~~less~~ limited

↖ ↘ if another
underlying
condition
is not
present

be a huge problem. Proper diet, exercise, sleep should also be taken care of.

Screen time is overall ^{tends to be} slight worse than for example a book, using blue light glasses or night mode on electronic devices especially at night time helps the eyes to focus the light more easily and doesn't disturb the circadian rhythm.

Taking time to blink, and/or using lubricating ~~artificial~~ artificial tear drops.

Mar 19 Ortho-K ~~is usually~~ usually works better than peripheral defocus lenses. Some people might find it wearing hard contact lenses while sleeping, then the second best option is are soft contact lenses, then peripheral defocus lenses are still a lot better than traditional corrective lenses or wearing, no leaving myopia uncorrected.

~~The reason ortho-K works better than than~~ // /

~~Self~~

Vision

Atropine is really beneficial in slowing down axial elongation, (best when in the cases of genetic myopia, axial myopia) ~~or any~~

Red light therapy works similarly to atropine as it strengthens the choroid.

Cloudips ~~or~~ are the best when myopia is ~~a specific~~ specific habits) and/or behaviours that could be causing myopia.

Vision therapy is optimal if there is an underlying condition ~~be~~ causing myopia such as arthropodia.

Real-World Applications.

These are some steps that we can ~~take~~ take to apply the knowledge

- kids should under 3 should have 0 screen time and go outside as much as possible (pneumo)
- after school today, I wrote my conclusion, edited my method, and research in the platform.

Mar 20, 2025

- Today I wrote my bibliography (I wrote the sources I used for each section)

Mar 21, 2025

- There are the things I need to get done:
- Take pictures of logbook and upload the pdf format
- Finish ~~writing~~ writing my bibliography
- Make final touches on everything
- Get extra research in

- Maybe upload a presentation video if everything else is done and I have more time as I really wanted to do that but didn't get the time.

- Also, my original plan was to attach the google doc with all the sources I used in it that I used all throughout my project but I figured that it doesn't give any more information than the citations section of my project.

- ~~Today I~~

- I did some extra research on ~~Dee~~ Sleep & myopia, ~~or~~ Diet and Nutrition also about TCL 40 Nxtpaper smartphone that is more comfortable for eyes.