



SECP 1513
TECHNOLOGY AND INFORMATION SYSTEM
DESIGN THINKING

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TABLE OF CONTENT

No.	Content	Page
1.0	Introduction	3
2.0	Detail Step and Descriptions	3 - 6
3.0	Detailed Descriptions 3.1 Problem 3.2 Solution 3.3 Team working	6 - 8
4.0	Design Thinking Assessment Points	8 - 9
5.0	Design Thinking Evidence 5.1 Empathy 5.2 Define 5.3 Ideate 5.4 Prototype 5.5 Test	9 - 15
6.0	Reflection	15 - 18
7.0	Task Distribution	18 - 19
8.0	Conclusion	19
9.0	Links for Video and e-Portfolio	20

BookwormsLinkup

1.0 INTRODUCTION

In the realm of digital innovation, the BookwormsLinkup stands as a beacon for bibliophiles and literary enthusiasts alike. From its extensive library spanning diverse genres to its intuitive user interface such as the cutting-edge books app designed this app redefines the reading experience.

The features and unique attributes of BookwormsLinkup is a book review platform which allows readers to express their opinion based on an author's ideas, writing techniques, and work quality. Moreover, there is also reading challenge which encourage readers to consistently record their daily reading by tracking the readers' screen time. Furthermore, this app also provides communities platform where discussions are organized and personalized book recommendations for every reader.

Thus, whether you're a seasoned bookworm or just begin your reading journey, BookwormsI linkup will elevate your reading pleasure. Readers can dive into a world of diverse genres, captivating stories, and a seamless reading experience.

2.0 DETAILED STEPS AND DESCRIPTIONS

No.	Date	Phase	Description
1.	23 Oct	Empathy	Through observation of surroundings, interview and discussion with friends, we have gathered their opinions regarding reading habits and their wants and needs in order to build this habit. Among those who do not have a reading habit, they have voiced out that they do not have access to books and some have expressed their desire to start the habit but they lack the motivation to do so and are not confident with their progress. Whereas those who are practicing the habit have uttered the difficulties they faced to maintain the habit due to the lack of

			friends with similar hobby and their tight schedule.
2.	23 Oct	Define	<p>Through the various opinions gathered, we have sort them out as follows:</p> <ol style="list-style-type: none"> 1. The lack of access to books, students do not usually borrow books from local libraries or get books from bookstores. 2. The difficulty of starting a new habit, it is a common pitfall of humans in making changes in life. They found it hard to muster enough determination to start a reading habit and to maintain it over the course of their life. 3. The lack of companionship and friends with similar reading hobby. This has greatly reduced the experience of reading itself when they do not have people to share the exciting ideas and insights from the book they consumed. This also causes a feeling of loneliness and over time they might give up their reading habits. 4. The tight schedule left students with no time to read. They either forget to read after a long day of hustle or have no free time for it. <p>Based on our understanding of their problems, we have draw the motive of this design thinking process as follows:</p> <ol style="list-style-type: none"> 1. Students need to cultivate reading habits because books are where knowledge is found and that knowledge is power. 2. Students need to strengthen their cognitive skills because problem-solving skills, communication and adaptability are core elements towards a successful career. 3. Students need to appreciate and cherish the habit of reading because ‘the man who does not read has no advantage over the man who cannot read.’

3.	30 Oct	Ideate	<p>We have therefore craft out several approach to solve their problems, that is:</p> <ol style="list-style-type: none"> 1. Form a readers' community, either virtually on social media or a physical one, to promote reading through group effect and to encourage intellectual discussions. 2. Form a book club, to allow readers to share or exchange their preloved books. 3. Design a habit tracking system to help students keep up with their reading habit. 4. Organize forums to actively spark off meaningful exchange of opinions and dialogues. 5. Design a blog for students to write their book review. 6. Start a university journal or magazine for students to express their opinions. 7. Organize a reading campaign, to promote the importance of reading to university students. <p>In the end, we have come to the conclusion of creating a software application that serves as a virtual forum, a blog for writing, a socializing tool and a habit tracker. It is a book-centric social media that allows users to write book reviews, have intellectual discussions with other users and keep track of their reading habits.</p>
4.	6 Nov	Prototype	<p>The software application that we are to create should have the following features:</p> <ol style="list-style-type: none"> 1. Writing and publishing reviews and quotes for users to share their opinions. 2. Reading challenge for users to track their habits. 3. Readers communities for users to socialize. 4. Book suggestions for users to expand their horizons.
5.	20 Nov	Test	Based on the features developed above, we have designed the

		<p>interfaces of our application. We have asked the public opinions regarding the features, visual effect, usability of our platform and they have reacted positively and some have pointed out several improvement can be made, that is:</p> <ol style="list-style-type: none"> 1. To add a personal chat feature to allow users to socialize more freely and directly. 2. To change our interfaces to a brighter colour or tone to give a better visual effect. 3. To allow in-app purchases, or a premium account feature for commercial purposes. <p>From their recommendations, we have humbly accepted them and added or amended wherever appropriate and suitable.</p>
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3.0 DETAILED DESCRIPTIONS (PROBLEM, SOLUTION AND TEAM WORKING)

3.1 Problem

Based on our observation among university students at UTM, a vast majority of university students at UTM do not consume any reading materials on a daily basis. Nowadays we can hardly see people walking around carrying with them a book or any reading materials. This hobby has gradually lost its avid enthusiasm from our modern society.

This phenomenon arose due to our fast-paced and demanding lifestyle, the heavy commitments and tight schedule leave us with little or no time and energy for recreational reading. With the limited free time available, we often do not benefit them but give them away to activities such as scrolling through social media and playing video games as they are more appealing than the time- and concentration-consuming activities like reading.

Through the interview conducted, among students who do not have reading habits, some have pointed out that they do not have or have limited access to books. Even though there is a library in the university, still, it is not a prevalent practice among students to borrow books from there and for some of them the library is not even a commonplace where they would spend their free time.

Among those who reportedly read, some of them find it hard to maintain their reading habits mainly due to the lack of companionship and community engagement. This is because reading is more of an individual activity, unlike sports game, e-game or other hobbies, people can form their own circle and feel a sense of belonging to a bigger group or community and therefore are easier to maintain their habits. The trait of the habit itself coupled with the lack of readers' community or book club in the university make it extremely difficult for a reader to connect with others of mutual hobbies. Besides, it is also known that it is less fun to only read but not be able to share all of the exciting ideas and have discussion with others regarding some new and unexplored topics.



3.2 Solution

We have come to the conclusion of designing an inclusive and multi-purpose software application. This application should be all about reading, but it should not be like any old and uninteresting ideas, it should look like a social media that is designed to link up readers all across the country and perhaps the globe.

This application should have features that allow and encourage users to share their book review, keep track of their reading habits and also join readers' community. The main purpose of this application is to help users to maintain their reading habits, sharpen their cognitive skills and make new friends along the journey. We also aim to bring back to limelight the classic reading culture among the 21st century citizens even and especially, during this ever-changing technology era.

3.3 Team Working

All members of the team have had very different perspectives regarding the issues subjected above. Among them are the core problems leading to the lack of reading habits among people nowadays and the truly useful solution to solve the problem. In the face of conflict, however and eventually, the team was willing to find the common ground that satisfied the opinion of each member. We have carried with us this tolerance attitude throughout the whole project especially when we go further and deeper down the details of designing the software application.

4.0 DESIGN THINKING ASSESSMENT POINTS

Going from the empathy phase to the defining phase, we have made sure we gathered enough opinions from undergraduate students of different backgrounds through interviews. This is to ensure we have gained a thorough understanding and a wide perspective over the issues to be worked on, that is the lack of reading habits and the complex factors behind it.

In the define phase, we have to internalize the problems and opinions gathered from the interviewees, fully elaborate them in order to generate adequate ideas and insights to prepare our mind for any actionable decision and plan. Moving to the ideate phase, we have held several discussions over the weeks to allow us to repeatedly contemplate at any outcomes of our discussions. We have constantly improved our ideas and proposed new solutions to replace the imperfect ones until all members have reached a common understanding on the plan to be adopted.

In the prototyping phase, we have to frequently keep track of our progress to ensure the feasibility and functionality of our prototype. We have gone through processes of trial and error on our prototype to better identify the underlying nugs and errors lying in the user interaction, visual design and so on. We found out there are some user interfaces and functions that can be modified to cater to our user needs and experience.

At the end of the project, each of us carried out a reflection to look back on our initial intentions and goal as to why we wanted to build this app in the first place. Did it align with our goal? Did we achieve our mission? Will it help our users to cultivate reading habits?

All in all, the assessment points are vital in group thinking so we are able to identify minor mistakes and polish up small details so it can be functioned properly and we are right on track.

5.0 DESIGN THINKING EVIDENCE

5.1 Empathy

Through discussion among group members, we had come up with different problems we faced such as:

1. Difficulty to find a book in the UTM library.
1. Lack of hygiene by direct distribution of face masks.
2. Absence of reading habits among university students.

It is found that the last problem has no effective solution yet and therefore, it would be selected as our problem to be solved. Therefore, we have conducted interviews with 3 undergraduate students to obtain their opinion on the phenomenon.



Diagram 1: Interview conducted with 2 interviewees.

Below are the questions we have asked and the responses from the interviewees:

No.	Interviewees	Question 1: Do you think reading is a common habit among university students?	Question 2: Based on your response, why do you think so?

1.	Hafiz, 20 (Faculty of Computing)	No, I have never come across anyone here and found that they were reading.	I think the main reason is we don't have time... to be honest, we don't even have time to sleep, let alone read.
2.	Amelia, 20 (Faculty of Computing)	No, I don't think it's a culture here and I'd say it's way less prevalent here than in the West.	I don't know where we get to find books, (a lot of us) definitely don't buy books from local stores, they're expensive.
3.	Aisyah, 20 (Faculty of Computing)	Nah, I don't think so, not here in this university or at any other.	It's hard to maintain a reading habit, unless you started it when you were a child... but I also doubt if people get to keep up with it.

5.2 Define

We are aware of the variety of obstacles faced by different individuals and to sum up their ideas and opinions, we have defined the details behind the issue discussed as follows:

1. Little or no free time due to a tight schedule.
2. The absence of reading culture in the university.
3. Lack of access to books.
4. Not aware of the importance of reading.
5. Lack of motivation to build a reading habit.
6. No contemporaries or friends that encourage us to read.
7. Prefer entertainment over activities like reading.

5.3 Ideate

To solve this complex problem, we have to dive deep into the causes and eventually design solution(s) to counter each of them.

No.	Problem	Solution(s)
1.	Little or no free time due to a tight schedule.	<ul style="list-style-type: none"> - Design a habit tracking system. - Design a timetable.
2.	The absence of reading culture in the university.	<ul style="list-style-type: none"> - Start a book club in the university. - Run a readers community on the internet.
3.	Lack of access to books.	<ul style="list-style-type: none"> - Encourage book exchange among students. - Promote the school library. - Start an online store that helps people to sell and buy pre-loved books.
4.	Not aware of the importance of reading.	<ul style="list-style-type: none"> - Organize a reading campaign.
5.	Lack of motivation to build a reading habit.	<ul style="list-style-type: none"> - Make friends that have reading habits.
6.	No contemporaries or friends that encourage us to read.	<ul style="list-style-type: none"> - Expand the friend circle and make new friends that have reading habits.
7.	Prefer entertainment over activities like reading.	<ul style="list-style-type: none"> - Activate the non-disturb mode on the phone to focus better.

We have decided to design a software application that combines all the solutions above because

1. It is easier to gather users to form communities on the internet
2. It is a portable tool that people can access anywhere anytime.
3. It allows a wider exchange of opinions among users from afar.
4. It is more convenient to record and keep track of the reading habits.

5.4 Prototype

We have therefore developed the core features of our software application as follows:

- 1. Write and publish.**

The main feature of our apps is to write and upload reviews and quotes. Prior to writing, users need to add the book to their library by stating the book title and author or the ISBN identifier. Users can write and save in draft before uploading the book reviews or quotes. This feature helps users to retain the key information of the book and organize their thoughts by writing and journaling. Summarizing enhances the user's ability to express their thoughts effectively and convey information in a coherent manner.

- 2. Reading challenge.**

In the reading challenge, users are encouraged to consistently record their daily reading durations, no matter in minutes or hours. Users can set reading schedules and get notified each day. Therefore, it also serves as a powerful habit tracking tool for users to maintain their reading habit. This feature can boost a sense of remarkable accomplishment and motivation through daily streak achievements.

- 3. Readers communities.**

Users can form new communities or join existing ones based on their preferences. In their respective communities, they can exchange opinions, ideas and offer book suggestions for other users on the platform. This feature connects like-minded individuals and it enriches their sharing experience. By doing so, users can also make new friends either from local or global communities with mutual hobbies.

- 4. Book suggestions.**

Our app provides personalized book recommendations for the users based on

- (a) The initial setting on preferred book genres
- (b) The genres of book which they have reviewed or quoted from
- (c) The genres of book reviewed by other users of the same communities

By introducing the users to a range of genres, authors, and perspectives, this feature can greatly broaden their horizons and encourage them to explore new literary territories.

Below are some examples of our interface design:



Diagram 2 - 6: Interfaces of software application

5.5 Test

We have tested our software application among users of different backgrounds by showing them our interface design. Below are the feedback and opinions from the interviewees.

No.	Interviewees	Feedback/ opinions
1.	Hafiz	I think you guys should add a personal chat feature to allow users to socialize more freely and directly.
2.	Amelia	I don't like the black and white tone of the app, maybe use a brighter colour.
3.	Aisyah	Why don't you guys design some premium features for users who pay, that way we can make money.

Besides feedback from the users, we have also conducted research using several methods such as the internet, reference books and consultation from the lecturer. As we are aware of several existing applications that serve similar purposes with ours, we have dive deep into these platforms to find some inspirations from their designs. From there, we have compared and outlined the uniqueness and differences of our application as follows:

No.	Existing apps	Our app: BookwormsLinkup	
1	LibraryThings	Do not have reading habit tracking feature, users may find it hard to stay on the platform as it grants no sense of satisfaction for them.	Have the reading habit tracking feature, users can track the duration they spent on reading each day. It motivates those who want to kick start their reading habits and for them to track their progress.
2	Goodreads	Book reviews focus largely on rating (out of 5 stars), review in words is not prevalent among users.	Does not have a rating feature due to the concern of skewed positive/negative popularity and subjective opinions among readers. Our motive is to encourage critical thinking, and intellectual

			discussion, this platform is inclusive to all understanding and viewpoints of users from different backgrounds.
3	Litsy	Prevalent posts are pictures or other media instead of literal contents such as book reviews or quotes.	Strongly and primarily encourage the publishing of book reviews or quotes in literal form, but also support other forms such as media, file and link.
4	StoryGraph	Do not have communities feature, users cannot connect with other users of similar interest in the book genre.	Have communities feature, users can form new communities or join existing ones based on mutual preferences. They can connect with other users and have discussions.

6.0 REFLECTION

No.	Group members	Reflection
1.	Adlina Narisya Binti Ismail	<p>1. My dream is to be a data analyst once I graduated with Computer Science (Bioinformatics) program and is skilled enough to demonstrate an understanding of biological and computer science concepts.</p> <p>2. Through this design thinking I got to improve my soft skills such as communication, creativity and problem-solving which crucial in the workplace. Thus, I learned to interact with my teammate by discussing about how to enhance and design our app, Bookwormsl inkup either meet physically</p>

		<p>or online through Google Meet that helps me to build and maintain our relationship.</p> <p>3. As a student, I try to participate in as many activities as possible to improve my resume. Hence, I gain transferable skills through the activities that can be applied in the workforce. Moreover, I will get professional advice from qualified professional counselors to develop a clear career path.</p>
2.	Karen Yam Vei Xin	<p>1. My aim in studying computer science is to master the fundamental principles and stay updated on current technologies. I wish to excel academically, gain deep knowledge, and use my skills to contribute to technological advancements.</p> <p>2. This design thinking provides me a hands-on opportunity to apply the theory which I learned from the course. It allows me to strengthen my problem-solving abilities, a skill that is essential later in the workplace.</p> <p>3. To enhance my potential in the industry, I will consistently stay updated on the latest developments and trends within the field of computer science. I plan to build a strong professional network by connecting with experienced individuals and seeking mentorship from them. These can help me to enhance my skills and be well-prepared for the industry challenges in the future.</p>
3.	Ngu Yu Ling	<p>1. My goal in regard to the course I am studying right now is to complete and polish my skill set in computational biology and bioinformatics as my dream is to work in the cancer research industry in the future.</p> <p>2. This project allows me to approach various problems in my life in creative and innovative ways. It also reminds me of</p>

		<p>the importance of listening to the inner voice and letting it direct me towards achieving whatever matters to my life.</p> <p>3. To work professionally in the industry, I would have to equip myself with adequate knowledge and skills as well as a positive working attitude towards achieving scientific or technological breakthroughs.</p>
4.	Nur Aina Syafina Binti Kamasuahadi	<p>1. For me, my goal in this course is to have various skills that dominate critical thinking, problem solving and coding skills. It is so important for me to be an expert Data Scientist in future. It will help me to get more probability to have my dream career.</p> <p>2. From this project, I do my research a lot and sometimes I read more ideas from various websites. I gained more knowledge and know more methods to solve my problem. It gives me more creativity and ideas to do my assignment.</p> <p>3. I think flexibility is a vital thing that I should apply to myself. Flexible in managing time and condition. It will make improvements in the quality of my work, have more time to get more knowledge and improve my skills.</p>
5.	Ryan Segal Anak Nicklas	<p>1. Personally, I am looking forward to equipping myself with a formal knowledge of information technologies that will be an added value in my overall program (Bioinformatic). I believe that this course is crucial for me to understand the world trend on IT, Management and Marketing that would be a great help to propel me on the job market</p> <p>2. During the making of the design thinking, I have realized that there are a lot of things we as a degree students are not aware about. It gives me the opportunities to learn and unlearn things I know. It help me to reconstruct my goal and plan order to achieve my dream.</p>

		<p>3. I believe that in order to excel in the industry at this age, we have to be versatile. Versatility is something rare that not everyone possesses. Therefore I need to actively explore new things outside of my field. Do networking with others that have the opposite knowledge from me, learn from them and apply it in my real life.</p>
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7.0 Task Distribution

No.	Group members	Task
1.	Adlina Narisya Binti Ismail	<ul style="list-style-type: none"> 1. Do an introduction for the report. 2. Editing the video. 3. Elaborate the features of the app.
2.	Karen Yam Vei Xin	<ul style="list-style-type: none"> 1. Do the conclusion of the report. 2. Elaborate more about the features of the software application.
3.	Ngu Yu Ling	<ul style="list-style-type: none"> 1. Conduct interviews with university students. 2. Design the steps and description in design thinking. 3. Define and decide the problems to be solved and the solutions to be adopted. 4. Record the progress and evidence of our work in each phase. 5. Roughly craft out the features of the software application for prototype design.
4.	Nur Aina Syafina Binti Kamasuahadi	<ul style="list-style-type: none"> 1. Design interfaces using canva. 2. Prepare prototype video.

5.	Ryan Segal Anak Nicklas	<ol style="list-style-type: none"> 1. Observe and do the design thinking assessment point 2. Gather information through internet and other source of material
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8.0 Conclusion

Through this project, we've enhanced our capabilities, problem-solving and soft skills to pursue our personal goals in this field. Our increased flexibility and adaptability highlight our commitments to going above and beyond to excel in project tasks and contribute to its success.

Through our discussion, we've obtained the skills to demonstrate tolerance, build strong teamworks and relationships. In the process of conducting interviews, we've also developed the ability to accept constructive criticism, show respect for different opinions, and empathize with each other.

The discussion on BookwormsLinkup and its application highlights the impact of this innovative product on users' challenges. Primarily, it provides users with insights that enhance their comprehension of the significance of daily reading. We have developed some features of our software application, which allow users to write and upload reviews and quotes, record their daily reading durations, form new communities or join existing ones based on their preferences and personalized book recommendations for the users.

By developing BookwormsLinkup, we hope to assist users, especially among students, to consistently maintain their reading habits in this fast-paced and demanding lifestyle. We held the belief that our project could foster reading habits and make a positive contribution to society.

9.0 LINKS FOR VIDEO AND E-PORTFOLIO

1. Video: https://youtu.be/vkU_vK8kg8A?si=8fCogWrQGuSjhJB

2. e-Portfolio:

No.	Group members	e-Portfolio links
1.	Adlina Narisya Binti Ismail	https://eportfolio.utm.my/user/adlina-narisya-binti-ismail https://github.com/Narisyaa
2.	Karen Yam Vei Xin	https://eportfolio.utm.my/user/karen-yam-vei-xin https://github.com/karenyvx
3.	Ngu Yu Ling	https://eportfolio.utm.my/user/nguyuling https://github.com/nguyuling
4.	Nur Aina Syafina Binti Kamasuahadi	https://eportfolio.utm.my/user/nur-aina-syafina-binti-kamasua https://github.com/ksyfna
5.	Ryan Segal	https://eportfolio.utm.my/user/ryan-segal-anak-nicklas https://github.com/rxyaen