

ASSIGNMENT 3: NEW PRODUCT DEVELOPMENT

for

[GROUP 7/SMART VIEWING REAL ESTATE GLASSES (AR)]

Faculty : COLLEGE OF BUILT ENVIRONMENT

Program Code : CFAP255

Group : CFAP2555E (202541)

Course : TECHNOLOGY ENTREPRENEURSHIP

Semester : OCTOBER 2025 – JANUARY 2026

Group Members :

- 1) MUHAMAD HAZIQ HAKIMI BIN ZULKARNAIN
(2024602938)
- 2) FARISH RIDZUAN BIN M SABRI AZALI
(2024249554)
- 3) MUHAMMAD DANISH FARHAN BIN MOHD
(2024699366)
- 4) ALIF MUQRIY BIN RUSLI
(2024883528)
- 5) MUHAMMAD IKMAL HAKIMI BIN MOHD AIZAL
(2024847334)
- 6) MUHAMMAD ISKANDHAR BIN MOHD ATAN
(2024835604)
- 7) RAJA HILMI BIN RAJA BAIDRUL HISHAM
(2024643708)

Submitted to:

DR NOOR FAIZAH BINTI MOHD LAJIN

Submission Date:

19 December 2025

TABLE OF CONTENTS

CONTENT	PAGE NUMBER
Executive Summary	2
1.0 Introduction	3
2.0 NABC Approach	5
3.0 New Product Development	9
3.1 Definition	9
3.2 Classification of New Product Development	10
3.3 New Product Development Process	11
3.3.1 Research and Development	11
3.3.2 Product Design/Features & Technology Description	12
3.3.3 Concept Testing	13
3.3.4 Build Prototype (2D)	14
3.3.5 Test Marketing	15
4.0 Conclusion	21
References	22
Appendices	24

Executive Summary

This report proposes the development of Smart Viewing Augmented Reality (AR) Glasses as an innovative solution to address inefficiencies in the traditional real estate viewing process in Malaysia. Conventional property viewing relies heavily on physical site visits, which are time-consuming, costly, and inconvenient particularly for overseas buyers. Existing digital alternatives such as online listings and 360-degree virtual tours remain limited in their ability to convey accurate spatial perception and immersive experience. Using the NABC (Needs, Approach, Benefits, Competition) framework, this project identifies a clear market need for a more realistic, accessible, and efficient property viewing method and presents AR-based smart glasses as a practical response.

The proposed product leverages augmented reality technology to enable users to conduct immersive virtual walkthroughs of residential properties regardless of location. By integrating AR glasses with cloud-based property data and 3D models, buyers can visualise layouts, dimensions, pricing, and nearby amenities in real time. This approach is particularly relevant to Malaysia's high-density residential market, where show units are limited and buyers often need to compare multiple unit types across different locations. The solution enhances decision-making by providing a clear understanding of space, scale, and interior flow compared to conventional screen-based viewing tools.

The Smart Viewing AR Glasses offer significant benefits to key stakeholders. Property buyers gain convenience and confidence in purchase decisions, real estate agents improve efficiency by reducing unnecessary site visits, and developers lower marketing costs by minimising reliance on physical show units. From an industry perspective, the product supports digital transformation initiatives, strengthens Malaysia's appeal to foreign investors, and shortens property sales cycles. Classified as an improvement on existing products and new to the firm, the project follows established New Product Development stages, including concept testing, 2D prototyping, and test marketing. Overall, this report demonstrates that Smart Viewing AR Glasses have strong potential to enhance customer experience, improve operational efficiency, and create competitive advantage within Malaysia's real estate industry.

1.0 Introduction

Digital advancements have dramatically changed the real estate sector. However, property viewing continues to pose problems for homebuyers and real estate agents alike. Under traditional methods, homebuyers must travel to the property multiple times, set up appointments with the real estate agent, and incur expensive travel costs, especially if the homebuyer lives a significant distance from the property or lives abroad. Although photographs, videos, and even virtual tours through mobile applications have been developed as potential alternatives to these time-consuming and costly processes, they still only provide "flat" or two-dimensional views of properties, which fails to give buyers a true sense of scale, space and immersion into the property being viewed.

The Smart Viewing Real Estate Glasses (AR) have been proposed to help solve these problems and improve how homebuyers view properties by incorporating augmented reality. Smart AR glasses will allow users to experience a property as if they were physically standing in it. Users will be able to use smart glasses in conjunction with a dedicated app that provides them with access to all listings created by the real estate agent using the AR glasses.

Users can experience an interactive and immersive experience of a property with Virtual Reality Walkthroughs by using 3D Property Models; Floor Plans, Room Information and Pricing can all be viewed in real-time. Smart Viewing Real Estate Glasses provides a better experience for all users wanting to view properties in an engaging and varied way versus currently used traditional methods. Users who benefit from this type of viewing method include international buyers, busy professionals, and Realtors who handle many listings. Augmented Reality provides the real estate market with improved decision-making processes, decreases costs and, ultimately, allows real estate markets to reach potential buyers regardless of their geographical.

1.1 Vision

The Smart Viewing Real Estate Glasses initiative is creating a revolution in the way we can view properties by introducing a comprehensive user-friendly and technologically advanced way to experience them using virtual reality, regardless of geographical location or the time of day. The project anticipates a growth of the virtual reality aspect in the real estate world, thus aiding buyers in deciding on property purchases faster and more accurately with the help of efficient, effective digital marketing tools for agents and developers.

1.2 Mission

Project Goals: The purpose of this project is to create a more realistic and immersive way for people to view properties using augmented reality (AR) technology instead of relying solely on visiting property physically. This technology will provide customers and real estate agents with a convenient way by maximizing travel/time/cost savings to reach a larger audience including international customers. Additionally, the interactive capabilities of the AR application, including real-time room information, floor plan overlays, and pricing information, will enhance the customer's overall experience. Lastly, through this project we hope to encourage digital transformation and technology innovation throughout the real estate sector.

1.3 Objectives

This project has the following goals To Identify limitations of conventional methods of viewing properties and currently available virtual tour solutions. To design and build a system of AR viewing glasses which permits the user to move through the property in an immersive environment. Enhance convenience and time efficiency for property buyers and real estate agents by removing travel time and scheduling issues. Enhance property exposure and accessibility for out-of-region and virtually inaccessible buyers, improve property buying decision-making via detailed property information presented during virtual walkthroughs and demonstrate how Augmented Reality can provide additional value and innovate the processes by which real estate is conducted today.

2.0 NABC Approach

The NABC approach is important because it offers a structured and systematic framework for evaluating and presenting innovations by emphasizing real-world relevance rather than focusing solely on technology. By beginning with Needs, the approach ensures that a proposed solution addresses a genuine problem faced by users or the market. This step is crucial in preventing the development of innovations that are technologically advanced but lack practical value or user demand. Clearly identifying the need also helps define the target users and the context in which the problem occurs, strengthening the overall relevance of the proposal.

The Approach component explains how the identified problem will be solved in a clear and logical manner. It demonstrates that the solution is feasible and that the selected methods or technologies are appropriate for addressing the need. This promotes structured thinking and reassures stakeholders that the innovation can be realistically implemented. The Benefits section then highlights the value created by the solution for different stakeholders, such as improved efficiency, reduced costs, enhanced user experience, and better decision-making. By focusing on outcomes rather than features, this element helps justify why the innovation should be adopted or invested in.

Finally, the Competition aspect encourages awareness of existing alternatives in the market. By comparing the proposed solution with current practices or competing technologies, it becomes possible to demonstrate unique advantages and competitive positioning. Overall, the NABC approach improves clarity, strengthens alignment between problems and solutions, and enhances communication with stakeholders, making innovations more practical, competitive, and market-ready.

2.1 Needs

In Malaysia, conventional property viewing methods remain heavily dependent on physical site visits, which are often inefficient, time-consuming, and costly. Buyers commonly need to travel between multiple locations such as Kuala Lumpur, Selangor, Johor, and Penang to compare residential units. For example, a working professional in Kuala Lumpur may need to take time off work to visit a property in Shah Alam or Cyberjaya, facing traffic congestion, parking issues, and scheduling conflicts with real estate agents.

These challenges are even more significant for overseas buyers and outstation investors, particularly from Singapore, China, and the Middle East, who form a substantial segment of Malaysia's property investment market. Such buyers often rely on property agents' descriptions, brochures, and photographs, which may not accurately represent the actual space, lighting, or layout of the unit. While developers and agents in Malaysia commonly use platforms such as PropertyGuru, iProperty, and Facebook listings that include photos, videos, and basic virtual tours, these tools remain largely two-dimensional. They do not provide an accurate sense of depth, ceiling height, or spatial proportion, which is critical for understanding condominium units, serviced apartments, and landed houses. As a result, buyers may hesitate, request multiple site visits, or delay purchase decisions, indicating a clear need for a more immersive, realistic, and accessible property viewing solution within the Malaysian real estate market.

2.2 Approach

To address these challenges, the Smart Viewing Real Estate Glasses leverage augmented reality (AR) technology to transform property viewing in Malaysia. By integrating AR smart glasses with a dedicated real estate application, buyers can experience virtual walkthroughs of Malaysian residential properties as if they were physically present. For instance, a buyer located in Penang can virtually walk through a condominium unit in Kuala Lumpur using AR glasses, exploring each room at their own pace.

Real estate agents and developers in Malaysia can upload 3D property models generated from architectural drawings, BIM data, or laser scanning of show units. During the AR walkthrough, relevant information such as unit size in square feet, layout type examples Type A, Type B, pricing in Ringgit Malaysia, maintenance fees, and nearby amenities (LRT, MRT, schools, and shopping malls) can be displayed as interactive overlays. This approach is particularly suitable for Malaysia's growing high-rise residential developments, where show units are limited and often shared across multiple projects. By removing geographical and time constraints, the solution allows buyers to view properties remotely, revisit shortlisted units, and make informed comparisons without repeated physical visits.

2.3 Benefits

The implementation of Smart Viewing Real Estate Glasses offers significant benefits to Malaysian property buyers, agents, and developers. Buyers gain a clearer understanding of unit layouts, spatial dimensions, and interior flow, helping them determine suitability for family living or investment purposes. For example, first-time homebuyers under Malaysian housing schemes such as PR1MA or Rumah Selangorku can better evaluate whether a unit meets their lifestyle needs before committing to a purchase.

Real estate agents benefit from improved efficiency, as virtual walkthroughs reduce the number of unnecessary site visits and help pre-qualify serious buyers. Developers can showcase multiple unit types without constructing numerous physical show units, reducing marketing costs. From an industry perspective, the technology strengthens Malaysia's attractiveness to foreign investors, supports the government's digital transformation initiatives under Industry 4.0 and Smart City developments, and helps shorten property sales cycles. Overall, the solution enhances customer experience, reduces operational overheads, and increases competitiveness within Malaysia's property market.

2.4 Competition

In Malaysia, existing digital property viewing solutions mainly consist of online listings on platforms such as PropertyGuru, iProperty, Mudah.my, and social media advertisements. While some developers offer 360-degree virtual tours, these solutions are generally limited to fixed viewpoints and screen-based interactions. Users cannot freely move within the space or accurately perceive scale and depth, which is especially important for compact urban condominiums common in Kuala Lumpur and Johor Bahru.

Compared to these alternatives, Smart Viewing Real Estate Glasses provide a fully immersive AR-based viewing experience combined with real-time property data. Users can explore units naturally, assess spatial proportions, and interact with contextual information relevant to Malaysian buyers. This positions the proposed system as a more advanced and innovative solution that addresses the limitations of current digital property viewing tools in Malaysia's competitive real estate industry.

3.0 New Development Project

3.1 Definition

The Smart Viewing AR Glasses, an augmented-reality system that enhances the traditional real-estate-viewing experience. By using these devices, the potential tenants, buyers and investors have the ability to "walk through" properties virtually without needing to visit them physically. Smart Viewing AR Glasses also provides users with real-time information about the interior layout of properties and allows them to interact with and view the features of a given property regardless of where they are located.

According to investor, this type of product is defined as a technology that enabled the viewing solution for real estate that deals with the time, travel cost and scheduling difficulties that currently faces when it comes to property viewing. Several studies have demonstrated that the implementation of interactive technologies such as augmented reality (AR) and virtual reality (VR), can significantly increase buyer engagement and decision-making processes by reducing the number of physical visits needed and improving user experiences. In addition, studies shows that when users explore property space through virtual tours or AR experiences, they have much better understanding of the property than when they are given static photos or videos, which improving their ability to eventually make an informed purchasing decision.

By offering a more interesting and dynamic viewing experience than static images and typical video, Smart Viewing AR Glasses have completely transformed how consumers see the properties. Buyers will be able to immediately see the property in an improved digital version that is easily accessible from any location thanks to the technology. This product also gives potential buyers a simple and effective way to see properties from all over the world as they have never been able to before by crossing limitations on geography, time constraints and connectivity. The usage of augmented reality (AR) in real estate has also been associated with higher customer interaction levels and improved agent marketing methods and making this product development more valuable than current solutions.

3.2 Classification of New Product Development

The classification of Smart Viewing AR Glasses is based on the classifications of New Product Development (NPD) as a type of Improvement on Existing Products which were considered a New Product Category by the Product Development Board and it also classified as New to the Firm product.

While augmented reality and virtual tours are now being used in the real estate industry's marketing campaigns, the augmenting wearable smart devices with AR provides a number of advantages over current methods and technology. At this moment, desktop and mobile screen-based virtual tours are the current approaches used in the real estate sector. Instead of only viewing 3D property components on a screen, people now can interact with them more effectively and directly thanks to this solution that uses AR glasses. This innovation is consistent with research showing that the use of immersive technology increases interaction with potential real estate buyers, improves viewing efficiency and enables purchasers to experience property more meaningfully than with traditional techniques.

This product is also considered new to the firm as it goes beyond existing software only solutions by providing real estate agents an alternative approach to promoting the property. Although AR ideas are already available in the market, this product has been presented as a new and different option for the company and its target consumer due to the particular integration of wearable AR technologies that created for real estate viewing.

3.3 New Product Development Process

3.3.1 Research and Development

The research and development stage of the new product development process begins with the idea generation process, where a number of ideas on potential products in the real estate domain are identified. In this stage, three ideas are generated. The first idea is the 'smart property management app' where the app enables the monitoring of rental payments, maintenance works, and communication between the landlord and tenant from a single platform. The second idea is the 'virtual reality property viewing system' where the app enables the buyer to view the property through a completely immersive experience using the VR headset. The third concept is the 'Smart Augmented Reality Glasses,' which aims to improve the viewing process for real estate properties by superimposing all interior and exterior designs, floor plans, and details on the real-life environment." These ideas are shaped based on the analysis of some common issues prevailing in the real estate domain

After completing the concept generation, idea screening begins to choose the best concept to proceed with. The Smart Property Management Application concept is eliminated because there are already competing applications available, making it and any other variation of it harder to differentiate. Also, the Virtual Reality Property Tour System concept is eliminated because of its shortcomings, including expensive equipment, bulkiness, and limited functionality as a property visiting tool. After analysis, it was concluded that Smart Augmented Reality Glasses is the concept to be pursued since it harmonizes innovation and functionality, and it is something entirely different from virtual reality systems since it complements property visiting and not replace it.

The chosen idea is expanded by describing the core technology that has been incorporated into the new product. The technology found in the Smart AR Glasses involves the application of both augmented reality and three-dimensional modelling. The technology allows for the accurate projection of digital information onto physical environments. The technology is incorporated into a mobile application that allows estate agents to upload relevant information about properties, which is later stored in a cloud hosting platform. This technology allows for the visual representation of properties in real time and facilitates decisions by potential property owners. This technology development process informs that the idea of the Smart AR Glasses qualifies as an innovation that should proceed into development.

3.3.2 Product Design / Features & Technology Used

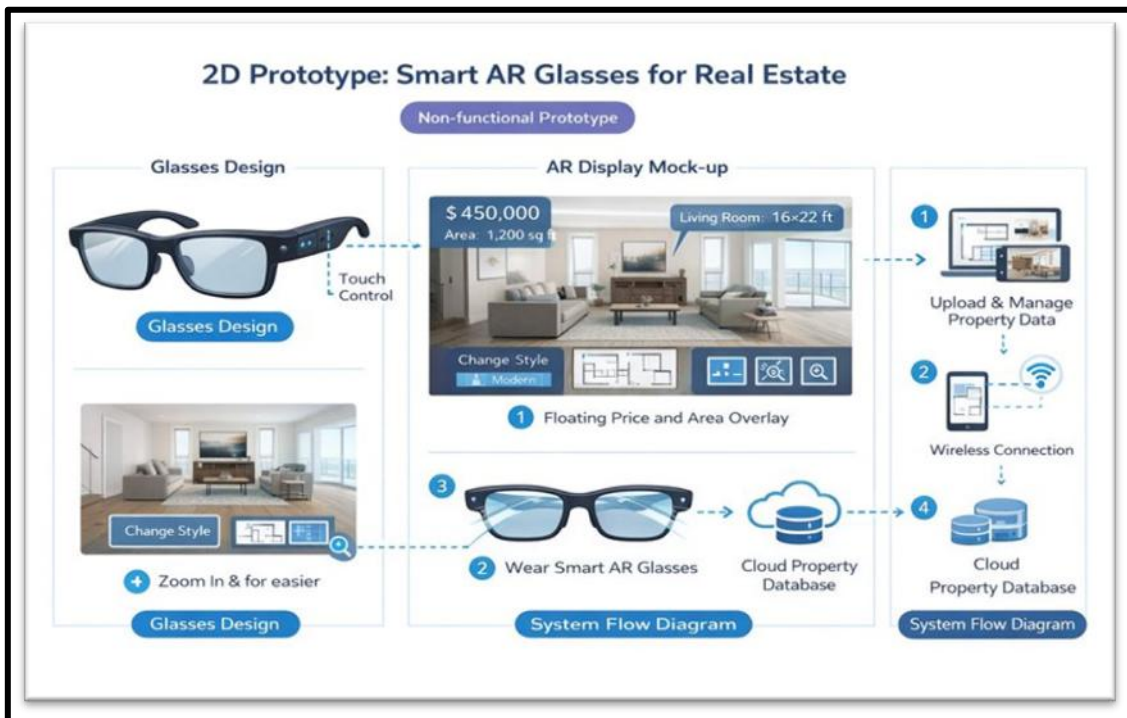


Figure 1

The proposed product is Smart Augmented Reality Glasses developed specifically to enhance the property viewing process within the real estate industry. The product is designed to be lightweight, ergonomic, and suitable for professional use during extended property visits. From a physical design perspective, the glasses resemble conventional eyewear in order to ensure user comfort and social acceptability during client interactions. The transparent lenses allow users to view the real environment while digital elements are overlaid using augmented reality technology. A minimalist and professional aesthetic is adopted to align with the expectations of real estate agents and property developers. Functionally, the product enables users to visualise three-dimensional furniture, interior layouts, and design concepts within empty or unfinished spaces, thereby improving spatial understanding.

In addition, digital overlays such as floor plans, room dimensions, pricing information, and property specifications are displayed in real time within the user's field of view. The underlying technology combines augmented reality, spatial mapping, and 3D modelling to ensure accurate alignment between digital content and the physical environment. Property data is stored on a cloud-based system and managed through a dedicated mobile application, allowing agents to upload, update, and customise content efficiently. Overall, the design and technology of the product address market needs by improving decision-making, reducing time spent on physical viewings, and supporting remote and overseas property buyers.

3.3.3 Concept Testing

Concept testing is conducted to evaluate the feasibility, clarity, and market acceptance of the Smart AR Glasses concept before further development. The product concept is communicated through detailed verbal explanations supported by visual sketches, digital renderings, and presentation slides that illustrate real estate use cases. The concept is introduced to selected individuals from the target market, including real estate agents, property buyers, and real estate students, to gather preliminary feedback. During this stage, respondents are encouraged to provide opinions regarding the practicality of the product, perceived usefulness, and ease of understanding of the AR features.

Moreover, attention is given to whether the concept effectively addresses common challenges faced during property viewing, such as difficulty visualising space and reliance on static marketing materials. The feedback obtained from concept testing is analysed to identify strengths, weaknesses, and areas requiring refinement, ensuring that the proposed product aligns with user expectations and industry requirements.

3.3.4 Build Prototype (2D)



Figure 2

For the purpose of this assignment, a non-functional two-dimensional (2D) prototype is developed to visually represent the proposed Smart Augmented Reality Glasses for real estate viewing. The 2D prototype illustrates the overall physical design of the glasses, including the frame structure, lens placement, and basic control areas, allowing viewers to understand the intended form and professional appearance of the product.

In addition, the prototype includes an augmented reality display mock-up that demonstrates how digital information such as property price, floor area, room dimensions, and interior design options would appear within the user's field of view during a property viewing session. A simplified system flow diagram is also incorporated to explain the interaction between the AR glasses, the mobile application used by real estate agents, and the cloud-based property database. Although the prototype does not provide actual functionality, it effectively communicates the product concept, visual interface, and usage process. This approach is appropriate for academic evaluation as it clearly represents the intended product design and user experience without requiring a fully developed working model.

3.3.5 Test Marketing

Test marketing is conducted to assess the potential acceptance and demand for the Smart AR Glasses among the target market. A structured questionnaire is distributed to a sample group consisting of real estate agents, property buyers, and individuals with an interest in real estate, with a total of 31 respondents considered sufficient due to current limitations.

The questionnaire focuses on respondents' perceptions of the product's usefulness, and satisfaction with the proposed features. The results obtained from the test marketing stage provide valuable insights into customer preferences, perceived benefits, and potential barriers to adoption. This feedback is used to refine the product concept and guide future development decisions prior to full market introduction.

These are the feedback of the questionnaire for the product. Generally, the questionnaire has 5 sections which are part A, B, C, D, and E. Part A is to collect the demographic data of the respondents and has three questions with option answers.

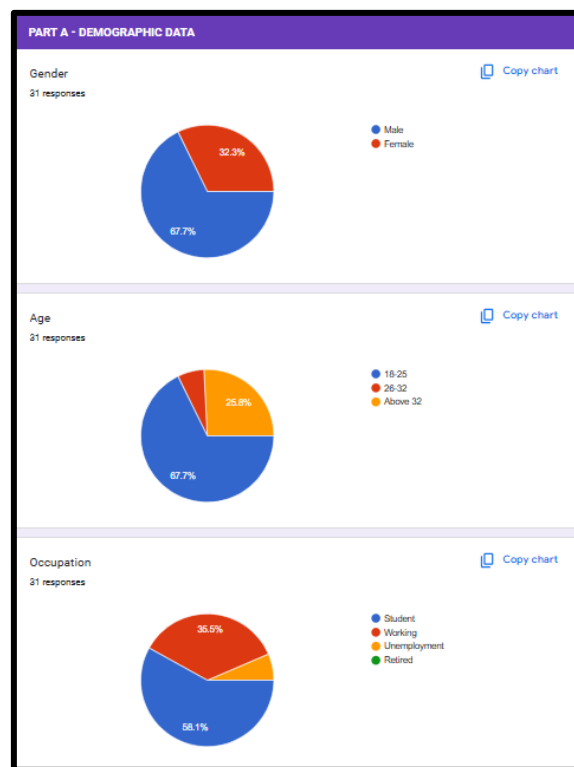


Figure 3

The first question of this part is the gender of the respondents which the option is male or female. From this result it shows the respondents who answer this questionnaire form is 21 male respondents and the other 10 is the female respondents. The second question is the age of the respondent, from the data that collected the majority of the respondents ages is around 18

to 25 years old with 21 responses, there also 2 respondents age around 26 to 32 years old, and the rest of 8 respondents is age above 32 years old. The last question of this part is the occupation of the respondents, the major contributes to answer this questionnaire is the students which is 18 students is take part to answer the form, another 11 person is the employment or working people and the rest 2 people is the unemployment persons.

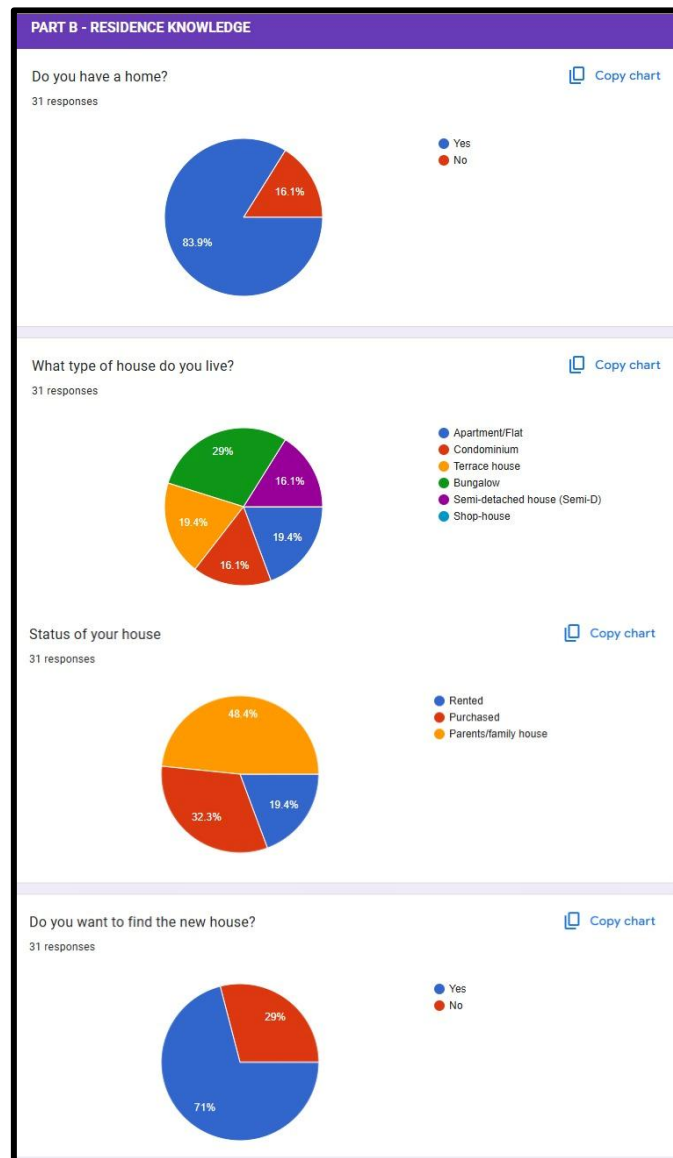


Figure 3

The part B is the section where the marketing team want to collect the residence knowledge from the respondents. This part has 4 questions starting from the respondent has a home, type of house they live, status of the house and the respondents' interest to find a new house. Same as previous section this part has option answers for respondents choose to answer the questions.

Result from the 31 respondents shows the 26 of them has a home while the rest 5 respondent didn't has a home. Maybe they life at the temporary residence. The second question's response shows the 9 from 3 respondents live in a bungalow house, while both the terrace and apartment have 6 respondent that live it in and the rest semi-detached house and condominium each have 5 respondents living the property.

The third question is about the status of the house, from the 31 respondents, 15 of them is living with their family, 10 of them has purchases their own property and the 6 of them is rented the property. The last question is about the respondents' interest to find a new house, 22 of them are interest to find a new house while the rest 9 people want to stay in their current house.

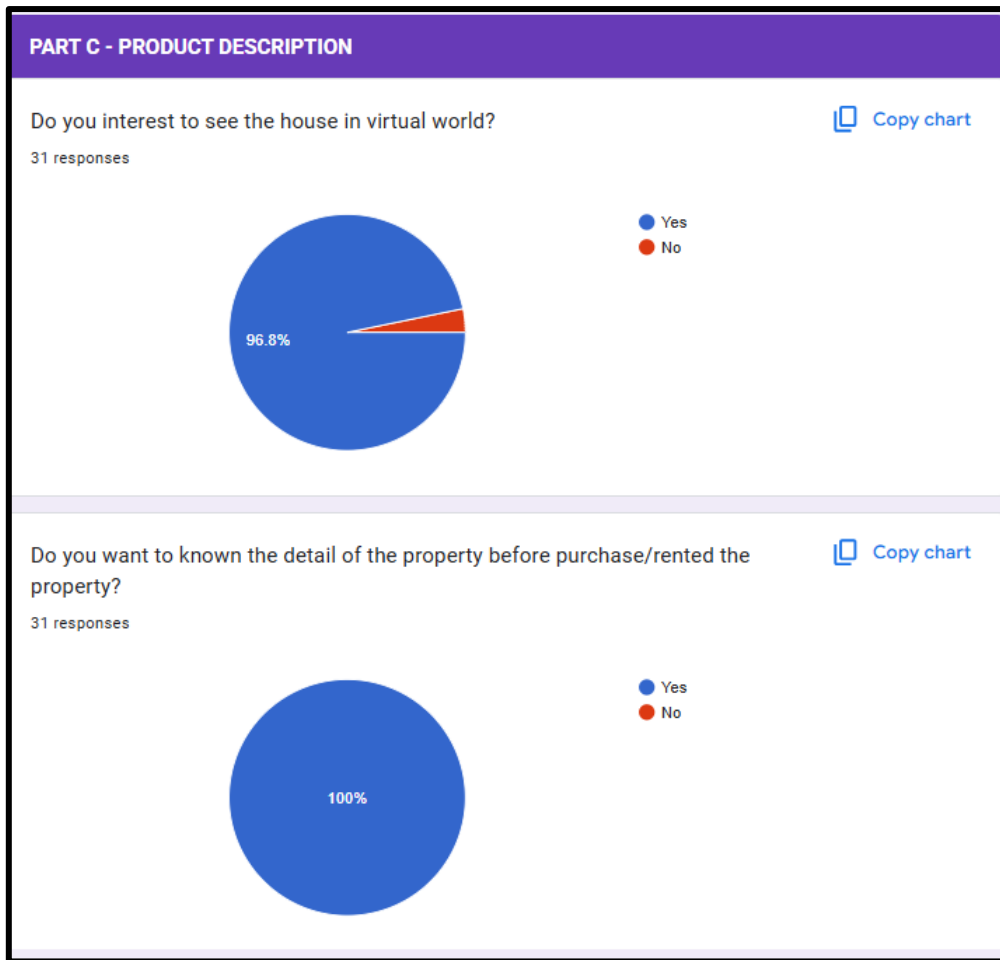


Figure 4

Part C is section which the introduction to our product which is the product description, this part consists two question which is the respondent's interest to see the house in the virtual world and the respondent's interest to know the detail of the property before buy or rent the property. The first question is the respondent's interest to see the house in virtual world, from the 31 respondents, 30 of them are interest to see the house virtually while only one respondent is no interest to see the property in virtual world. The second question is the respondent's interest to know the detail of the property before buy or rent the property and all 31 of the respondents is interest to see the property before buy or rent the property.

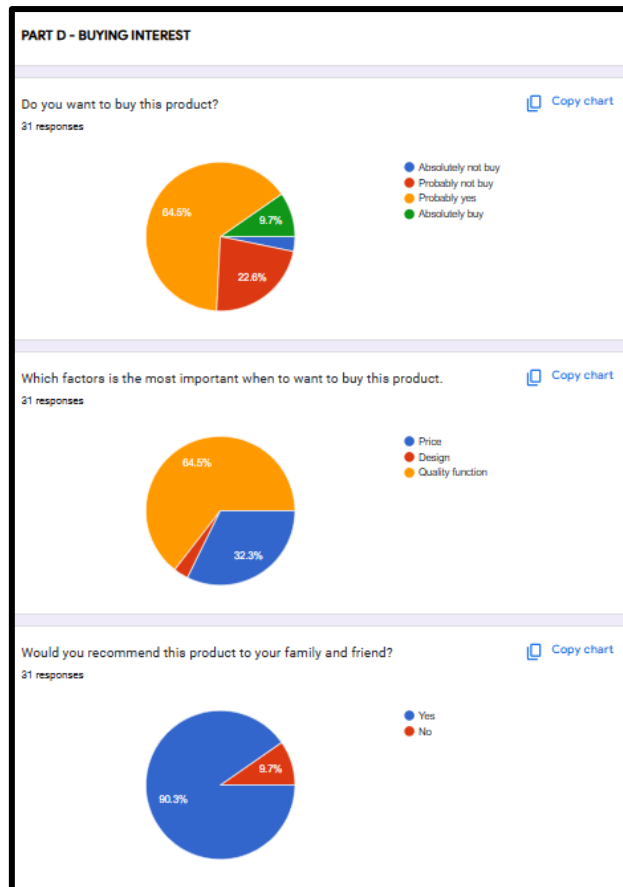


Figure 5

Part D is part where the marketing team want to know if the respondent is interest to buy this product or not. This section has the three question which is one question the to rate the interest of respondent to buy this product and the rest of two questions is consist of the question with the option answer to choose.

For the first question, from 31 respondents, 20 of them is probably agree to buy this product, the 7 of them is probably not buy this product, 3 of them is absolutely buy the product and 1 of the respondents didn't want to buy the product. The second question is the crucial factors of the product that make the respondent want to buy, from 31 respondents 20 of them has agreed the quality function is the big factor to purchase this product, while 10 of them is choose the price as the main factor and only 1 respondent is choose the design as the main factor. The third question is the respondent recommendation to advice their family and friend to buy this product, from 31 respondents 28 of them agreed to recommend this product to their family and friends while the rest 3 respondent didn't agree to recommend this property.

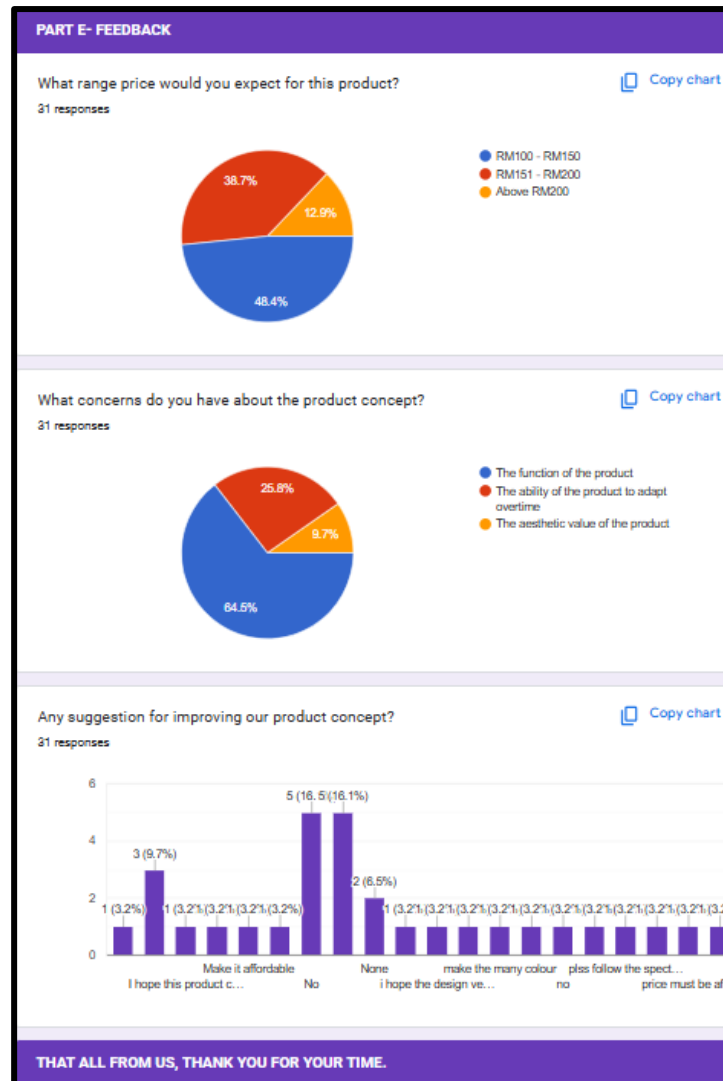


Figure 7

The last section which is part E is the respondent's feedback of the product. This section has three questions which are two questions of option answer question an open-ended question

The first question is about the range price of this product that respondent expect for this product, from 31 respondents 15 of them has an expectation price about RM100 to RM150 for this product, 12 of them is expect the product price is about RM151 to RM200 per each and the rest 4 of them expect the price will be above RM200 per unit. The second question is about the concern of the product. From 31 respondents, 20 of them has the concern with the function of the product, while 8 of them is concern about the adaptability of the product overtime and the rest 3 of them is concern about the aesthetic value of the product. The third and last question is the open-ended question that give the respondents chances to give suggestion to improving the product. Overall, 20 respondents are satisfying with the product concept while another 11 respondents are giving suggestion in the design and the price of the product.

4.0 Conclusion

In conclusion, this project highlights the limitations of traditional property viewing methods that are still widely used in Malaysia. Physical site visits require significant time, travel, and coordination, which can be inconvenient and costly for buyers and real estate agents. These challenges are more serious for overseas investors, outstation buyers, and busy professionals. Although digital platforms such as online listings, photos, and basic virtual tours are commonly used, they remain limited as they do not provide a realistic sense of space, depth, and layout, often causing buyers to delay decisions or request multiple visits. This situation shows the growing need for more efficient and immersive property viewing solutions.

The Smart Viewing Real Estate Glasses offer an effective solution by using augmented reality technology to create immersive and interactive property viewing experiences. Through AR smart glasses and a dedicated application, users can virtually walk through properties while viewing real-time information such as floor plans, unit size, pricing, and nearby amenities. This approach improves understanding of property layouts and spatial proportions, allowing buyers to evaluate properties more accurately without the need for repeated physical visits. It also allows users to revisit properties multiple times at their own convenience.

The use of the NABC framework strengthens the project by clearly identifying real market needs, presenting a practical approach, and highlighting clear benefits over existing solutions. Buyers benefit from better decision-making and convenience, real estate agents gain efficiency and reduced workload, and developers can lower marketing costs while reaching a wider audience, including international buyers. Compared to current digital tools, the Smart Viewing AR Glasses provide a more advanced and immersive experience, giving them a strong competitive advantage in the Malaysian real estate market. This framework also helps ensure that the proposed solution is realistic and market-ready.

Overall, the Smart Viewing Real Estate Glasses support digital transformation and innovation within the real estate industry and align with Malaysia's smart technology and Industry 4.0 initiatives. Although this project focuses on concept development and a 2D prototype, the positive feedback from concept testing and test marketing indicates strong potential for future development. With further improvement and real-world implementation, this technology has the potential to transform property viewing practices and add long-term value to the real estate sector. In the long term, it may also encourage wider adoption of advanced digital tools across the property industry.

6.0 References

1. Peps Ventures. (2021). How virtual tours and 3D walkthroughs are changing property marketing.
<https://resources.pepsventures.com/how-virtual-tours-and-3d-walkthroughs-are-changing-property-marketing>
2. Tunku Abdul Rahman University College. (2020). Virtual reality application for real estate property viewing (Final year project).
<https://eprints.tarc.edu.my/15653/>
3. StarProperty. (2018). Viewing property through virtual reality.
<https://www.starproperty.my/news/property-through-virtual-reality/126488>
4. Miljkovic, I., Shlyakhetko, O., & Fedushko, S. (2023). Real Estate App Development Based on AI/VR Technologies. *Electronics*, 12(3), 707.
<https://doi.org/10.3390/electronics12030707>
5. Crudu, V. & MoldStud Research Team. (2025, April 6). Enhancing customer engagement in real estate – A case study on augmented reality solutions. MoldStud.
<https://moldstud.com/articles/p-enhancing-customer-engagement-in-real-estate-a-case-study-on-augmented-reality-solutions>
6. Crudu, V. & MoldStud Research Team. (2024, November 25). Real estate innovation – Exploring the possibilities of AR and VR technologies. MoldStud.
<https://moldstud.com/articles/p-real-estate-innovation-exploring-arvr-possibilities>
7. Ulrich, K. T., & Eppinger, S. D. (2016). *Product design and development* (6th ed.). McGraw-Hill Education.
8. Tidd, J., & Bessant, J. (2020). *Managing innovation: Integrating technological, market and organizational change* (7th ed.). Wiley.
9. Ries, E. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. Crown Business.
10. Malaysian Ministry of Higher Education. (2020). *Entrepreneurship (ENT600) textbook*. Open University Malaysia Press.
11. Azuma, R. T. (1997). A survey of augmented reality. *Presence: Teleoperators and Virtual Environments*, 6(4), 355–385.
12. Miljkovic, I., Shlyakhetko, O., & Fedushko, S. (2023). Real Estate App Development Based on AI/VR Technologies. *Electronics*, 12(3), 707.
<https://doi.org/10.3390/electronics12030707>
13. Crudu, V. & MoldStud Research Team. (2025, April 6). Enhancing customer engagement in real estate – A case study on augmented reality solutions. MoldStud.
<https://moldstud.com/articles/p-enhancing-customer-engagement-in-real-estate-a-case-study-on-augmented-reality-solutions>
14. Crudu, V. & MoldStud Research Team. (2024, November 25). Real estate innovation – Exploring the possibilities of AR and VR technologies. MoldStud.
<https://moldstud.com/articles/p-real-estate-innovation-exploring-arvr-possibilities>

15. Peps Ventures. (2021). How virtual tours and 3D walkthroughs are changing property marketing.

<https://resources.pepsventures.com/how-virtual-tours-and-3d-walkthroughs-are-changing-property-marketing>

16. Tunku Abdul Rahman University College. (2020). Virtual reality application for real estate property viewing (Final year project).

<https://eprints.tarc.edu.my/15653/>

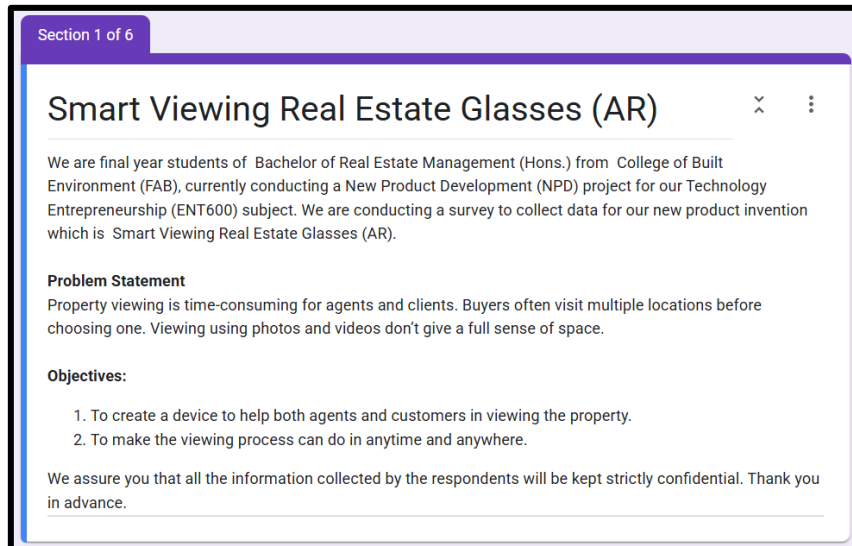
17. StarProperty. (2018). Viewing property through virtual reality.

<https://www.starproperty.my/news/property-through-virtual-reality/126488>

7.0 Appendices

7.1 The questionnaire (Goggle Form)

7.1.1 The introduction of questionnaire



Section 1 of 6

Smart Viewing Real Estate Glasses (AR)

We are final year students of Bachelor of Real Estate Management (Hons.) from College of Built Environment (FAB), currently conducting a New Product Development (NPD) project for our Technology Entrepreneurship (ENT600) subject. We are conducting a survey to collect data for our new product invention which is Smart Viewing Real Estate Glasses (AR).

Problem Statement
Property viewing is time-consuming for agents and clients. Buyers often visit multiple locations before choosing one. Viewing using photos and videos don't give a full sense of space.

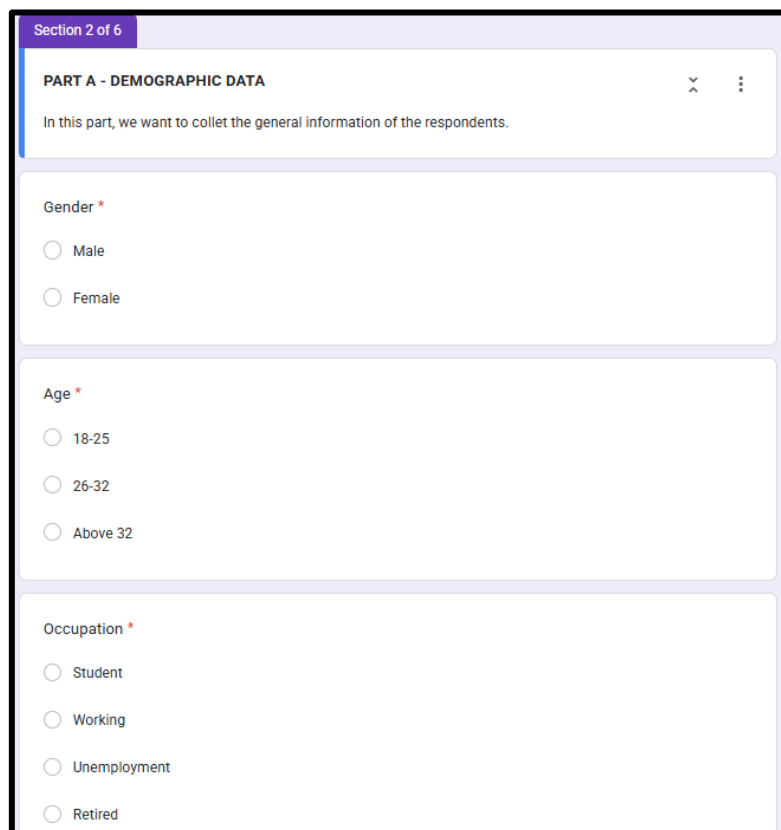
Objectives:

1. To create a device to help both agents and customers in viewing the property.
2. To make the viewing process can do in anytime and anywhere.

We assure you that all the information collected by the respondents will be kept strictly confidential. Thank you in advance.

Figure 8

7.1.2 Part A of questionnaire



Section 2 of 6

PART A - DEMOGRAPHIC DATA

In this part, we want to collect the general information of the respondents.

Gender *

Male

Female

Age *

18-25

26-32

Above 32

Occupation *

Student

Working

Unemployment

Retired

Figure 9

7.1.3 Part B of questionnaire

Section 3 of 6

PART B - RESIDENCE KNOWLEDGE

For this part, we want to ask level of understanding about residence knowledge

Do you have a home? *

Yes

No

What type of house do you live? *

Apartment/Flat

Condominium

Terrace house

Bungalow

Semi-detached house (Semi-D)

Shop-house

Status of your house *

Rented

Purchased

Parents/family house

Do you want to find the new house? *

Yes

No

After section 3 Continue to next section

Figure 10

7.1.4 Part C of questionnaire

Section 4 of 6

PART C - PRODUCT DESCRIPTION

Our product is a tools innovation to help during the housing viewing process.

1. The glasses that upload 3D scans or 360° models of listed properties.
2. The glasses includes interactive features including room info, floor plan overlays, price details.
3. Compare to the old time inspection which is the customer need to make a appointment to check the property, this glasses will help the customer to view the exactly property model in anytime and anywhere without need to go to the property.
4. People also can save travel time and cost to view the property especially the oversea clients.
5. Users just need wear the glasses to "walk through" properties virtually.

Smart Viewing Real Estate Glasses (AR)

SMART VIEWING REAL ESTATE GLASSES (AR)

The diagram shows a pair of black AR glasses with blue-tinted lenses. Labels with leader lines point to various components: 'BATTERY' is located on the left temple; 'AR DISPLAY' is on the right temple; 'CAMERA' is on the right side of the frame; and 'MICROPHONE' is on the right side of the frame.

Do you interest to see the house in virtual world? *

Yes

No

Do you want to known the detail of the property before purchase/rented the property?

Yes

No

Figure 11

7.1.5 Part D of questionnaire

PART D - BUYING INTEREST

In this part, we want to know the respondents are interested in buying our product.

Do you want to buy this product? *

Absolutely not buy

Probably not buy

Probably yes

Absolutely buy

Which factors is the most important when to want to buy this product. *

Price

Design

Quality function

Would you recommend this product to your family and friend? *

Yes

No

After section 4 Continue to next section

Figure 12

7.1.6 Part E of questionnaire

PART E- FEEDBACK ✕ ⋮

For this part, we want to know your feedback about our product.

What range price would you expect for this product?

RM100 - RM150

RM151 - RM200

Above RM200

What concerns do you have about the product concept? *

The function of the product

The ability of the product to adapt overtime

The aesthetic value of the product

Any suggestion for improving our product concept? *

Short answer text
.....

Figure 13