



**POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH
JABATAN KEJURUTERAAN MEKANIKAL**

PROJECT 2

DJJ50193

SMART LIGHTBOARD

NURUL UMIRAH BINTI ISMAIL (08DMP20F2009)

HAZIQ AIMAN BIN KORNAIN (08DMP20F2014)

MUHAMMAD SYAKIRIN BIN NOOR HAFFIZAL (08DMP20F2016)

SESI 2 2022/2023

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SMART LIGHTBOARD

NURUL UMIRAH BINTI ISMAIL (08DMP20F2009)

HAZIQ AIMAN BIN KORNAIN (08DMP20F2014)

MUHAMMAD SYAKIRIN BIN NOOR HAFFIZAL (08DMP20F2016)

**Laporan ini dikemukakan kepada Jabatan Kejuruteraan Mekanikal
sebagai memenuhi sebahagian syarat penganugerahan Diploma
Kejuruteraan Mekanikal**

JABATAN KEJURUTERAAN MEKANIKAL

SESI 2 2022/2023

AKUAN KEASLIAN DAN HAK MILIK

SMART LIGHTBOARD

1. Kami, NURUL UMIRAH BINTI ISMAIL (NO KP:

020818120470), HAZIQ AIMAN BIN KORNAIN (NO KP:020317101343), MUHAMMAD SYAKIRIN BIN NOOR HAFFIZAL (NO KP:021224100813) adalah pelajar Diploma Kejuruteraan Mekanikal (Pembungkusan), Politeknik Sultan Salahuddin Abdul Aziz Shah yang beralamat di 40150 Shah Alam, Selangor.

(Selepas ini dirujuk sebagai 'Politeknik tersebut')

2. Kami mengakui bahawa 'Projek tersebut di atas' dan Harta Intelekt yang ada di dalamnya adalah hasil karya/ reka cipta asli kami tanpa mengambil atau meniru mana-mana harta intelek daripada pihak lain.

3. Kami bersetuju melepaskan 'Projek tersebut' kepada 'Politeknik tersebut' bagi memenuhi keperluan untuk penganugerahan Diploma Kejuruteraan Mekanikal (Pembungkusan) kepada kami.

Diperbuat dan dengan sebenar-benarnya diakui oleh tersebut)

(NURUL UMIRAH BINTI ISMAIL)

.....

(No Kad Pengenalan: 020818120470)

NURUL UMIRAH

(HAZIQ AIMAN BIN KORNAIN)

.....

(No Kad Pengenalan: 020317101343)

HAZIQ AIMAN

(MUHAMMAD SYAKIRIN BIN NOOR HAFFIZAL)

.....

(No Kad Pengenalan: 021224100813)

MUHAMMAD SYAKIRIN

Di hadapan kami,

(MUHAMMAD HANIF BIN SELAMAT)

.....

(NO KP: XXXXXX-XX-XXXX)

MUHAMMAD HANIF

Sebagai Penyelia Projek pada tarikh: (.....)

PENGHARGAAN

Setinggi-tinggi penghargaan dan ribuan terima kasih diucapkan kepada Encik Muhammad Hanif bin Selamat sebagai penyelia projek yang telah banyak memberikan bimbingan serta tunjuk ajar dan nasihat yang baik sehingga projek ini dapat disiapkan walaupun mempunyai banyak rintangan. Disamping itu, kami ingin mengucapkan ribuan terima kasih kepada pensyarah yang telah memberi tunjuk ajar kepada kami sepanjang tempoh pelaksanaan projek ini. Pihak Politeknik Sultan Salahuddin Abdul Aziz Shah juga tidak ketinggalan kerana telah memberikan peluang kepada para pelajar untuk mengembangkan idea-idea yang ada bagi menjadikan sesuatu yang inovasi dan berguna pada masa akan datang.

Bersyukur ke hadrat ilahi serta selawat ke atas junjungan besar kita iaitu Nabi Muhammad SAW dapatlah saya menyiapkan projek akhir walaupun sedikit terlewat dari tempoh yang telah ditetapkan iaitu selama 6 bulan kerana komponen yang rosak diakhir tarikh yang perlu dihantar. Terima kasih kepada panel yang memberi peluang kepada kami untuk membentangkan hasil projek 2 kami sedikit lewat dari tarikh yang ditetapkan.

Akhir sekali, terima kasih diucapkan kepada semua pihak yang telah berkerjasama membantu saya sama ada secara langsung atau tidak langsung bagi menyiapkan tugas projek ini. Dengan ini kami bersyukur ke hadrat Allah SWT maka siaplah projek akhir ini. Harapan kami semoga laporan ini dapat dijadikan panduan kepada pihak-pihak yang berkenaan pada masa hadapan. Sekian Terima Kasih.

Sekian Terima Kasih.

TABLE OF CONTENT

| CHAPTER | CONTENT | |
|---------|--|-------|
| | STATEMENT OF AUTHENCITY AND OWNERSHIP | ii |
| | APPRECIATION | iii |
| | ABSTRAK | iv |
| | ABSTRACT | v |
| 1 | INTRODUCTION | 1 |
| | 1.1 project background | 1 |
| | 1.2 problem statement | 2 |
| | 1.3 objective of the study | 2 |
| | 1.4 scope of the study | 2 |
| | 1.5 significance of the study | 2 |
| | 1.6 research question | 3 |
| | 1.7 summary chapter | 3 |
| 2 | INTRODUCTION | 4 |
| | 2.1 writing board | 4 |
| | 2.2 white board | 5 |
| | 2.3 chalk board | 5 |
| | 2.4 light board | 6 |
| | i. The lightboard as open-source hardware | 6 |
| | ii. Construction consideration | 6 |
| | iii. Full-scale lightboard design | 7 |
| | iv. Small-scale lightboard design | 7 |
| | v. The lightboard in teaching and learning | 8 |
| | 2.5 summary chapter | 9 |
| 3 | INTRODUCTION | 10 |
| | 3.1 flow chart of the study | 11,12 |
| | 3.2 conceptual design | 13 |

| | | |
|---|------------------------------------|----------------|
| | 3.3 safety and product reliability | 13 |
| | 3.4 procedure | 14 |
| | 3.5 materials and equipment | 15 |
| 4 | INTRODUCTION | 16 |
| | 4.1 observation study | |
| | 4.1.1 research type project | 16,17,18,19,20 |
| | 4.1.2 real type project | 20 |
| | 4.2 result and discussion | 21 |
| | 4.3 conclusion | 22 |
| 5 | INTRODUCTION | 23 |
| | 5.1 conclusion | 23 |
| | 5.2 recommendation | 23 |
| | 5.3 limitation project | 23 |
| | 5.4 summary | 23 |
| | REFERENCES | 24,25 |
| | APPENDIX | 26 |
| | 1.gantt chart project 1 | 26,27 |
| | 2.gantt chart project 2 | 28,29 |
| | 3.bill of material | 30 |

ABSTRAK

Reka bentuk papan lampu pintar yang boleh ditulis dari belakang papan, mempunyai saiz yang lebih mudah diurus dan mudah alih adalah topik utama kajian ini. Papan lampu pintar ini bertujuan untuk memudahkan guru menyampaikan pelajaran dalam talian. Adalah penting untuk menjadikannya lebih mudah untuk kedua-dua pengajar menerangkan semasa menulis di papan tulis dan untuk pelajar belajar dengan lebih berkesan walaupun semasa kelas dalam talian. Memandangkan begitu ramai orang masih menggunakan papan putih standard pada masa kini, murid tidak dapat belajar dengan lebih jelas dan guru perlu berjalan lebih banyak. Bagi profesor yang mengendalikan kelas mereka dalam talian, papan lampu pintar mungkin merupakan pengganti yang sempurna.

ABSTRACT

The design of a smart lightboard that can be written on from the back of the board, has a more manageable size, and is portable is the main topic of this study. This smart lightboard seeks to make it simpler for teachers to deliver online lessons. It is crucial to make it simpler for both the instructor to explain while writing on the board and for students to learn more effectively even when the class is online. Since so many people still use the standard white board nowadays, pupils cannot learn more clearly, and teachers need to walk about more. For professors who conduct their classes online, a smart l

CHAPTER 1

PROJECT INTRODUCTION

1.0 INTRODUCTION

A smart lightboard is a cutting-edge educational tool that allows lecturers and educators to design presentations that are extremely engaging and interactive. Using this cutting-edge technology, educators may write and draw in front of their audience on a transparent glass board with LED lights. Smart lightboards are being used more frequently to teach subjects like physics, maths, and language arts because they are very efficient in grabbing the interest of students of all ages. Smart lightboards have transformed how educators give lessons in the modern digital era by enabling the use of video conferencing, recording, and live streaming technology.

1.1 PROJECT BACKGROUND

- i. Smart Lightboard is an innovative device that improves the learning experience of students. Instead of traditional whiteboards, it uses LED lights to create a glowing surface that can be written on and recorded. The image is then streamed live on a digital platform, making it accessible to students anywhere in the world.
- ii. The Smart Lightboard project was initiated to address the challenges of traditional teaching methods. Studies have shown that students are more engaged and retain information better when they are actively involved in the learning process. Smart Lightboard allows educators to create interactive sessions, where students can ask questions, participate in discussions, and learn collaboratively.
- iii. The Smart Lightboard project also aims to reduce the time and cost associated with creating instructional videos. With the traditional methods of creating videos, production teams require elaborate setups, expensive equipment, and plenty of time. The Smart Lightboard simplifies this process by allowing educators to create videos on the fly, recording the lecture as they write on the device.

1.2 PROBLEM STATEMENT

- i. This project was carried out to provide facilities to instructors who often use visual media as a teaching platform. Before this project was carried out, the instructors only used the existing ones. Apart from that, the existing facilities are relatively few and have their own shortcomings. After all, there are some whiteboard users who are a little uncomfortable with the effect after using it.

1.3 OBJECTIVE OF THE STUDY

- i. to facilitate the online learning process and recording while make it interesting.
- ii. to do online learning process and recording anywhere.
- iii. to provide effectiveness in online learning and class recording.

1.4 SCOPE OF THE STUDY

- i. we chose the online learning process and recording subject as our project guide. It is because there are problems when teaching, especially teaching online or when recording learning videos. With the knowledge of craftsmanship, we learned in semesters 1, 2 and 3, we can apply the knowledge we have by innovating the whiteboard to a "smart lightboard with high quality and attractive according to the user's wishes.

1.5 SIGNIFICANCE OF THE STUDY

- i. This project was carried out to provide facilities to instructors who often use visual media as a teaching platform. Before this project was carried out, the instructors only used the existing ones. Apart from that, the existing facilities are relatively few and have their own shortcomings. After all, there are some whiteboard users who are a little uncomfortable with the effect after using it.

1.6 RESEARCH QUESTIONS

- i. Have you heard about smart light board ?
- ii. Do you think smart lightboard can attract students attention ?
- iii. Are you comfortable if you teach using a normal whiteboard during an online class or record a learning video?
- iv. Do you think smart lightboard can make learning visually interesting?
- v. Do you think smart lightboard is important for an instructor?
- vi. Do you think smart lightboard can help in the online learning process?
- vii. If this smart lightboard was sold in the market, would you buy it and recommend it to your fellow instructors?

1.8 SUMMARY CHAPTER

Whiteboards are now required for in-person classroom learning sessions. Whiteboards are additionally employed for online learning sessions. The present smart lightboard is one of the classrooms learning gadgets made of acrylic that helps teachers deliver lessons more effectively and more efficiently. The results of this study will make it easier to communicate ideas effectively and pleasantly.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

The literature review was reviewed in chapter 2 based on articles that were released between. First off, a thorough description of earlier studies conducted on a specific subject is referred to as a literature review. The literature review looks at scholarly articles, books, and other materials important to a certain study area. This prior study should be listed, described, condensed, impartially assessed, and made clear in the review. Therefore, books and other written works that are considered to have artistic or literary worth or to have a lasting impact are included in the definition of literature.

The review, on the other hand, is an assessment or discussion of something's value. The term "review" can also refer to going over a subject once more as part of a study session or revisiting something later. The combination of these two concepts produced literature reviews, which are crucial for summarising subjects. To sum up, this chapter will contain all the information and theories from the publications that were gathered and the research into earlier work.

2.1 WRITING BOARD

Writing board is a board to be wrote on used in the classroom by anyone who teach people as students or called writing medium which is used to state and show people about notes that has been written by a teacher. Writing boards are also including whiteboard, chalkboard, and lightboard.

Whiteboard and chalkboard are an example of writing board used in a physical or face to face classroom. Meanwhile lightboard are used in a virtual teaching or educational video. Both requires power source but in different way. Figure 2.1 shows an example of writing board.

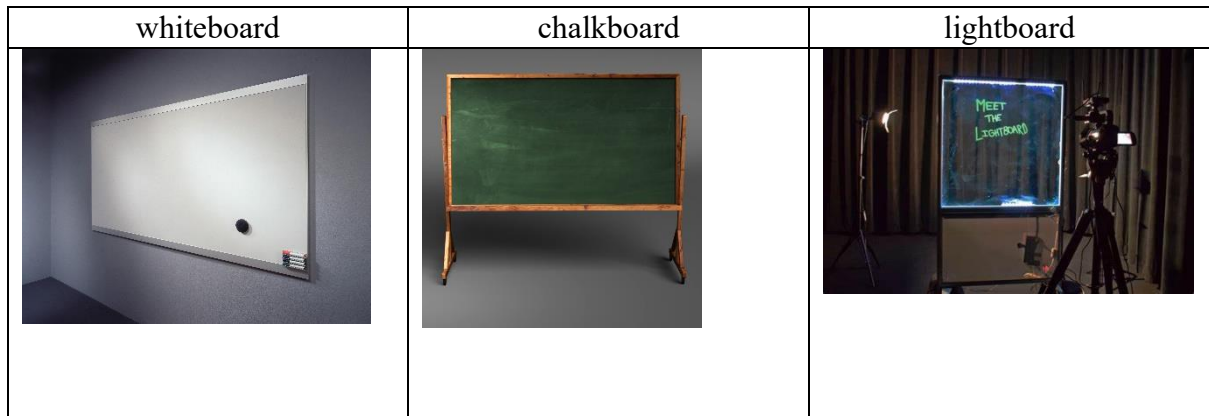


Figure 2.1 Example of writing board

2.2 WHITEBOARD

A whiteboard is a visual tool used by students, teachers, marketers, researchers, organizers, planners, and other professionals to effectively express a content idea or presentation of data. It can be a traditional dry-erase surface or a digital collaboration workspace. The purpose of a whiteboard is to visualize thoughts, concepts, write down ideas, explain and teach, plan and create in the group and many other things. A whiteboard is a glossy, usually white surface for making non-permanent markings.

2.3 CHALKBOARD

A blackboard or a chalkboard is a reusable writing surface on which text or drawings are made with sticks of calcium sulphate or calcium carbonate, known, when used for this purpose, as chalk. Blackboards were originally made of smooth, thin sheets of black or dark grey slate stone. Chalkboards are a great way to maximize your students' ability to learn and retain new information. By writing out key points and drawing helpful illustrations on the chalkboard, students are also able to take better, more accurate notes.

2.4 LIGHTBOARD

The Lightboard is a low-technology solution for recording instructional videos where the focus is on writing or drawing. Lightboards are most commonly constructed as a pane of glass surrounded by a strip of small LED lights that illuminate dry erase markers to make writing highly visible on camera. Faculty record their instruction in the manner to which they are already accustomed—using a dry erase marker on a whiteboard-sized surface—as they are captured with a camera on the other side of the glass. The video is mirror-flipped using computer software (or by pointing a camera directly at a mirror while recording) and the handwriting appears correct to those watching the video

I) THE LIGHTBOARD AS OPEN-SOURCE HARDWARE

Michael Peshkin, the originator of the Lightboard Open-Source hardware initiative, inspired a few individual lecturers, colleges, and universities to construct Lightboards of their own (Peshkin, n.d.). By promoting the Lightboard as Open Source, rather than a commercial product, Peshkin's website (Lightboard.info) and accompanying Google Group have fostered a collaborative and reciprocal environment of idea sharing and design documentation of Lightboard construction around the world.

II) CONSTRUCTION CONSIDERATIONS

The Open-Source hardware nature of the Lightboard offers both benefits and limitations. While schools and individual faculty have constructed their own boards, and many design types and construction material options are described online (Peshkin, n.d.), the skills and tools necessary to construct a study. The undergraduate college and the business school have experimented with online electives, hybrid courses, and flipped classrooms.

III) FULL-SCALE LIGHTBOARD DESIGN



Designs from Grand Valley State University eLearning and Emerging Technologies (n.d.) and the University of California San Diego (Anderson & Frazee, 2014) featuring Steelcase adjustable height tables were used as the inspiration for this build. Specifically, the Steelcase Series 7 adjustable height table was ordered from a contracted vendor for black on black custom finish so as to not be visible on camera. Once arriving on campus, the table was modified with the addition of casters and a wooden frame to house the glass.

IV) SMALL-SCALE LIGHTBOARD PILOT



Michael Peshkin's website (Lightboard.info) provides links to schools and individuals who have shared their Lightboard designs, instructions, and construction progress. The designs and materials used in the construction of Lightboards are varied and unique, such as custom woodworking, mounts upon existing adjustable height tables, and aluminium framing (Peshkin, n.d.). After considerable time studying the designs and materials used in Lightboard construction, the authors set out to develop a prototype to be used in a faculty pilot. The Lightboard pilot began as a three- by five-foot sheet of Plexiglas surrounded by LED strip lights pressed to the edge of the glass and secured with electrical tape (Figure 2). The Lightboard contained no frame, but rather a modest wooden stand which, when inserted, kept the Plexiglas upright. The Lightboard used for the pilot was constructed by the authors in their garage and offices with materials and scrap lumber already on hand. The Plexiglas board, being frameless save for a border of electrical tape, was easily transportable and wide enough to fit on a desk-sized table.

V) THE LIGHTBOARD IN TEACHING AND LEARNING

As more faculty are making the transition to online learning, blended learning, and active learning, the Lightboard can serve as a low-barrier tool for the production of learning media. By removing the burden of learning how to use new software, this time can instead be shifted to the thoughtful design and pacing of instruction. When utilizing contemporary pedagogies, faculty often elect to make course materials available online. In designing instruction and supplemental learning media, faculty should reconsider the role of content in their classroom (Weimer, 2013) and aim for student-centered opportunities for active engagement with the ideas presented rather than passive consumption of a library of course videos. Some may view the Lightboard as a technological novelty, But what makes the Lightboard noteworthy is in its simplicity of use—a sans technology from the lecturer's point of view—rather than its on-camera glow. The novelty of the Lightboard may entice faculty to visit their teaching and learning center and the center's program offerings, as was the case observed in our workshop, leading to secondary conversations on improving teaching practices. In the event that the Lightboard is not a good match for the subject matter at hand, the practices of planning,

segmenting, and storyboarding content are transferrable to rapid eLearning development software, screencasts, and Web 2.0 media production solutions.

| AUTHOR | RESEARCH | OUTCOME |
|--------------------------|--|--|
| McCorkle & Whitener,2017 | mirror-flipped video using computer software (or by pointing a camera directly at a mirror while recording) and the handwriting appears correct to those watching the video. | this study is to examine whether this product is suitable to be used for teaching visually. |
| Peshkin, n.d. | promoting the Lightboard as Open Source, rather than a commercial product. | to refer as an product design idea and knowledge as it is already being promoted around the world. |
| Peshkin, n.d. | the skills and tools necessary to construct a study. | to learn about what is required to build such as product. |
| Anderson & Frazee, 2014 | Designs from Grand Valley State University eLearning and Emerging Technologies and the University of California San Diego | as a reference for products feature and design. |
| Peshkin, n.d. | The designs and materials used in the construction of Lightboards are varied and unique. | as inspiration of product's weight, size and material used. |
| Peshkin & Anderson, 2017 | removing the burden of learning how to use new software, this time can instead be shifted to the thoughtful design and pacing of instruction. | to acknowledge effectiveness of product in teaching and learning. |

2.5 SUMMARY CHAPTER

The study of this project can boost understanding while also refining pupils' abilities to study things attentively such as the study of portable making through the development of a lightboard that has been built. A portable and foldable lightboard was designed and developed to use as much space yet is space saving by being able to fold and carried. to light the LED

up and suitable for e-learning or virtual learning. Overall, this chapter provides a review of earlier research sources to conclude the task. Students can also learn about the functions of machinery in general.

CHAPTER 3

METHODOLOGY

3.0 INTRODUCTION

As far as we know, this chapter will recover about research and findings in methodology. The methods of implementation of smart lightboard will be described and explained how to develop this project from the beginning of the process until the design product is generated. This chapter is helpful in upcoming with ideas either in sketches or also in drawing using computer. This chapter also shows the initial process of analysis carried out including costs, materials as well other costs directly related to the implementation of the project. This smart lightboard has been designed and developed to to facilitate instructors in online learning sessions or make learning videos more easily and effectively.

3.1 FLOWCHART OF STUDY

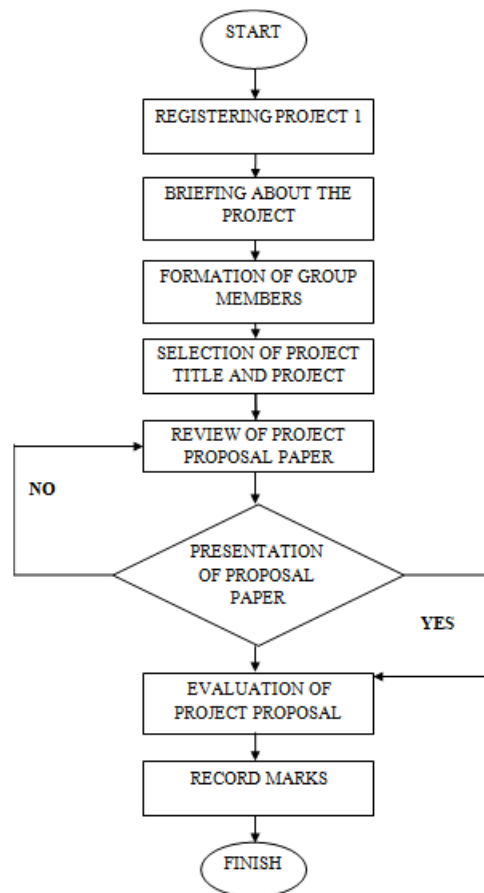


Figure 3.1 Flowchart of Study Project 1

Figure 3.1 shows the flow chart of the study. Firstly, project course registration 1. Secondly, briefing on the project by the course lecturer. Next, all students need to form groups. 1 group consists of 3 people. After forming the group, start with the selection of the project title and project supervisor. We chose the title of smart lightboard and Mr Muhammad Hanif Bin Selamat as the project supervisor. Continue with the presentation of the project proposal paper and improve the project proposal paper so that the project proposal paper is accepted.

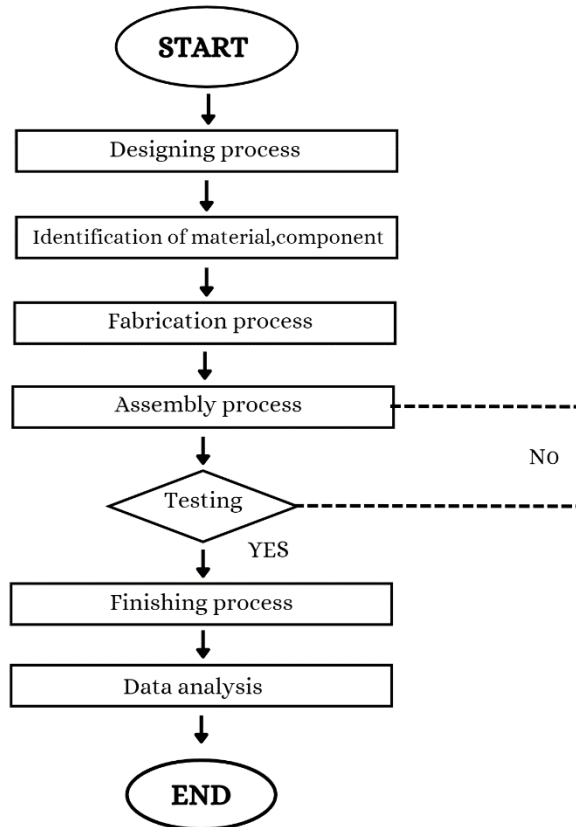


Figure 3.2 Flowchart of Design Process

The flow chart of the design process is shown in Figure 3.2. Start with design and system. We are looking for a good emphasis on the use of materials needed to produce this project to achieve the objective.

3.2 CONCEPTUAL DESIGN

Conceptual design is an early phase of the design process, in which the broad outlines of function and form of something are articulated. It includes standard and code practice in design, safety and product reliability, criteria and constraints in design considerations, material selections, design specifications, and economy. With the presence of conceptual design, we can give a little bit of enlightenment to choosing the right design to realize our project. We can also gain about a project's benefits and drawbacks through conceptual design.

3.3 SAFETY AND PRODUCT RELIABILITY

As we all know, everything that exists in this world has its safety and product reliability. Safety is important in our daily life as it is related to our health as well. In short, safety is a state in which or a place where you are safe and not in danger or at risk. Enforcing safety rules can reduce on-the-job accidents and injuries and maximize productivity. Safety instructions can prevent someone from doing dangerous things unconsciously. Hence, they need to know the right safety rules when using this mobile food tricycle project as shown in Table 3.4.1.

| | BEFORE | DURING | AFTER |
|------|--|---|---|
| i. | measure the required length of acrylic | ensure the acrylic length is cut accurately | re-measure the acrylic length after cutting |
| ii. | measure the required length of aluminium iron. | make sure the tip of the iron is slanted | put aluminium iron on acrylic |
| iii. | make a hole in the end of the aluminium iron | attach aluminium iron using rivets | make sure the aluminium iron sticks well |

3.4 PROSEDURE

a) design

Although the concept is more akin to an online class, it is based on the whiteboard that is frequently used in classrooms for the instructor to write while instructing. Additionally, because it is smaller than the typical one, it is more portable. It may also be seen more clearly and features a lamp to illuminate the writing that is reflected.

b) fabrication

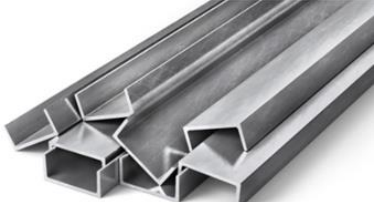
In the beginning, we measure all the iron needed for the frame and cut it with a slanted end.

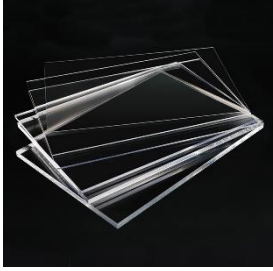




The iron used as a frame is given a small hole at one end in the first phase to facilitate riveting it easier. Then, we place the acrylic into the cut iron first, followed by the LED light. Finally, we use the proper rivets to attach all the materials together.

c) Test

By writing on the board to test the project, we can observe that the writing is perfectly legible. Additionally, we hoist the project to check its weight.

3.5 MATERIALS AND EQUIPMENT

| NO | COMPONENT | DESCRIPTION | DIAGRAM |
|----|----------------|---|---|
| 1 | Aluminium iron | to be used as a smart lightboard frame and legs |  |

| | | | |
|---|-------------|--|---|
| 2 | acrylic | to be used as a writing board |  |
| 3 | LED light | to emit lighting writing on acrylic |  |
| 4 | Marker pen | to write on acrylic |  <p>MEDIUM POINT Light Green</p> |
| 5 | Black spray | to blacken the iron used in the frame |  |
| 6 | Rivet | for the installation of smart lightboard frames and legs |  |

CHAPTER 4

RESEARCH FINDING AND DISCUSSION

4.0 INTRODUCTION

This chapter will discuss in detail the data analysis and findings or field research that was obtained from the study based on the objectives and scope of the study. To achieve the objectives and stay within the scope of the project, studies and discussions on the "Smart Lightboard" project have been conducted. One of the Smart Lightboard's goals is to create a portable yet having a large screen to be written on. Besides that, the objective of this project is to design a lightboard for the use of e-learning class or video using a small power source. Furthermore, the scope of this project specifies the use of a 10000Mah power source, and the use of 12v output cable and a 12v led light. Figure 4.1 show the flowchart of the project 2

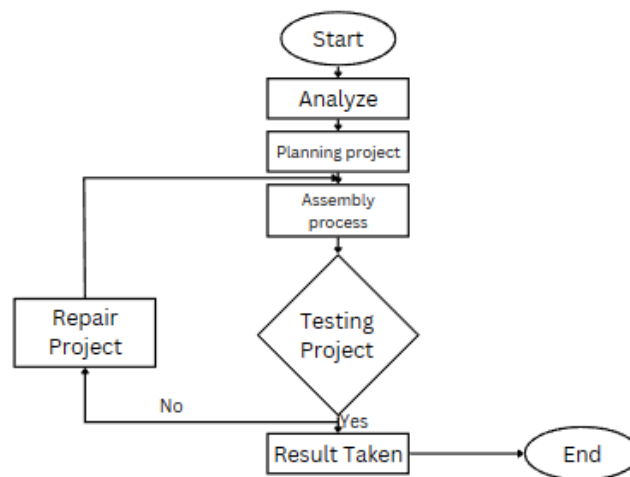


Figure 4.1 flowchart project 2

4.1 OBSERVATION STUDY

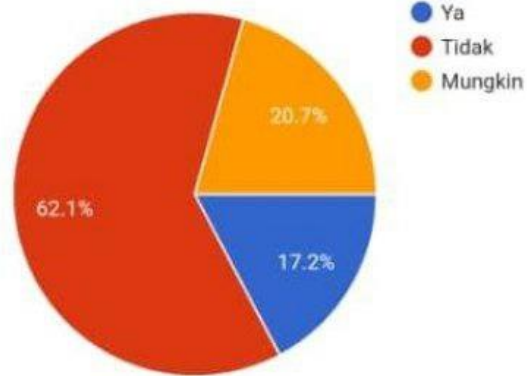
4.1.1 RESEARCH TYPE PROJECT

Our team conducted a survey for knowledge of Lightboard and comparisons between Lightboard and Whiteboard while teaching online class or record an educational video. Lightboard was created for the reason that the use of whiteboard was found used a lot of movement against instructors. We conducted a survey of students and instructors to get public analysis and approval on the project we undertake, Smart Lightboard. Here is the analysis data obtained from the survey we did.

Apakah anda pernah mendengar tentang **SmartLightBoard**?

 Copy

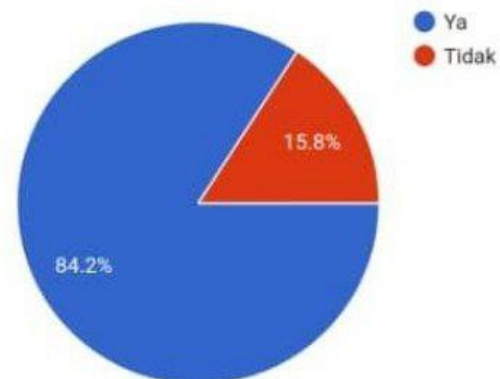
29 responses



Adakah anda rasa smart lightboard dapat menarik perhatian pelajar?

 Copy

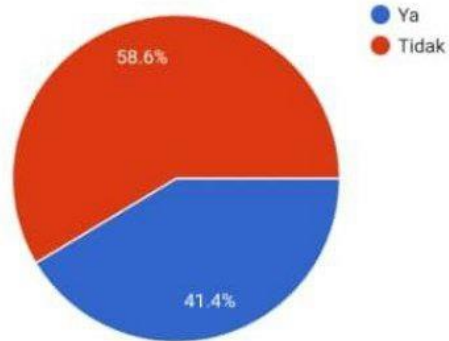
19 responses



Adakah anda **selesa** jika mengajar menggunakan whiteboard biasa ketika kelas online atau merakam video pembelajaran?

 Copy

29 responses



Adakah anda rasa smart lightboard dapat membuat pembelajaran secara visual menarik?

 Copy

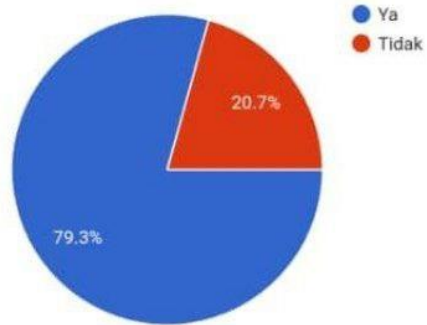
19 responses



Adakah anda rasa SmartLightBoard **penting** bagi seorang pengajar?

 Copy

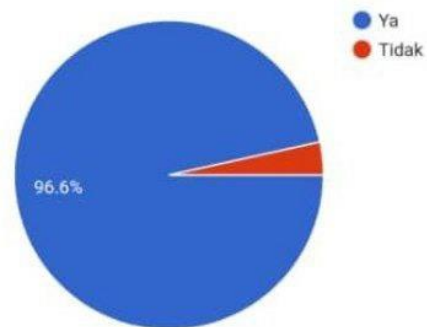
29 responses



Adakah anda rasa SmartLightBoard dapat **membantu** dalam proses pembelajaran online atau video pembelajaran?

 Copy

29 responses





The diagram above shows the percentage of our survey. Based on the diagram, it was found that 17.2% know about lightboard, 62.1% do not know and 20.7% are not sure about it. Despite this, 84.2% of respondents feel that Lightboard can attract students' attention while studying virtually. To get the instructor's perspective, we went on to ask about the comfort of using whiteboard when teaching virtually. Found 58.6% feel uncomfortable while 41.4% felt comfortable to make the whiteboard as a writing material to be used in e-learning. Next, the question we ask is about making virtual learning interesting by using lightboard. the result is 100% of the respondents think lightboard can make e-learning interesting. The majority think that lightboard can help in the online learning process and video learning and it is recommended to fellow teachers to use lightboard as a writing medium to teach online or record videos about learning. It is also state that 79.3% of respondents opinion state the lightboard is important to online class and educational video.

4.1.2 REAL TYPE PROJECT

All of the group member, chose to conduct field research at "Politeknik Sultan Salahuddin Abdul Aziz Shah". This is because to the fact that Sultan Salahuddin Abdul Aziz Shah Polytechnic has a lightboard. The proprietor of the lightboard used the lightboard to do e-learning class and video. The goal of our field study is to look more closely at the lightboard's design and evaluate the various elements that can be used to create our project 2, the Smart Lightboard. Various elements are known to us as a result of our research. Our supervisor showed us the lightboard and all of the group members together took pictures of the lightboard to strengthen the evidence that we conducted a field study in Politeknik Sultan Salahuddin Abdul Aziz Shah. Figure 4.1 depicts a photo of the existing lightboard.



Figure 4.1

4.2 RESULT AND DISCUSSION

According to the findings of our field research on the lightboard at Sultan Salahuddin Abdul Aziz Shah Polytechnic, there are several elements that we can highlight, as well as some that should not be taken into account for us to succeed in our project 2 Table 4.1 below breaks down and comments on some of those elements.

Table 4.1 shows the element

| ELEMENT | PSA LIGHTBOARD | SMART LIGHTBOARD |
|----------------|---|--|
| Size | Huge-scale sized requires huge space to place the lightboard. | Small-scale sized affecting space and weight to be ease for be carried. |
| Foldable | Flat-board leaves an effect to the space. | Using foldable elements to be used for open the board while using and close the board to reduce using space while being carried. |

| | | |
|--------------|-------------------------------------|--|
| Portability | Has a limit on space to be carried. | Can be lifted, folded, and stored in a small space. |
| Power-source | Using plug output. | Using battery as a power-source to make it easy to carry and can be use even far from plug output. |

4.3 CONCLUSION

In conclusion, through this field study we have realized that there are elements that can be highlighted. In addition, doing this field study has also opened the eyes of our group members about the advantages and disadvantages found in our two projects. With the existing knowledge this can also convince people to use our project in the future. Finally, with this study we can also upgrade all the existing shortcomings of our lightboard and indirectly also open the eyes of the community regarding how and what needs to be added to upgrade the lightboard in the future so that this project is successfully commercialized and favored by small teachers to teach and attract more students to learn in the future.

CHAPTER 5

CONCLUSION AND SUGGESTION

5.0 INTRODUCTION

This chapter will go over the research summary, conclusions, and suggestions for improving the study. The summary and conclusion are based on the results of the data analysis obtained in Chapter 4, which are the research findings.

5.1 CONCLUSION

The smart lightboard, in conclusion, is a very creative and adaptable teaching tool that enables instructors to develop dynamic and interesting content for their pupils. It has the potential to revolutionise the way we teach and learn in the classroom thanks to its interactive features, high-quality video recording capabilities, and simplicity of use. Its capacity to support remote collaboration and distance learning makes it a vital asset in the rapidly shifting educational environment of today. The smart lightboard marks a huge advancement in the way we approach teaching and learning as technology continues to change the future of education.

5.2 RECOMMENDATION

There are a few suggestions to enhance this smart lightboard based on the findings of the research that has been done. Making a frame installation that can remove acrylic quickly is one of them. Make the legs of the smart lightboard better and safer next. Lastly, swap out the acrylic for something less heavy and difficult to scratch.

5.3 LIMITATION PROJECT

Each project that is created has a predetermined budget. A little bit of darkness is required for the smart lightboard project so that the lighting on the lettering can be seen more clearly. Additionally, a lighter material must be employed. This is due to the fact that the manufactured smart lightboard is portable, making it simpler for the user to transport it anywhere.

5.4 SUMMARY

To determine whether a product is appropriate for use and will become something that is easier, faster, and safer, its construction must first be investigated and analysed. This is considered "innovation." Created as a facilitator for use in outdoor activities, innovate is constructed from already-available goods.

As with every project that is established, the smart lightboard project has its own significance and goals. Even though there were issues at first, we were able to accomplish the goal. We therefore hope that this initiative can be continued for it to be broadly accepted and commercialised. With this, let's work together to produce more innovation and advance the Malaysian economy.

5.5 REFERENCES

- Anderson, M. (n.d.). Learning Glass Solutions, Inc. Retrieved from <http://www.learning.glass>.
- Anderson, M., & Frazee, J. (2014). Learning glass specifications and assembly manual. UC San Diego Academic Computing Media Services. Retrieved from http://its.sdsu.edu/docs/Learning_Glass_Specifications.pdf.
- Anderson, M. Frazee, J. & Peshkin, M. (2018). Reframing learning with learning glass and lightboard. Retrieved from <https://er.educause.edu/blogs/2018/4/reframing-learning-with-learning-glass-and-lightboard>.
- Baden, T., Chagas, A., Gage, G., Marzullo, T., Prieto-Godino, L., & Euler, T. (2015). Open Labware: 3-D printing your own lab equipment. PLoS Biology, 13(3), 1-12. <https://doi.org/10.1371/journal.pbio.1002086>.
- Clark, R. & Mayer, R. (2012). Applying the segmenting and pretraining principles: Managing complexity by breaking a lesson into parts. E-Learning and The Science of Instruction: Proven guidelines for consumers and designers of multimedia learning (3rd ed.). San Francisco, CA: Pfeiffer. <http://doi.org/10.1002/9781118255971>.
- Duke Digital Media Community. (2014, May 16). The dawn of a new day. Retrieved from <https://sites.duke.edu/ddmc/2014/05/16/the-dawn-of-a-new-day>.
- Fung, F. M. (2017). Adopting lightboard for a chemistry flipped classroom to improve technology-enhanced videos for better learner engagement. Journal of Chemical Education, 94(7), 956-959. <http://doi.org/10.1021/acs.jchemed.7b00004>.
- Grand Valley State University eLearning and Emerging Technologies. (n.d.). Digital studio lightboard build. Retrieved from <https://www.gvsu.edu/elearn/digital-studio-lightboard-build-9.htm>.
- Guo, P. J., Kim, J., & Rubin, R. (2014). How video production affects student engagement: An empirical study of MOOC videos. In Proceedings of the first ACM conference on Learning @ Scale. Atlanta, GA. <https://doi.org/10.1145/2556325.2566237>.
- Koch, K. (n.d.). New Revolution Tools. Retrieved from <https://www.newrevolutiontools.com/collections/lightboards>.
- Lopez, N., & Castaneda, J. (2015, December 18). Instructables.com: DIY Lightboard. Retrieved from <http://www.instructables.com/id/DIY-Lightboard>.
- Mayer, R. E. (2011). Multimedia Learning. New York, NY: Cambridge.

McCammon, L. & Parker, B.N. (n.d.) Fizz Method. Retrieved from <https://web.archive.org/web/20160417144350/http://lodgemccammon.com/flip/research/fizz-method>.

McCorkle, S., & Whitener, P. (2017). The Lightboard: A faculty introduction to the development of supplemental learning media. In 2017 Conference on Higher Education Pedagogy Proceedings. Blacksburg, VA.

McFall, T., & McCorkle, S. (2017, February). Using videos to complement classroom activities: The merits of chunking, brevity, and a clear presentation. Paper presented at the 43rd Annual Conference of the Eastern Economic Association, New York, NY.

Open Source Hardware Association. (2012, May 26). Open Source Hardware (OSHW) Statement of Principles 1.0. Retrieved from <https://www.oshwa.org/definition>.

Peshkin, M. (n.d.). Lightboard.info. Retrieved from <http://lightboard.info>.

Peshkin, M. & Anderson, M. (2017). Video: Increasing student interaction with Lightboard. Retrieved from <https://er.educause.edu/multimedia/2017/11/video-increasing-student-interaction-with-lightboard>.

Peshkin, M., Birdwell, J., Inzko, H., Bobbert, C., & Evans, E. (2014, August 18). Educause: 7 things you should know about lightboard. Retrieved from <https://library.educause.edu/resources/2014/8/7-things-you-should-know-about-lightboard>.

Skibinski, E., Debenedetti, W., Ortoll-Bloch, A., & Hines, M. (2015). A blackboard for the 21st century: An inexpensive light board projection system for classroom use. *Journal of Chemical Education*, 92(10), 1754-1756. <http://doi.org/10.1021/acs.jchemed.5b00155>.

Speranza, J. (2016, August 4). JoelSperanza.com: How to build a lightboard on a budget. Retrieved from <http://joelsperanza.com/flipped-learning/build-a-lightboard-on-a-budget>.

Tan, M., Yang, Y., & Yu, P. (2016). The influence of the maker movement on engineering and technology education. *World Transactions On Engineering And Technology Education*, 14(1), 89-94. Retrieved from http://www.wiete.com.au/journals/WTE&TE/Pages/TOC_V14N1.html.

Weimer, M. (2013). *Learner-centered teaching: Five key changes to practice*. San Francisco: Jossey-Bass.

Ye, W. (2016). Lightboard and Chinese language instruction. *Journal of Technology & Chinese Language Teaching*, 7(2), 97. Retrieved from <http://www.tclt.us/journal/2016v7n2/ye.pdf>.

2.GANTT CHART PROJECT 2

5/24/23, 7:36 PM

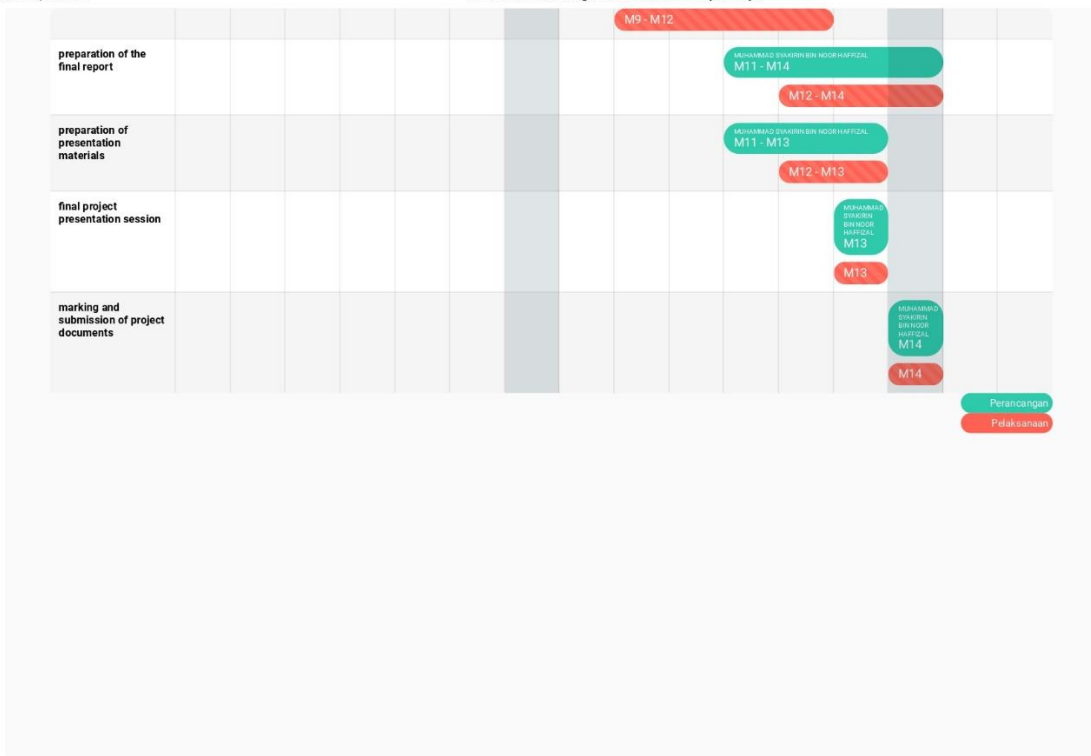
Carta Gantt : Perancangan dan Pelaksanaan Projek Pelajar



1/2

5/24/23, 7:36 PM

Carta Gantt : Perancangan dan Pelaksanaan Projek Pelajar



2/2

3. BILL OF MATERIAL

| BIL | MATERIAL | QUANTITY | PRICE PER UNIT (RM) | PRICE (RM) |
|-------|----------------|----------|---------------------|------------|
| 1 | Aluminium iron | 12 | 3.75 | 45.00 |
| 2 | Acrylic(32x25) | 1 | 90.00 | 90.00 |
| 3 | Acrylic(15x25) | 2 | 45.00 | 90.00 |
| 4 | spray | 1 | 10.00 | 10.00 |
| 5 | Marker | 1 | 3.00 | 3.00 |
| 6 | rivet | 1 | 30.00 | 30.00 |
| 7 | LED light | 2 | 50.00 | 100.00 |
| TOTAL | | | | 368.00 |