Hybrid Spaces

Re-imagining pedagogy, practice and research

26th - 28th March 2021

FIRST-YEAR INTERIOR DESIGN STUDENTS' PERCEPTION:

USABILITY OF DIGITAL AND COLLABORATIVE SKETCH SOFTWARE

FOR BRAINSTORMING IDEA

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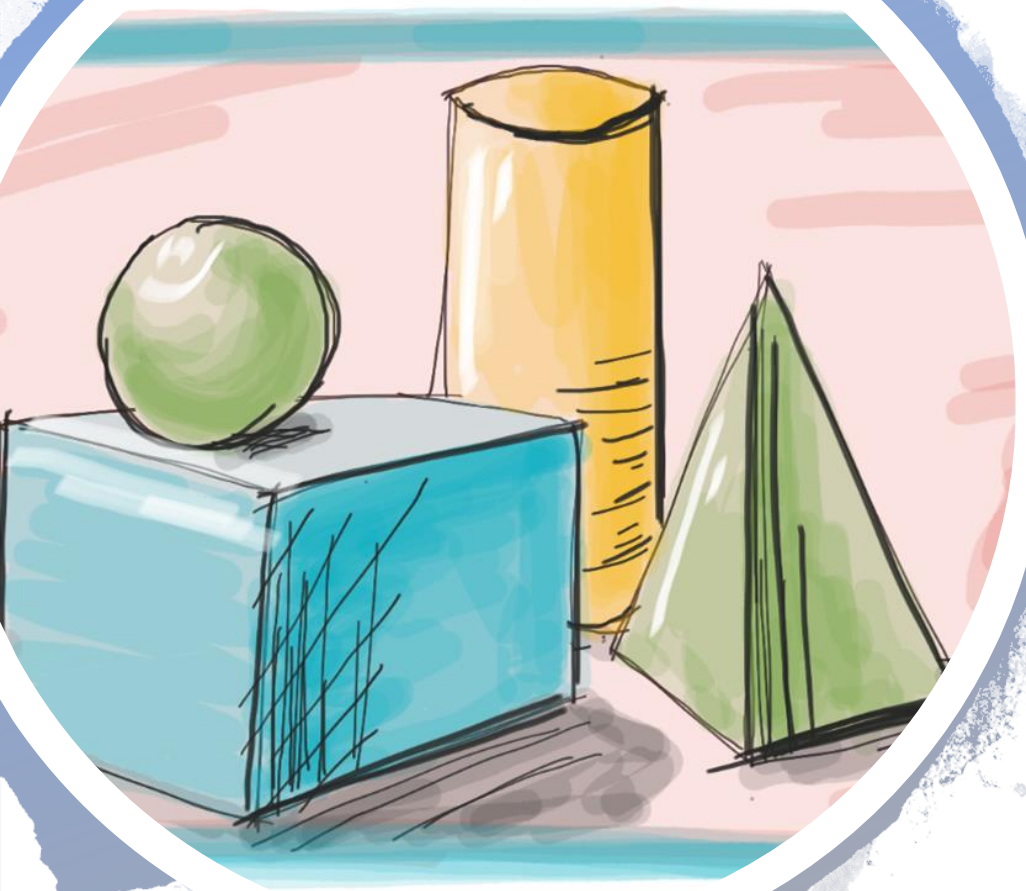
Indonesia
2021

The NEED to transfer IDEA and BRAINSTORMING

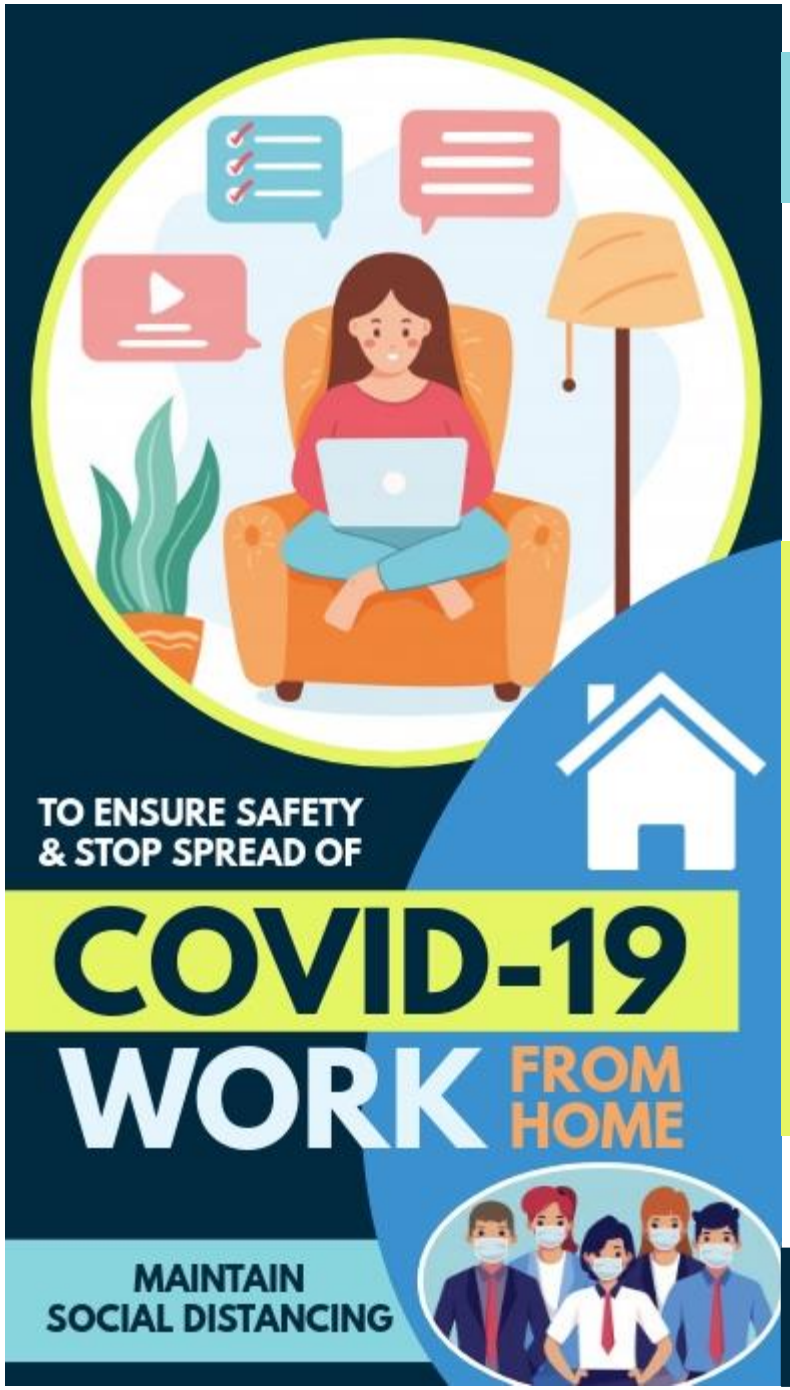


Why we need sketching especially in interior design field?

- Sketching is a type of drawing used for quickly and effectively representing ideas in a pictorial form and is highly related with design fields that require a form-related search for the realization of ideas. Freehand sketches are an important part of visual thinking (Börekçi,2019)
- The roles of sketching for individual problem solving are still present for the individual designers in a group context. (Lugt, 2002)

What is designers thinking while sketching?

- Externalize design problems and facilitate problem solving (Tovey, Porter and Newman, 2003);
- Organize their cognitive activity and the information they are making use of in the idea generation process (Tovey, 2012);
- Visualize an idea and explore its potentials (Aspelund, 2010);
- Generate new ideas, as sketching leads to further sketching (Tovey, et al., 2003);
- Document the ideas (Schenk, 2014);
- Use the documentation to review the process and reconsider earlier ideas (Tovey, 2012); and
- Represent the design ideas for communication with others (van Eck, 2015)



Because of COVID-19, **a tool for a blended learning** is needed… to help the students brainstorming idea

From HAND drawing (sketch)→DIGITAL SKETCHING with built-in collaborative and information integration system

The Interior Design Study Program of the Petra Christian University under the Faculty of Arts and Design was established in 1998, is one of the leading design study programs in Surabaya, also teaches students to use software technology assistance in designing.

This can be seen in the 2020 study program curriculum which has "**Introduction to Digital Applications**" courses since semester 1. This "**Introduction to Digital Applications**" course is a compulsory basic course that is part of the Interior Design study program curriculum.

One of the course's aim is to introduce **the students is digital and collaborative sketch through various software** (in this case is MIRO, Jamboard and Sketchpad) so the students can still brainstorm their ideas through digital sketch.

How the **teaching process** is **done?** How the **student's perception** regarding the usability of sketch collaboration software**?**

The aim of this paper is to identify the students' perception regarding the usability of sketch collaboration software (Miro, Jamboard, or Sketchpad) using SUS Tool

Participants

78 first year students enrolled in the course and participated in this research (100%).
The age of participants ranged from 18 to 20.
The majority participants were female

Introduction to Digital Applications detail course

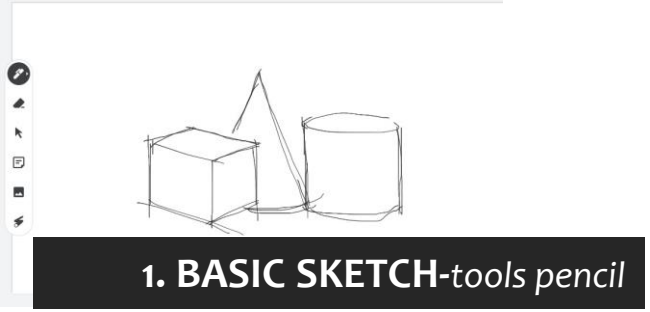
The Introduction to Digital Applications course is a 3 credits course, was held twice a week for 4 h per meeting (Schedule for class Monday 13.30-17.30; and Thursday 13.30-17.30) in 1st semester 2020/2021.

The digital sketching was introduced in the first 3 weeks; Digital Photography for 2 weeks Adobe software for 6 weeks and AutoCAD for 4 weeks

1 The LEARNING SKETCH that was INTRODUCED to the students

They learn to do the basic sketch tips

1. In this course they learn to draw basic 3-dimensional shapes.

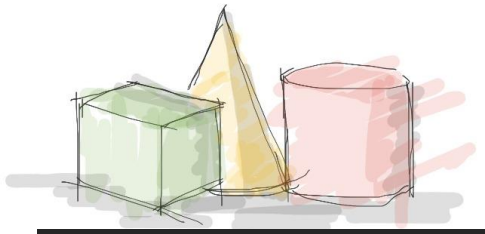


1. BASIC SKETCH-*tools pencil*

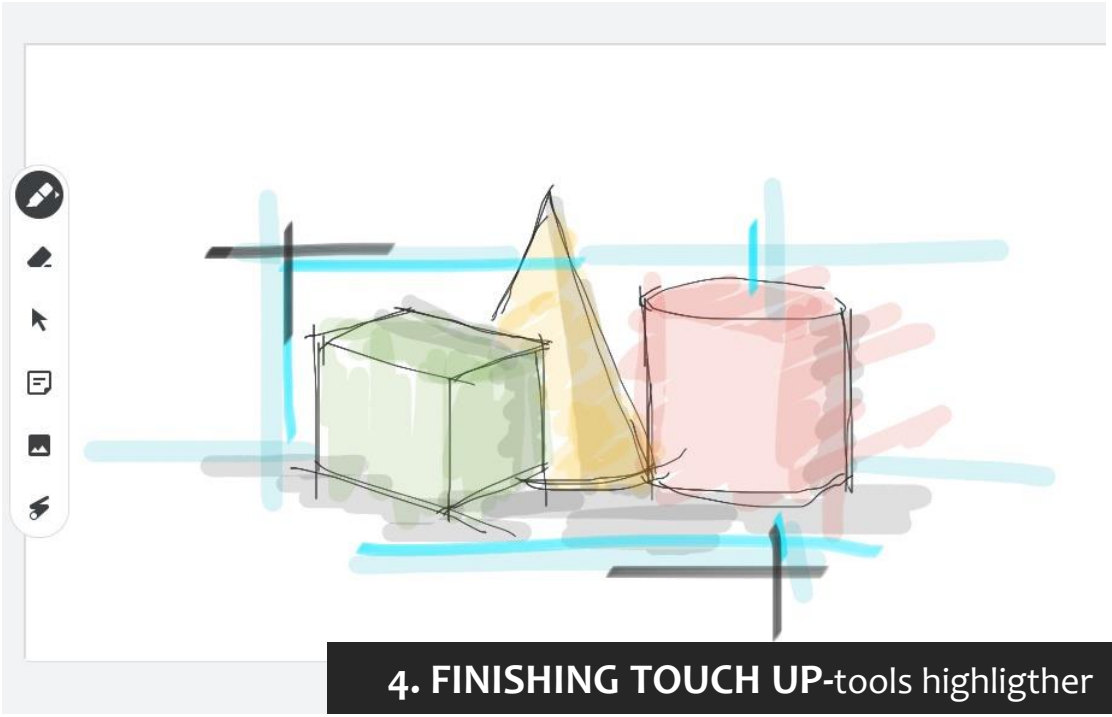
2. They learn few methods in creating shadows in sketching

2. SHADOW SKETCH-*tools marker*

3. They learn few methods in colouring the sketching

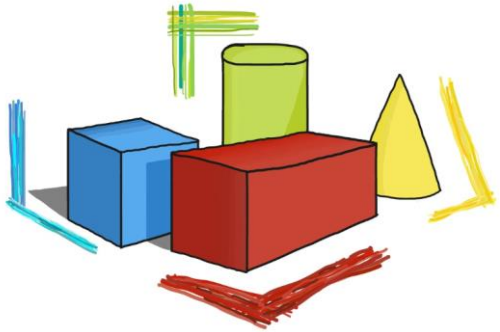


3. COLOURING-*tools colouring*

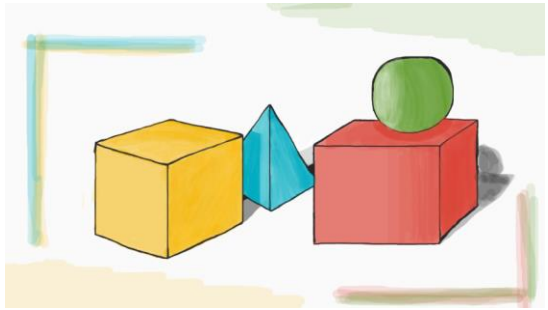


4. FINISHING TOUCH UP-tools highligther

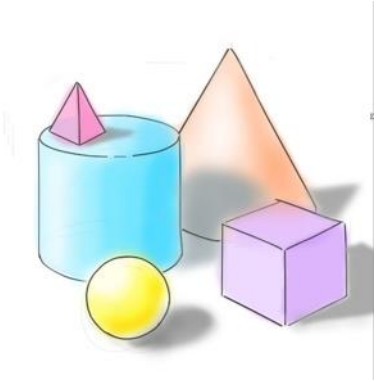
2 The BLENDEDED LEARNING tools that was INTRODUCED to the students



MIRO
Free Online Collaborative Whiteboard Platform
http://miro.com
Usage : mind mapping, brainstorming, visual group disscusion

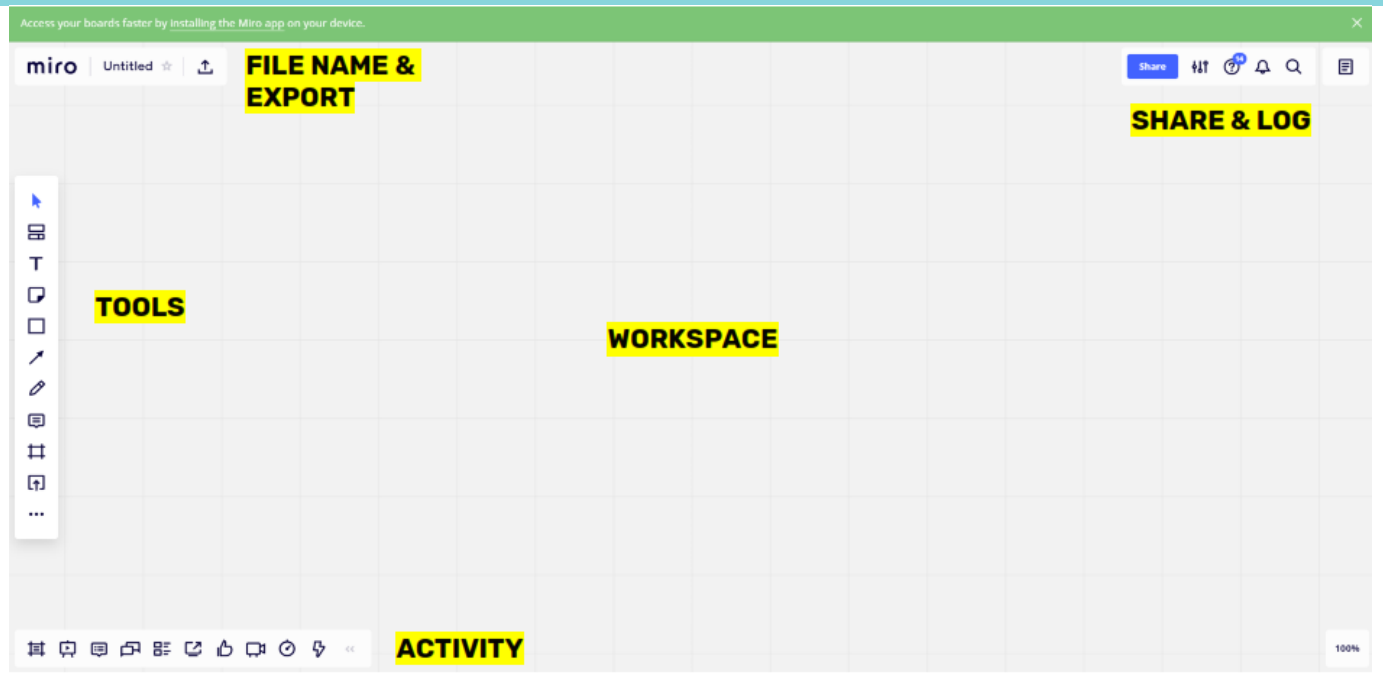


JAMBOARD
Collaborative Digital Whiteboard
http://jamboard.google.com
Usage : discussion, group sketch

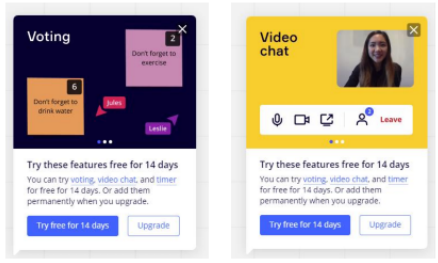


SKETCHPAD
Online Digital Drawing Board
https://sketchpad.app/
Usage : sketch & graphic creator

3 The MIRO that was INTRODUCED to the students



FRAME
PRESENTATION MODE
COMMENT
CHAT
CARD
SCREENSHARE
VOTING
VIDEO CHAT
TIMER
ACTIVITY



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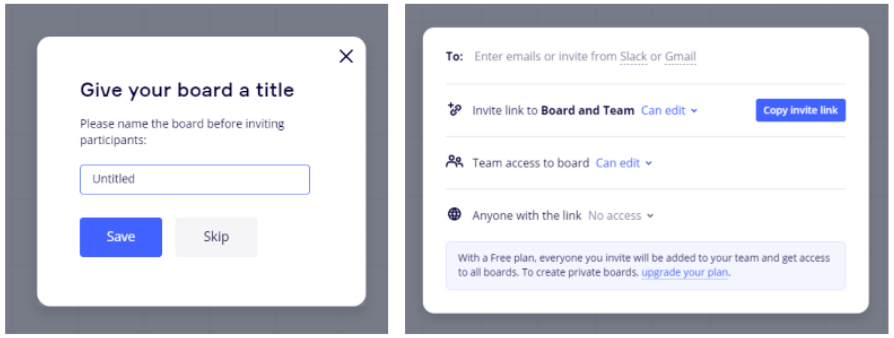
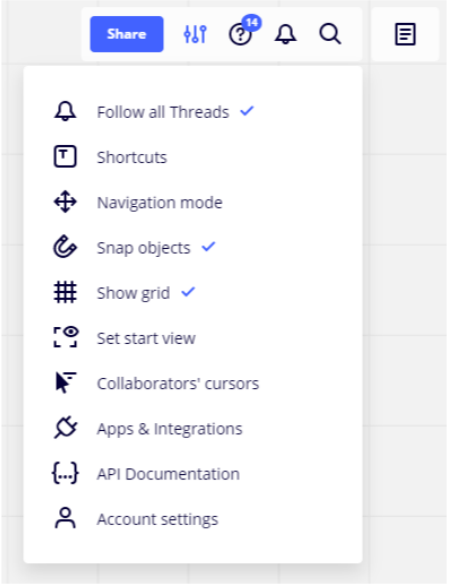
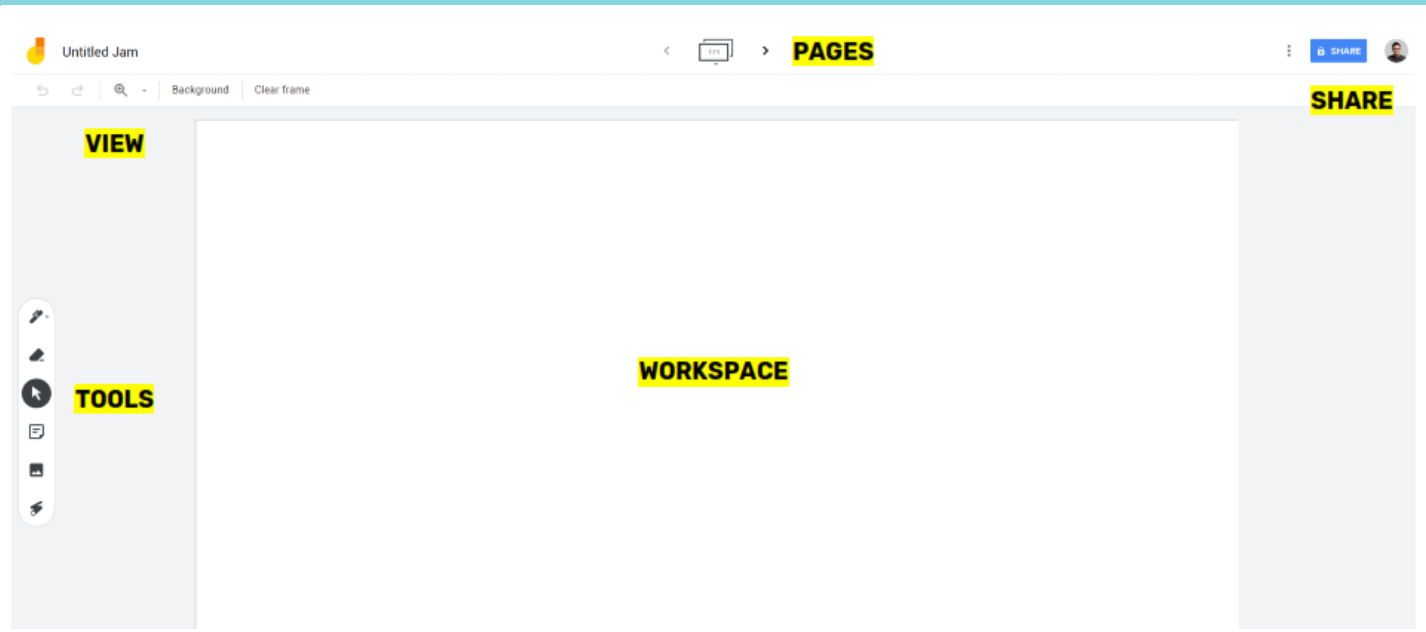
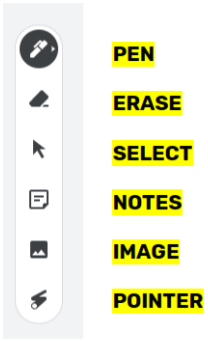




3 The JAMBOARD that was INTRODUCED to the students



tools



PEN

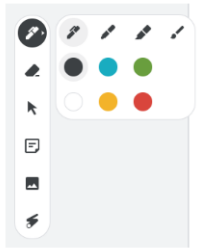
ERASE

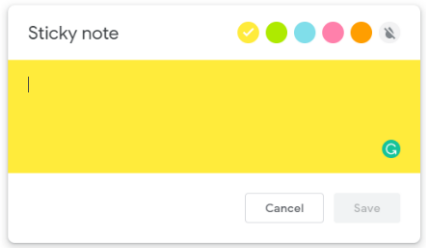
SELECT

NOTES

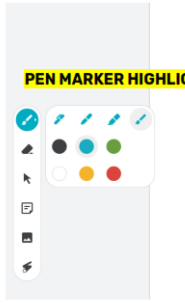
IMAGE

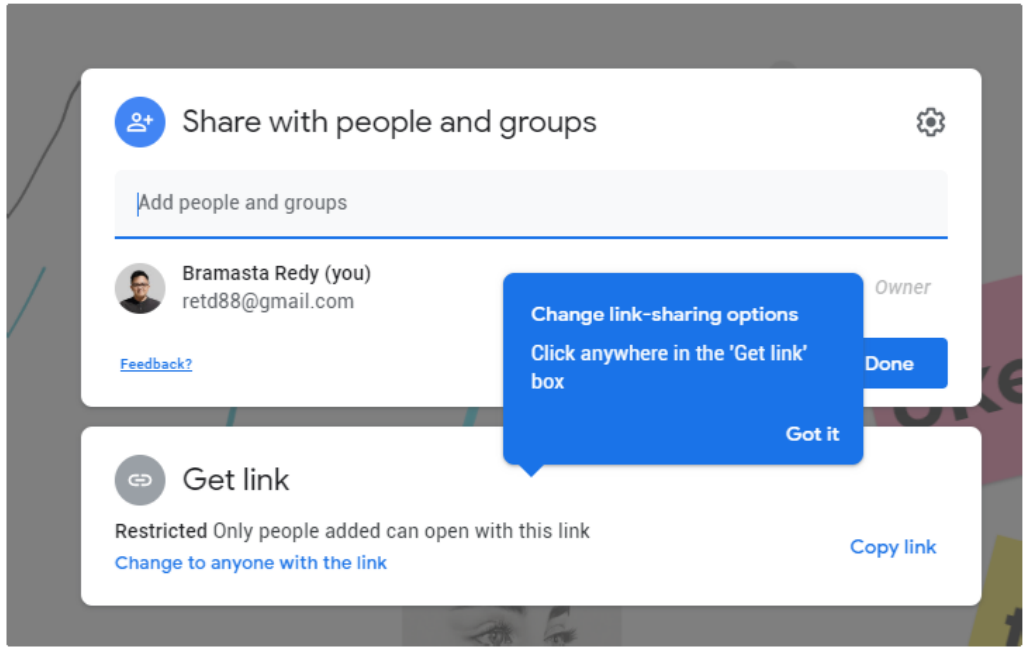
POINTER



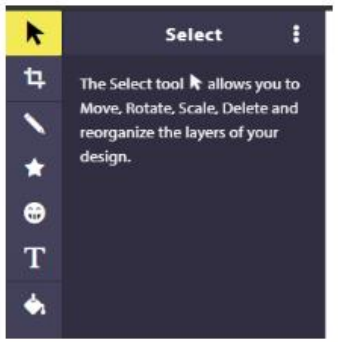


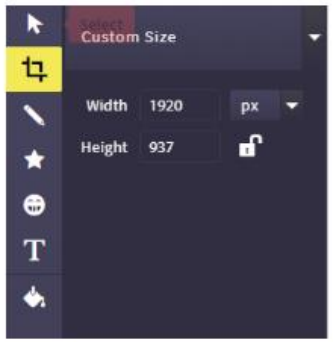
PEN MARKER HIGHLIGHTER BRUSH

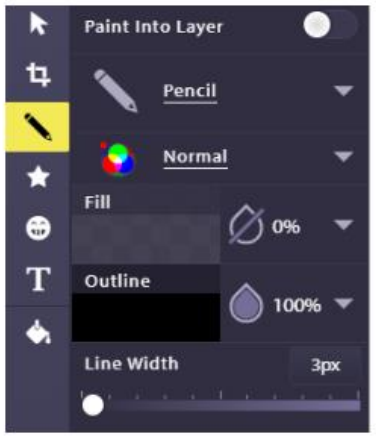


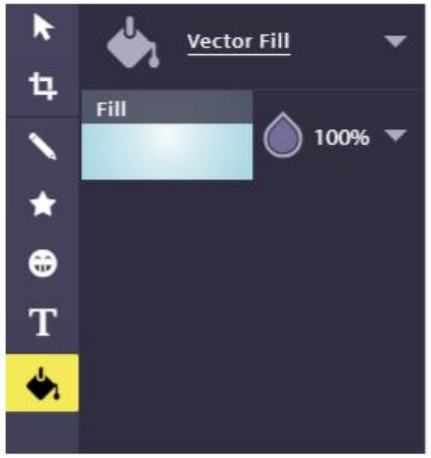


3 The SKETCHPAD that was INTRODUCED to the students



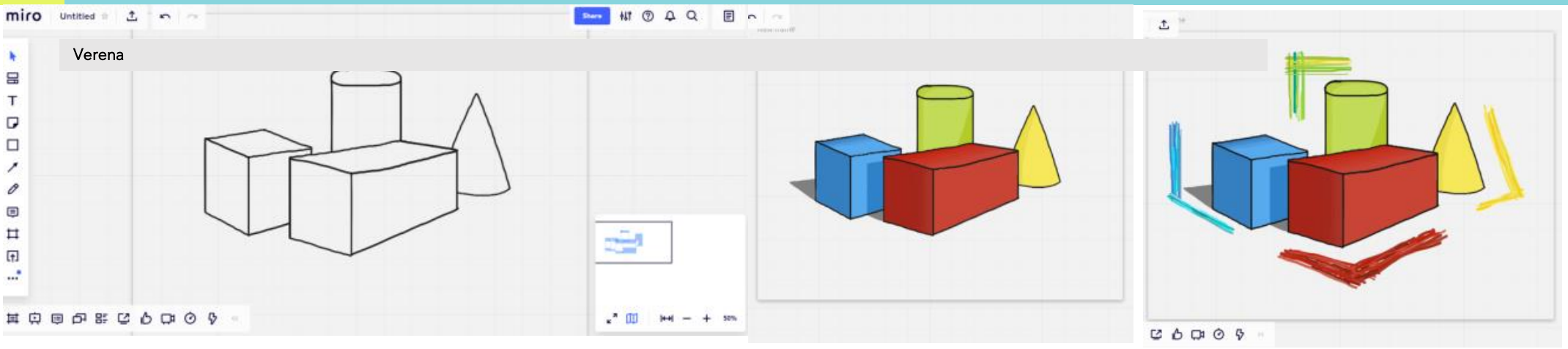




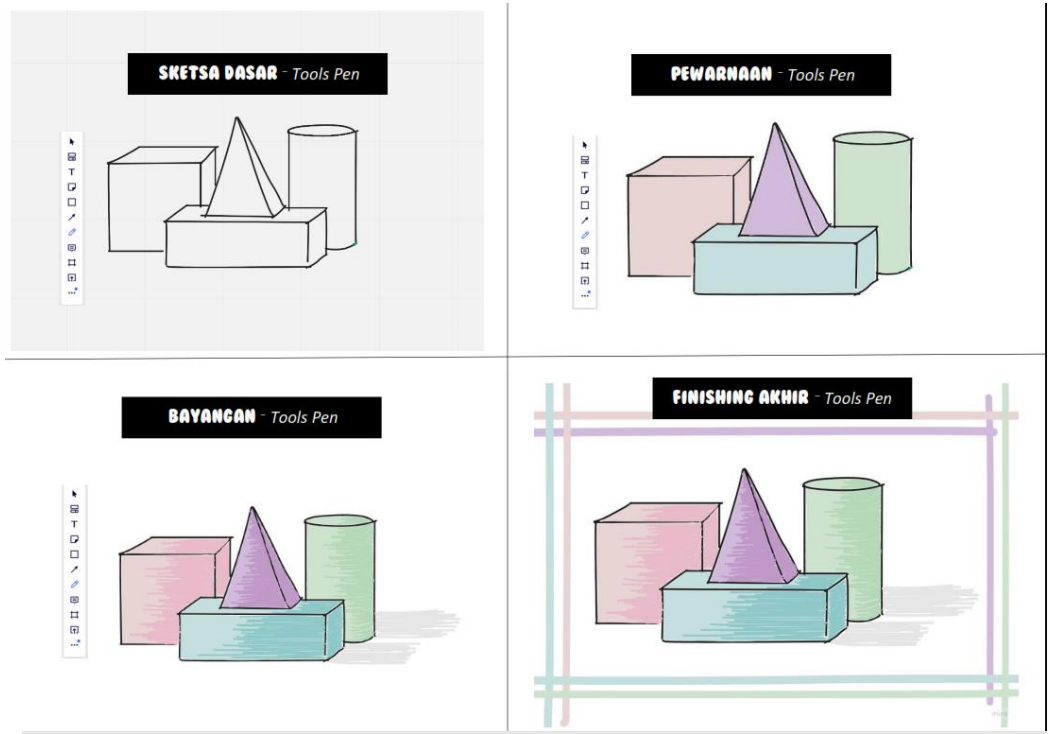


4 The PROCESS and RESULTS of Student's work

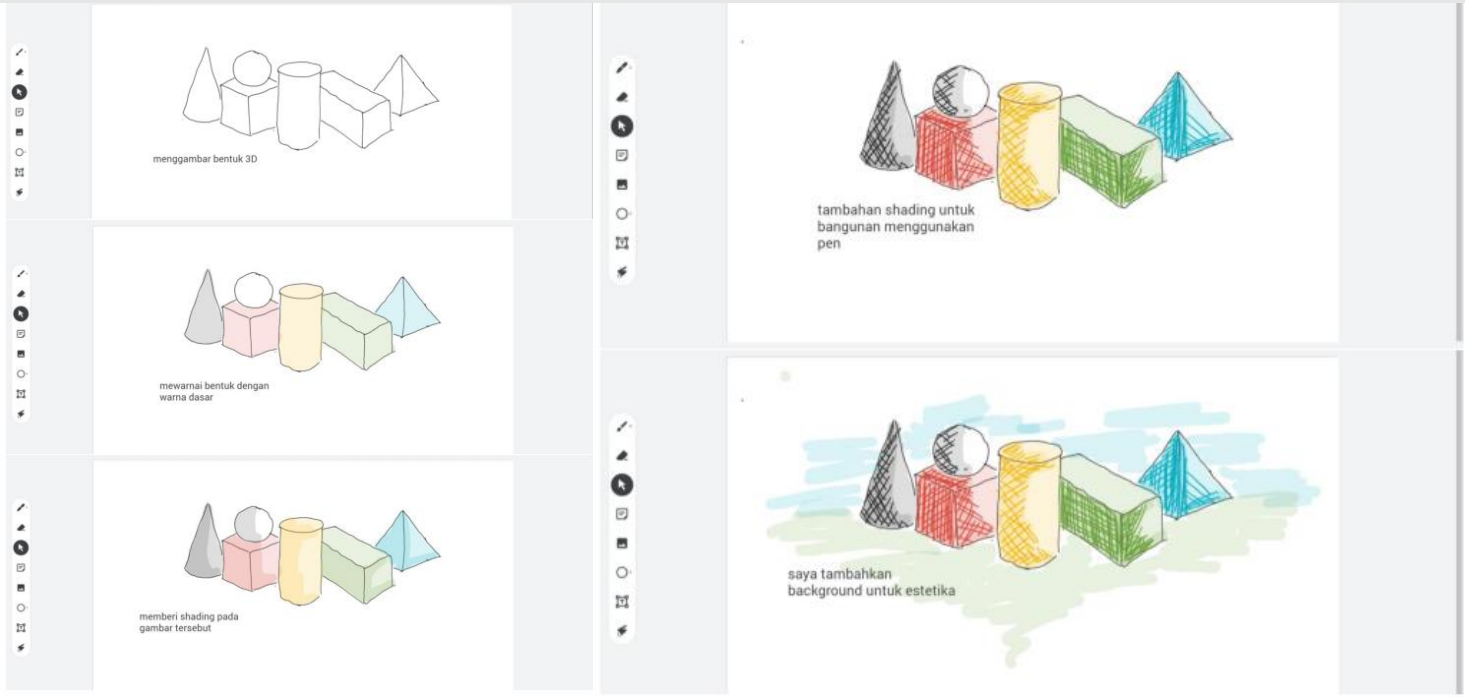
Verena



Shella Febriani



Jennifer Ilene



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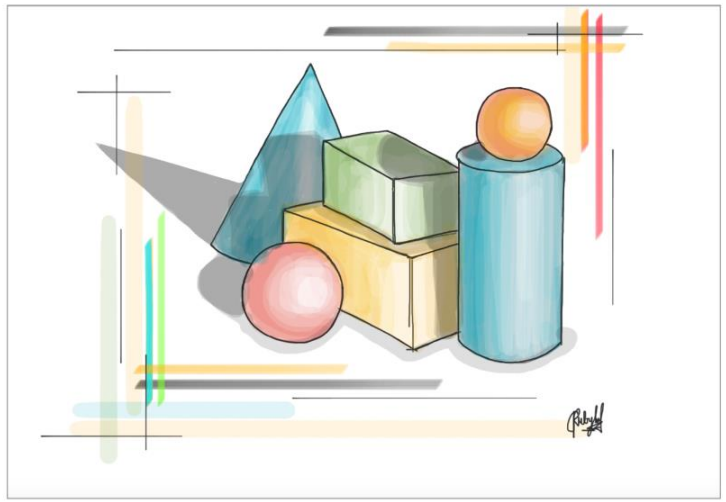
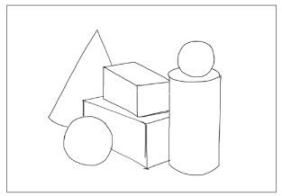
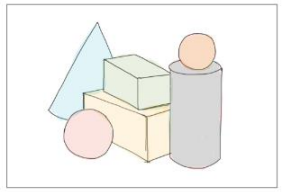
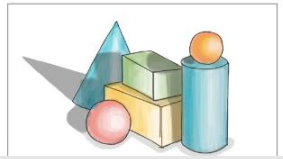








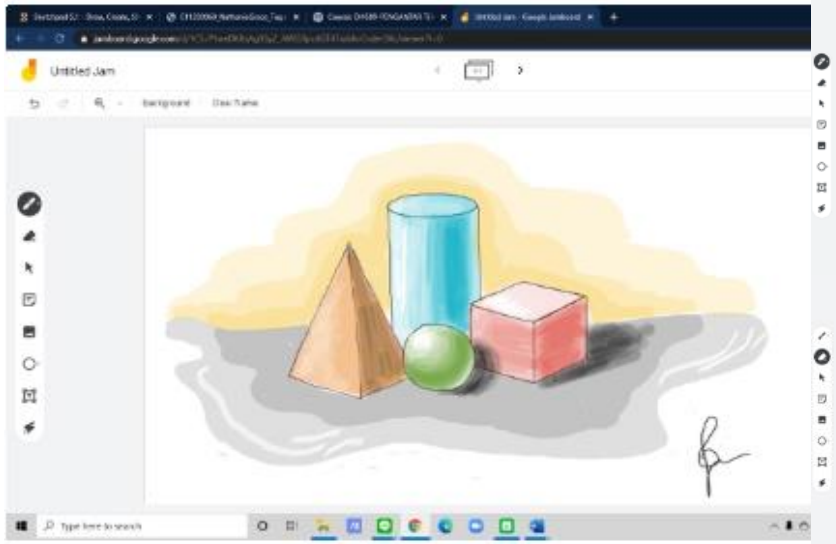
LINK :
https://jamboard.google.com/d/1Xqg7kAWzR0w_cmNdlSOrWIbnUVVCvbHg2SiF0KHzv

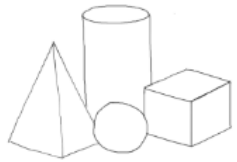
Cheryl Ruby Lee

Lavenia Felita Jaya

2. PEWARNAAN DAN BAYANGAN– tools pen dan brush

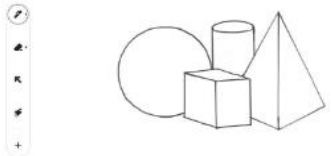
4. FINISHING AKHIR – tools pen dan brush





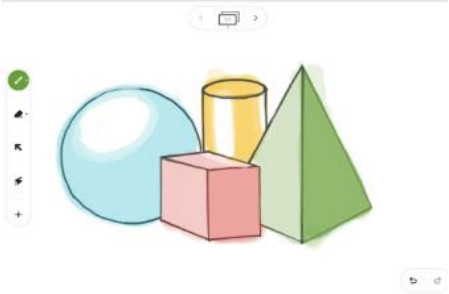
Ivana Florensia

Natasya Amanda Setiawan



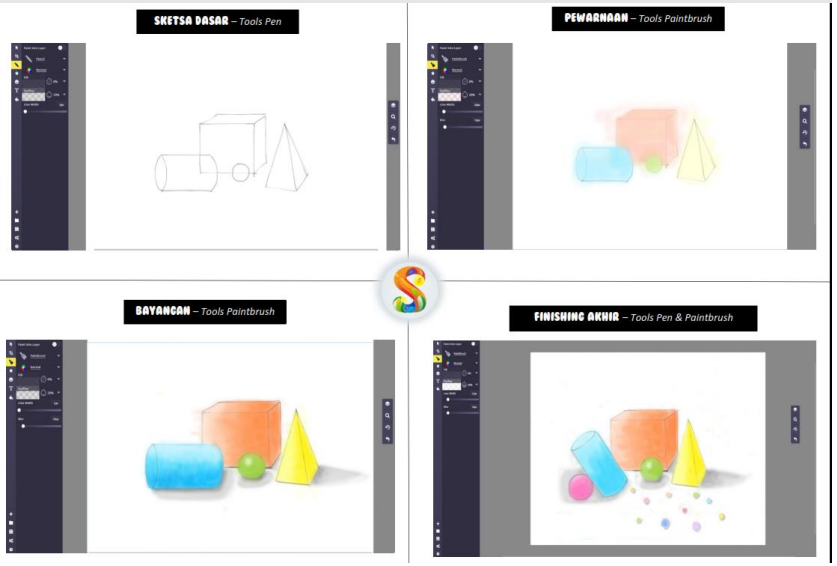
3. BAYANGAN – tools marker

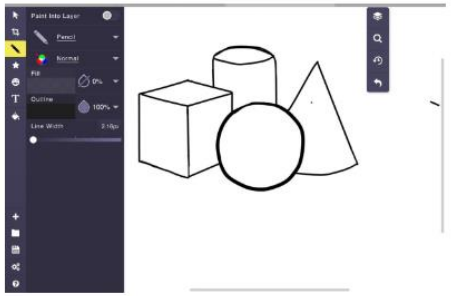
1. SKETSA – tools pen



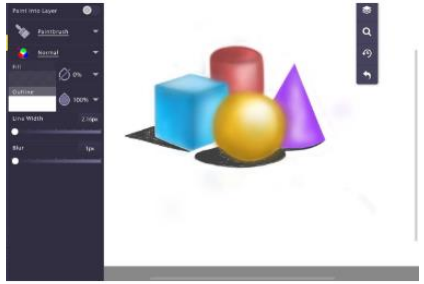
4 The PROCESS and RESULTS of Student's work

Shella Febriani

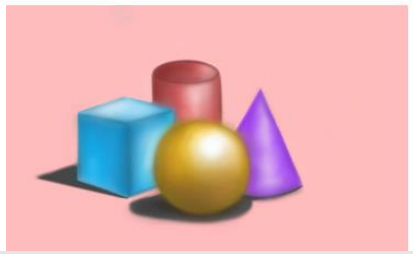




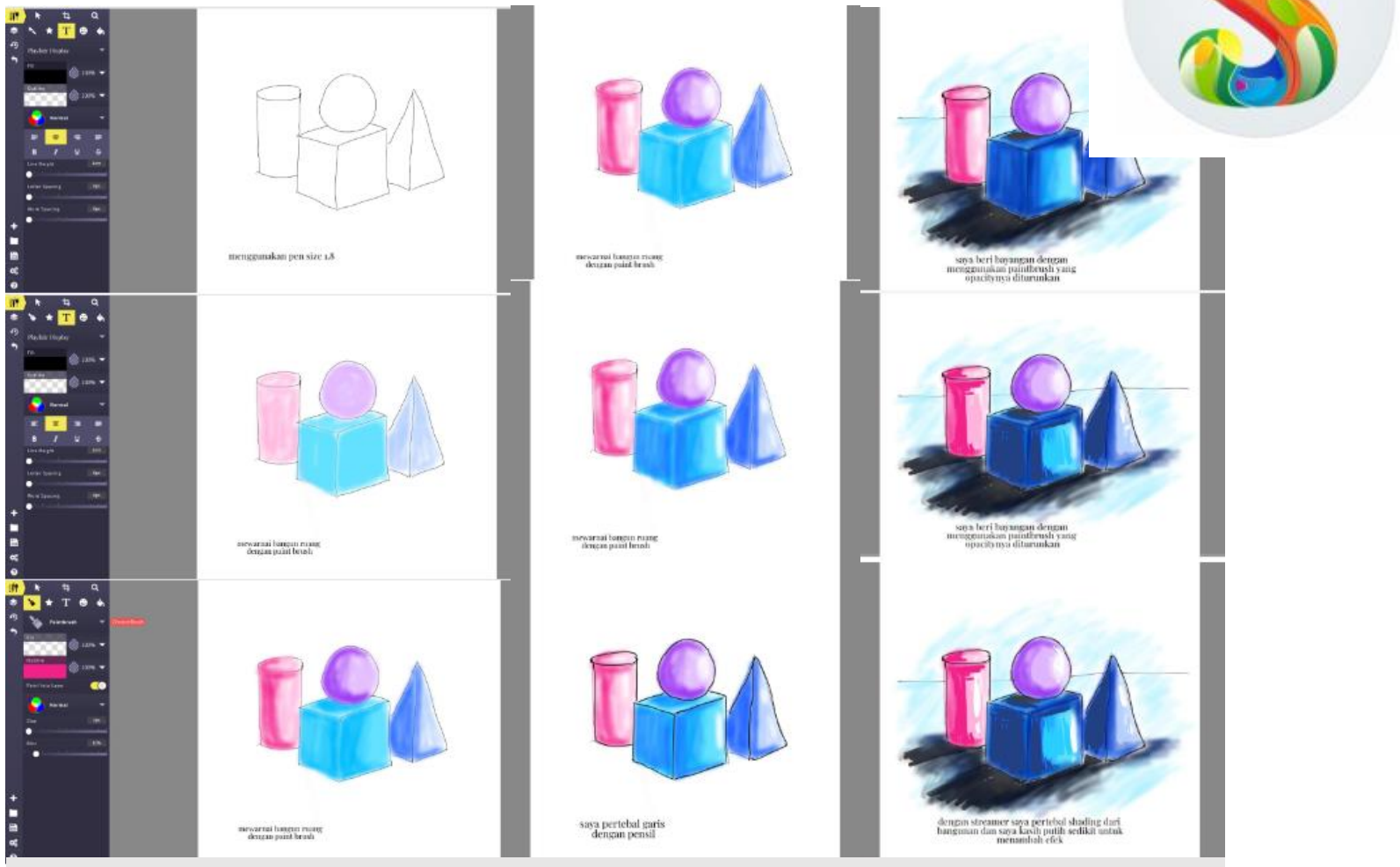
1. SKETSA DASAR - tools pencil



3. BAYANGAN – tools sketchy dan paintbrush



Natasya Amanda Setiawan



Jennifer Ilene

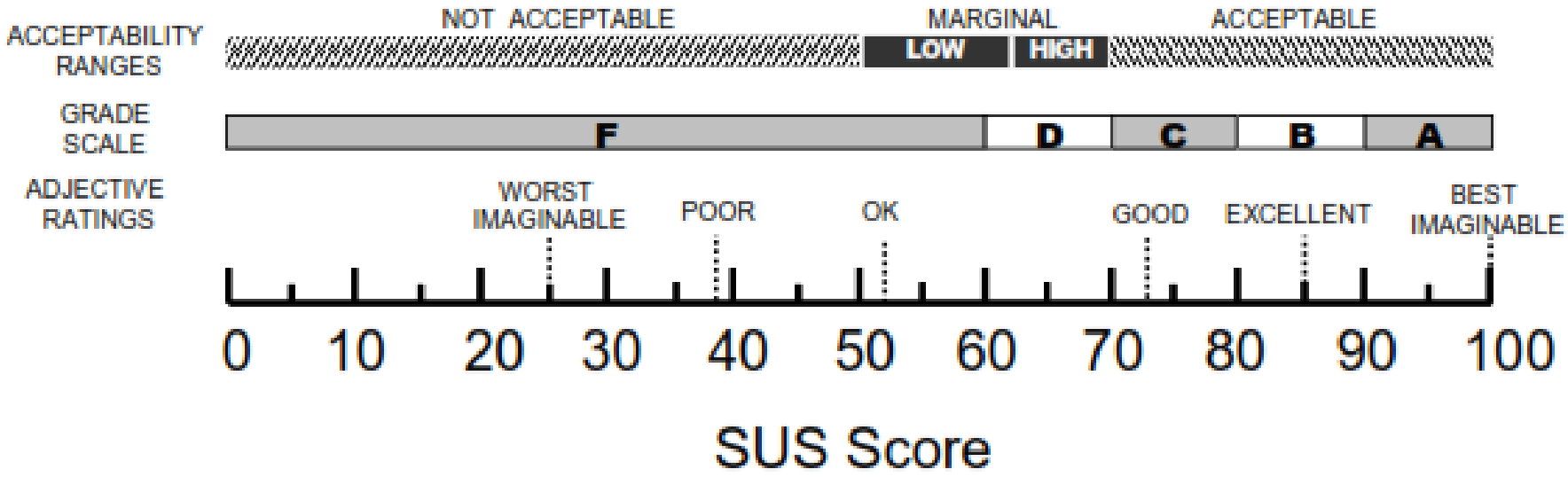
5 Instrumen I - using the System Usability Scale (SUS)

Original SUS Question	Adapted SUS Question	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
I think that I would like to use this system frequently.	I think I would like to use the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** frequently.	☐	☐	☐	☐	☐
I found the system unnecessarily complex.	I found the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** less complex.	☐	☐	☐	☐	☐
I thought the system was easy to use.	I thought the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** was easy to use.	☐	☐	☐	☐	☐
I think that I would need the support of a technical person to be able to use this system.	I think that I would need the support of a technical person / tutor to be able to use this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	☐	☐	☐	☐	☐
I found the various functions in this system were well integrated.	I found the various functions in this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** were well integrated.	☐	☐	☐	☐	☐
I thought there was too much inconsistency in this System.	I thought there was too much inconsistency in this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	☐	☐	☐	☐	☐
I would imagine that most people would learn to use this System very quickly.	I would imagine that most people would learn to use this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** very quickly.	☐	☐	☐	☐	☐
I found the system very cumbersome to use.	I found the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** very cumbersome to use.	☐	☐	☐	☐	☐
I felt very confident using the system.	I felt very confident using the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	☐	☐	☐	☐	☐
I needed to learn a lot of things before I could get going with this system.	I needed to learn a lot of things before I could get going with this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	☐	☐	☐	☐	☐

the participant will have ranked each of the 10 templates questions above, from scale 1 to 5, based on their level of agreement. After they fill the scale, we can calculate the answer from the participant.

The first rule is for each of the odd numbered questions (question 1,3,5,7, and 9 considered as positive statement), we subtract 1 from the score (for example, the participant scale is 5 for question no 1, then the final score will be 5-1 = 4). The second rule is for each of the even numbered questions (question 2,4,6,8, and 10 considered as negative statement), subtract their value from 5. score (for example, the participant scale is 3 for question no 2, then the final score will be 5-3 = 2). The next step is to take these new values which you have found, and add up the total score, after that multiply the total score by 2.5. The result of all these SUS score calculations is that our score out of 100

5 Instrumen I - using the System Usability Scale (SUS)



There are three ways that will be used to determine score: using acceptability range, grade scale and adjective ratings. (Broacceptablee, 2013). For the acceptability range, there will be 3 categories: not acceptable, marginal and acceptable. For the grade scale, there will be 6 scale: A, B, C, D, E, and F. While the adjective ratings, there will be 6 ratings: worst imaginable, poor, ACCEPTABLE, good, excellent and best imaginable.

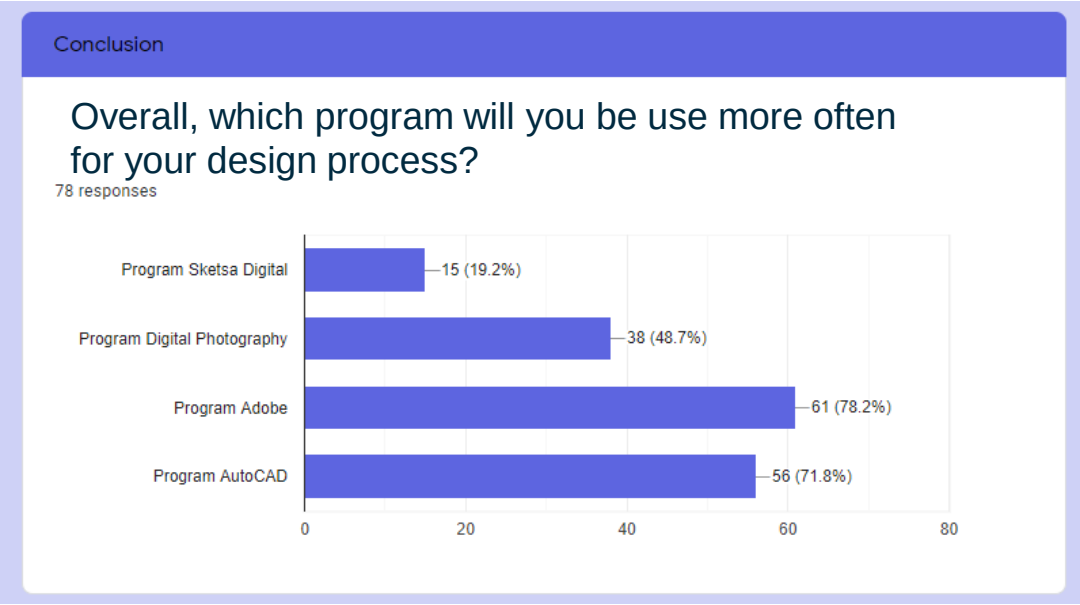
5 Instrumen I - using the System Usability Scale (SUS)

		Modified SUS Question	Mean of Score	SUS Rules Calculation Score	SUS Final Score (x 2.5)
Digital-Collaborative Sketch	1	I think I would like to use the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** frequently.	3,29	2,29	5,74
	2	I found the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** less complex.	3,33	1,67	4,17
	3	I thought the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** was easy to use.	4,04	3,04	7,60
	4	I think that I would need the support of a technical person / tutor to be able to use this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	3,45	1,55	3,88
	5	I found the various functions in this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** were well integrated.	3,95	2,95	7,37
	6	I thought there was too much inconsistency in this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	2,46	2,54	6,35
	7	I would imagine that most people would learn to use this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** very quickly.	4,04	3,04	7,60
	8	I found the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)** very cumbersome to use.	2,14	2,86	7,15
	9	I felt very confident using the **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	3,58	2,58	6,44
	10	I needed to learn a lot of things before I could get going with this **Digital Sketch Program (MIRO, Jamboard, Sketchpad)**.	3,05	1,95	4,87
		Total Score			**61,15**

Based on the SUS score The Digital Sketch Program is 61.15)

The acceptability range for the three programs are HIGH Marginal, the grade scale are grade D and the adjective ratings are ACCEPTABLE.

6 Instrumen II – Survey Polling - Result



The survey produced 78 responses (which the participants can voted more than one choice). From the polling question, 19.2% voted for Digital Sketch as one of tools for future brainstorming idea

Students' insight:

- After I was introduced to the digital sketching program, I used it more often when I wanted to do assignments because it was very easy to use, and had many features to use, such as when creating moodboards, mind mapping, etc.
- Because the programs in my opinion are easier to use and easier to develop
- In my opinion, these programs have their own uniqueness. I need these programs for my design, because each program has different functions and completeness of different tools. So, in my opinion, it is better to be able to use all of these programs, besides being able to increase knowledge, we can also use the program for our business, maybe from there we can open a small business to help design logos, do photography, etc. So, all of these programs are important for me to study.
- To draw 2D sketch, it is more practical to use sketchpad because it is very easy to learn and has many features.
- I usually use tablets / iPhones for editing so I choose a digital sketch program.
- In my opinion, the Digital Sketching Program is the most fun and easy to learn.
- The software generally can be draw with a mouse, but not with digital sketches, it's a bit strange it feels like to draw using a mouse, but I prefer using stylus
- I chose the programs because of their functions and in my opinion, I would need all of these programs according to my needs.
- Because it is easy to use even though it is a bit difficult for the first time learning, if you are used to it, you can easily use these programs, it can make it easier to design an object or room in 2D-3D form, especially in the use of digital sketches that can be accessed on a cellphone, making it easier to make layouts portfolio or logo designed by yourself
- Because I love photography and digital sketching

Conclusion

- On the SUS Score, for the Digital Sketch Program is 61.15. The acceptability range for the three programs are HIGH Marginal, the grade scale are grade D and the adjective ratings are ACCEPTABLE usability.

- On the survey polling regarding the software usability, even though only 19.2% students voted for digital sketch program. But based on students' opinion who voted for this digital sketch program, they found this program is easy to use and developed, fun and easy to learn especially for transforming their design idea in the future.

- From these two result, the students find out that the program is acceptable usability mean that the students found the program is simple to use, easy to use and very well integrated to help them transform and brainstorm their hand sketch to digital and collaborative sketching.

- For future research, we can compare the usability of these programs after the students doing designing real cases in the second year interior design course.

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