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Training on Designing UI/UX using Design Thinking and Figma at SMKN 4 Bandung

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ABSTRACT

The emergence of User Interface (UI) and User Experience (UX) Design in the world is now attracting more people who want to learn about it. SMKN 4 Bandung is one of the schools that have an industry-class curriculum, where students are provided with a learning program related to industrial technology. This training is divided into three stages: Pre-Test, Training, and Post-Test. The Pre-Test is used to assess the extent of their understanding of UI and UX. During the training process, there is an introduction and implementation of UI and UX concepts. The results of the Pre-Test showed that 90% of the students were not familiar with UI and UX. The Post-Test results confirm that, overall, this community engagement in the industrial class on UI and UX has successfully improved the knowledge of the students of SMKN 4 Bandung, with a N-gain score of 0.45 considered medium improvement.

Keywords: *training, UI/UX, Design Thinking, Figma*

1. INTRODUCTION

In facing the working world, students must prepare themselves both in terms of knowledge and mental readiness for the job market. The rapid development of technology at present is increasingly felt in its impact and benefits for everyone in all aspects of life. One of these is the positive impact on the development of the job market, such as the demand for digital transformation within companies. To support this transformation, according to **(Kraus et al., 2021)**, companies must consider channel for information or interactions with stakeholder. Communication channels can be social technology, mobile technology, websites, analytics, cloud, and the Internet **(Sebastian et al., 2017)**.

One important aspect of a website is the extent to which each function works (usable) and the experience the user perceives when interacting with the website **(Aziz et al., 2021; Bucko & Kakalejčík, 2018**). The characteristics of a website with good usability include learnable, useful, effective, efficient, desirable, easy to remember, and attractive user interface **(Damayanti et al., 2022)**. Therefore, the quality of usability in a technology depends on its user interface (UI) and user experience (UX). Design with UI/UX that meets user satisfaction will have a good impact on the sustainability of the company's business. The process of designing UI/UX design for an application is not as easy as imagined. Design developers need

in-depth research to maximize user experience and create an attractive appearance **(Nasution & Nusa, 2021)**. Thus, UI/UX is now a field that is in great demand and is needed to increase a company's business success.

Vocational high school (SMK) is an education that is oriented to provide students with provisions so they can enter the job market easily. SMK Negeri 4 Bandung is one of the schools that provides an industrial curriculum to prepare students to be competitive in the world of work. UI/UX design is a profession in the field of digital product design such as websites and mobile applications for user needs. In the era of digital transformation, job opportunities as a UI/UX designer is a truly promising job in the IT profession. Therefore, we carry out community service at SMK Negeri 4 Bandung to provide training to students on how to design UI/UX designs by applying the Figma as UI/UX tools. This community service aims to provide practical experience to students regarding the process of designing the user experience of an application, starting from empathizing with users to exploring needs to producing interface prototype designs that can be tested on users using a design thinking approach. It is hoped that the results of this community service will provide students with insight and interest in the UI/UX field.

2. METHOD

This Community Service Activity provides UI/UX design training using Figma at SMKN 4 Bandung. The method used in this training activity include: (1) preparation (making teaching materials), (2) Pre-test, (3) conducting training, and (4) evaluation or post-test (see Figure 1).

Preparation. Teaching materials for UI/UX design training activities include User Interviews, Affinity Mapping, User Personas, and an introduction to UI design elements for implementing designs to the wireframe and mockup stages using the Figma application.

Training. The topic material provided in this training adopts the Design Thinking method for designing UI/UX designs. Design Thinking emphasizes a way of thinking to define a problem and solution that is human-focused, driven by high curiosity, using stories and visualization to share important findings and do it repeatedly **(Lewrick et al., 2018; Nabila, 2022; Nurjanah et al., 2022).** The Design Thinking approach is a method for designing software products based on innovation, which revolves around discovering solutions to address specific problems **(Ansori et al., 2023; Putra et al., 2022; Zukhri, 2022)**. According to **(Dam & Siang, 2020)**, design thinking method can be divided into five stages, include: Empathize, Define, Ideate, Prototype, and Test (See figure 1).

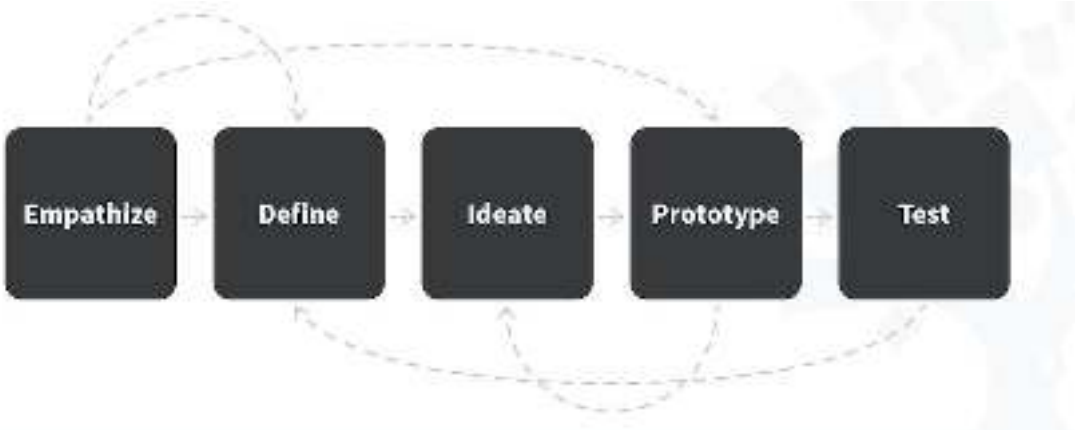

Figure 1. Design Thinking Stages

However, in this training, the design thinking stages that will be discussed are only limited to the empathize to prototype stages. At this stage, training is carried out on UI/UX Design according to the predetermined activity schedule. The training was conducted through four sessions. The material topics for each session include: (1) Introduction to UI/UX; (2) The Relationship Between Information, Interaction and Visual Design; (3) User Interview, Affinity Mapping, User Persona; and (4) Visual Design Elements. The method applied during the training is drill and practice, where the facilitator provides material followed by direct practice based on the modules that have been provided.

Pre-test. The pre-test is carried out with the aim of measuring students' basic understanding of UI/UX design theories and concepts that will be provided during the training. The Pre-Test questionnaire was created in Google Forms consisting of 16 questions which were given to SMKN 4 students before training. This pre-test was carried out as an evaluation material for the achievement of this training objective. There are 16 questions were given to 26 students as a basic reference for this training activity because most students still did not have knowledge about UI and UX design. Before the questionnaire items are distributed to students, validity and reliability tests are carried out first to ensure that the serviceability questionnaire is used as a measuring tool. Validity testing uses the product moment correlation formula as shown in Equation (1).

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{(N\sum X^2 - (\sum X)^2)(N\sum Y^2 - (\sum Y)^2)}} \quad (1)$$

According to **(Pearson, 2008)**, an instrument item is considered valid if it has an r score greater than the r-table with an error rate of 5% and N-2 degrees of freedom.

Post-test. Post Test or final test is a test used to determine the extent of student development and achievements after training. This posttest is a benchmark for the success of each student who takes part in the training. Apart from that, this post-test is also a benchmark for the success of the teaching methods provided during the training.

3. RESULTS AND DISCUSSION

3.1 Preparation

The implementation of training on UI/UX Design in Community Service (PKM) activities took place over 4 sessions with a duration of 3 hours in one meeting which was attended by 26 students of SMKN 4 Bandung. Every participant who takes part in this training is given material along with practice in creating UI/UX concepts such as user interviews, affinity mapping, user personas, and mockups. Implementation of PKM activities is as follows:

- Training Dates: 25.28 October and 1.4 November 2022
- Location: Lab C2.1 SMKN 4 Bandung
- Time: 07.30 - 9.45 WIB

The training schedule is prepared based on the condition that students are familiar with the concept of software development considering that it is part of the curriculum given in the software engineering program, but in general based on the results of discussions with several students it was found that UI/UX design skills using the Design Thinking approach and design modeling techniques are still not very familiar.

To gain students' understanding of the UI/UX design aspects more specifically, a pre-test is carried out before the training is carried out. The results of the pre-test will become the basis

for the level of depth of each material provided. If it is found that students have mastered certain questions or are not even familiar with them, then this will be input for the instructor in technical activities during training. The following is the UI/UX design training schedule at SMKN 4 Bandung (Table 1).

Table 1. Training Schedule

Schedule	Topic Training
Day 1: 25 October 2022: UI/UX Overview	
07.15 – 07.30	Pre-Test
07.30 – 08.30	UI/UX Concepts
08.31 – 09.45	Introduction to Figma
Day 2: 28 October 2022: The Relationship Between Information, Interaction and Visual Design	
07.30 – 08.30	Relationship between information, interaction and visual design
08.31 – 09.45	Implementation of visual design in Figma
Day 3: 01 November 2022: User Interview, Affinity Mapping, User Persona	
07.30 – 08.30	User Interviews, Affinity Mapping, User Personas
08.31 – 09.45	Implementation of User Interview, Affinity Mapping, User Persona on Figma
Day 4. 4 November 2022: Visual Design Element	
07.30 – 08.30	Visual Design Elements
08.31 – 09.45	Create Visual Design Elements using Figma
09.45 – 10.00	Post-test

3.3 Training

Pretest. Before entering the learning material, students are asked to fill out a Pre-Test questionnaire. The test results were obtained from 17 questionnaire items, there was 1 item questionnaire indicated as invalid because the calculated r score < r table, namely 0.427 **(Hair et al., 2018)**. However, because the r score on the item includes sufficient criteria, the questionnaire items are still used with improvements to the statements.

Table 2. Pre-test results

No.	Item Questionnaire	Average
1	I know about UI/UX	2.92
2	I know the definition of User Interface	2.88
3	I know the definition of User Experience	2.69
4	I know the difference between UI and UX	3.00
5	I know about Information Design	2.38
6	I know about Interaction Design	2.15
7	I know about Visual Design	2.77
8	I know about the relationship between Information Design, Interaction Design and Visual Design	2.23
9	I know about User Interviews	2.88
10	I know I can do User Interviews	2.88
11	I know about Affinity Mapping	2.04
12	I know how to make Affinity Mapping	2.62
13	I know about User Personas	2.46
14	I know how to create a User Persona	2.73
15	I know how to create a UI design	2.27
16	I am interested in UI/UX	3.31
	Average	**2.64**

According to the pre-test results, there is an overall average of 2.64 for UI/UX knowledge of students before taking part in this training (Table 2). This indicates that students still do not know both the theory and practice of UI/UX design. However, most students are interested in UI/UX design considering that this skill can enrich students' skills in creating creative digital products, both website and mobile-based, and students view UI/UX design as something fun.

Training activities. Then the students were given material about User Interface (UI) and User Experience (UX) design and carried out practices using Figma. In this session, the activity carried out is creating an account on Figma. Students are asked to open a browser and search with the keyword Figma. After that, students are asked to create an account using their personal email. After that, it's time to introduce the features of this Figma application, to make it easier during training and practice in class as shown in Figure 2.

Figure 2. Create New Account on Figma

On the next session, the students learned about the meaning of UI/UX, the difference between UI and UX, then the students were asked to pair up to conduct interviews. The results of the interview findings conducted in pairs were written in the form of keywords in Figma (Figure 3) as a basis for the next stage, namely, affinity mapping, create user persona and prototyping.

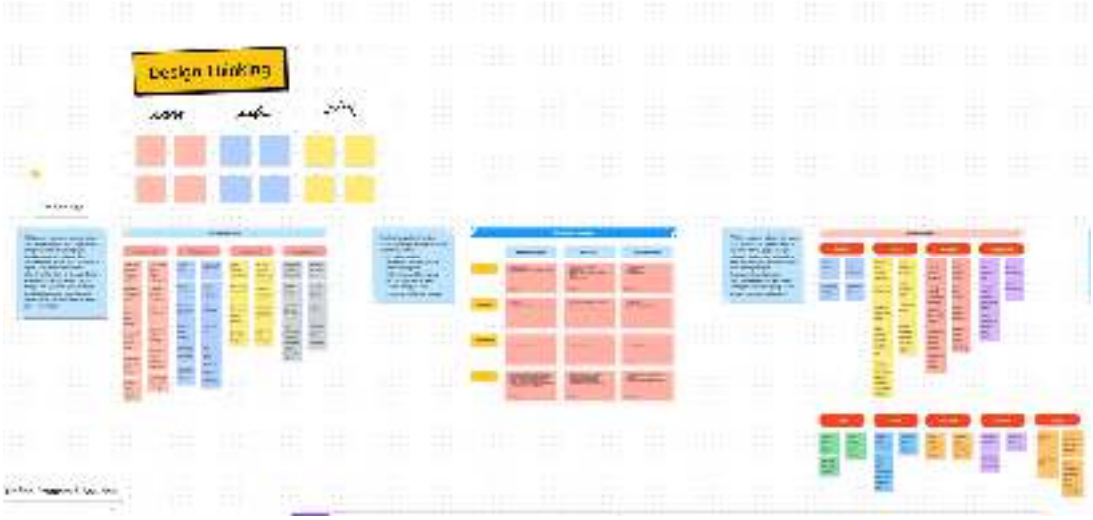

Figure 3. UI/UX design process using Figma.

After students create their user persona based on findings during interview. After that, students were asked to create a portfolio in the form of a website using Figma. During training sessions, students tend to be active and enthusiastic to actively participate in training activities. the training atmosphere can be seen in Figure 4.

Figure 4. Training Session

Posttest. On the last session, a post-test was carried out to evaluate the achievement of training objectives and students' understanding after participating in the training. The posttest consists of the same statement items as the pre-test. Based on the post-test results, an average increase of 1.08 was obtained from the pre-test results before the training was carried out. This shows that students experience increased knowledge about UI/UX both in theory and practice. A comparison of each question item can be seen in Figure 5.

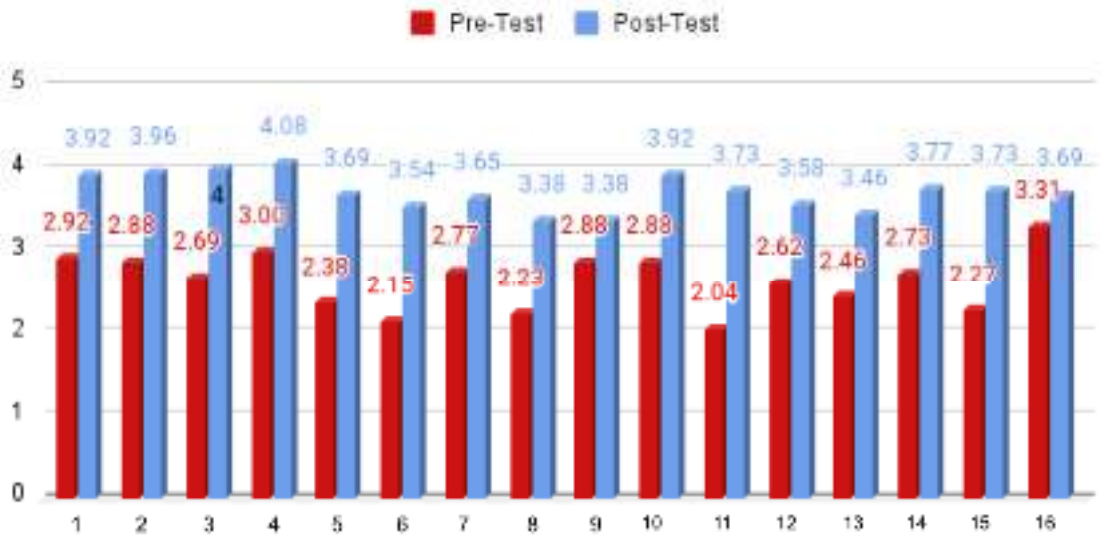

Figure 5. Comparison of pre-test and post-test

To determine the increase in students' understanding in a certain measure, a gain test (N-Gain) was carried out to determine the extent to which students' understanding increased before and after being given training. The following is the normalized Gain test formula **(Archambault et al., 2008)** as shown in Equation (2):

$$< g >= \frac{skor\ posttest - skor\ pretest}{skor\ maksimum - skor\ pretest}\ x\ 100 \quad (2)$$

The normalized gain value <g> obtained is interpreted with the classification in table 3.

Table 3. N-Gain Criteria (Hake, 1998)

Nilai g	Keterangan
0,7 < g < 1	High
0,3 < g < 0,7	Medium
0 < g < 0,3	Low

According to the Gain score, the normalized gain value <g> obtained in this training was **0.45** or 45%, meaning that the increase in students' understanding after being given this training was included in the medium criteria. Nevertheless, overall training activities ran well and smoothly. Most of the students gave positive responses and impressions. This was shown from the survey results given after the training was completed that the topic of UI/UX design was considered interesting and the activities during the training were also enjoyable (Table 4).

Table 4. Students' responses during Training activities

Participant	Responds
1	very pleasant
2	It was fun to make the design, the mentor's meaning was easy to understand
3	It's fun because the design can be according to what we want, the teachers are also fun.
4	happy with the learning
5	It's really fun to be able to learn design and find out about it
6	The discussion will be useful for later
7	The impression was that studying UI/UX actually made me focus on what I was doing, the message was thank you to my brothers and sisters who have taught me, good luck always amen
8	nice to get to know ui/ux etc
9	Thank you for providing the material and explaining the material well.
10	Interesting, thank you very much to me and my friends for teaching me about this material
11	It's really exciting, bro, you really have fun
12	Impressions for UI/UX materials are very useful for creating and building designs on the web and others. UI focuses on the beauty of the appearance while UX focuses on user satisfaction. For me UI/UX is very interesting to learn more about
13	In my opinion, this time it was really fun to practice
14	I really want to learn more about UI
15	Very interesting
16	It's fun to know UI/UX

Participant	Responds
17	Enjoy learning UI/UX
18	The learning is interesting, but please increase the interaction further and create a more pleasant atmosphere, sorry in advance because so far you are the most exciting teacher from PT Median because there is a lot of interaction and that's really good, but the quiet atmosphere is too annoying for me
19	very pleasant
20	It was fun to make the design, the mentor's meaning was easy to understand
21	It's fun because the design can be according to what we want, the teachers are also fun.
22	happy with the learning
23	It's really fun to be able to learn design and find out about it
24	The discussion will be useful for later

However, there are still many things that can be improved, especially in terms of learning methods and controlling the atmosphere in the classroom to make it more active and interesting. As for increasing students' understanding in subsequent training, more interactive and student-centered learning methods can be applied so that increased understanding before and after training can be included in the high criteria.

4. CONCLUSION

Community service activities were carried out at SMKN 4 Bandung for 4 days with the topic of training on the basics of UI/UX design using the Design Thinking and Figma methods. Starting from making teaching materials on the basics of UI/UX, conducting a pre-test, installing Figma, after that conducting training and implementation on the basics of UI/UX for SMKN 4 Bandung students and at the end a post-test was carried out. The students of SMKN 4 Bandung showed a good response when taking part in the UI/UX basics industrial training class which was carried out by showing enthusiasm in participating in the activity until the end. According to pre-test and post-test results, there was an increase of 1.08, where the results of the pre-test were obtained with an average result of 2.64, while after the training was carried out a post-test was carried out, with an average result obtained. of 3.72. Therefore, after carrying out training on the basics of UI/UX in this community service activity, it can be concluded that there has been an increase in the knowledge and understanding of SMKN 4 Bandung students.

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LIST OF REFERENCES

Ansori, S., Hendradi, P., Nugroho, S., Mayjen Bambang Soegeng, J., Mertoyudan, K., Magelang, K., & Tengah, J. (2023). Penerapan Metode Design Thinking dalam Perancangan UI/UX Aplikasi Mobile SIPROPMAWA. *Journal of Information System Research*, *4*(4), 1072–1081. https://doi.org/10.47065/josh.v4i4.3648

Archambault, J., Burch, T., Crofton, M., & McClure, A. (2008). *The Effects of Developing Kinematics Concepts Graphically Prior to Introducing Algebraic Problem Solving Techniques*.

Aziz, N. S., Sulaiman, N. S., Hassan, W. N. I. T. M., Zakaria, N. L., & Yaacob, A. (2021). A Review of Website Measurement for Website Usability Evaluation. *Journal of Physics: Conference Series*, *1874*(1), 12045. https://doi.org/10.1088/1742-6596/1874/1/012045

Bucko, J., & Kakalejčík, L. (2018). Website usability and user experience during shopping online from abroad. *Information Management*, *XXI*(3), 205–219. https://doi.org/10.15240/tul/001/2018-3-013

Dam, R. F., & Siang, T. Y. (2020). *Design thinking: a quick overview*. Interaction Design Foundation. https://doi.org/https://doi.org/APO-306478

Damayanti, C., Triayudi*, A., & Sholihati, I. D. (2022). Analisis UI/UX Untuk Perancangan Website Apotek dengan Metode Human Centered Design dan System Usability Scale. *JURNAL MEDIA INFORMATIKA BUDIDARMA*, *6*(1), 551–559. https://doi.org/10.30865/mib.v6i1.3526

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., Black, W. C., & Anderson, R. E. (2018). *Multivariate Data Analysis*. https://doi.org/10.1002/9781119409137.ch4

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, *66*(1), 64–74. https://doi.org/10.1119/1.18809

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital Transformation: An Overview of the Current State of the Art of Research. *SAGE Open*, *11*(3), 21582440211047576. https://doi.org/10.1177/21582440211047576

Lewrick, M., Link, P., & Leifer, L. (2018). *The Design Thinking Playbook*. ohn Wiley & Sons, Inc.

Nabila, G. (2022). MDP STUDENT CONFERENCE (MSC) 2022 Penerapan UI/UX Dengan Metode Design Thinking Pada Aplikasi Jaya Indah Perkas. *Mdp Student Conference (Msc)*, 231–238.

Nasution, W. S. L., & Nusa, P. (2021). UI/UX Design Web-Based Learning Application Using Design Thinking Method. *ARRUS Journal of Engineering and Technology*, *1*(1), 18–27. https://doi.org/10.35877/jetech532

Nurjanah, S., Nurjannah, N., & Kristiani, S. P. (2022). Perancangan Ui/Ux Menggunakan Design Thinking Untuk Organisasi Kampus Daerah Purwakarta. *JSI : Jurnal Sistem Informasi (E-Journal)*, *14*(1), 2442–2449. http://ejournal.unsri.ac.id/index.php/jsi/index

Pearson, K. (2008). The Concise Encyclopedia of Statistics. In *The Concise Encyclopedia of Statistics* (pp. 418–419). Springer New York. https://doi.org/10.1007/978-0-387-32833-1_313

Putra, L. D., Primajaya, A., & Prihandani, K. (2022). Penerapan Design Thinking Pada Perancangan UI/UX Aplikasi Pembelajaran Online Untuk Mengurangi Dampak Technostress. *INTECOMS: Journal of Information Technology and Computer Science*, *5*(2), 125–130. https://doi.org/10.31539/intecoms.v5i2.3920

Sebastian, I. M., Ross, J. W., Beath, C., Mocker, M., Moloney, K. G., & Fonstad, N. O. (2017). How Big Old Companies Navigate Digital Transformation. *AIS E-Library*, *16*(3). https://aisel.aisnet.org/misqe/vol16/iss3/6/

Zukhri, Z. (2022). *Implementasi Metode Design Thinking Pada Perancangan UI/UX Website Tracking GPS Tiara Track*. 101–110. https://journal.uii.ac.id/AUTOMATA/article/view/24213