Developing Of A Comic Digital Gallery To Improve The Potential Of Visual Communication Design Students

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ABSTRACT

To develop the domestic and global comic industry, a synergy between the industry and higher education institutions as providers of professional resources is needed. After the Covid-19 pandemic, learning methods in the world of education are adapted to online-based learning media. Such adaptation is needed to facilitate students' learning activities. This study developed a website-based comic gallery media using the waterfall method, which is then tested in beta to students using the black box method to get user experience responses. The developed media serves as a storage and display of the students' comic works that can be accessed globally. The results of the black box test show that the digital gallery system is significantly needed by students, because they can use it as a simulation of the comic creative industry. This simulation media has a cognitive and psychological impact on students. Cognitively, this media can improve students' potential through learning experiences that are close to the real world of the comic industry. Meanwhile, psychologically, this media can help students develop their mental capacity to face industry challenges and the possibility of gaining personal popularity.

Keywords: Design media learning, Comic industry, Website-based digital gallery, Communication visual design.

1. Introduction

The human civilization is currently the era of technological advances (Wierzbicki, 2007; Fell, 2004) based on digitalization (Wiesböck & Hess, 2020), internet (Liu, Tong, Mao, & Yang, 2020; Lei, 2022), and database traffic. (Johari, Keyvan-Ekbatani, Leclercq, Ngoduy, & Mahmassani, 2021; Yu, Lee, & Jeon, 2017). Thus, humans, both individually and in communities, need to adapt (Abbas, et.al, 2021; Prasanna, et.al, 2019; Mulyadi, Zulkarnain, & Laugu, 2019; Yang, & Koo, 2014) by understanding and/ or creating systems and technologies that are in accordance with the development of the era. Moreover, with the onset of the Covid-19 pandemic, such adaptation efforts have become even more necessary (Hiscott, et.al, 2020; Dey, Al-Karaghouli, & Muhammad, 2020; Yousif, Hewage, & Nawaf, 2021; Haleem, Javaid, & Vaishya, 2020; Attoe, & Chimakonam, 2021). This causes many changes in various sectors of life globally. One of these changes occurred in the education sector (Sun, Zhang, & Li, 2020; Domínguez-Vergara, & Dominguez-Perez,

2021; Oliveira, et.al, 2021) , including in the field of fine arts (Nortvig, et.al, 2020; Lorenza & Carter, 2021). Changes in the visual arts education include the teaching and learning methods that combine theoretical and practical learning, as well as the media used to deliver the learning materials (Vadivel, Mathuranjali, & Khalil, 2021; Lapitan Jr, et.al, 2021; Rasheed, Kamsin, & Abdullah, 2020; Aderibigbe, 2021). The field of fine arts is studied particularly at the college or university level, where students have the maturity and logic to think, determine, and choose their respective specializations. A subject of comic study is one of the focuses in the field of arts that combines the skills to compose illustrations and narratives.

Education in the field of art and design uses practicum methods (Kim, 2018; Li, 2021; Orhun, 2009; Turkmenoglu, 2012; Rintoul, 2014) to provide students with creative and aesthetic experiences. Thus, the learning process of arts and designs is often carried out in an exhibition or gallery space (Williams, Biggemann, & Tóth, 2020). With this method, students will gain empirical knowledge and experience about objects of arts and designs. In the world of art, there are two groups of art levels, namely elite art (Barker, 2014) and popular art (Davies, 2019). Galleries and museums are easy places to see elite works of art. Meanwhile, popular or applied arts or designs can be seen anywhere without any gathering room facilities.

Comic is an icon of popular culture (Woo, 2018) It has become one of the commodities in the creative economy that is known throughout the world. The popularity of comics occurs because of the loyalty of its readers (Zhao & Mahrt, 2018) who want affordable entertainment facilities (Boynton, 2018) to fill their spare time. Comic productivity that has become a global trend manifests itself as an industry (Shum, 2017) which also creates a specific market. The activities that take place in the comic market are not only product transactions, but also supporting elements such as visual illustrations, story writing, designs, typography, and other potentials that can be found and needed in it.

Digital technology has become a culture in people's lives (Aguilar-Rodríguez, et.al, 2021; Liao, 2009), either individually, in communities, or in institutions. The technological development creates a virtual world space (Lippert & Cloutier, 2021) as a place for socialization and communication. Various digital platforms are created to facilitate the public in accessing various things, including in the field of art. Digital art galleries (Harding, Liggett, & Lochrie, 2019) become an alternative when someone experiences space and time constraints to be physically present. Comics, as a part of the art realm, also have a digital version of such space in the form of market places, websites, social media, and professionally managed galleries.

Currently, there is not much development or facilitation of art and design learning media that focuses on comics. Most students access digital spaces or galleries in a general context and not in an educational context. This is not a problem if students intend to see the real professional world. However, students are individuals who are still in the stage of developing their potential to become professional individuals. For this reason, this study sought to design a website-based digital comic gallery that can be used as a teaching method to increase and direct the students' potentials. This research also conducted a beta testing of the product to improve user functions and services in the future. The students' potential in the field of comics can then be directed to support the improvement of the national comic industry. Research on the creation of digital comic galleries has not been widely conducted, thus this study can add to the knowledge repertoire, especially in the fields of fine art, design, comics, and the creative industry.

2. Methods

Komiksemar.online is a website-based digital comic gallery designed, used, and developed as a medium for student practicums in the field of

fine arts and design at the university level. This media design aims to provide experience in the field of comic literacy for students to develop their potential in the creative industry. The designing process of the media included two main points, namely the development of a website-based digital gallery and evaluation of user acceptance (Shen, & Eder, 2011; Alhammad & Gulliver, 2014).

The development process of the website-based digital gallery was carried out using waterfall method, starting from the planning stage to the designing and testing stages. At the designing stage, activity diagrams and site map designs were created to produce the display and variety of functions on the website. At the evaluation stage, user responses were obtained using black box test method on the beta version of the product. This

process began with the creation of product standards based on four of the world's most popular comic websites generated from the ranking of similarweb.com. Further, a list of test questions was designed to be distributed to 52 respondents to produce product recommendations as a result of the black box test.

2.1. Digital Gallery Development

The digital gallery was developed using waterfall method (Figure 1) (Zhao, & Balagué, 2015; Pawan, et.al, 2021). This software development method has detailed and logical steps such as system requirements planning, system design, coding, and testing using the Black Box method (Nasrudin, Masykur, & Triyanto, 2018; Zahara, Munthe, & Ritonga, 2021) .
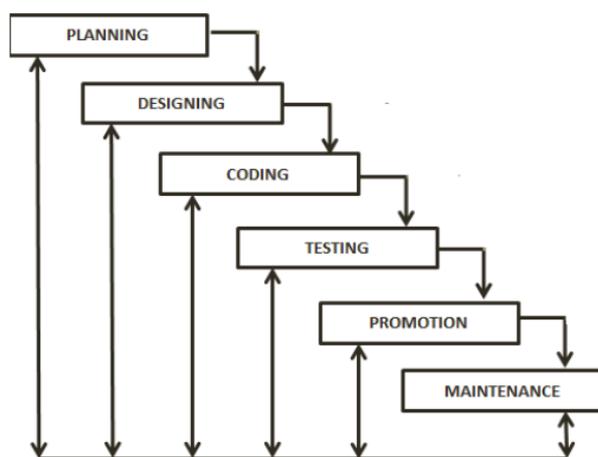
Fig. 1. Diagram of Waterfall Method.

2.1.1.   Planning Stage

The planning stage of the media development was carried out by identifying and collecting data in the field as a guideline for determining the input and output of the website-based comic

gallery being designed. The field data includes (see Table 1).

Table 1. Data of User Interface and Item Types on Comic Gallery

User Interface Data	Types of Items
Comic Gallery	A variety of comics in digital format
Comic Genre	Romance, Horror, Comedy, Drama
Comic Artists	The creators of comics contained in the gallery
Interaction	A discussion medium between admins and visitors

2.1.2. Designing Stage

The designing stage of the digital gallery included three parts which were carried out concurrently. These sections included the designing of site map, use case, and activity diagram. The designing of use case and activity diagram were divided into sections for admins and sections for users or visitors.

The site map design (Figure 2) was used to create a map of position, facility, and function distributions that are applied on the digital comic gallery website. The comic gallery content includes several main sections, namely; Home, which shows the homepage and facility menu; Genre, which directs the reader to choose the types of comics; Comic artists, which serves as an effort to introduce the comic artists who create comics in the gallery; Send Messages, as an interactive effort between admins and visitors; and About Us, which contains information about the manager of the komiksemar.online website.

The use case design (Figure 3) komiksemar.online was used as a guideline in compiling various activities carried out by both admins and users or visitors on the digital comic gallery website. The use case differentiation will affect the activities carried out by each type of users.

The activity diagram design was used to create a series of activities carried out by both the admin (Figure 4) and users or visitors (Figure 5) in using the facilities on the digital comic gallery website. The designing of this activity was carried out according to the use case of each type of users, so that the admin position will not be the same as the user or visitor position, and vice versa.
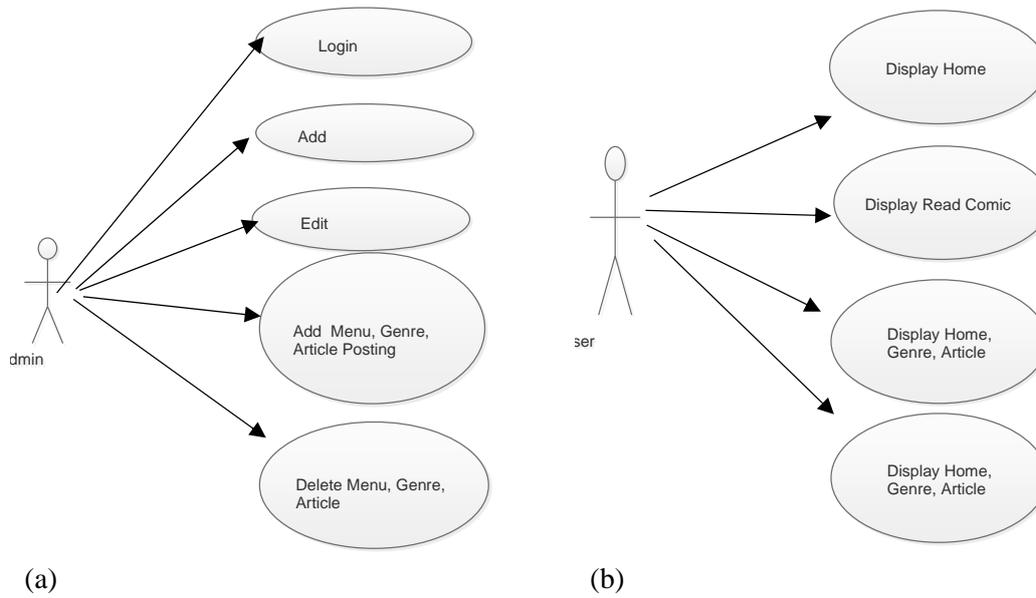
Fig. 2. Site map.

(a)   (b)
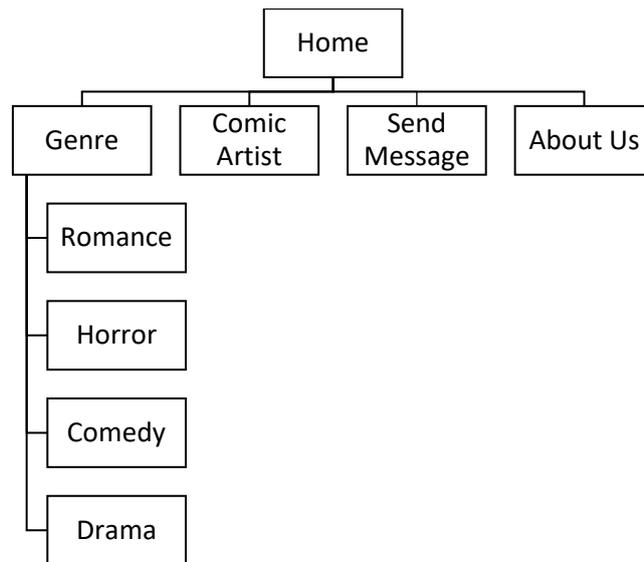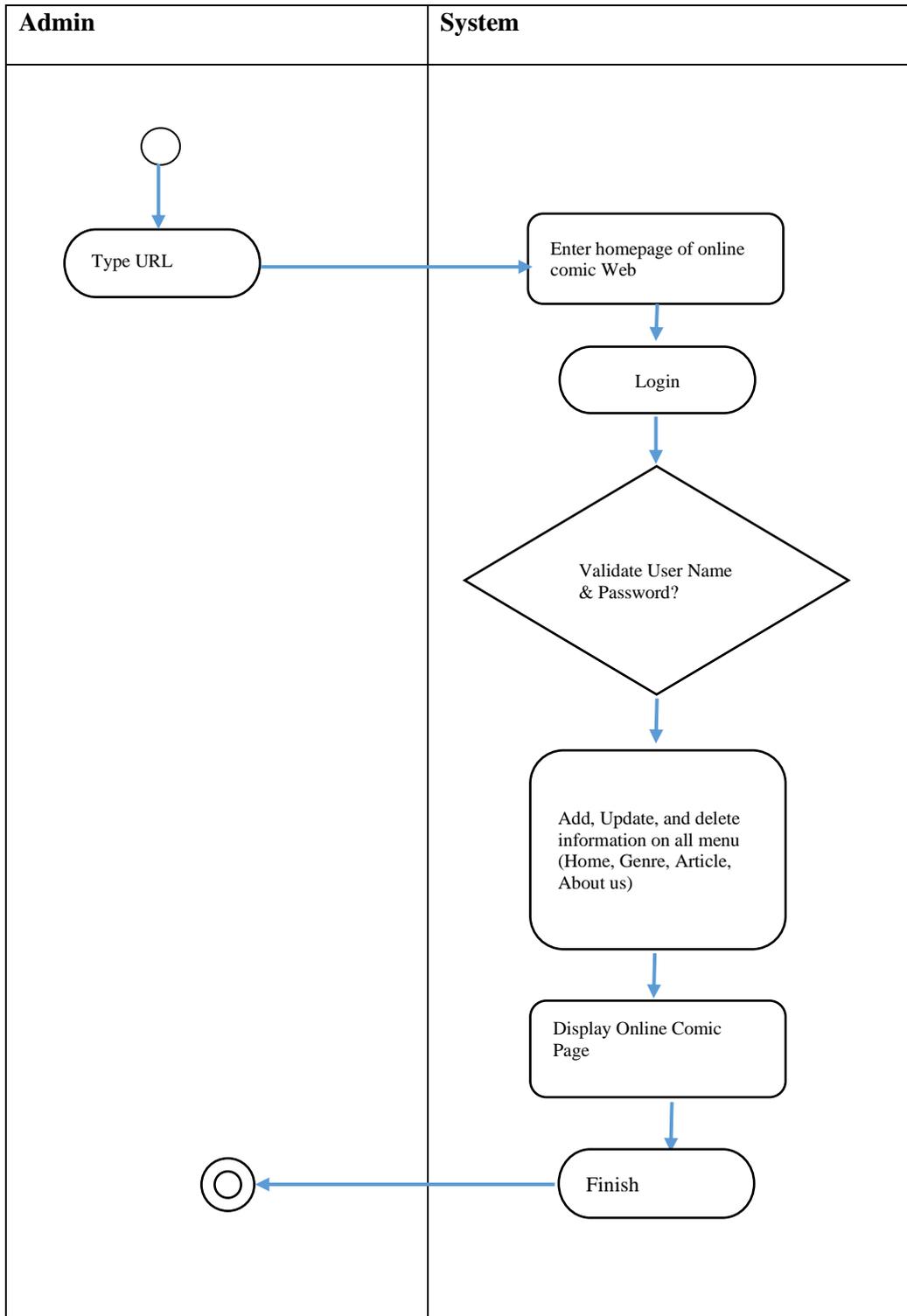
Fig. 3. (a) Use case administrator (b) Use case user.

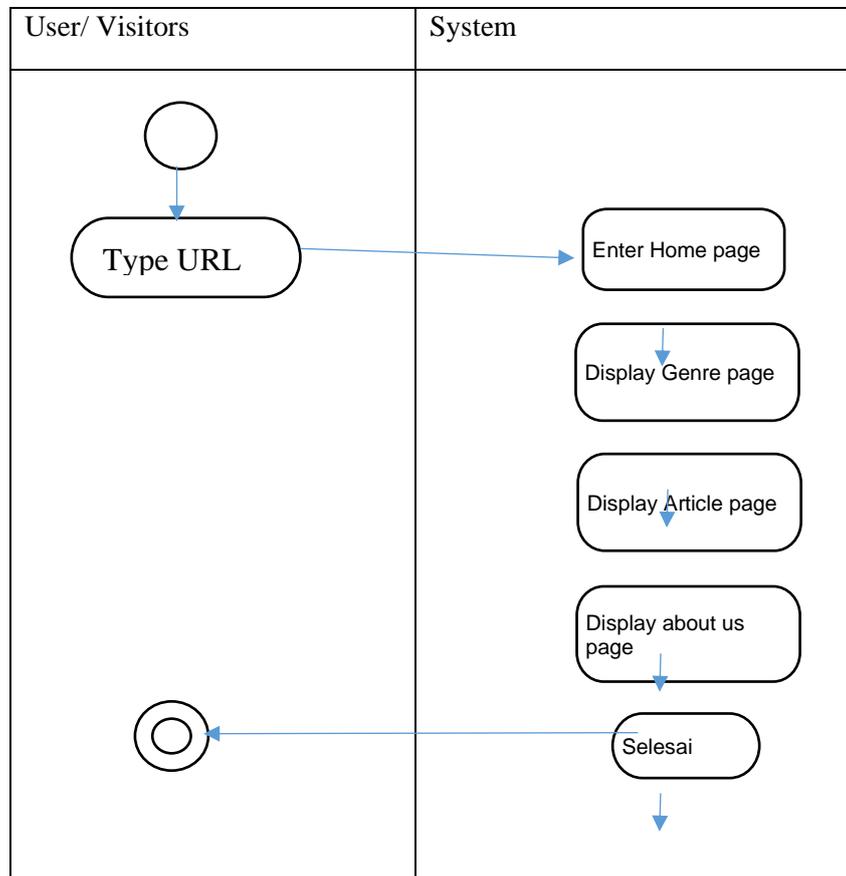**Fig. 4. Admin's Activity Diagram.**

Fig. 5. User's or Visitor's Activity Diagram.

2.2. Testing

Komiksemar.online digital gallery which would be used as an educational medium required evaluation to improve its services to users and maximize its media functions. The media analysis and evaluation were carried out in the form of user responses based on general standards. Two stages of response research were carried out, namely analysis to standard and standard to evaluation.

2.2.1. Analysis to Standard

The media standard assessment was carried out on komiksemar.online using analysis from similar websites based on popularity rankings in Indonesia. The standard data were obtained from similarweb.com website by taking four comic gallery websites (Figure 6), namely komicast.com (Figure 7), komiku.id (Figure 8), komikindo.id (Figure 9), and westmanga.info (Figure 10). The standard functions were used as a reference for visualization and comic website facilities that were generally available in the community.

Fig. 6. Standard Analysis based on website ranking at similarweb.com.
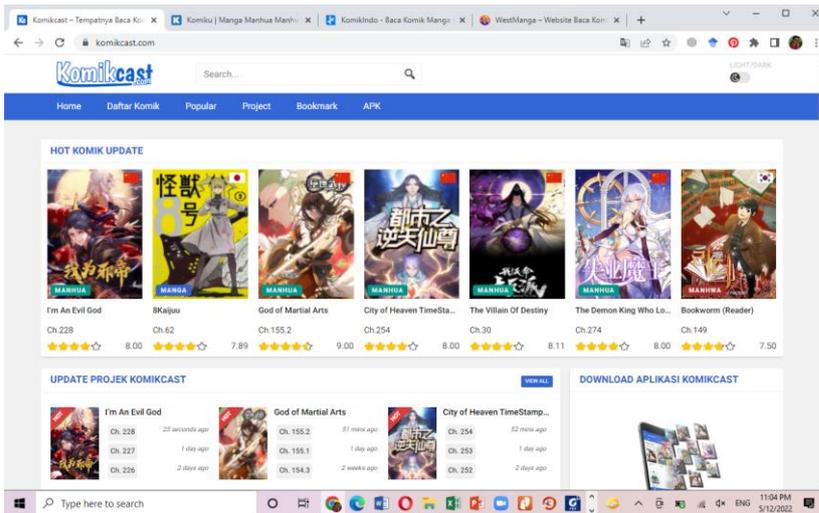
Fig. 7. Comic Website Display on komikcast.com.
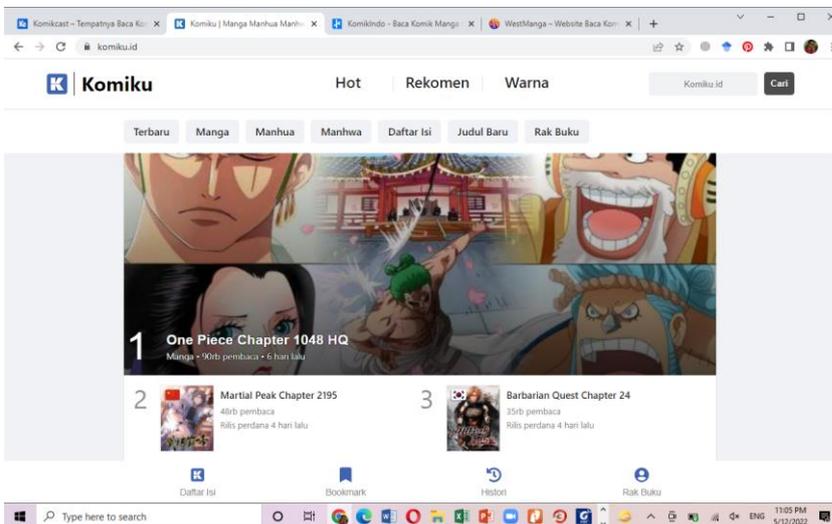
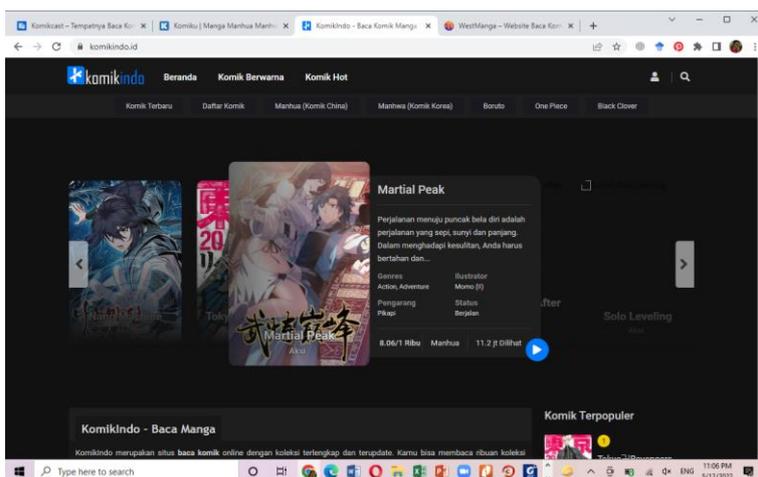**Fig. 8. Comic Website Display on komiku.com.**

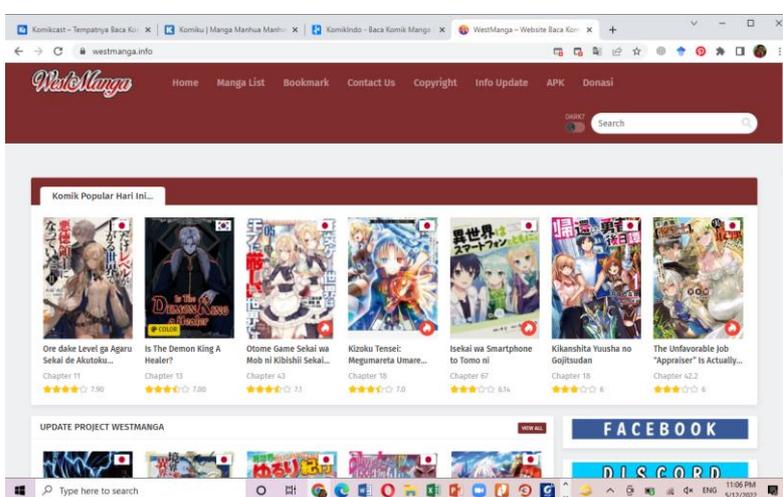**Fig. 9. Comic Website Display on komikindo.id**

Fig. 10. Comic Website Display on westmanga.info.

The four comic gallery websites had become the standard for providing the common facilities presented in comic websites. In addition, these four websites also became the standards for the basic features or facilities provided on websites about comics. These standards include:

1. Basic Features

   Including the home feature which provides access to the home page, the question and answer feature that provides interaction between the user and the admin, the download feature, and the about or contact us feature which provides a disclaimer and acknowledgment of ownership of the website.

2. Classification Features

   Including the grouping of various comics in terms of visual style, story genre, latest works, and most popular works.

3. Activity Features

   Including interaction features between users facilitated by admins such as discussion or forum features, as well as transaction features.

2.2.2. Standard to Evaluation

The standard of facilities available on digital comic galleries affects user acceptance. Thus, the website created need to be tested and

evaluated. The product was tested using Black Box method as beta testing to obtain user acceptance data (Table 2).

The beta version of komiksemar.online software was distributed to limited respondents or a group of users and testers. If there were deficiencies or exceptions, respondents could report them to the developer as a form of evaluation. This was done as a testing effort based on the respondents' initial experiences before the product was launched to the public. The sample respondents for this product were students of the Visual Communication Design study program, Faculty of Fine Arts and Designs, Universitas Sebelas Maret. The number of the respondents was 52 people from 3 different batches, namely those who had completed the comic course subject, those who were currently undergoing the subject, and those who had not taken it.

Table 2. Black Box Test Statements

Statements	SA	A	N	DA	SDA
The online Comic Website is easily accessible on the Internet?					
The online comic website is interesting.					
The displayed menu is easy to use.					
The comic genre classifications are correct.					
The online comic website can be accessed with various devices (Desktop/Mobile).					
I am interested in using the comic digital gallery products offered.					
I have never experienced an error when using an online comic website?					

Table 3. Description of the Black Box Test Assessment

Code	Information
SA	Strongly agree
A	Agree
N	Neutral
DA	Disagree
SDA	Strongly Disagree

3. Results and Discussion

3.1. Design Result and testing

The website-based comic gallery is a medium for students to exhibit their works to the public so that they can be digitally documented and published. Documented works can be a learning medium for other students who want to study comics or visual narratives. The complete address of the comic gallery is komiksemar.online. In the gallery, there are Home, Genre, Comic artist, Send Message, and About Us pages. There are two types of access in the operation of the gallery, namely admin

and visitors. Admin can perform maintenance (Figure 11 and Figure 12), upload comic products (Figure 13), and interact with gallery visitors using the 'Send Message' page.

Meanwhile, visitors can see comic products directly or through a choice of comic genres, and interact with admins through the 'Send Message' page.

Fig. 11. Website html Display.
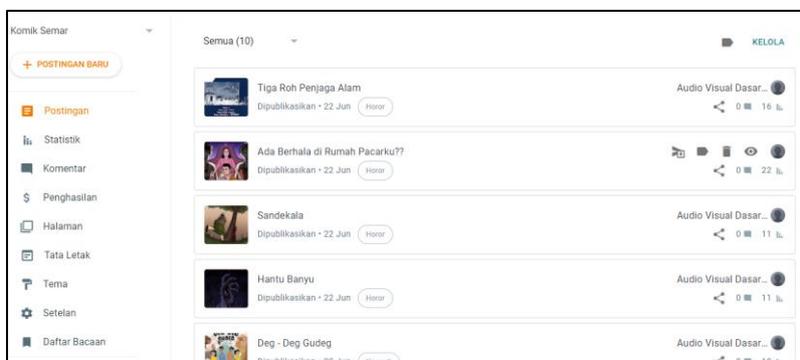
Fig. 12. Admin Page Display.
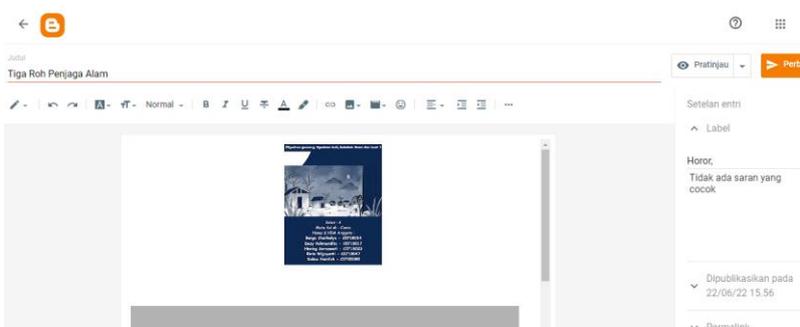
Fig. 13. Admin Comic Material Posting Page Display.

The comic digital gallery was created with the aim of creating learning media for comic course subject. Thus, its appearance refers to the general format of comic websites (Figure 14), in which the 'Home' page displays a variety of document content presentations for comics works (Figure 15). Comics are grouped into genre categorization, namely romance, horror, comedy, and drama (Figure 16). This was done to make it easier for readers to choose the types of story they wanted. Making a site map that refers to popular comic websites aimed to make students have confidence in facing real conditions in the creative industry, especially in the comic industry.
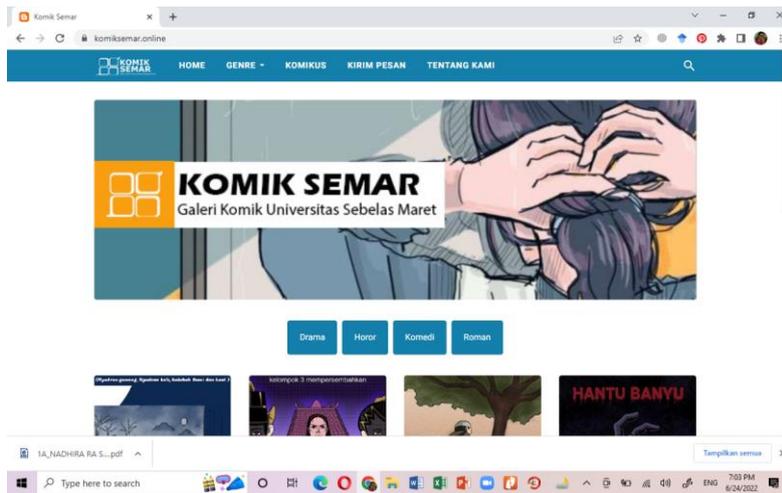
Fig. 14. Home page.
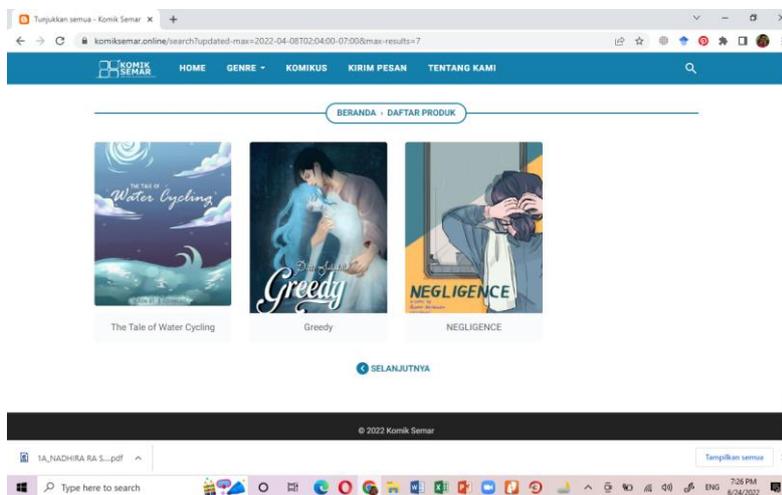
Fig. 15. 'List of Comic Work' page.
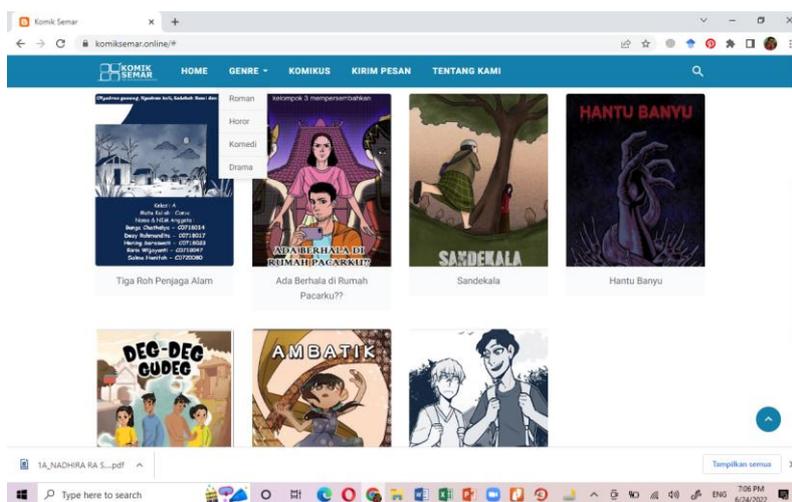
Fig. 16. Category page and examples of comic genres.

The simulation of the comic industry world was taken seriously by displaying comic artist profiles on the 'Comic Artist' page (Figure 17). This page was designed to display photos

or avatars and nick names of the comic artists. This setting is expected to trigger interaction between comic artists and their readers through the 'Send Message' page (Figure 18) which is facilitated by the admin. Readers can express their appreciation and assessment through this page. In addition, readers can also interact with admins by providing input or criticism related to gallery operations.
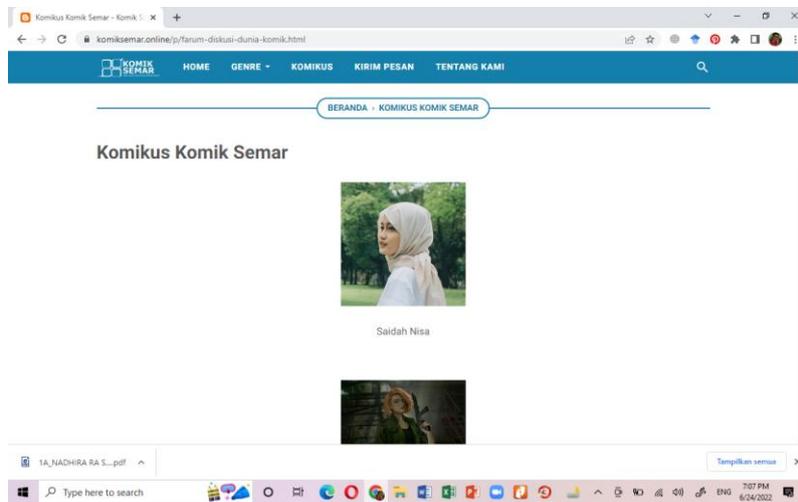
Fig. 17. "Comic Artist" page.
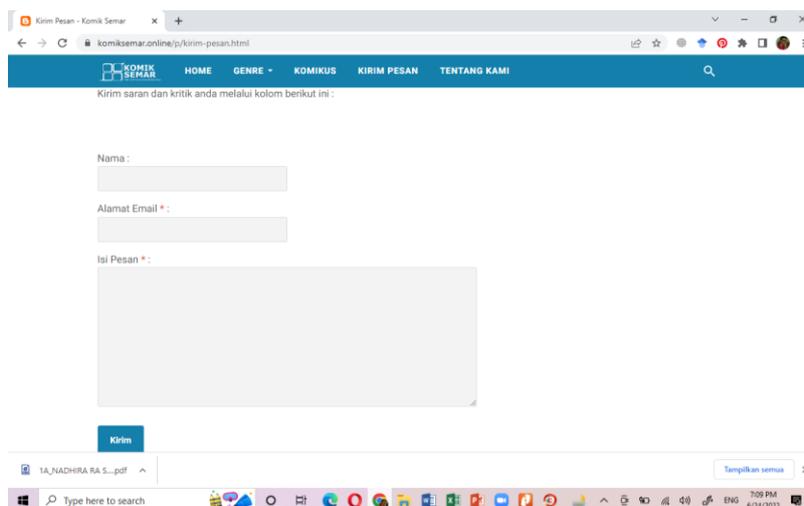
Fig. 18. "Send Message" page.

The 'About Us' page serves as an effort to take responsibility in the management of the website-based comic gallery and a disclaimer regarding the system ownership. It displays information about the institution that owns the online gallery.
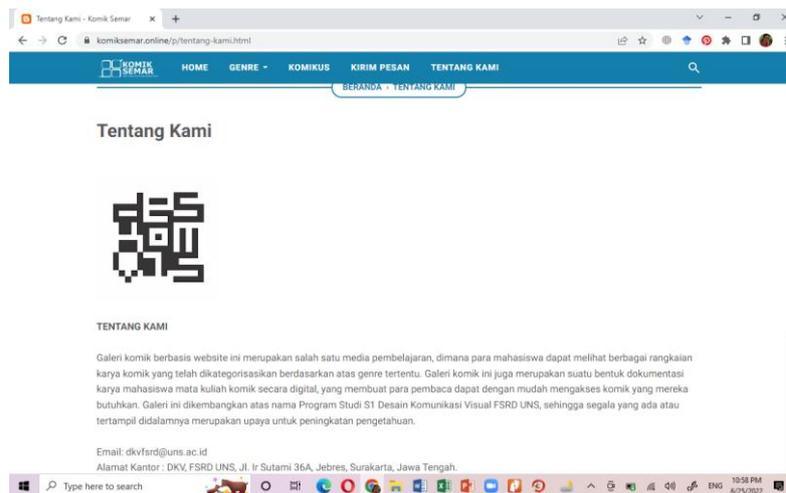
Fig. 19. "About Us" page.

The black box test results on the beta version of the product showed that 88, 4% of respondents considered the website layout to be easy to operate. This shows that the layout used does not make it difficult for users to access the comic products. In addition, the speed of access to the operational system was considered good by 92.3% of respondents. This was supported by the graphic element in the form of color comfort which received a good response by 80.8% of respondents. A total of 92.3% of respondents considered that the application can be accessed well on personal computers, desktop computers, and smartphones, both using IOS and Android operating systems.

The categorization of comic genres in the system makes it easy for readers to choose the story elements they like. The use of the genre division function received a good score by 90.4% of respondents. Fast and responsive interactive facilities received good marks by 94.2% of respondents. This may lead to the development of a three-way communication system, namely from admins, comic artists, and readers, or even the development of discussion forums by adding forum applications.

3.2. Media Effect

3.2.1. Cognitive Effect

The Covid-19 pandemic that occurred simultaneously with the technological developments in the industrial revolution 4.0 caused the need for adaptation to various daily activities. Adaptation often presents disruption that requires improvement, adjustment, and development of operational activities to avoid stagnant situations (Boavida, et.al, 2012; Sreenivasan, Malarvizhi, & Reza, 2019). This also occurs in the development of the comic industry globally and domestically in Indonesia. The production and consumption processes, previously dominated by printing-based manual activities, must now change to digital-based activities (Mataram & Ardianto, 2019).

The comic industry, which used to develop products only in book format, must now provide products in the form of digital documents. These documents are then uploaded through a mobile application-based or website-based digital platform system. The emergence of social media applications provides more space and opportunities for amateur comic artists to show their works. Linking back to the function of comic course subject in arts higher education institutions, such medium supports the learning process because it can prepare students to join the industry professionally. However, in the industrial world, the products of higher education institutions will compete with amateur-based or self-taught product creators with equal or better creation capabilities.

3.2.2. Psychological Effect

In line with the function of the course, the digital comic gallery seeks to create a simulation in which students are exposed to the public who read and evaluate their work directly. The development of the global and domestic comic industry requires personal skills that can be seen through the works. This digital comic gallery can also be used to accommodate these conditions.

The results of the black box test show that the digital gallery system is very much needed by the students. This is in accordance with the respondents' answers, where 94.3% of respondents wanted to use the comic digital gallery system. This enthusiasm occurs because the educational institution that houses the students provides a simulation format from the world of the creative industry, especially the comic industry. The simulation becomes a stimulant for students to improve their creative ability, mental preparedness, and readiness for personal popularity.

In creating comics, students of Visual Communication Design are cognitively trained in terms of visualization and plotting or narration. However, in terms of mental readiness, they need to be trained to face the realities of the industrial world and competition with competitors. They also need to prepare themselves if they later gain personal popularity.

Mental readiness to enter the industry certainly brings many consequences, one of which is increased discipline and other soft skills. The experience of the simulation will make students brave to show off on a digital platform with the potential that their work will be seen globally.

Competition with competitors in the industry is also not an easy thing to tackle. In competition, students will have to reflect on themselves, whether they dare to face the public, either offline or online.

In addition, unpreparedness to face personal popularity or what is commonly referred to as 'star syndrome' will have a negative impact. Students need to be introduced to the possibility of this happening. Even though it is still in a small scope, such as on campus or between friends, students with comic works that are considered good by the audience, either visually or narratively, have the potential to quickly adjust to this condition.

4. Conclusion

Komiksemar.online website-based digital gallery is one of the learning media used by students focusing on comic studies. Like a gallery in the real world, this digital gallery was designed as a digital comic showroom and as an archive space for the students' works. This digital comic gallery is a medium that serves as a bridge between the comic industry and arts higher education institutions. The industry will need resources that have the appropriate capacity and proven credibility. Such quality can be observed from the presented works in the digital gallery. Meanwhile, educational institutions also need simulation media that can be used as a means to improve students' mental capacity to face challenges in the industry and personal popularity.

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