Design of Learning E-Modules

Kristin Wulansari[1], Della Olivia Caterina Kalangit, Hamdani Hamdani, Nur Aidha Eka Putri

Business Administration Department
Politeknik Negeri Samarinda
Samarinda, Indonesia
kristinwulansari@polnes.ac.id,

Abstract - This study aims to create Google Sites in making E-Modules in the D3 Business Administration Study Program at Politeknik Negeri Samarinda. The object of this research is the D3 Business Administration Study Program, Politeknik Negeri Samarinda. The data collection technique is documentation and literature study. The system approach method used is the SDLC or System Development Life Cycle. SDLC has 4 basic phases: planning, analysis, design, and implementation. This study uses Google Sites, Fliphtml5 E-Book, Google Drive, and Disqus, the materials and tools used in designing the Learning E-Module. The design of the E-Module page is made in sheets using Google Sites, while for the display form of the E-Module to become an E-Book using E-Book Fliphtml5, and E-Module storage on Google Drive, as well as comment fields using Disque. The use of the formula in this research is in the design of the E-Module Login Page and Comment Column Display. The results of the study show that Google sites can be applied in making learning E-modules in the D3 Business Administration Study Program at the Politeknik Negeri Samarinda with an attractive and interactive display, which can be accessed anytime and anywhere by students and lecturers of the D3 Business Administration Study Program using computers, laptops, tablets or even smartphones.

Keywords—component; Learning, E-Modules, Google Sites, Google Drive

I. INTRODUCTION

The purpose of national education, according to the law, is to form an independent person who has the will, has quality human resources, is respectable, has a decent life, is happy and has the same position as other countries in the world globally, thus the ideals of the nation Indonesia can be realized well [1].

The use of proper learning media for message and information transmission is one of the aspects that motivates the learning process [2]. The attention and interest of students can be piqued by using media to deliver messages or information during the teaching and learning process. The use of learning media will have a positive impact, namely building the same perception between students and lecturers and between students regarding the material presented, which impacts learning outcomes [3]. A crucial element that contributes to the success of learning is learning media [4][5].

In learning media, various elements consist of approaches, models, methods, strategies, tactics, media and other learning resources. currently, lecturers from the Business Administration Department of Business Administration D3 Study Program use learning media in the form of printed modules, student worksheets and other printed book sources.

Therefore we need a media that can be alternative learning for students other than printed modules, namely by utilizing electronic module (E-module) technology, combining print technology and smartphone technology in teaching and learning activities. Paper modules can be converted into E-modules, which are electronic versions of paper modules. In order to accomplish learning objectives, the electronic module can be seen as a type of independent learning material that is divided into learning units in increasing student understanding of the material being studied so that students are actively involved in learning [6], which is displayed in electronic format, the web-based E-module in the D3 Business Administration Study Program is designed with an attractive and interactive display that can be accessed anytime and anywhere using a computers, laptops, tablets or even smartphones. E-modules can also be used in the long term following the applicable curriculum.

II. LITERATURE REVIEW

A. Learning Media

Learning media is the process of conveying knowledge from a teacher to pupils via an intermediate in the form of audio, visual, or video. Learning media includes anything that is intended to spread messages that can get students' attention, feelings, and desire to think in order to promote a deliberate, controlled learning process [7].

B. E-Module

The term "e-module" refers to a module that may be accessed and used electronically via computers, laptops, tablets, or even smartphones. The fact that e-modules come with interactive media like video, audio, animation, and other features that students may play and replay when utilising the E-Module gives them an advantage over printed teaching materials [8]. Self-instructional, Self-contained, Stand-alone, Adaptive, User-friendly, Consistent in fonts, spacing, and layout, and provided through electronic media, such as multimedia, are the features of e-modules.

A learning tool or tool called a "e-module" contains information, techniques, constraints, and methods of evaluation that are organised and appealingly to help students electronically develop the competences that are expected given the level of complexity [9].

C. Design

According to [10], Design is the process of developing new system specifications based on the results of system analysis recommendations. Meanwhile, according to [11], System design translates the results of analysis into a software package by determining the processes and data needed to create a new system or improve an existing one

D. Internet

The Internet is a global communication network that connects all computers worldwide, even though they have different operating systems and machines [12]. Interconnected Network, or what can be called the natural network of the wide Web, is a computer network that connects networks globally [13][14][15].

E. Google Sites

Google Sites is a structured wiki application for creating personal and group websites for personal or corporate purposes. Google Sites is set up as a replacement for Google Page Creator. The created Site will have an address http://sites.google.com/site/username. The simplest way to make information available to those who require quick, current access is through Google Sites. On the website, users can collaborate to upload new freeform material, attached files, and data from other Google services (including Google Docs, Google Calendar, Youtube, and Picasa). Users always determine who has access, whether it is just themselves, a team, or the entire organisation. Co-creating a site is as simple as updating a document. Even users can broadcast the website to the entire world. Any machine with Internet connectivity can view the Google Sites Web App.

F. Google Drive

Google's online storage service, called Google Drive, became live on April 24, 2012. Once installed, this add-on for Google Docs will take the role of docs.google.com with drive.google.com. A 15GB storage space is offered by Google Drive without charge, and additional space can be purchased. With greater functionality like Dropbox, which syncs files via a specific desktop folder and is more commonly known as a desktop sync client. Features connected to other Google products like Gmail, Google+, and Google Search. The Google Drive developer APIs are highlighted as a feature. Up until now, Google Drive has been integrated with a large number of external programmes.

G. Fliphtml 5 ebook

Fliphtml5 is an interactive html5 digital publishing platform that makes creating digital publications, including magazines, catalogues and e-books, easy.

H. Disqus

A commenting platform in cyberspace called Disqus is accessible on many well-known websites. Facebook, Twitter, Google Plus, and other social networking platforms may all be accessed directly from Disqus. Disqus and social media accounts can be linked so that comments made on Disqus instantly appear on the user's social media account.

I. Mobile

A smart mobile phone is usually called a smartphone. The smartphone includes an operating system connecting users with smartphone devices. Android is one of the most well-liked and commonly used operating systems. A subset of mobile device software known as Android was made available by Google and consists of an operating system, middleware, and core applications. Android is a modified version of the Linux operating system for mobile devices (Mobile Operating System) [16].

III. METHODOLOGY

By thoroughly outlining the research that was conducted and then qualitatively analysing it in accordance with the development process, the descriptive analysis method is utilised to accomplish the goals of this study [17]. The object-oriented system approach method uses classes and objects in the system process as the foundation for its needs analysis methodology [18][19]. It is required to build and develop a web-based learning e-module in order to solve current issues and satisfy the demand for learning E-Modules that can offer the features specified in the background. The research framework is shown in Fig 1:
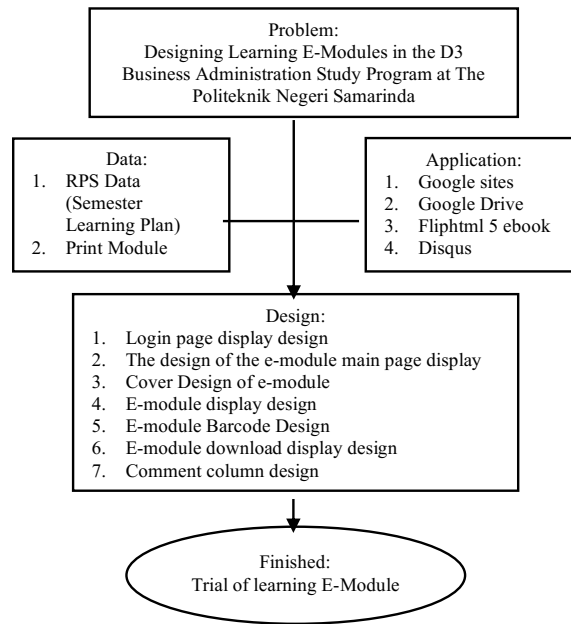
Fig 1. Research Framework

The method used for developing this website system is the System Development Life Cycle (SDLC), a system development methodology, roles and skills needed for system analysis, characteristics, and basic object-oriented systems that can produce the system as desired [20]. A software system is developed or modified using the SDLC using methodological models to construct earlier software systems (based on best practises or well-tested methods) [21].
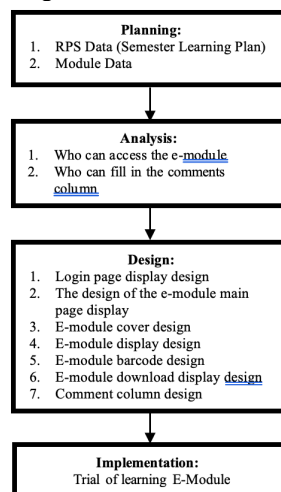The stages of the E-Modul to be built are shown in Fig 2:

Fig 2. The stages of the E-Module

IV. DISCUSSION

A. Planning

After getting the desired data, the needs of the E-module system to be built are identified. Where the planning of the D3 Business Administration Study Program e-module system can be illustrated in the chart below:
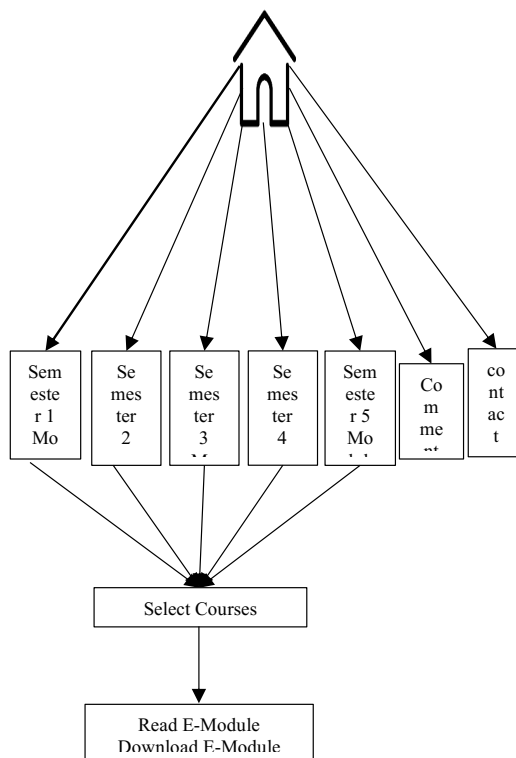

Figure 3. E-Module System Planning

B. Analysis

After this stage, it is necessary to identify parties [22] who can access the E-Learning Module. The first step is to identify the existing business processes in the D3 Business Administration Study Program. From the results of interviews with the Head of the D3 Business Administration Study Program, it can be seen that this Learning E-Module can be accessed by admins, students, and Lecturers of the D3 Business Administration Study Program. Meanwhile, the comments column can be used by students and lecturers who wish to provide criticism and suggestions for the e-module of the D3 Business Administration Study Program.

C. Design

At this stage, a design is made based on the analysis results. It can be concluded that the design of learning e-modules includes the following:

1)   *Login Page:* The Login page is the initial page before entering the main page. The steps for creating a Login page include: (1) Installing a background image of the new building of the Politeknik Negeri Samarinda. (2) Giving the text "Welcome to the D3 Business Administration E-Module Login Page of Politeknik Negeri Samarinda ". (3) giving Tolls Username, Password and Login. The result of the login page can be seen in the image below:
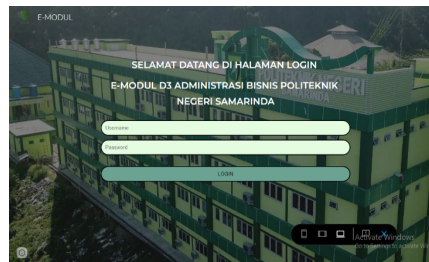
Figure 4. Learning E-Module Login Page

2)   *Main page:* The main or home page is the visible start page of the e-module. The steps for making the main page include: (1) installing a green background based on the characteristics of the Polnes campus, namely a green campus. (2) Installing a background header with a photo of the Samarinda State Polytechnic directorate building. (3) Providing the Text "Welcome to the E-Module of the D3 Business Administration Study Program, Politeknik Negeri Samarinda ". (4) giving the Polnes logo at the top left corner of the header explaining that Politeknik Negeri Samarinda students made this electronic module. (5) Providing module selection buttons from semester 1 to semester 5 modules. (6) Providing a comment column to find criticisms and suggestions from e-module visitors. (7) adding a footer with a choice of addresses in the form of the Politeknik Negeri Samarinda address, business and home administration study program email. The resulting page can be seen in the following figure:

Figure 4. Main Page of the Learning E-Module

3)   *E-Module Content Pages per Semester:* The contents page describes the menu of the subject matter displayed, namely the menu choices of learning e-modules from semester 1, semester 2, semester 3, semester 4, and semester 5. The steps in making these pages include (1) Using a green background according to the display of the home menu so that it is aligned and compatible. (2) Placement of e-module cover images to make it easier for users to choose the e-module they want (3) Additional text according to the choice of course. The results of the E-Module content page per semester can be seen in the image below:

Figure 5. Contents Page of Semester 1 Learning E-Module

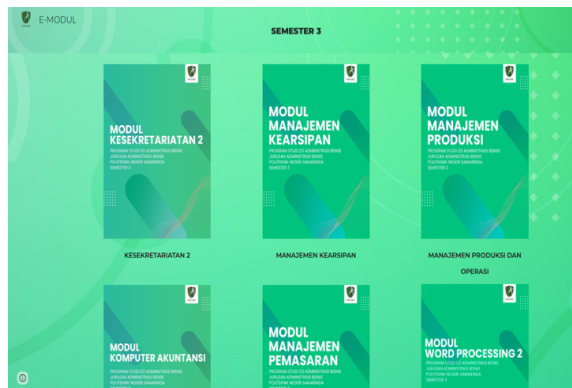Figure 6. Semester 2 Learning E-Module Contents Page

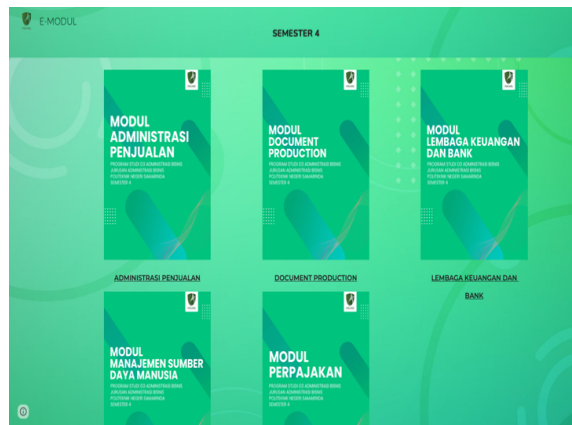Figure 7. Contents Page of Semester 3 Learning E-Module

Figure 8. Contents Page of Semester 4 Learning E-Module

Figure 9. Contents Page of Semester 5 Learning E-Module

4)   E-Module Description Pages Per Subject: This page displays the course description page before entering the menu to read modules and download modules. The procedure for making this page: (1) Provide a green background to align with the main page and contents page of the semester course. (2) Placement of the E-Module cover according to the course. (3) Place the menu to read the module or download the module under the cover of the E-Module. (4) Placement of the text of course titles, descriptions of learning achievements, majors, study programs, and semesters. (4) Placement of a QR code image which can later be scanned and directly connected to the E-Module. An example of the resulting page for the content of the E-Module course can be seen below:
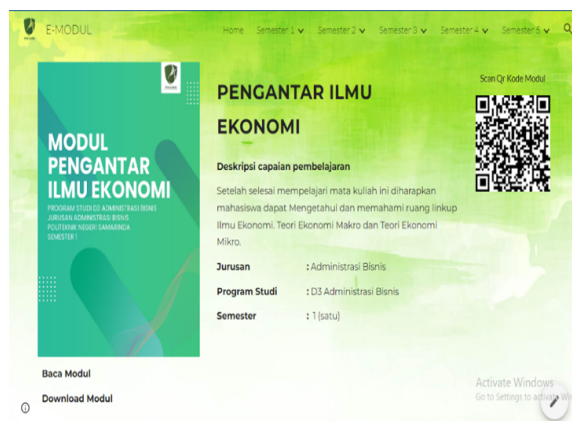
Figure 10. E-Module Description

5)   *E-Module Reading View Page:* On this page is the display of the E-Module course reading page when students read it. The procedure for creating this page usingFliphtml 5 ebook. The resulting page can be seen in the following figure:
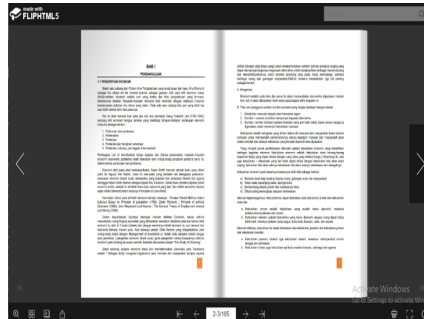

Figure 11.E-Module Reading View Page

6)   *E-Module Download Page:* This page displays the download page for the course E-Module when students download it. The procedure for creating this page is by linking the E-Module file on Google Drive so that students can download the E-Module file. The resulting page can be seen in the following figure:

Figure 11. E-Module Download Page

7)   *Comment Column Page*: This comment column uses a 3rd party application, Disqus, because the Google Sites feature does not provide an automatic comment column. The following is an image in the form of a comment column:
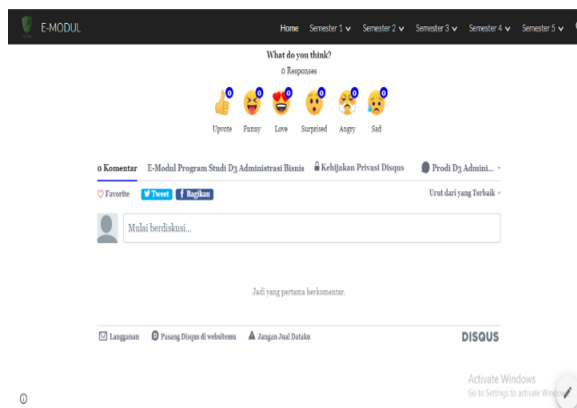

Figure 11.Comment Column Page

D. Implementation

The implementation of the design of the learning E-Module in the D3 Business Administration Study Program follows the analysis and design made in the previous stage. After the author has tested the system, it can be concluded that it has met the needs and all the features are running well. Students and lecturers can also access the E-Modules, and there is a comment column that students and lecturers can use for criticism and suggestions for the E-Module in the D3 Business Administration study program. Learning e-modules in the D3 Business Administration Study Program can be accessed via the page:
https://sites.google.com/polnes.ac.id/e-modulprodiab/home

V. CONCLUSION

Based on the discussion that has been put forward, it can be concluded that the design of Learning E-Modules in the D3 Business Administration Study Program at Politeknik Negeri Samarinda using Google Sites can be applied to make learning E-Modules with an attractive and interactive appearance. There are several advantages to implementing the E-Module in the teaching and learning system, such as the ease of using the E-Module, which can be accessed anytime and anywhere, as well as the availability of a comment column that can be accessed by students and lecturers of the D3 Business Administration Study Program who wish to provide criticism and suggestions for the learning E-Module, so that in the future the E-Module can be further developed to suit the development needs of students and lecturers in the learning and teaching process.

FORMULA

1. Login Page Display Formula

```
<style>

.inputtext {
 width: 100%;
 vertical-align: middle;
 margin: 5px 10px 5px 0;
 padding: 10px;
 background-color: #e4fde1;
 border: 2px solid #000;
 border-radius: 20px;
 box-sizing: border-box;

}

.tombol {
 width: 100%;
 vertical-align: middle;
 margin: 5px 10px 5px 0;
 padding: 10px;
 background-color: #6ba292;
 border: 2px solid #000;
 border-radius: 20px;
 box-sizing: border-box;
 text-transform: uppercase;
}

div {
 font-family: arial;
 font-weight: bold;

}

body {
 overflow-y: hidden; /* Hide vertical scrollbar */
 overflow-x: hidden; /* Hide horizontal scrollbar */
}
```

```
</style>

<body>

<center>

<center>

<div class="div1">

<form name="myform" method="post">

  <input type="text" name="uname" class="inputtext" placeholder="Username">
  <br>
  <input type="password" name="pass" class="inputtext" placeholder="Password">
  <br>
  <div id="timer"></div>
  <br>
  <input type="button" class="tombol" name="log" id="logbutton" value="Login" onclick="myfunction()">
  <br><br>


</form>


</div>

</center>

</center>

</body>

<script type="text/javascript">

  function myfunction ()
  {

   var un = document.forms["myform"]["uname"].value;
   var pw = document.forms["myform"]["pass"].value;
   if (un=="Nur Aidha Eka Putri" && pw=="19622023")
  {
   window.open('https://sites.google.com/polnes.ac.id/e-modulprodiab/home', '_blank');
  }
   else
  {
   document.getElementById("timer").innerHTML = "";
  }
  }

</script>
```

2. Comment Column Display Pages Formula

```
<div id="disqus_thread"></div>
<script>
```

/**

* RECOMMENDED CONFIGURATION VARIABLES: EDIT AND UNCOMMENT THE SECTION BELOW TO INSERT DYNAMIC VALUES FROM YOUR PLATFORM OR CMS.

* LEARN WHY DEFINING THESE VARIABLES IS IMPORTANT: https://disqus.com/admin/universalcode/#configuration-variables   */

/*

var disqus_config = function () {

this.page.url = 'https://sites.google.com/polnes.ac.id/e-modulprodiab/'; // Replace PAGE_URL with your page's canonical URL variable

this.page.identifier = '/polnes.ac.id/e-modulprodiab/'; // Replace PAGE_IDENTIFIER with your page's unique identifier variable

};

*/

(function() { // DON'T EDIT BELOW THIS LINE

var d = document, s = d.createElement('script');

s.src = 'https://e-modul-program-studi-d3-administrasi-bisnis.disqus.com/embed.js';

s.setAttribute('data-timestamp', +new Date());

(d.head || d.body).appendChild(s);

})();

</script>

<noscript>Please enable JavaScript to view the comments powered by Disqus.</noscript>

REFERENCES

1. L. Efriyanti & F. Annas, "Aplikasi Mobile Learning Sebagai Sarana Pembelajaran Abad 21 bagi Pendidik dan Peserta Didik di era Revolusi Industri 4.0," *J. Educ. J. Educ. Stud.*, vol. 5, no. 1, 2020.
2. F. I. Rahma, "Media Pembelajaran (kajian terhadap Langkah-langkah Pemilihan Media dan Implementasinya dalam Pembelajaran bagi Anak Sekolah Dasar," *J. Stud. Islam*, vol. 14, no. 2, pp. 87–99, 2019.
3. A. Ramli, R. Rahmatullah, I. Inanna, and T. Dangnga, "Peran media dalam meningkatkan efektivitas belajar," *Pros. Semin. Nas. Lemb. Pengabdi. Kpd. Masy. UNM*, pp. 5–7, 2018, [Online]. Available: https://ojs.unm.ac.id/semnaslpm/article/download/7649/4429.
4. A. M. Nillofa Ende, I. R. Jasril, and P. Jaya, "Perancangan dan Pembuatan E-Modul Interaktif Berbasis Canva Pada Mata Pelajaran Dasar Listrik dan Elektronika," *JTEV (Jurnal Tek. Elektro dan Vokasional)*, vol. 8, no. 2, p. 193, 2022, doi: 10.24036/jtev.v8i2.117118.
5. Yurniwati and C. Kustandi, "Designing Web-Based Knowledge Building for Pedagogical Content Knowledge Development of Prospective Teachers," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 13, no. 2, pp. 760–766, 2023, doi: 10.18517/ijaseit.13.2.16676.
6. I. R. Jasril, "Upaya Peningkatan Aktivitas Belajar Mahasiswa Melalui Lesson Study Matakuliah Dasar Teknik Digital," *INVOTEK J. Inov. Vokasional dan Teknol.*, vol. 19, no. 2, pp. 93–102, 2019, doi: 10.24036/invotek.v19i2.624.
7. N. N. Hendri, "Pengembangan Multimedia Interaktif Mengunakan Adobe Captivate 7.0 Pada Mata Kuliah Dasar-Dasar Komputer," *J. Educ. Stud.*, vol. 2, no. 2, 2017, doi: http://dx.doi.org/10.30983/educative.v2i2.467.
8. T. Setiadi and R. Zainul, "Pengembangan E-Modul Asam Basa Berbasis Discovery Learning Untuk Kelas XI SMA/MA," *EduKimia*, vol. 1, no. 1, pp. 21–27, 2019, doi: 10.24036/ekj.v1i1.104019.
9. N. Imansari and I. Sunaryantiningsih, "Pengaruh Penggunaan E-Modul Interaktif Terhadap Hasil Belajar Mahasiswa pada Materi Kesehatan dan Keselamatan Kerja," *VOLT J. Ilm. Pendidik. Tek. Elektro*, vol. 2, no. 1, p. 11, 2017, doi: 10.30870/volt.v2i1.1478.
10. Kusrini, *Strategi Perancangan dan Pengelolaan Basis Data*. Yogyakarta: Amikom, 2007.
11. R. Pressman, *Rekayasa Perangkat Lunak: Pendekatan Praktisi Buku*. Yogyakarta: Andi Offset, 2015.
12. & H. Ahmadi, *E-Business & E-Commerce*. Yogyakarta: Andi Offset, 2013.
13. A. F. Sibero, *Kitab Suci Web Programming*. Yogyakarta: MediaKom, 2011.
14. A. F. Sibero, *Web Programming Power Pack*. Yogyakarta: MediaKom, 2013.
15. W. Dan *et al.*, "Digital Technology Fluency and BIM Learning Environment in Undergraduate Construction Management," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 13, no. 1, pp. 235–249, 2023, doi: 10.18517/ijaseit.13.1.16946.
16. H. N. Lengkong, A. A. E. Sinsuw, and A. S. . Lumenta, "Perancangan Penunjuk Rute Pada Kendaraan Pribadi Menggunakan Aplikasi Mobile GIS Berbasis Android Yang Terintegrasi Pada Google Maps," *E-journal Tek. Elektro dan Komput.*, vol. 2015, no. 2015, pp. 18–25, 2015.
17. S. Narimawati, U., Pertiwi, P., and Sulaeman, "Penggunaan aplikasi padlet untuk meningkatkan hasil belajar menulis mahasiswa pada materi teks prosedur pada mahasiswa Unikom," *JIIP-Jurnal Ilm. Ilmu Pendidik.*, vol. 5, no. 11, pp. 4714–4719, 2022.
18. M. Kanaki, K. and Kalogiannakis, "Introducing fundamental object- oriented programming concepts in preschool education within the context of physical science courses," *Educ. Inf. Technol.*, vol. 23, no. 6, pp. 2673–2698, 2018.
19. [19] A. Almaarif and M. Lubis, "Vulnerability Assessment and Penetration Testing (VAPT) Framework: Case Study of Government's Website," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 10, no. 5, pp. 1874–1880, 2020, doi: 10.18517/ijaseit.10.5.8862.
20. [20] A. Sukmaindrayana and R. Sidik, "Aplikasi Grosir Pada Toko RSIDIK Bungursari Tasimalaya," *J. Manaj. Inf.*, vol. 4, no. 2, pp. 1–30, 2017, doi: 10.1017/CBO9781107415324.004.
21. [21] Rosa A.S. ; M. Salahudin, *Rekayasa Perangkat Lunak : Terstruktur Dan Berorientasi Objek*, Cet. 3. Bandung: Informatika, 2014.
22. [22] D. Kusumastuti, R. P. Soesanto, A. Kurniawati, and M. T. Kurniawan, "E-learning content design using ADDIE and SECI: Case of shelving activity in research organization," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 10, no. 3, pp. 1072–1077, 2020, doi: 10.18517/ijaseit.10.3.10841.